Cambium Assessment

Annual Technical Report

Utah Readiness, Improvement, Success, Empowerment (RISE) Assessment

English Language Arts, Mathematics, and Science

2020–2021 School Year

October 2021

UTAH'S STATEWIDE ASSESSMENTS

UTAH READINESS, IMPROVEMENT, SUCCESS, EMPOWERMENT (RISE)

READING GRADES 3–8

WRITING GRADES 5 AND 8

MATHEMATICS GRADES 3–8, SECONDARY MATHEMATICS I

SCIENCE GRADES 4–8

2020–2021 ANNUAL TECHNICAL REPORT

OCTOBER 2021

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1.1 OVERVIEW

The purpose of this technical report is to document the evidence that supports claims made for how the Utah Readiness, Improvement, Success, Empowerment (RISE) assessment scores may be interpreted. Evidence for the validity of test score interpretations is central to substantiating claims that RISE test scores can be used to evaluate the effectiveness with which Utah districts and schools teach students the Utah Core Standards and whether individual students have achieved those standards by the end of each school year. The report therefore begins with a review of validity evidence evaluated to date. Because evidence for the validity of test score interpretations will accrue over time, this chapter will be expanded as further evidence is collected.

Chapter 2 of this technical report describes the design and development of RISE assessments, including the Utah Core Standards, which define the content domain to be assessed by RISE; the development of test specifications, including blueprints, that ensure the breadth and depth of the content domain is adequately sampled by the assessments; and test development procedures that ensure alignment of test forms with the blueprint specifications. The full RISE assessment system administered throughout the year includes end-of-course (EOC)assessments for English language arts (ELA) in reading for grades 3–8 and writing for grades 5 and 8; mathematics for grades 3–8 and EOC Secondary Mathematics I; and EOC assessments in science for grades 4–8. Utah's original Student Assessment of Growth and Excellence (SAGE) tests were developed beginning with the 2014 operational field test, and item development for them continued from 2014 to 2018. When CAI resumed delivering the Utah assessments in fall 2019, they were renamed RISE assessments to match the work conducted with the interim vendor. Note that for these RISE assessments, the blueprints remained the same as they were at the end of the 2018 contract, with minor edits made to account for the updated Utah Core Standards. Thus, CAI and the Utah State Board of Education (USBE) can be confident that the original SAGE assessments are comparable to the RISE assessments delivered by CAI.

Chapter 3 presents the results of the 2020–2021 RISE test administration. This chapter provides summaries of the test-taking student population and their performance on the assessments. In addition, these sections describe administration-specific evidence for the reliability of RISE assessments, including internal consistency reliability, standard errors of measurement (SEMs), and the reliability of performance-level classifications.

The remaining chapters document technical details of test development, administration, scoring, and reporting activities. Chapter 4 describes the item development process and the sequence of reviews that each item must pass through before being eligible for RISE test administration. This chapter also describes Cambium Assessment, Inc.'s (CAI) adaptive algorithm that delivers the computerized RISE assessments to Utah students.

Chapter 5 discusses the test administration procedures, including eligibility for participation in RISE assessments; testing conditions, including accessibility tools and accommodations; systems security for assessments administered online; and test security procedures for all test administrations.

Chapter 6 provides a description of the score reporting system and the interpretation of test scores. Chapter 7 outlines the procedures that USBE used to identify and adopt performance standards for the RISE assessments. Chapter 8 describes the procedures used to scale and equate RISE assessments for scoring and reporting.

Chapter 9 covers the procedures for scoring constructed-response (CR) items, both machine-scored and handscored, and summarizes rater agreement results. Finally, Chapter 10 provides an overview of the quality assurance (QA) processes CAI uses to ensure that all test development, administration, scoring, and reporting activities are conducted with fidelity to the developed procedures.

1.2 VALIDITY EVIDENCE

The term *validity* refers to the degree to which test score interpretations are supported by evidence, and it speaks directly to the legitimate uses of test scores. Establishing the validity of test score interpretations is the most fundamental component of test design and evaluation. The *Standards for Educational and Psychological Testing* (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 2014) provide a framework for evaluating whether claims based on test score interpretations are supported by evidence. Within this framework, the standards describe the range of evidence that may be brought to support the validity of test score interpretations.

The kinds of evidence required to support the validity of test score interpretations depend on the claims made for how test scores may be interpreted. Moreover, the standards make explicit that validity is an attribute not of tests but rather of test score interpretations. Some test score interpretations may be supported by validity evidence, while others are not. The test itself is not assessed for validity; instead, the intended interpretation and use of test scores are evaluated.

There are several intended uses for RISE test scores, including school accountability, feedback about student and class performance, measurement of student growth over time, evaluation of performance gaps between groups, and diagnosis of individual student strengths and weaknesses. Each of these intended uses requires claims to be made about the interpretation of test scores, and the strength of those claims rests on the validity evidence supporting them. Some validity evidence will be central to all of the claims, including evidence showing that test items and administrations align with Utah Core Standards. Other evidence may target more specific claims, such as evidence for measurement of student growth. Validity evidence should therefore be evaluated with respect to the claim that it is purported to support.

Determining whether the test measures the intended construct is central to evaluating the validity of test score interpretations. Such an evaluation in turn requires a clear definition of the measurement construct. For Utah's RISE assessments, the definition of the measurement construct is provided by the Utah Core Standards.

The Utah Core Standards specify what students should know and be able to do by the end of the year for each grade level in order for them to graduate prepared for post-secondary education or entry into the workforce. The Utah Core Standards were established in 1984 and are regularly revised. The current Utah Core Standards for ELA were approved by the USBE in 2010 and fully implemented in June 2013. Utah's mathematics standards were originally approved in 2010, implemented in April 2013, and updated for all grades in 2016. Utah's science standards were adopted and implemented in 2010. They were updated for grades 6–8 in December 2015 and for grades 4 and 5 in June 2019. The Utah Core Standards for ELA, mathematics, and science describe the educational targets for students in each subject area. The updated grades 6–8 science standards went into effect in 2018, and the updated grades 4–5 science standards went into effect in the 2020–2021 school year.

Because directly measuring student achievement against each benchmark in the Utah Core Standards would result in an impractically long test, each test administration is designed to measure a representative sample of the content domain defined by the Utah Core Standards. To ensure that each student is assessed on the intended breadth and depth of the Utah Core Standards, item selection in the Test Delivery System (TDS) is guided by a set of test specifications, or blueprints, which indicate the number of items that should be sampled from each content strand, standard, and benchmark. The test blueprints represent a policy statement about the relative importance of content strands and standards in addition to meeting important measurement goals (e.g., sufficient items to report strand performance levels reliably). Because the test blueprint determines how student achievement of the Utah Core Standards is evaluated, alignment of test blueprints with the content standards is critical. USBE has published the RISE test blueprints that specify the distribution of items across reporting strands and Depth of Knowledge (DOK) levels.

While the blueprints ensure that the full range of the intended measurement construct is represented in each test administration, tests may also inadvertently measure attributes that are not relevant to the construct of interest. For example, when a high level of English language proficiency is necessary to access content in mathematics and science items, language proficiency may unnecessarily limit the student's ability to demonstrate achievement in those subject areas. While such tests may measure achievement of relevant mathematics and science content standards, they may also measure construct-irrelevant variation in language proficiency, limiting the universality of test score interpretations for some student populations.

The principles of universal design of assessments provide guidelines for test design that minimizes the impact of construct-irrelevant factors in assessing student achievement. Universal design removes barriers to access for the widest possible range of students. The following seven principles of universal design are applied in the process of test development (Thompson, Johnstone, & Thurlow, 2002):

- Inclusive assessment population
- Precisely defined constructs
- Accessible, non-biased items
- Amenable to accommodations
- Simple, clear, and intuitive instructions and procedures
- Maximum readability and comprehensibility
- Maximum legibility

Test development specialists receive extensive training on the principles of universal design and apply these principles in the development of all test materials, including items and accompanying stimuli. During the review process, adherence to the principles of universal design is verified.

1.2.1 CONTENT STANDARDS

The RISE assessments were aligned to the ELA standards adopted by Utah in 2013, mathematics and the grades 6–8 science standards adopted by Utah in 2016, and the grades 4 and 5 science standards adopted by Utah in 2019. The standards are available for review at the following URLs:

- https://www.schools.utah.gov/curr/elaelementary
- https://www.schools.utah.gov/curr/elasecondary
- https://www.schools.utah.gov/curr/mathematics/core
- https://www.schools.utah.gov/curr/science

Blueprints were developed to ensure that the test and the items aligned to the prioritized standards they were intended to measure. A complete description of the blueprint and test construction process can be found in Section 2 of this report, Background of RISE Assessments.

Table 1 through Table 3 present the number of items in the 2020–2021 item pool that measured each reporting category by grade for ELA, mathematics, and science, respectively.

Table 1: Number of Items for Each Reporting Category, ELA

Grade	Reporting Category	Number of Items
3	Informational Text	208
	Literature	155
	Language	147
	Speaking and Listening	59
4	Informational Text	210

Grade	Reporting Category	Number of Items
	Literature	144
	Language	149
	Speaking and Listening	66
5	Informational Text	178
	Literature	185
	Language	139
	Speaking and Listening	59
	Writing	4
6	Informational Text	276
	Literature	146
	Language	137
	Speaking and Listening	57
7	Informational Text	204
	Literature	177
	Language	128
	Speaking and Listening	52
8	Informational Text	218
	Literature	185
	Language	146
	Speaking and Listening	59
	Writing	4

Table 2: Number of Items for Each Reporting Category, Mathematics

Grade	Reporting Category	Number of Items
3	Geometry/Measurement and Data	147
	Number and Operations in Base Ten	229
	Number and Operations – Fractions	234
	Operations and Algebraic Thinking	246
4	Geometry/Measurement and Data	171
	Number and Operations in Base Ten	119
	Number and Operations – Fractions	248
	Operations and Algebraic Thinking	152

Grade	Reporting Category	Number of Items
5	Geometry/Measurement and Data	166
	Number and Operations in Base Ten	210
	Number and Operations – Fractions	170
	Operations and Algebraic Thinking	105
6	Expressions and Equations	201
	The Number System	148
	Ratios and Proportional Relationships	147
	Geometry/Statistics and Probability	189
7	Expressions and Equations	89
	The Number System	132
	Ratios and Proportional Relationships	138
	Geometry	128
	Statistics and Probability	122
8	Expressions and Equations	208
	Functions	116
	Geometry/The Number System	273
	Statistics and Probability	101
SM I	Algebra	179
	Geometry	132
	Number and Quantity/Functions/Statistics and Probability	218

Note. SM I = Secondary Mathematics I

Table 3: Number of Items for Each Reporting Category, Science

Grade	Reporting Category	Number of Items
4	Organisms Functioning in Their Environment	23
	Energy Transfer	14
	Wave Patterns	9
	Observable Patterns in the Sky	8
5	Characteristics and Interactions of Earth's Systems	20
	Properties and Changes of Matter	19
	Cycling of Matter in Ecosystems	22
6	Structure and Motion within the Solar System	7

Grade	Reporting Category	Number of Items
	Energy Affects Matter	7
	Earth's Weather Patterns and Climate	7
	Stability and Change in Ecosystems	14
7	Forces are Interactions Between Matter	13
	Changes to Earth Over Time	9
	Structure and Function of Life	4
	Reproduction and Inheritance	8
	Changes in Species Over Time	12
8	Matter and Energy Interact in the Physical World	17
	Energy is Stored and Transferred in Physical Systems	15
	Life Systems Store and Transfer Matter and Energy	9
	Interactions with Natural Systems and Resources	19

1.3 EVIDENCE BASED ON TEST CONTENT

The RISE assessments are designed to measure student progress toward achievement of the Utah Core Standards. Therefore, the validity of RISE test score interpretations critically depends on the degree to which test content aligns with expectations for student learning as specified in the Utah Core Standards.

Alignment of content standards is achieved through a rigorous item development process that proceeds from the content standards and refers to those standards in a highly iterative item development process. That process includes the Utah State Board of Education, test developers, and educator and stakeholder committees. The review process is described in more detail in Section 1.3.2, Independent Alignment Study, and is explicitly designed to ensure rigorous alignment of test content to the Utah Core Standards.

Ensuring the alignment of test items to their intended content standards establishes a critical link between the expectations for student achievement articulated in the Utah Core Standards with the RISE item content. The RISE test blueprints, in turn, specify the range and depth with which each of the content strands and standards will be covered in each test administration and complete the link between the Utah Core Standards and the RISE content-based test score interpretations.

The test blueprints drive item selection in the adaptive algorithm used to administer RISE assessments. The adaptive algorithm seeks to meet the following three objectives:

- To satisfy blueprint constraints
- To maximize overall test information near the student's ability estimate
- To maximize test information within each of the reporting strands, as well

Each item satisfies multiple blueprint elements. For example, an item not only measures a particular content standard, but also does so at a particular DOK level. As the test progresses, the weight of item selections increases for blueprint elements that have not been met, while items measuring blueprint elements that have been satisfied are no longer considered. The adaptive algorithm is configured for each assessment to ensure that all critical blueprint elements are satisfied in each test administration.

Moreover, unlike fixed-form tests, in which the same test form is administered to all students statewide, the RISE assessments are administered adaptively to students within the same classrooms and schools administer different samples of items from the subject-area pool. While each student may be administered only one or two items per benchmark, performance indicators at the classroom and school levels are based on a larger, more representative sample of the content domain than is possible with fixed-form assessments. This ensures that teachers and schools are held accountable for instruction across the full range of the academic content standards.

1.3.1 REVIEW PROCESS FOR ITEMS APPEARING IN RISE OPERATIONAL TEST ADMINISTRATION

This section describes the item review procedures used to ensure item accuracy and alignment with the Utah Core Standards. Following a standard item review process, item reviews proceed initially through a series of internal CAI reviews before items are deemed eligible for review by USBE content experts. Most of the CAI content staff members responsible for conducting internal reviews are former classroom teachers who hold degrees in education and/or their respective content areas. Each item passes through the following four internal review steps before it is designated as eligible for review by USBE:

1. Preliminary Review, conducted by a group of CAI content area experts
2. Content Review 1, performed by a Level 3–4 CAI content specialist
3. Edit, in which a copy editor checks the item for correct grammar and usage
4. Senior Content Review, conducted by a Level 4–5 lead content expert

At every stage of the item review process, beginning with the preliminary review, CAI's test developers analyze each item to ensure the following:

- The item is well aligned with the intended content standard.
- The item conforms to the item specifications for the target being assessed.
- The item is based on a quality idea (i.e., it assesses something worthwhile in a reasonable way).
- The item aligns correctly to a DOK level (for ELA and mathematics).
- The vocabulary used in the item is appropriate for the intended grade or age and subject matter, and it takes into consideration language accessibility, bias, and sensitivity.
- The item content is accurate and straightforward.
- Any accompanying graphic and stimulus materials are necessary to answer the question.
- The item stem is clear, concise, and succinct; it contains enough information to ensure that it will be understood; it is stated positively (and does not rely on negatives such as no, not, none, or never unless absolutely necessary); and it ends with a question.
- For selected-response items, the set of response options are succinct; parallel in structure, grammar, length, and content; sufficiently distinct from one another; and all plausible, but with only one correct option.
- There is no obvious or subtle cueing within the item.
- The score points for constructed-response items are clearly defined.
- For machine-scored constructed-response (MSCR) items, the items score as intended at each score point in the rubric.

On the basis of their reviews of each item, the test developers may accept the item and classification as written, revise the item, or reject the item outright.

Items passing through the internal review process are sent to USBE for its review. At this stage, items may be further revised in accordance with any edits or changes requested by USBE or rejected outright. Items at the USBE review level pass through three external reviews in which committees of Utah educators and stakeholders assess each item's accuracy, alignment to the intended standard, and DOK level, as well as item fairness and language sensitivity. All items considered for inclusion in the RISE item pools are initially reviewed as follows:

- Utah content advisory committees ensure that each item is
  - aligned to the intended content standard;
  - appropriate for the grade level;
  - accurate; and
  - presented online in a way that is clear and appropriate.
- Utah fairness and sensitivity committees ensure that each item and any associated stimulus materials are free from bias, sensitive topics, controversial language, stereotyping, and statements that reflect negatively on race, ethnicity, gender, culture, region, disability, or other social and economic conditions and characteristics.
- Utah community panels review all test items for appropriateness of test content.

Items successfully passing through this committee review process are then field-tested to ensure that they behave as intended when administered to students. Despite conscientious item development, some items perform differently than expected when administered to students. Using the item statistics gathered in field-testing to review item performance is an important step in constructing valid and equivalent operational test forms.

Classical item analyses ensure that items function as intended with respect to the underlying scales. Classical item statistics are designed not only to evaluate item difficulty and the relationship of each item to the overall scale (item discrimination) but also to identify items that may exhibit a bias across subgroups (differential item functioning [DIF] analyses).

Items flagged for review on the basis of their statistical performance must pass a three-stage review to be included in the final item pool from which operational forms are created. In the first stage of this review, a team of psychometricians reviews all flagged items to ensure that the data are accurate and properly analyzed, response keys are correct, and that there are no other obvious problems with the items.

USBE then reconvenes the content review and fairness and sensitivity committees to reevaluate flagged field-test items in the context of each item's statistical performance. On the basis of their review of each item's performance, the content review, fairness and sensitivity, and parent review committees may either recommend that a flagged item be rejected or deem the item eligible for inclusion in operational test administrations.

1.3.2 INDEPENDENT ALIGNMENT STUDY

While it is critically important to develop and strictly enforce an item development process that works to ensure alignment of test items to content standards, it is also important to independently verify the alignment of test items to content standards. USBE has contracted with the National Center for Research on Evaluation, Standards, and Student Testing (CRESST) to conduct an independent alignment study.

The CRESST study was two-pronged and was designed to evaluate the adequacy of both the item pool and the administered test forms generated by a computer-adaptive algorithm that were delivered to Utah students in the 2014–2015 school year. To evaluate the adequacy of the item pool, CRESST relied on a team of content experts to code for cognitive complexity and the academic content standards for each of the content areas (ELA, mathematics, and science). To evaluate the adequacy of the computer-adaptive tests (CATs) administered to students, the CRESST study evaluated standards and blueprint fulfillment, as well as the informativeness, item difficulty, and reliability of the administered tests. The alignment studies were completed in spring 2016, and the results are presented in Appendix 1-A, CRESST Utah SAGE Alignment Study Executive Summary.

1.4 EVIDENCE FOR INTERPRETATION OF PERFORMANCE STANDARDS

Alignment of test content to the Utah Core Standards ensures that test scores can serve as valid indicators of the degree to which students have achieved the learning expectations detailed in the Utah Core Standards. However, the interpretation of the RISE test scores rests fundamentally on how test scores relate to performance standards, which define the extent to which students have achieved the expectations defined in the Utah Core Standards. RISE test scores are reported with respect to four proficiency levels, demarcating the degree to which Utah students have achieved the learning expectations defined by the Utah Core Standards. The cut score establishing the Proficient level of performance is the most critical, since it indicates that students are meeting grade-level expectations for achievement of the Utah Core Standards, that they are prepared to benefit from instruction at the next grade level, and that they are on track to pursue post-secondary education or enter the workforce. The performance standards of the RISE assessments remain unchanged from the original SAGE assessments, except for grades 4 and 5 science. Procedures used to adopt performance standards for the original SAGE assessments are therefore central to the validity of test score interpretations.

Following the first operational administration of the SAGE (now RISE) assessments in spring 2014, a series of standard-setting workshops were conducted to recommend to USBE a set of performance standards for reporting student achievement of the Utah Core Standards. Utah educators, serving as standard-setting panelists, followed a standardized and rigorous procedure to recommend performance-level cut scores. The workshops employed the Bookmark standard-setting procedure, a widely used method in which standard-setting panelists used their expert knowledge of the Utah Core Standards and student achievement to map the Performance-Level Descriptors (PLDs) adopted by USBE onto an ordered-item booklet (OIB) comprising an operational test form that met all blueprint elements. For science, standard-setting workshops were conducted after the adoption of the updated standards: in 2018 for grades 6–8, and in 2021 for grades 4–5. The workshops employed the Assertion Mapping Procedure (AMP), an adaption of the Bookmark method that preserves the integrity of the multi-interaction science items.

Panelists were also provided with contextual information to help inform their primarily content-driven cut score recommendations. Panelists recommending performance standards for the high school assessments were provided with information about the approximate location of the relevant American College Testing (ACT) college-ready performance standard for each assessment. Panelists recommending performance standards for the grades 3–8 summative assessments were provided with the approximate location of relevant National Assessment of Educational Progress (NAEP) performance standards. Panelists were asked to consider the location of these benchmarks when making their content-based cut score recommendations. When panelists used benchmark information to locate performance standards that converged across assessment systems, the validity of test score interpretations was bolstered.

In addition, panelists were provided with feedback about the vertical articulation of their recommended performance standards so that they could view how the locations of their recommended cut scores for each grade-level assessment sat in relation to the cut score recommendations at the other grade levels. This approach allowed panelists to view their cut score recommendations as a coherent system of performance standards. In addition, it reinforced the interpretation of test scores as indicating not only students' achievement of current grade-level standards but also their preparedness to benefit from instruction in the subsequent grade level.

Following the recommendations of final performance standards and vertical moderation sessions to ensure articulation of recommended cut scores across grade levels, the recommended cut scores were presented to a stakeholder panel for review and comment.

Table 4 shows the percentage of students meeting the SAGE (now RISE) Proficient level of achievement for each assessment in spring 2014 on the basis of adopted cut scores. In addition, this table shows the approximate percentage of Utah students meeting the associated ACT college-ready standard for high school assessments and the percentage of Utah students meeting the NAEP proficiency standards at grades 4 and 8. As Table 4 indicates, the performance standards recommended and adopted for the SAGE assessments are quite consistent with relevant

ACT college-ready and NAEP Proficient benchmarks. Moreover, because the performance standards were vertically articulated, grade-level proficiency rates are generally consistent.

Table 4: Percentage of Students Meeting SAGE and Benchmark Proficient Standards, Spring 2014

Test	SAGE Proficient	ACT College-Ready	NAEP Proficient
ELA			
Grade 3	45		
Grade 4	42		37
Grade 5	42		
Grade 6	42		
Grade 7	42		
Grade 8	41		39
Grade 9	39		
Grade 10	40		
Grade 11	38	41	
Mathematics			
Grade 3	45		
Grade 4	48		44
Grade 5	44		
Grade 6	35		
Grade 7	43		
Grade 8	38		36
Secondary Mathematics I	32	31	
Secondary Mathematics II	28	31	
Secondary Mathematics III	33	36	

Note. SAGE high school assessments are not part of the RISE assessments. They are included in the table to demonstrate benchmarking during standard setting in 2014.

Table 5 and Table 6 show the percentage of students meeting the SAGE Proficient level of performance on the basis of adopted cut scores for science in grades 6–8 in spring 2018, and the percentage of students meeting the RISE Proficient level of performance on the basis of adopted cut scores for science in grades 4–5 in spring 2021. In addition, the tables show the percentage of Utah students meeting the NAEP proficient standards in each grade. As Table 5 and Table 6 indicate, the performance standards recommended and adopted for the SAGE/RISE assessments are quite consistent with relevant NAEP proficient benchmarks.

Table 5: Percentage of Students Meeting SAGE and Benchmark Proficient Standards in Science Grades 6–8, Spring 2018

Test	SAGE Proficient	NAEP Proficient
Grade 6	52	48
Grade 7	50	49
Grade 8	50	50

Note. Benchmark data describes the percentage at or above each performance level using data from the 2015 grade 8 NAEP; grades 6 and 7 are interpolated from the grades 4 and 8 NAEP.

Table 6: Percentage of Students Meeting RISE and Benchmark Proficient Standards in Science Grades 4 and 5, Spring 2021

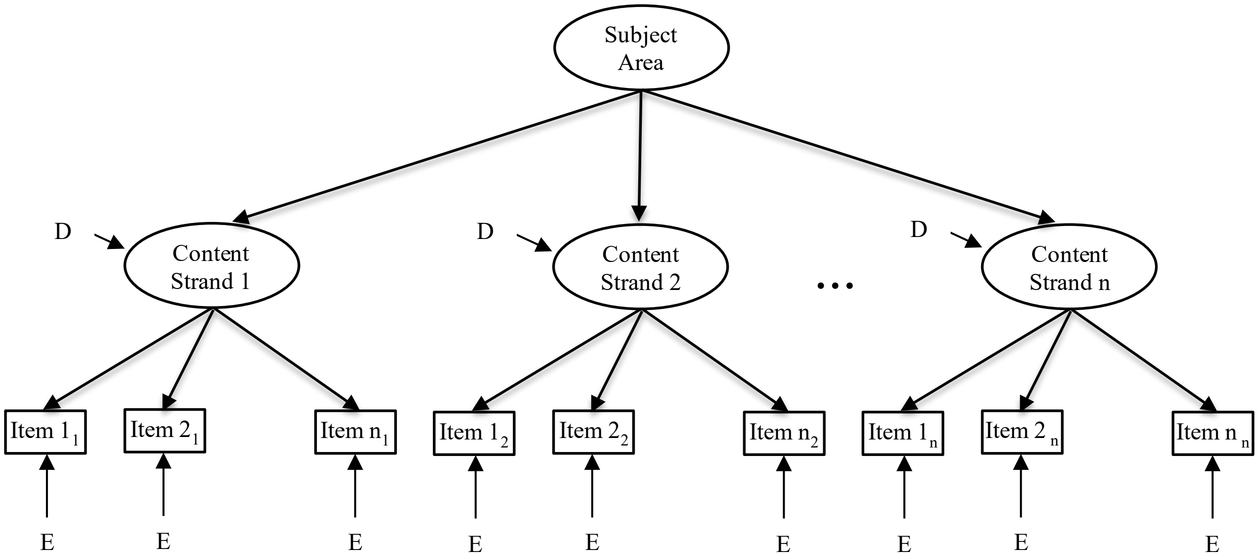
Test	RISE Proficient	NAEP Proficient
Grade 4	43	45
Grade 5	45	46

Note. Benchmark data describes the percentage at or above each performance level using data from the 2015 grade 4 NAEP; grade 5 is interpolated from the grades 4 and 8 NAEP.

1.5 EVIDENCE BASED ON INTERNAL STRUCTURE

Utah's RISE assessments represent a structural model of student achievement in grade-level and course-specific content areas. Within each subject area (e.g., ELA), items are designed to measure a single content strand (e.g., Reading Information, Reading Literature, Language, Writing). Content strands within each subject area are, in turn, indicators of achievement in the subject area. The form of the second-order confirmatory factor analyses is illustrated in Figure 1. As the figure illustrates, each item is an indicator of an academic content strand. Because items are never pure indicators of an underlying factor, each item also includes an error component. Similarly, each academic content strand serves as an indicator of achievement in a subject area. As at the item level, the content strands include an error term indicating that the content strands are not pure indicators of overall achievement in the subject area. The paths from the content strands to the items represent the first-order factor loadings, or the degree to which items are correlated with the underlying academic content strand construct. Similarly, the paths from subject-area achievement to the content strands represent the second-order factor loading, indicating the degree to which academic content-strand constructs correlate with the underlying subject-area achievement construct.

Figure 1: Second-Order Structural Model for SAGE Assessments



Confirmatory factor analysis was used to evaluate the fit of this structural model to student response data from the SAGE test administrations. SAGE assessments in spring 2014 were administered using only the blueprint match component of the adaptive algorithm because there were no item response theory (IRT) parameter estimates on which to adapt test information to student ability. In the absence of a common test form for all students, we constructed a single form for each grade and subject comprising frequently administered items that met content standard blueprint specifications. This approach was necessary to ensure a well-conditioned covariance matrix to support the analyses.

For each of these test forms, we examined the goodness of fit between the structural model and the operational test data. Goodness of fit is typically indexed by a $\chi 2$ statistic, with good model fit indicated by a non-significant $\chi 2$ statistic. However, the $\chi 2$ statistic is sensitive to sample size, so even well-fitting models will demonstrate highly significant $\chi 2$ statistics given a very large number of students. Therefore, fit indices, such as the Comparative Fit Index (CFI; Bentler, 1990), the Tucker-Lewis Index (TLI; Tucker & Lewis, 1973), the Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Residual (SRMR) were also used to evaluate model fit. Table 7 provides a list of the goodness-of-fit statistics used to evaluate model fit, along with a guideline as to what constitutes a good fit.

Table 7: Guidelines for Evaluating Goodness-of-Fit

Goodness-of-Fit Index	Indication of Good Fit
CFI	≥ .95
TLI	≥ .95
RMSEA	≤ .05
SRMR	≤ .08

In addition to testing the fit of the hypothesized SAGE second-order confirmatory factor analysis model, we examined the degree to which the second-order model improved fit over the more general one-factor model of academic achievement in each subject area. Because the second-order model is nested within the one-factor general achievement model, a simple likelihood ratio test can be used to determine whether the additional information provided by the Utah Core Standards framework improves model fit over a general achievement model. Results indicating improved model fit for the second-order factor model provide support for the interpretation of content standard performance above the overall subject area score. In addition to model fit, information criterion indices can be used to evaluate the gains of model fit relative to increased model complexity. Complex models often improve model fit but do so by sacrificing parsimony. Information indices such as Akaike's Information Criteria (AIC), the Bayesian Information Criteria (BIC), and the sample size adjusted Bayesian Information Criteria (aBIC), allow for evaluation of gains in model fit relative to model complexity.

The RISE assessments also claim to measure subject-area achievement using test items that probe student knowledge and skills across multiple DOK levels. As with the content standards, the alignment of items by DOK also represents a structural model that can be evaluated using confirmatory factor analysis. In this case, each item is an indicator of a DOK level first-order factor, and each DOK is in turn an indicator of subject-area achievement. Confirmatory factor analysis was used to evaluate the fit of this DOK structural model to student response data from the SAGE test administrations. In the absence of a common test form for all students, we constructed a single form for each grade and subject comprising highly administered items that met content standard blueprint specifications. This approach was necessary to ensure a well-conditioned covariance matrix to support the analyses. We note that there are two assessments in mathematics and one in science for which we were unable to produce an analyzable matrix.

1.5.1 ELA CONTENT MODEL

The goodness-of-fit statistics for the hypothesized SAGE second-order models in ELA are shown in Table 8. All the statistics indicate that the second-order models posited by the SAGE assessments fit the data well. This pattern was true across all grades. The CFI and TLI values are all equal to or greater than .95. The RMSEA values are all 0.01, and SRMR values are between 0.02 and 0.04, well below the values used to indicate good fit.

Table 8: Goodness-of-Fit for the SAGE ELA Second-Order Models

Grade	CFI	TLI	RMSEA	SRMR
Second-Order Models				
Grade 3	0.96	0.96	0.01	0.03
Grade 4	0.97	0.97	0.01	0.03
Grade 5	0.95	0.95	0.01	0.03
Grade 6	0.98	0.97	0.01	0.03
Grade 7	0.98	0.98	0.01	0.03
Grade 8	0.97	0.97	0.01	0.02
Grade 9	0.97	0.97	0.01	0.03
Grade 10	0.97	0.97	0.01	0.03
Grade 11	0.98	0.98	0.01	0.02

The results of the comparison between the hypothesized SAGE model and the more general achievement model are presented in Table 9. The chi-square difference test indicates that the strand-based second-order model showed significantly better fit across grade levels than the general achievement first-order model. The χ^2_{Diff} *p*-values were less than 0.001 across all grade levels. In addition, the positive values for the information criteria indicate that the gains in fit for the second-order model justify the increased model complexity.

Table 9: Difference in Fit Between ELA Strand-Based Second-Order Models and General Achievement First-Order Models

Grade	x^2_{Diff}	Df $_{Diff}$	*p*-value	AIC $_{Diff}$	BIC $_{Diff}$	aBIC $_{Diff}$
First-Order and Second-Order Models						
Grade 3	2850.5	5	0.000	2840.5	2796.7	2812.6
Grade 4	3228.7	5	0.000	3218.7	3174.9	3190.8
Grade 5	2568.0	5	0.000	2558.0	2514.3	2530.1
Grade 6	2846.5	5	0.000	2836.5	2792.8	2808.7
Grade 7	1250.8	5	0.000	1240.8	1197.2	1213.1
Grade 8	2485.6	5	0.000	2475.6	2432.1	2448.0
Grade 9	1325.1	5	0.000	1315.1	1271.8	1287.7
Grade 10	5540.0	5	0.000	5530.0	5487.0	5502.8
Grade 11	1413.2	5	0.000	1403.2	1360.5	1376.4

1.5.2 ELA DEPTH OF KNOWLEDGE MODEL

Table 10 presents the fit indices for the first-order model and the second-order DOK structural models. The fit of the first-order model shows mixed results. The CFI and TLI values are less than the cutoff value of 0.95. However, the RMSEA and SRMR values are both well below the good fit cutoff values. The results for the multi-factor model are more consistent. The CFI and TLI values, along with the RMSEA and SRMR, all show the model is a good fit for the operational test data.

Table 10: Goodness-of-Fit Statistics for ELA Considering Depth of Knowledge

Grade	CFI	TLI	RMSEA	SRMR
First-Order Models				
Grade 3	0.90	0.89	0.01	0.04
Grade 4	0.88	0.88	0.01	0.04
Grade 5	0.91	0.90	0.01	0.03
Grade 6	0.91	0.91	0.01	0.04
Grade 7	0.94	0.93	0.01	0.04
Grade 8	0.94	0.94	0.01	0.03
Grade 9	0.94	0.94	0.01	0.03
Grade 10	0.87	0.86	0.02	0.06
Grade 11	0.94	0.93	0.01	0.03
Second-Order Models				
Grade 3	0.94	0.94	0.01	0.03

Grade	CFI	TLI	RMSEA	SRMR
Grade 4	0.96	0.96	0.01	0.03
Grade 5	0.94	0.94	0.01	0.03
Grade 6	0.97	0.97	0.01	0.03
Grade 7	0.98	0.98	0.01	0.03
Grade 8	0.97	0.97	0.01	0.02
Grade 9	0.96	0.96	0.01	0.03
Grade 10	0.97	0.97	0.01	0.03
Grade 11	0.98	0.98	0.01	0.02

Table 11 shows the difference in fit between the two models. All of the *p*-values associated with χ^2_{Diff} are highly significant. This result suggests there is a difference in fit between the first-order model and the multi-factor model. Furthermore, the information criteria are positive. This indicates that between the two models, the multi-factor model is the better fit for the data and that information about the DOK of test items adds information beyond that of the general subject-area factor model.

Table 11: Difference in Fit Between First-Order Model and Second-Order Model Considering Depth of Knowledge for ELA

Grade	x^2_{Diff}	Df_{Diff}	*p*-value	AIC_{Diff}	BIC_{Diff}	$aBIC_{Diff}$
Grade 3	1937.2	6	0.000	1925.2	1872.6	1891.6
Grade 4	2846.3	6	0.000	2834.3	2781.7	2800.8
Grade 5	2065.9	6	0.000	2053.9	2001.3	2020.4
Grade 6	2601.6	6	0.000	2589.6	2537.2	2556.3
Grade 7	1238.5	6	0.000	1226.5	1174.3	1193.4
Grade 8	2256.5	6	0.000	2244.5	2192.3	2211.4
Grade 9	1153.6	6	0.000	1141.6	1089.6	1108.7
Grade 10	5426.4	6	0.000	5414.4	5362.7	5381.8
Grade 11	1344.5	6	0.000	1332.5	1281.3	1300.4

1.5.3 MATHEMATICS CONTENT MODEL

The goodness-of-fit statistics for the strand-based second-order models in mathematics are shown in Table 12. The models generally show good fit, although the CFI and TLI fit indices are less than the cutoff value of 0.95 for some of the higher grade-level assessments. Even for these grades, however, the RMSEA and SRMR estimates are well below their respective 0.05 and 0.08 cutoff values. All of the statistics indicate the second-order models are a good fit for the data.

Table 12: Goodness-of-Fit for the SAGE Mathematics Second-Order Models

Grade	CFI	TLI	RMSEA	SRMR
Second-Order Models				
Grade 3	0.96	0.95	0.01	0.03
Grade 4	0.97	0.96	0.01	0.03
Grade 5	0.96	0.96	0.01	0.03
Grade 6	0.96	0.96	0.01	0.03
Grade 7	0.96	0.96	0.01	0.03
Grade 8	0.92	0.92	0.02	0.03
SM I	0.93	0.93	0.01	0.04
SM II	0.96	0.96	0.01	0.03
SM III	0.83	0.82	0.02	0.05

The results of the comparison between the second-order, strand-based model and the first-order, general achievement model are presented in Table 13. The chi-square difference test shows that the hypothesized second-order model provided significantly greater fit relative to the first-order model, with χ^2_{Diff} *p*-values less than 0.001 across grade levels. The information criteria, however, showed mixed results, indicating that the gains in model fit afforded by the second-order model may be outweighed, at least in part, by the greater complexity of that model relative to the first-order, general achievement model.

Table 13: Difference in Fit Between Mathematics Strand-Based Second-Order Models and General Achievement First-Order Models

Grade	x^2_{Diff}	Df $_{\text{Diff}}$	*p*-value	AIC $_{\text{Diff}}$	BIC $_{\text{Diff}}$	aBIC $_{\text{Diff}}$
First-Order and Second-Order Models						
Grade 3	31.3	5	0.000	21.3	-22.6	-6.7
Grade 4	22.5	5	0.000	12.5	-31.4	-15.5
Grade 5	19.0	5	0.002	9.0	-34.7	-18.8
Grade 6	82.7	5	0.000	72.7	29.1	44.9
Grade 7	19.5	5	0.002	9.5	-33.9	-18.0
Grade 8	20.4	5	0.001	10.4	-33.0	-17.1
SM I	16.2	5	0.006	6.2	-37.3	-21.5
SM II	14.7	5	0.012	4.7	-37.9	-22.0
SM III	34.7	5	0.000	24.7	-14.0	1.9

1.5.4 MATHEMATICS DEPTH OF KNOWLEDGE MODEL

Table 14 presents the fit between the first-order model and the multi-factor model. The fit of the first-order model again shows mixed results. The CFI and TLI values are a bit lower than the cutoff value of 0.95. However, the RMSEA and SRMR values both indicate good fit. The results for the multi-factor model are more consistent. The CFI and TLI values, along with the RMSEA and SRMR, all show that the model is a good fit for the operational test data.

Table 14: Goodness-of-Fit Statistics for Mathematics Considering Depth of Knowledge

Grade	CFI	TLI	RMSEA	SRMR
First-Order Models				
Grade 3	0.95	0.94	0.01	0.04
Grade 4	0.94	0.94	0.01	0.04
Grade 5	0.93	0.93	0.01	0.05
Grade 6	0.97	0.97	0.01	0.03
Grade 7	0.95	0.94	0.01	0.04
Grade 8	0.93	0.93	0.01	0.03
SM I	0.92	0.92	0.01	0.05
SM II	0.94	0.94	0.01	0.04
SM III	0.80	0.79	0.01	0.06
Second-Order Models				
Grade 3	0.96	0.96	0.01	0.04
Grade 4	0.94	0.94	0.01	0.04
Grade 5	0.94	0.94	0.01	0.04
Grade 6	0.97	0.97	0.01	0.03
Grade 7	0.95	0.95	0.01	0.04
Grade 8	-	-	-	-
SM I	0.93	0.92	0.01	0.04
SM II	-	-	-	-
SM III	0.85	0.84	0.01	0.05

Table 15 presents the results of the comparison between the models. The chi-square difference test shows that the first-order model differed significantly across grade levels from the multi-factor model. The χ^2_{Diff} *p*-values were all less than 0.001 across grade levels. The information criteria show all are positive, suggesting that the multi-factor model is the preferred model.

Table 15: Difference in Fit Between First-Order Model and Second-Order Model Considering Depth of Knowledge for Mathematics

Grade	x^2_{Diff}	Df $_{Diff}$	*p*-value	AIC $_{Diff}$	BIC $_{Diff}$	aBIC $_{Diff}$
Grade 3	516.4	3	0.000	510.4	484.1	493.6
Grade 4	66.6	3	0.000	60.6	34.3	43.8
Grade 5	699.6	3	0.000	693.6	667.3	676.8

Grade	x^2_{Diff}	Df Diff	*p*-value	AIC Diff	BIC Diff	aBIC Diff
Grade 6	58.9	3	0.000	52.9	26.7	36.3
Grade 7	510.9	3	0.000	504.9	478.9	488.4
Grade 8	-	-	-	-	-	-
SM I	292.4	3	0.000	286.4	260.3	269.9
SM II	-	-	-	-	-	-
SM III	520.2	3	0.000	514.2	491.0	500.5

1.5.5 SCIENCE CONTENT MODEL

1.5.5.1 Science Cluster Effects

The Utah science assessments are modeled with the Rasch testlet model (Wang & Wilson, 2005). The IRT model is high-dimensional, incorporating a nuisance dimension for each item cluster and a dimension representing overall proficiency. Section 4.5.2.2, Science Item Response Theory Statistics, presents a detailed description of the IRT model. The internal (latent) structure of the model is presented in Figure 14. The psychometric approach for the assessment is innovative and quite different from the traditional approach of ignoring local dependencies. The validity evidence on the internal structure presented in this section relates to the presence of cluster effects and how substantial they are.

Simulation studies conducted by Rijmen, Jiang, and Turhan (2018) confirmed that both the item difficulty parameters and the cluster variances are recovered well for the Rasch testlet model under a variety of conditions. Cluster effects with a range of magnitudes were recovered well. The results obtained by Rijmen *et al.* (2018) confirmed earlier findings reported in the literature (e.g., Bradlow, Wainer, & Wang, 1999) under conditions selected to closely resemble the assessment. For example, in one of the studies, the item location parameters and cluster variances used to simulate data were based on the results of a pilot study.

We examined the distribution of cluster variances obtained from the 2019 IRT calibrations for the entire bank used across all states that participate in the Memorandum of Understanding (MOU) item-sharing agreement and the states that rely on the science ICCR item pool.

For elementary school, the estimated value of the cluster variances of all operational, scored items ranged from 0 to 5.13, with a median value of 0.57 and a mean value of 0.92. For middle school, the estimated value of the cluster variances of all operational, scored items ranged from 0 to 4.63, with a median value of 0.46 and a mean value of 0.68. For high school, the estimated value of the cluster variances of all operational, scored items ranged from 0.11 to 7.75, with a median value of 0.45 and a mean value of 0.65.

The variance proportion shows the relative magnitude of the variance of an item cluster compared to the variance of the overall dimension. For instance, if the variance proportion of a cluster is larger than 0.5, then the cluster variance is larger than the overall variance; otherwise, the cluster variance is smaller than the overall variance. For all three grade bands, a wide range of cluster variances is observed. These results indicate that, for all grades, cluster effects can be substantial and provide evidence for the appropriateness of a psychometric model that explicitly takes into account local dependencies among the assertions of an item cluster.

1.5.5.2 Science Grades 6–8 Confirmatory Factor Analysis

Section 1.5.5.1 presents evidence for substantial cluster effects in the science assessments across grade bands. In the present section, the internal structure of the IRT model used for calibrating the item parameters is further evaluated using confirmatory factor analysis. In addition, alternative models are considered, including models with a simpler internal structure (e.g., unidimensional models) and models with a more elaborate internal structure.

Estimation methods for confirmatory factor analysis for discrete observed variables are not well suited for incomplete data collection designs where each case has data only on a subset of the set of observed variables. The linear-on-the-fly (LOFT) test design utilized by many states results in sparse data matrices. Because every student responds only to a small number of items relative to the size of the item pool, data are missing on most of the manifest variables for any given student. In 2018 and 2019, a LOFT test design was used for all operational science assessments inspired by the Next Generation Science Standards (NGSS) framework, except for Utah. As a result, the student responses of these other states are not readily amenable to applying confirmatory factor analysis techniques.

In 2018, Utah science grades 6–8 assessments comprised a set of fixed-form tests per grade, and all items in these forms were clusters. Therefore, the data for each fixed-form test are complete, and the fixed-form tests are amenable to confirmatory factor analysis. The number of fixed-form tests varied by grade, but within each grade, the total number of clusters was the same across forms. However, some items were rejected during the rubric validation or data review and were removed from this analysis. All students with a "completed" status were included in the factor analysis. The percentage of students per grade with a status other than "completed" was less than 0.85%. Table 16 summarizes the number of forms included in this analysis, and the range across forms of the number of clusters per discipline, the number of assertions, and the number of students for each one of the grades.

Table 16: Number of Forms, Clusters per Discipline, Number of Assertions per Form, and Number of Students per Form (Ranges Across Forms)

Grade	Number of Fixed Forms	Number of Clusters per Discipline in Each Form			Number of Assertions per Form	Number of Students per Form
		Physical Sciences	Earth and Space Sciences	Life Sciences		
6	3	2	2–3	2–3	74–83	6,804–6,881
7	6	2	2	5	83–89	3,822–3,890
8	3	6–7	2	2	93–100	5,061–5,104

The factor structure of a testlet model, which is the model used for calibration, is formally equivalent to a second-order model. Specifically, the testlet model is obtained after a Schmid–Leiman transformation of the second-order model (Li, Bolt, & Fu, 2006; Rijmen, 2009; Yung, Thissen, & McLeod, 1999). In the corresponding second-order model, the group of assertions related to a cluster are indicators of the cluster, and each cluster is an indicator of overall science performance. Because assertions are not pure indicators of a specific factor, each assertion has a corresponding error component. Similarly, clusters include an error component indicating they are not pure indicators of the overall science performance.

CAI used confirmatory factor analysis to evaluate the fit of the second-order model described earlier to student data from spring 2018. Three additional structural models were included in the analysis, as well. In the first model, there is only one factor representing overall science performance. All assertions are indicators of this overall proficiency factor. The first model is a testlet model where all cluster variances are zero. In the second model, assertions are indicators of the corresponding science discipline, and each discipline is an indicator of the overall science performance. This is a second-order model with science disciplines rather than clusters as first-order factors. This model does not take the cluster effects into account. In the last, most general model, assertions are indicators of the corresponding cluster, and clusters are indicators of the corresponding science discipline, with disciplines being indicators of the overall science performance. For the sake of simplicity, the models in the analysis are referred to as the following:

- Model 1–Assertions-Overall Science (one-factor model)
- Model 2–Assertions-Disciplines-Overall Science (second-order model)

- Model 3–Assertions-Clusters-Overall Science (second-order model)
- Model 4–Assertions-Clusters-Disciplines-Overall Science (third-order model)

Figure 2 through Figure 5 illustrate these four structural models. Model 1 is nested within Models 2, 3, and 4. Also, Models 2 and 3 are nested within Model 4. The paths from the factors to the assertions represent the first-order factor loadings. Note that all four models include factor loadings for the assertions, which is different from the calibration model for which all the discrimination parameters of the assertions were set to 1.

Figure 2: One Factor Structural Model (Assertions-Overall): "Model 1"

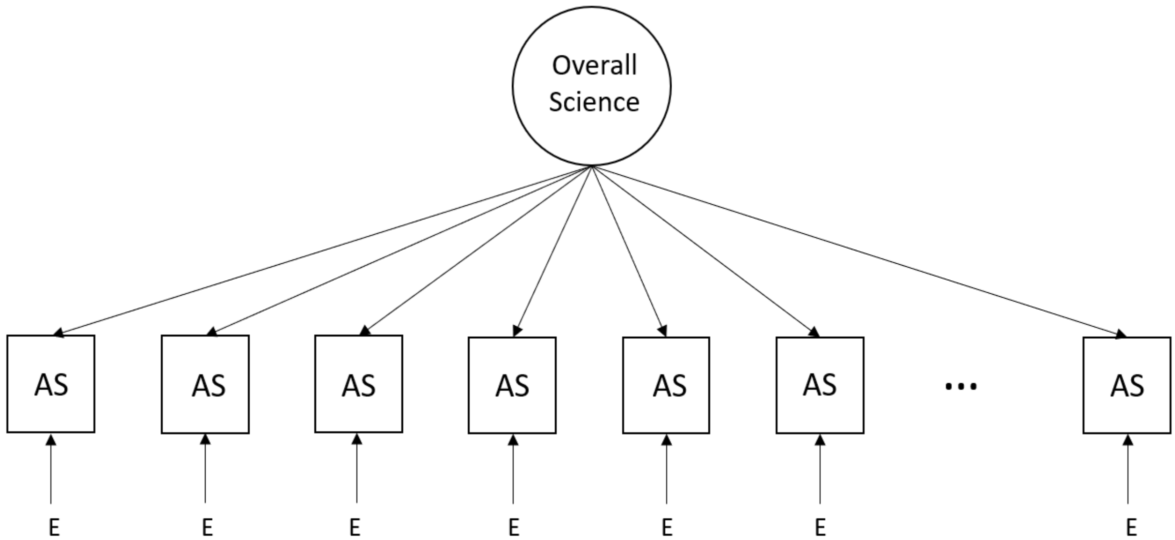


Figure 3: Second-Order Structural Model (Assertions-Disciplines-Overall): "Model 2"

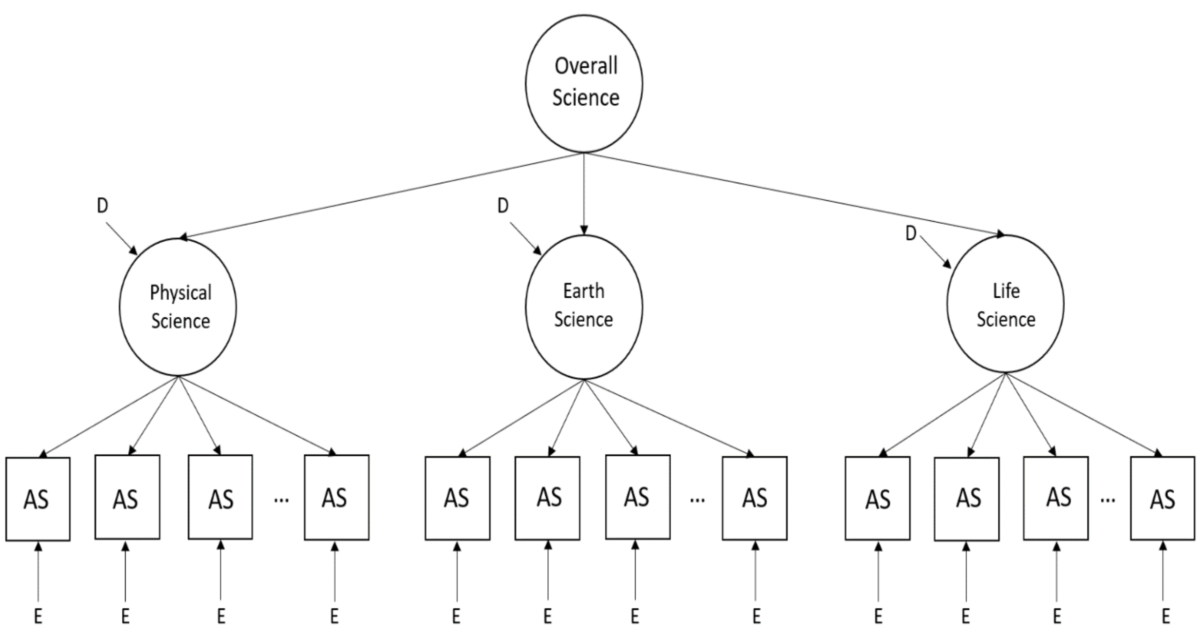


Figure 4: Second-Order Structural Model (Assertions-Clusters-Overall): "Model 3"

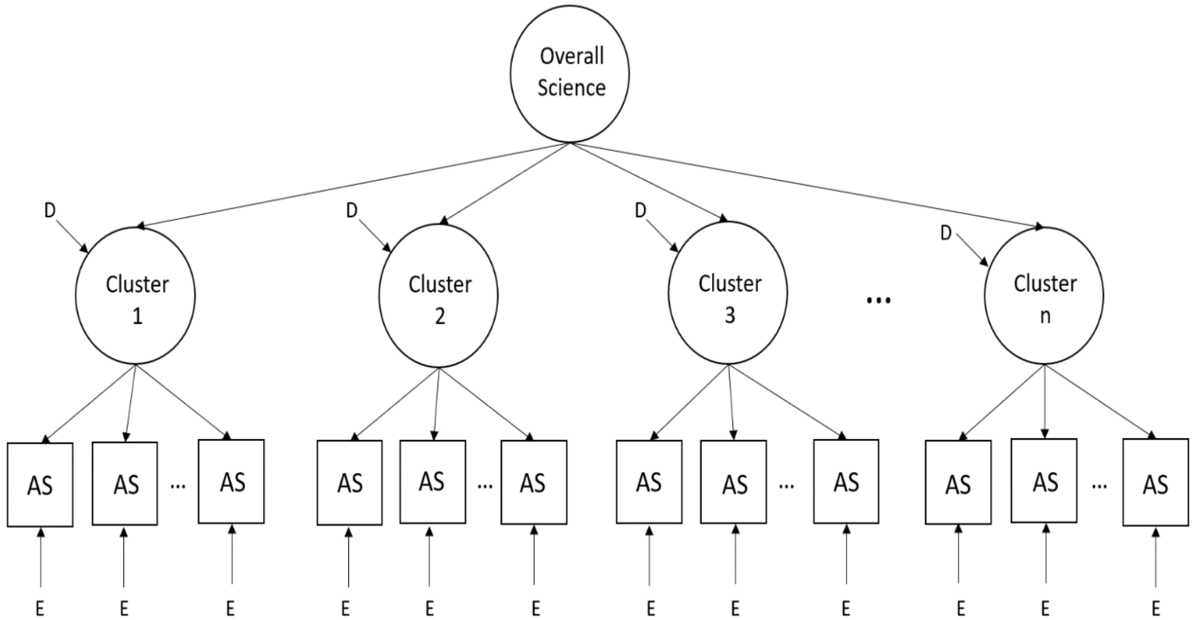
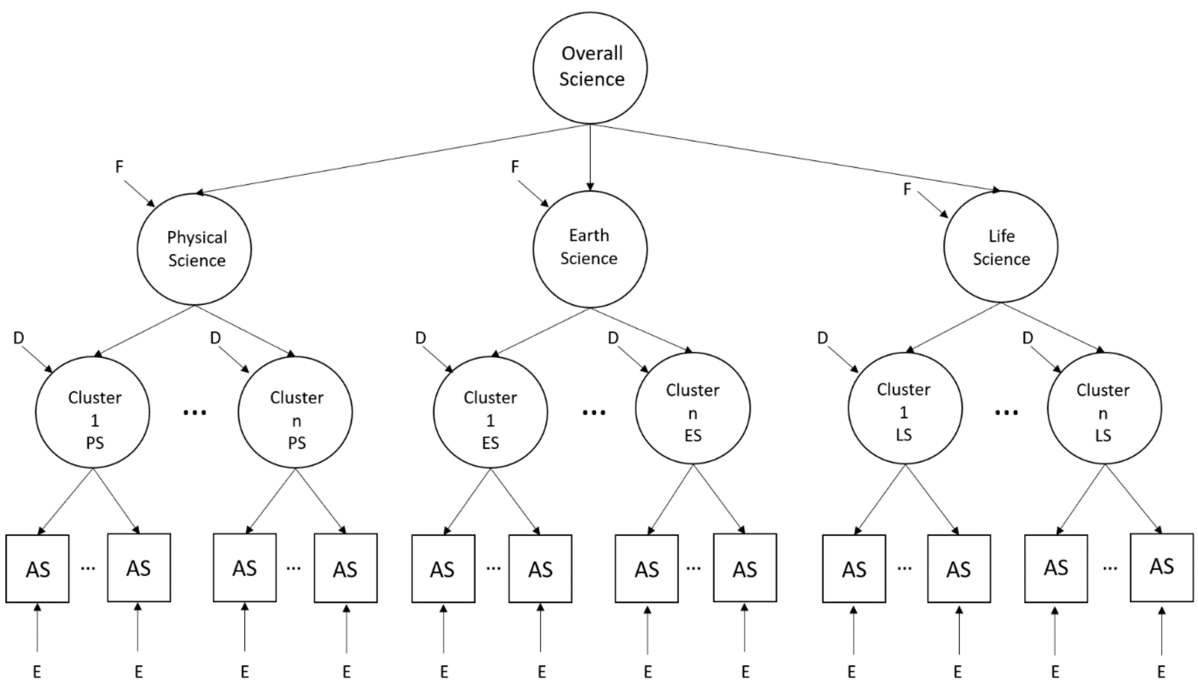


Figure 5: Third-Order Structural Model (Assertions-Clusters-Disciplines-Overall): "Model 4"



1.5.5.3 Science Grades 6–8 Results

For each test form, fit measures were computed for each of the four models. The fit measures used to evaluate goodness-of-fit were the CFI, the TLI, the RMSEA, and the SRMR. CFI and TLI are relative fit indices, meaning they evaluate model fit by comparing the model of interest to a baseline model. RMSEA and SRMR are indices of absolute fit. Table 17 provides a list of these measures along with the corresponding thresholds indicating a good fit (Brown, 2015; Hu & Bentler, 1999).

Table 17: Guidelines for Evaluating Goodness-of-Fit

Goodness-of-Fit Measure	Indication of Good Fit
CFI	≥ 0.95
TLI	≥ 0.95
RMSEA	≤ 0.06
SRMR	≤ 0.08

Table 18 through Table 20 show the goodness-of-fit statistics for grades 6–8, respectively.[1] Numbers in bold indicate those indices that did not meet the criteria established in Table 17. Across all grades and models, the following conclusions can be drawn:

- Model 1 shows the most misfit across grades and forms.
- Across forms, Model 3 generally shows more improvement in model fit relative to Model 1 than Model 2 (i.e., higher values for CFI and TLI and lower values for RMSEA and SRMR). This means that accounting for the clusters resulted in a greater improvement in model fit over a single factor model than accounting for disciplines.
- Model 4 does not show improvement in model fit over Model 3. Fit measures remained the same (or had a difference of 0.001 or smaller in very few cases) across forms for Models 3 and 4. Hence, including the disciplines into the model (when clusters are taken into account) did not improve model fit.
- Overall, model fit for Models 3 and 4 decreases with decreasing grades. For grade 8, all fit indices for Models 3 and 4 indicate good model fit for all three forms. For grade 7, all fit indices for Models 3 and 4 indicate good fit for two out of the six forms, and the degree of misfit for the other four forms is small. For grade 6, all three forms have fit indices above the threshold values for at least one of the absolute fit indices for Models 3 and 4. The amount of misfit is small for the RMSEA but more substantial for the SRMR for two out of the three forms.

[1] For very few assertions per form and model, some error variances for the assertions were slightly below 0. For grade 6, 1–2 assertions per form and model had an error variance below 0, with the lowest error variance being –0.027. For grade 7, Forms 1, 2, 5, and 6 had one negative error variance for one assertion in Models 3 and 4, with the lowest error variance being –0.099. Form 4 had 1–2 assertions with negative error variance in each model, and the lowest error variance was –0.102. For grade 8, there were no assertions with negative error variances for any of the forms and models.

Table 18: Fit Measures per Model and Form, Grade 6

Model	Form	CFI	TLI	RMSEA	SRMR
Model 1 Assertions-Overall (one-factor model)	**1**	0.995	0.995	**0.106**	**0.163**
	2	0.997	0.997	**0.093**	**0.148**
	3	0.995	0.995	**0.109**	**0.161**
Model 2 Assertions-Disciplines-Overall (second-order model)	**1**	0.996	0.996	**0.089**	**0.144**
	2	0.998	0.998	**0.078**	**0.128**
	3	0.997	0.997	**0.087**	**0.135**
Model 3 Assertions-Clusters-Overall (second-order model)	**1**	0.998	0.998	**0.065**	**0.107**
	2	0.999	0.999	0.056	**0.095**
	3	0.998	0.998	**0.067**	**0.104**
Model 4 Assertions-Clusters-Disciplines-Overall (third-order model)	**1**	0.998	0.998	**0.065**	**0.107**
	2	0.999	0.999	0.056	**0.095**
	3	0.998	0.998	**0.067**	**0.104**

Note. Numbers in bold do not meet the criteria for goodness of fit.

Table 19: Fit Measures per Model and Form, Grade 7

Model	Form	CFI	TLI	RMSEA	SRMR
Model 1 Assertions-Overall (one-factor model)	**1**	**0.892**	**0.889**	0.060	0.074
	2	**0.938**	**0.936**	**0.083**	**0.109**
	3	**0.940**	**0.939**	0.052	0.065
	4	**0.937**	**0.936**	**0.068**	**0.114**
	5	**0.939**	**0.937**	**0.093**	**0.119**
	6	**0.898**	**0.895**	0.056	0.071
Model 2 Assertions-Disciplines-Overall (second-order model)	**1**	**0.908**	**0.906**	0.055	0.073
	2	0.962	0.961	**0.065**	**0.088**
	3	0.950	**0.949**	0.048	0.063
	4	0.955	0.954	0.058	**0.094**
	5	0.959	0.957	**0.077**	**0.103**
	6	**0.906**	**0.903**	0.054	0.070
Model 3 Assertions-Clusters-Overall (second-order model)	**1**	**0.938**	**0.937**	0.046	0.072
	2	0.974	0.973	0.054	**0.082**
	3	0.967	0.966	0.039	0.055
	4	0.977	0.976	0.041	0.072

Model	Form	CFI	TLI	RMSEA	SRMR
	5	0.975	0.974	0.060	**0.089**
	6	**0.932**	**0.930**	0.046	0.072
Model 4 Assertions-Clusters-Disciplines-Overall (third-order model)	1	**0.939**	**0.937**	0.045	0.072
	2	0.974	0.973	0.054	**0.082**
	3	0.967	0.966	0.039	0.055
	4	0.977	0.976	0.041	0.072
	5	0.975	0.974	0.060	**0.089**
	6	**0.932**	**0.930**	0.046	0.072

Note. Numbers in bold do not meet the criteria for goodness of fit.

Table 20: Fit Measures per Model and Form, Grade 8

Model	Form	CFI	TLI	RMSEA	SRMR
Model 1 Assertions-Overall (one-factor model)	1	**0.929**	**0.927**	0.043	0.060
	2	0.959	0.958	0.042	0.056
	3	**0.943**	**0.941**	0.052	0.074
Model 2 Assertions-Disciplines -Overall (second-order model)	1	**0.934**	**0.932**	0.041	0.060
	2	0.963	0.963	0.040	0.056
	3	0.950	**0.949**	0.049	0.072
Model 3 Assertions-Clusters-Overall (second-order model)	1	0.953	0.952	0.034	0.057
	2	0.974	0.973	0.034	0.054
	3	0.970	0.969	0.038	0.064
Model 4 Assertions-Clusters-Disciplines-Overall (third-order model)	1	0.953	0.952	0.034	0.057
	2	0.974	0.974	0.033	0.053
	3	0.970	0.969	0.038	0.064

Note. Numbers in bold do not meet the criteria for goodness of fit.

For Models 3 and 4, grade 6 showed some degree of misfit across all three forms according to the measures of absolute model fit, especially for the SRMR. Further examination indicated that the lack of fit could be attributed to a single item that was common to all three grade 6 forms that were part of this factor analysis study. After removing this item, there were only two forms that had two or more clusters per discipline. The fit for both forms improved drastically in Models 3 and 4, with all fit measures except the SRMR for one form meeting the criteria for model fit. The SRMR value that exceeded the threshold value did so barely, with a value of 0.083. Table 21 shows the fit measures for grade 6 after removal of the item causing misfit. Note that, unlike Models 3 and 4, Models 1 and 2 still did not meet the criteria of model fit after removing the item.

Table 21: Fit Measures per Model and Form, Grade 6–One Cluster Removed

Model	Form	CFI	TLI	RMSEA	SRMR
Model 1 Assertions-Overall (one-factor model)	1	0.977	0.976	**0.094**	**0.130**
	2	0.974	0.973	**0.082**	**0.118**
Model 2 Assertions-Disciplines -Overall (second-order model)	1	0.986	0.986	**0.072**	**0.106**
	2	0.985	0.984	**0.062**	**0.094**
Model 3 Assertions-Clusters-Overall (second-order model)	1	0.992	0.991	0.057	**0.083**
	2	0.991	0.991	0.048	0.072
Model 4 Assertions-Clusters-Disciplines-Overall (third-order model)	1	0.992	0.991	0.057	**0.083**
	2	0.991	0.991	0.048	0.072

Note. Numbers in bold do not meet the criteria for goodness of fit.

Table 22 through Table 24 shows the estimated correlations among disciplines for Model 4 (third-order model). The correlations are all very high, ranging between 0.913 and 1. The high correlations between the disciplines in Model 4 indicate that, after considering the cluster effects, the disciplines do not add much to the model. This may explain why Model 4 did not show an improvement in fit compared to Model 3. Overall, the findings support the IRT model used for calibrating the science assessments.

Table 22: Model Implied Correlations per Form for the Disciplines in Model 4, Grade 6

Grade	Form	Discipline	Earth and Space Sciences (ESS)	Life Sciences (LS)
6	1	Physical Sciences (PS)	0.999	0.941
		Earth and Space Sciences (ESS)	–	0.940
	2	Physical Sciences (PS)	1.000	0.964
		Earth and Space Sciences (ESS)	–	0.964
	3	Physical Sciences (PS)	0.975	0.923
		Earth and Space Sciences (ESS)	–	0.947

Table 23: Model Implied Correlations per Form for the Disciplines in Model 4, Grade 7

Grade	Form	Discipline	Earth and Space Sciences (ESS)	Life Sciences (LS)
7	1	Physical Sciences (PS)	0.983	0.947
		Earth and Space Sciences (ESS)	–	0.937
	2	Physical Sciences (PS)	0.978	0.972
		Earth and Space Sciences (ESS)	–	0.951
	3	Physical Sciences (PS)	0.955	0.936

		Earth and Space Sciences (ESS)	–	0.966
	4	Physical Sciences (PS)	0.938	0.913
		Earth and Space Sciences (ESS)	–	0.973
	5	Physical Sciences (PS)	0.931	0.944
		Earth and Space Sciences (ESS)	–	0.965
	6	Physical Sciences (PS)	0.941	0.928
		Earth and Space Sciences (ESS)	–	0.967

Table 24: Model Implied Correlations per Form for the Disciplines in Model 4, Grade 8

Grade	Form	Discipline	Earth and Space Sciences (ESS)	Life Sciences (LS)
8	1	Physical Sciences (PS)	0.971	0.971
		Earth and Space Sciences (ESS)	–	0.970
	2	Physical Sciences (PS)	0.956	0.958
		Earth and Space Sciences (ESS)	–	0.935
	3	Physical Sciences (PS)	0.966	0.978
		Earth and Space Sciences (ESS)	–	0.988

1.6 EVIDENCE RELATED TO COGNITIVE PROCESSES

1.6.1 ELA AND MATHEMATICS

Cognitive labs investigating claims about the cognitive processes students use to respond to test items, and other questions concerning interactions with test items, are highly similar to those implemented by Smarter Balanced for which results of extensive cognitive labs do exist.

Among the many research questions addressed in these studies, several were relevant to the DOK level elicited by items across item types.

For example, one study examined whether students who achieved full credit on multi-part selected-response (MPSR) items demonstrated, through their think-aloud sessions, greater understanding than those students who did not achieve full credit. In addition, this study examined whether students who received full credit on MPSR items demonstrated a depth of understanding similar to that of students receiving full credit on similarly challenging constructed-response (CR) items measuring the same target. With respect to the first hypothesis, students receiving full credit on the MPSR items demonstrated a greater understanding of the material than those who did not obtain full credit. With respect to the second hypothesis, results indicated that in most cases, the DOK demonstrated by the students receiving full credit on the MPSR items either equaled or exceeded the DOK demonstrated by students achieving full credit on the matched CR items.

The cognitive labs were also designed to assess whether different types of technology-enhanced (TE) items elicited DOK levels comparable to CR items matched for specific content claim/targets and DOK levels. Selected-response (SR) items were also included, where available, as a comparison item format.

With respect to ELA items, students demonstrated a higher DOK level for most of the TE item types rather than for the matched CR items, but with some exceptions. A similar pattern was observed for the matched SR items versus the CR items. Evidence for mathematics items was mixed, with some TE and SR item types showing evidence for greater DOK than matched CR items, while other CR items indicated greater DOK than the matched TE and SR items.

These cognitive lab studies also addressed questions concerning student use of online tools, such as the equation editor for mathematics items, indicating, for example, that some students across grade levels did have difficulty responding using the equation editor, but that grade 3 students, in particular, had greater difficulty than students in other grades. Studies also inquired whether accessibility tools improved student access to test content, finding, for example, that while text-to-speech (TTS) always improved access to ELA test content, especially for English language learners (ELLs) and students with an Individualized Education Program (IEP), that in mathematics, access improved for students in grade 3 only.

1.6.2 SCIENCE

In 2017, when the development of item clusters for the MOU states began, cognitive lab studies were conducted to evaluate and refine the process of developing item clusters aligned to the NGSS. Results of the cognitive lab studies confirmed the feasibility of the approach used. Item clusters were completed within 12 minutes on average, and students reported being familiar with the format conventions and online tools used in the item clusters. They appeared to easily navigate the item clusters' interactive features and response formats. In general, students who received credit on a given item displayed a reasoning process that aligned with the skills that the item was intended to measure.

A second set of cognitive lab studies was conducted by CAI for Connecticut in 2018 and 2019 to determine if students using braille can understand the task demands of selected accommodated three-dimensional science standards-aligned item clusters and navigate the interactive features of these clusters in a manner that allows them to fully display their knowledge and skills relative to the constructs of interest. In general, both the students who relied entirely on braille and/or the Job Access with Speech (JAWS) screen-reading software and those who had some vision and were able to read the screen with magnification were able to find the information they needed to respond to the questions, navigate the various response formats, and finish within a reasonable amount of time. The item clusters were clearly different from (and more complex than) other tests with which the students were familiar, however, and the study recommended that students should be given adequate time to practice with at least one sample cluster before taking the summative test. The study also resulted in tool-specific recommendations for accessibility for visually impaired students. The reports of both sets of cognitive lab studies are presented in Appendix 1-B, Science Clusters Cognitive Lab Report, and Appendix 1-C, Braille Cognitive Lab Report.

1.7 MEASUREMENT INVARIANCE ACROSS SUBGROUPS

Measurement invariance occurs when the likelihood of responding correctly conforms to the measurement model and is independent of group membership, and the parameters of a measurement model are statistically equivalent across groups. The parameters of interest in measurement invariance testing are the factor loadings and intercepts/thresholds. Invariance in residual variances or scale factors can also be tested, but consensus shows that it is not necessary to demonstrate invariance across groups on these parameters. In general, measurement invariance testing can be conducted using a series of multiple-group confirmatory factor analysis (CFA) models, which impose identical parameters across groups. That is, the models that investigate the invariance of factor pattern (configural invariance), factor loadings (metric or weak invariance), latent intercepts/threshold (scalar or strong invariance), and unique or residual factor variances (strict invariance) are tested across groups in that sequential order. When factor loadings and intercepts/thresholds are invariant across groups, scores on latent variables can be validly compared across the groups, and the latent variables can be used in structural models that hypothesize relationships among latent variables.

Because RISE is adaptively administered and students do not see a common set of items, in order to investigate measurement invariance across subgroups, we selected from each assessment pool a set of items with high response rates for each reporting category from 2014–2015 test scores. This ensured a well-conditioned covariance matrix comprising a sample of items representing the full breadth of the content domain specified by the blueprint. The numbers of items selected varied across tests: 30–33 items across ELA assessments, 31–34 items across mathematics assessments, and 30–37 items across science assessments.

The full set of tables associated with these analyses is provided in Appendix 1-D, Invariance Across Subgroups, for each of the grade and subject-area assessments. The series A tables present the global model fit indices for the measurement invariance tests for each assessment. Following the sequence of tests of measurement invariance (Millsap & Cham, 2012), we tested configural, metric, and scalar invariance models using $\chi 2$ difference test (at $\alpha \leq 0.05$) and the examination of significant differences of the Root Mean Square of Approximation (RMSEA, change in RMSEA $\leq$ 0.015; Chen, 2007) between the two nested invariance models. Measurement invariance was investigated across the following subgroups: gender (Model A), ethnicity (due to small sample sizes, classified as white, Asian, or other ethnic groups in Model B), special education status (Model C), limited English proficiency (LEP) status (Model D), and economically disadvantaged status (Model E). Invariance tests of subgroups were investigated separately for each grade and subject-area test.

The null hypothesis of the $\chi 2$ difference test is that the more restricted invariance model (e.g., metric) fits the data equally as well as the less restricted invariance model (e.g., configural). Given that the sensitivity of the $\chi 2$ difference tests to sample size, we additionally examined significant differences on this test with an examination of the RMSEA. A small change in the RMSEA between the more restricted and less restricted invariance models supports retention of the more restricted invariance model (Chen, 2007).

The series B tables show the model fit indices of scalar invariance models assuming the same factor pattern + identical factor loadings + identical latent intercept/threshold across subgroups. Global model fit indices included the CFI (Bentler, 1990) and RMSEA. CFI values $\geq$ 0.90 and RMSEA values $\leq$ 0.08 were used to evaluate acceptable model fit. The model fit indices of the scalar invariance models for all tests suggested an acceptable fit to the data. For ELA, CFI ranged from 0.893 to 0.972, and RMSEA ranged from 0.007 to 0.018. For mathematics, excluding the Secondary Mathematics (SM) II assessment, CFI values ranged from 0.877 to 0.957, and RMSEA ranged from 0.009 to 0.019. CFI values for SM II ranged from 0.750 to 0.806 across models, indicating unacceptable fit, although RMSEA values ranged from 0.017 to 0.020, indicating acceptable model fit. For science, CFI values ranged from 0.860 to 0.957, and RMSEA ranged 0.010 to 0.026.

Although the $\chi 2$ difference test should ideally be nonsignificant, all $\chi 2$ difference tests were significant or marginally significant at $\alpha = 0.05$ due to large sample sizes. Nevertheless, we found that changes of the RMSEA between the two nested invariance models were very small (ranging from 0.000 to 0.004 for ELA, from 0.000 to 0.002 for mathematics, and from 0.000 and 0.005 for science). Based on the similar magnitudes of the RMSEA (i.e., no material changed across all tested models; Cheung & Rensvold, 2002) and the acceptable fit indices of the scalar invariance model to the data, SAGE test scores have the same measurement structure across gender, ethnicity (classified as White, Asian, or other ethnic groups), special education status, LEP status, and economically disadvantaged status for each test.

1.8 PANDEMIC-RELATED IMPACTS ON STUDENT ACHIEVEMENT

State summative assessments were cancelled in spring 2020, just before the opening of most state testing windows. As a result, states do not have available a spring 2020 measure of achievement against which to measure losses in student achievement due to pandemic-related impacts on instruction. Many schools reopened in spring 2020, employing remote instruction. However, the length of time that schools remained closed, as well as the ability of schools to provide effective remote instruction, varied considerably. Schools opened in fall 2020, employing a range of in-person, remote, and hybrid instruction. Although many states sought to again cancel state assessments for 2021, USED mandated that states continue to assess student achievement of state standards, although accountability of districts to student achievement and growth were postponed. Thus, the spring 2021 test administration provides the first opportunity for states to investigate systematically the impacts of pandemic-related disruptions in instruction on student achievement.

Evaluation of pandemic-related impacts on student achievement is made difficult, however, because the student population is not consistent between the pre- and post-pandemic test administrations. Students have left the public education system for several reasons, including transferring to private schools, homeschooling, or they have simply dropped out of the education system. Because the student population has changed between pre- and post-pandemic, direct comparisons of cohort changes in achievement provide an incomplete understanding of pandemic impacts on student achievement. For example, if students who are no longer participating in state assessments were lower achieving pre-pandemic, then any observed declines in student achievement post-pandemic will be underestimated since achievement declines among already lower-achieving students would not be adequately represented.

To better understand the impacts of the pandemic on student achievement, we identified two analysis strategies designed to control for changes in the tested population in order to examine pandemic-related impacts on student achievement. In an initial series of analyses, we used matched samples of students across cohorts to control for differences in achievement and demographic subgroup membership between the two cohorts of students (Ho, 2021). In this approach, we built a regression model by, first, regressing student achievement in 2019 onto student achievement and demographic characteristics of those same students in spring 2017. All students available in the 2017–2019 cohort were used to build the model. This regression model represents the pre-pandemic two-year growth. Since this analysis requires merging student records across a two-year span, it is limited to only those students in grades 5–8 in 2019 who were administered state assessments in grades 3–6 in 2017. We then identified students who were tested post-pandemic in spring 2021 (in grades 5–8) who also participated in state testing in spring 2019 (in grades 3–6). We used all students available in the 2019–2021 cohort as given and found a matched sample in the 2017–2019 cohort. The matching was based on the grade ***g-2*** scale scores between the two cohorts using the 1:1 nearest neighbor sampling method. We applied the regression coefficients to the grades 3–6 scores in 2017 in the matched sample to predict their grade 5–8 scores in 2019. In this way, the pandemic-related impacts on student achievement can be evaluated by comparing the observed 2021 grades 5–8 scores to the predicted 2019 grades 5–8 scores between a pair of matched samples. This approach can provide a better estimate of pandemic-related impacts on student achievement for the general education population overall, as well as for demographic subgroups.

It is also possible to investigate the expected performance of students who did not participate in spring 2021. In this approach, characteristics of students in the pre-pandemic cohort are used to predict non-participation in the spring 2021 sample. With the regression coefficients in hand, the prediction model can be applied to the 2017 test records of a sample of students matched to the non-participating students in spring 2021 to predict their 2019 performance, allowing us to estimate the expected level of performance of students who did not participate in the 2021 test administration based on their pre-pandemic performance. While this approach cannot address how those students may have been impacted by the pandemic, it may provide a picture of the pre-pandemic performance of those non-participating students.

We also conducted the matched sample analyses in a way that is slightly different than the Ho's. We drew the matched samples the same way we did in Ho's approach. Rather than using all available students in the 2017–2019 cohorts, the regression model was first constructed for the pre-pandemic matched sample by regressing the 2019 scores on the 2017 scores. Assuming that the two-year growth relationship provides a consistent expectation for growth across cohorts, the regression coefficients were applied to the 2019 scores to predict the 2021 scores of the post-pandemic sample, assuming no pandemic effects on instruction. We were then able to evaluate the pandemic-related impact on achievement by comparing the observed 2021 scores with the expected 2021 scores. We note that the two approaches produced nearly identical results. The difference in the predicted average scale score is within one scale score point, which is mostly due to rounding. The detailed procedures and results of the matched sample analyses are presented in Appendix 1-E, Examining Pandemic Impacts on Student Achievement in Match Samples of Student Cohorts.

In addition to the matched sample cohort analysis, we also wished to investigate more directly the relationships between prior achievement on subsequent achievement and how that relationship may have been impacted by the pandemic. As part of this analysis, we also sought to investigate whether subgroup differences in achievement gains were differentially impacted by pandemic-related disruption to instruction.

In this approach, we produced a regression model to predict student achievement at time two from student achievement and demographic subgroup membership at time one simultaneously using both the 2017 and 2019 cohorts of students (i.e., those initially tested in 2017 in grades 3–6, and those initially tested in those same grades in 2019). All students available in the 2017 and 2019 cohorts were used to build this regression model. This approach allows us to evaluate whether the relationships between prior and subsequent achievement differ across cohorts, as well as whether the relationships between demographic subgroups on subsequent achievement differ across cohorts, indicating differential impacts of the pandemic by subgroup. The detailed procedures and results of the matched sample analyses are presented in Appendix 1-F, Examining Pandemic Impacts on Student Achievement Using Cohort Regression Models.

1.9 FAIRNESS AND ACCESSIBILITY

1.9.1 FAIRNESS IN CONTENT

The principles of universal design of assessments provide guidelines for test design to minimize the impact of construct-irrelevant factors in assessing student achievement. Universal design removes barriers to access for the widest range of students possible. Seven principles of universal design are applied in the process of test development (Thompson, Johnstone, & Thurlow, 2002). They include the following:

- Inclusive assessment population
- Precisely defined constructs
- Accessible, non-biased items
- Amenable to accommodations
- Simple, clear, and intuitive instructions and procedures
- Maximum readability and comprehensibility
- Maximum legibility

Test development specialists receive extensive training on the principles of universal design and apply these principles in the development of all test materials, including tasks, items, and manipulatives. In the review process, adherence to the principles of universal design is verified.

1.9.2 STATISTICAL FAIRNESS ITEM STATISTICS

The spring 2014 administration was an operational field test, so items were not subject to statistical review until after the test administration. It is important to note that only items that passed through the statistical review contributed to students' test scores. When new items are developed, the Content and Fairness Advisory Committee (CFAC) reviews the items using the CAI Guidelines for Language Accessibility, Bias, and Sensitivity. After the field-test item analyses, the items flagged with the C category for any group in the differential item functioning (DIF) statistics are reviewed if there are any indications that items might have caused a significant DIF.

The DIF analyses were performed for the following groups:

- LEP/non-LEP
- Low income/non-low income
- Female/male
- SPED/non-SPED
- Asian/white

- African American/white
- Hispanic/white
- Multi-ethnic/white
- Native American/white
- Pacific Islander/white

The purpose of these analyses is to identify items that may have favored students in one group (focal group) over students of similar ability in another group (reference group).

1.9.3 FAIRNESS IN TEST SCORE INTERPRETATION

Section 1.7 described analyses investigating the invariance of the SAGE measurement model across subgroups. Model invariance provides evidence that the interpretation of test scores is comparable across subgroups. Results of this investigation indicated that SAGE (now RISE) test scores have the same measurement structure across gender, ethnicity (classified as white, Asian, or other ethnic groups), special education status, LEP status, and economically disadvantaged status for each test.

1.9.4 EFFECTS OF DICTIONARY AVAILABILITY ON STUDENT PERFORMANCE

Appendix 1-G, Results of Dictionary Study, describes a study investigating the effects of dictionary availability on item performance between English language learners (ELLs) and general education students. The results of this investigation did not find evidence that providing students with access to a dictionary differentially affected the performance of ELLs on the SAGE assessments.

In the absence of evidence indicating that providing a dictionary impacts student performance, USBE's Technical Advisory Committee (TAC) recommended that USBE make the dictionary tool available to all students. The dictionary tool was available to all students for the spring 2015 SAGE administration. Appendix 1-G outlines the results of the dictionary study in greater detail.

1.10 SUMMARY OF VALIDITY OF TEST SCORE INTERPRETATIONS

Evidence for the validity of test score interpretations is strengthened as evidence supporting test score interpretations accrues. In this sense, the process of seeking and evaluating evidence for the validity of test score interpretation is ongoing. Nevertheless, sufficient evidence exists to support the principal claims for the test scores, including that SAGE (now RISE) test scores indicate the degree to which students have achieved the Utah Core Standards at each grade level and that students scoring at the Proficient level or higher demonstrate levels of achievement consistent with national benchmarks that indicate they are on track for college readiness. These claims are supported by evidence of a test development process that ensures alignment of test content to the Utah Core Standards and evidence that the structural model described by the Utah Core Standards and implemented in the SAGE (now RISE) assessments is sound.

2. BACKGROUND OF RISE ASSESSMENTS

2.1 DEVELOPMENT OF RISE STANDARDS

The Utah State Board of Education (USBE) approved the Utah Core Standards for English language arts (ELA) and mathematics in 2010, and these standards were fully implemented in June 2013 for ELA and in April 2013 for mathematics. Utah's science standards were adopted and implemented in 2010. The Utah Core Standards for ELA, mathematics, and science describe the educational targets for students in each content area. The Utah Core Standards can be found at http://www.schools.utah.gov.

During 2015–2016, USBE supplemented an existing general education assessment program that aligns the RISE to the Utah Core Standards and satisfies the federal Elementary and Secondary Education Act (ESEA) requirements. USBE involved educators and assessment, and curriculum specialists in making decisions about how to measure standards. The statewide assessments aligned with the Utah Core Standards were administered for the first time in spring 2014 for ELA in grades 3–11, for mathematics in grades 3–8, along with end-of-course assessments for high school students taking Secondary Mathematics I–III. The cluster-based science assessments were first administered in spring 2018 for grades 6–8 and spring 2021 for grades 4–5.

USBE used a different vendor to deliver their 2018–2019 assessments and changed the name of the tests from SAGE to RISE.

2.2 ONLINE ITEM POOL CONSTRUCTION

The RISE operational item pool includes a variety of selected-response items and machine-scored constructed-response (MSCR) items in each content area.

Five types of MSCR items were included in the RISE item pool: graphic response, natural language, equation response, hot text, and table input items. The graphic response item types require students to place objects or move objects around in the answer space. A student can also plot points, draw lines, and draw shapes. The natural language item types require students to type an English language answer. The equation response items require students to enter a value or equation. The table input item types require students to input numerical values into a table.

The 2020–2021 RISE item pools each contain sufficient numbers of items per grade and content area to ensure that students would be administered items representing the breadth and depth of the content standards identified in the test specifications while also adapting item selection to maximize test information near each student's ability level. In ELA, since item selection is passage-dependent, it is more challenging to provide precise estimates of each student's true achievement level across the range of proficiency than in mathematics and science.

With new items being developed and field tested in the spring administration of each year, the operational pool size for each assessment has constantly increased since 2015. The simulations show that a larger operational pool improves the adaptive item selection in terms of blueprint match, content coverage, and precision of the student ability estimation, especially the ability estimation for students with more extreme test scores.

3. SUMMARY OF THE 2020–2021 OPERATIONAL TEST ADMINSTRATION

RISE is offered as an online assessment system with a number of assessment resources available to all students. In 2020–2021, the available assessment tools included the following: alternate location, assistive communication devices, audio amplification, calculation devices and computation tables, directions signed with a certified interpreter, highlight tool, dictionary tool featuring a thesaurus and Spanish translation options, text-to-speech, magnification, minimize distractions, scratch paper, spell check, and strikethrough. In addition to resources available to all students, there were options available to accommodate students who had been identified with special needs. In the 2020–2021 administration, the available accommodation options included the following: braille, American Sign Language (ASL) videos, print-on-request, and scribe (non-functional in RISE systems).

The following tests were available in the 2020–2021 administration:

- Reading grades 3–8
- Writing grades 5 and 8
- Mathematics grades 3–8 and Secondary Mathematics I
- Science grades 4–8

During the testing window, all eligible students had one opportunity in each content area using the web-based RISE system. The adaptive RISE ELA, mathematics, and science assessments were available to students who use braille. These students were allowed one opportunity to take each content area assessment using new technology and administration procedures. Also, mathematics and science students were given the option to use Unified English Braille (UEB) or Nemeth Code.

3.1 STUDENT POPULATION AND PARTICIPATION

All public school and public charter school students in grades 3–8 are required to participate in the RISE ELA, mathematics, and science assessments. Utah's statewide database system, UTREx, provided all student and rostering information, including test eligibility (now linked to course codes) and demographic information including gender, federal ethnic categories, English language learner (ELL), economic status (disadvantaged), special education status, and migrant status. UTREx test eligibility and demographic information are managed by USBE. Additional details regarding test eligibility and testing irregularities are outlined in the *Test Information Distribution Engine (TIDE) User Guide*.

Results for students who took the 2020–2021 RISE ELA, mathematics, and science assessments are presented in Table 25 by grade.

Table 25: Number of Students in 2020–2021 RISE Assessment

Assessment	G3	G4	G5	G6	G7	G8	SM I
Reading	45,290	46,496	47,000	47,715	47,169	46,311	-
Writing	-	-	46,998	-	-	46,430	-
Mathematics	45,177	46,281	46,621	47,277	44,439	44,290	3,337
Science	-	46,520	46,991	47,767	47,331	46,682	-

3.2 SUMMARY OF OVERALL STUDENT PERFORMANCE

The 2020–2021 state summary results for the average scale scores and the percentage of students in each proficiency level by grade and content area are presented in Table 26. Figure 6 through Figure 8 present the scale score distributions by subgroups for each content area and grade.

Table 26: 2020–2021 Percentage of Students in Proficiency Levels

Grade	Number Tested	Scale Score Mean	Scale Score SD	% Below Proficient	% Approaching Proficient	% Proficient	% Highly Proficient	% At or Above Proficient
Reading								
3	45,290	314	77.94	37	20	31	12	43
4	46,496	347	84.01	38	25	25	13	38
5	47,000	387	86.12	35	21	26	18	44
6	47,715	414	86.89	37	19	26	18	44
7	47,169	426	83.77	38	21	26	15	41
8	46,311	446	91.87	34	22	26	17	43
Mathematics								
3	45,177	309	37.93	35	20	21	24	45
4	46,281	338	45.77	36	19	23	22	45
5	46,621	368	53.03	41	17	23	19	42
6	47,277	400	60.28	45	23	18	14	32
7	44,439	427	63.63	38	22	28	12	40
8	44,290	465	74.5	37	27	24	11	35
SM I	3,337	586	51.2	2	11	37	50	87
Science								
4	46,520	550	13.72	29	28	23	20	43
5	46,991	550	13.82	29	25	27	18	45
6	47,767	849	13.66	27	20	34	18	53
7	47,331	848	13.00	29	27	26	18	44
8	46,682	850	13.00	26	26	29	20	48

Figure 6: 2020–2021 Reading Scale Score Distribution by Subgroup

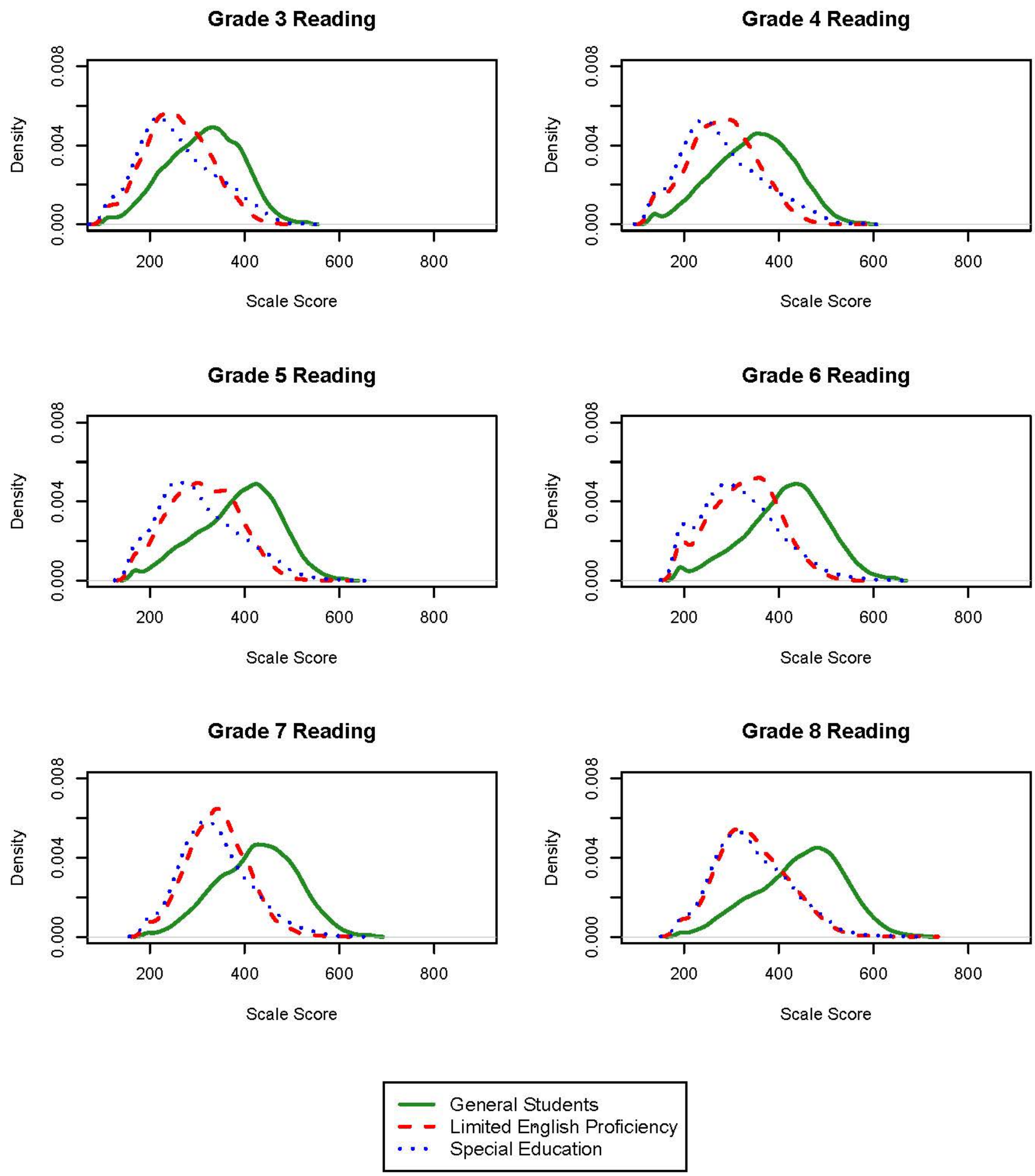


Figure 7: 2020–2021 Mathematics Scale Score Distribution by Subgroup

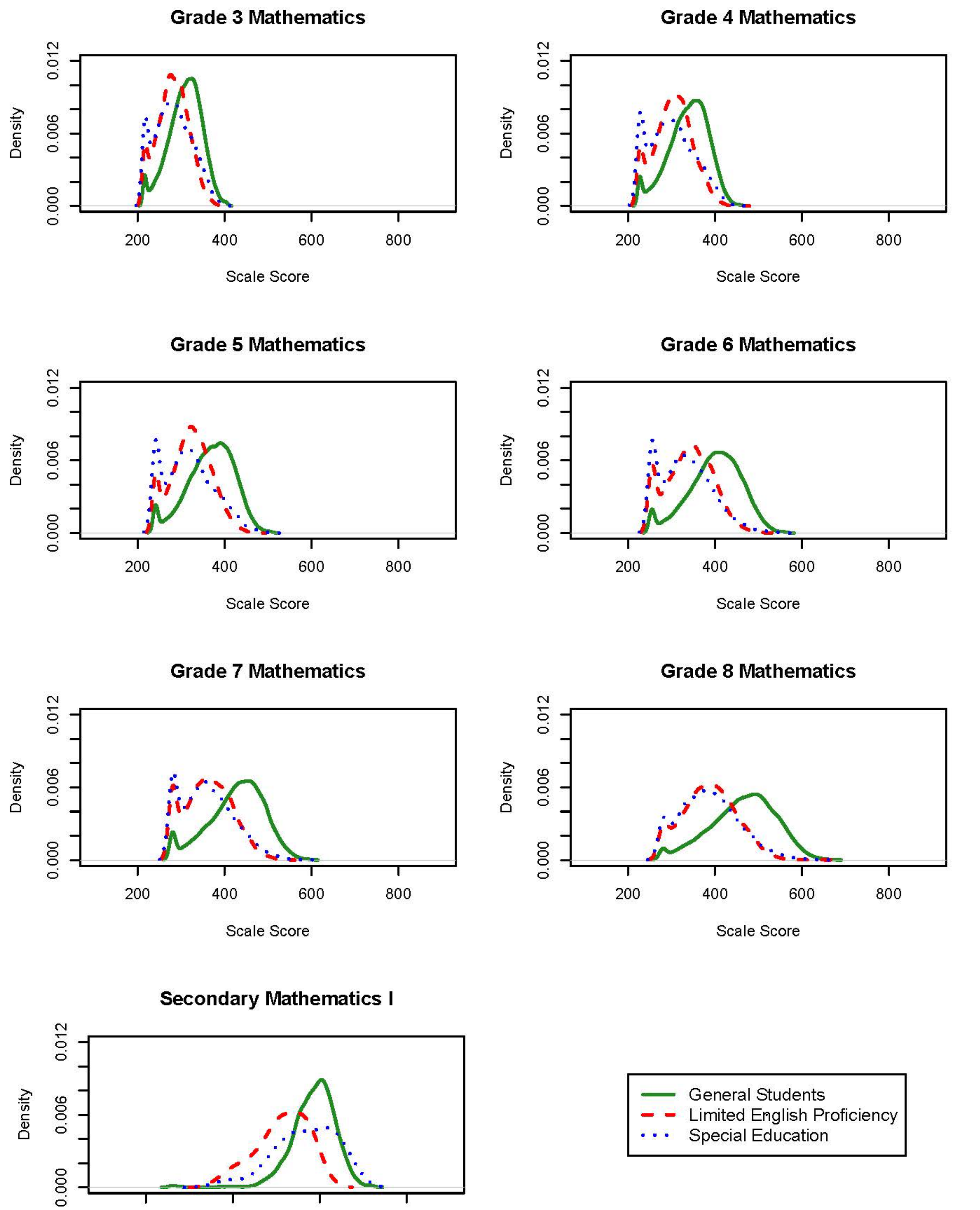
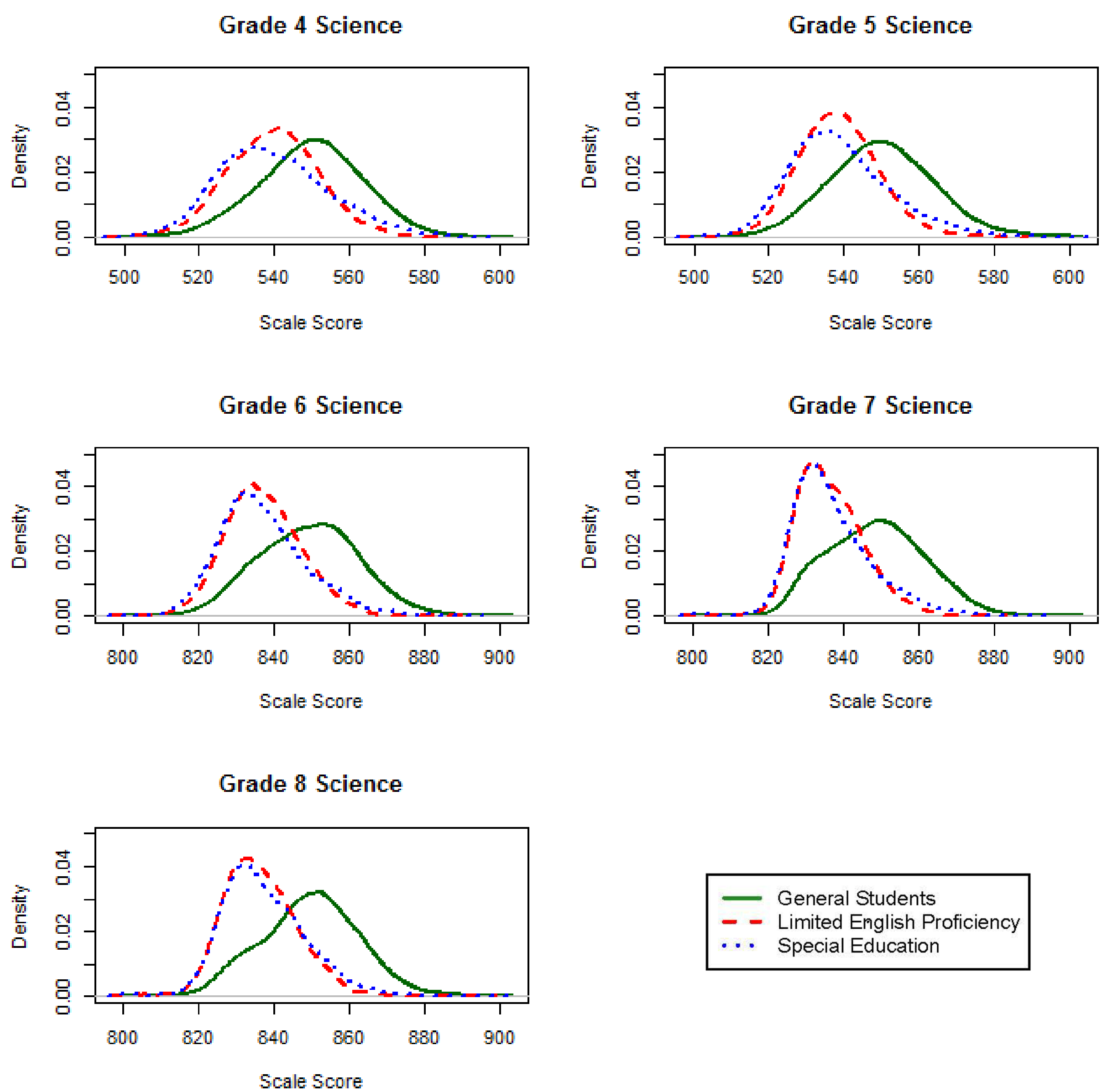


Figure 8: 2020–2021 Science Scale Score Distribution by Subgroup



3.3 STUDENT PERFORMANCE BY SUBGROUP

The 2020–2021 state summary results for the average scale scores and the percentage of students in each proficiency level by grade and by content area were calculated for several subcategories—including female, male, African American, American Indian/Alaskan, Asian, Hispanic/Latino, Multi-Racial, Native Hawaiian/Pacific Islander, White, limited English proficiency (LEP), special education (SPED), and low income. Percentage of students in performance levels for overall and by subgroup is presented in Appendix 3-A, Percentage of Students in Performance Levels for Overall and by Subgroup.

3.4 RELIABILITY

Test score reliability is traditionally estimated using both classical and item response theory (IRT) approaches. Classical estimates of test reliability, such as Cronbach's alpha, provide an index of the internal consistency reliability of the test or the likelihood that a student would achieve the same score in an equivalently constructed test form. While classical indicators provide a single estimate of the reliability of test forms, the precision of test scores varies with respect to the information value of the test at each location along the append. For example, most fixed-form assessments target test information near important cut scores or near the population mean so that test scores are most precise in targeted locations. Because adaptive tests target test information near each student's ability level, the precision of test scores may increase, especially for lower- and higher-ability students. The precision of individual test scores is critically important to valid test score interpretation and is provided along with test scores as part of all student-level reporting.

3.4.1 MARGINAL RELIABILITY

While measurement error is conditional on test information, it is nevertheless desirable to provide a single index of a test's internal consistency reliability. Such an index is provided by the marginal reliability coefficient, which considers the varying measurement errors across the ability range. Marginal reliability is a measure of the overall reliability of an assessment based on the average conditional standard errors, which are estimated at different points on the ability scale for all students.

The marginal reliability ($\bar{\rho}$) is defined as

$$\bar{\rho} = [\sigma^2 - \left(\frac{\sum_{i=1}^{N} CSEM_i^2}{N}\right)]/\sigma^2,$$

where N is the number of students, $CSEM_i^2$ is the conditional standard error of measurement of the scaled score for student i, and σ^2 is the variance of the scaled score. The higher the reliability coefficient, the greater the precision of the test.

Table 27 presents the marginal reliability coefficients and the average standard error of measurements for the total scale scores. The marginal reliability coefficients for subgroups are presented in Section 3.4.7, Reliability for Subgroups in the Population. Marginal reliability coefficients for accommodated vs. non-accommodated students are presented in Section 3.4.9, Reliability for Accommodated Testers.

Table 27: Marginal Reliability for Reading, Writing, Mathematics, and Science

Grade	Number of Items	Marginal Reliability	N	Mean	SD	SEM
			Reading			
3	550	0.90	45,290	314	77.94	24.76
4	608	0.89	46,496	347	84.01	27.47
5	541	0.91	47,000	387	86.12	26.01
6	656	0.91	47,715	414	86.89	26.54
7	578	0.91	47,169	426	83.77	25.33

Grade	Number of Items	Marginal Reliability	N	Mean	SD	SEM
8	551	0.91	46,311	446	91.87	27.06
			Writing			
5	4	0.70	46,998	378	100.14	54.66
8	4	0.76	46,430	438	119.51	58.18
			Mathematics			
3	682	0.96	45,177	309	37.93	7.98
4	767	0.96	46,281	338	45.77	9.27
5	748	0.95	46,621	368	53.03	11.55
6	685	0.96	47,277	400	60.28	12.59
7	609	0.94	44,439	427	63.63	15.71
8	698	0.95	44,290	465	74.50	17.02
SM I	529	0.88	3,337	586	51.20	17.66
			Science			
4	27	0.87	46,520	550	13.72	4.94
5	34	0.87	46,991	550	13.82	4.93
6	24	0.84	47,767	849	13.66	5.40
7	34	0.89	47,331	848	13.00	4.23
8	38	0.91	46,682	850	13.00	3.87

3.4.2 STANDARD ERROR OF MEASUREMENT

The magnitude of the conditional standard errors can be evaluated at the cut scores. For tests administered adaptively, we can evaluate whether the algorithm selected items appropriately to match a student's ability given the current item pool and identify the areas with a shortage of items.

Theoretically, with an infinitely large item bank comprising sufficient items to assess the range of achievement within all benchmarks and a perfect match-to-ability for each item presented, standard error of measurement (SEM) curves would be flat along the score range—an indication that all students are measured with the same precision. However, this is not practical because the real-world item pools are limited in size, especially in the early years of the computer-adaptive test (CAT) administrations. Thus, the SEM will be larger at locations characterized by relatively few items, typically at either end of the distribution where comprehensive sets of easy or difficult items are lacking. To improve measurement precision for adaptive assessments, items that measure the range of blueprint elements across the range of abilities are desirable. Nevertheless, because items targeting information near the population mean will be most frequently administered, it remains important to ensure sufficient items of normative difficulty to avoid overexposing items.

Table 28 provides the results of the average standard errors for each performance level. Generally, the average standard error is largest in the Well Below and Exceeds performance level for all subjects, which can be expected given a shortage of very easy and very difficult items in this item pool to better measure low-performing and high-performing students.

Table 28: Average Standard Error of Measurement by Performance Level

Grade	Total Items	Well Below	Approaches	Meets	Exceeds	Total
Reading						
3	550	29.61	19.44	19.75	23.03	23.76
4	608	30.59	23.26	23.99	28.16	26.83
5	541	28.10	21.28	22.84	28.18	25.34
6	656	28.24	21.76	23.27	28.50	25.78
7	578	27.93	21.86	22.00	26.31	24.85
8	551	29.26	23.08	24.20	29.31	26.57
Mathematics						
3	682	9.34	6.95	6.44	7.10	7.72
4	767	10.85	7.80	7.30	8.26	8.89
5	748	13.70	8.75	8.11	8.98	10.67
6	685	14.42	10.15	9.41	10.09	11.91
7	609	19.51	11.50	10.19	9.94	14.00
8	698	20.82	14.12	12.19	11.96	15.93
SM I	529	44.42	19.02	16.32	14.40	16.24
Science						
4	27	5.36	4.72	4.66	5.00	4.94
5	34	5.15	4.56	4.69	5.42	4.93
6	24	5.77	5.25	5.18	5.44	5.40
7	34	4.31	4.11	4.14	4.39	4.23
8	38	3.87	3.65	3.79	4.28	3.87

Figure 9 through Figure 11 show the conditional standard errors of measurement (CSEMs) across the range of ability by subgroups for each grade and subject for RISE scores. Because RISE was administered adaptively in 2020–2021, the item selection algorithm selected only items that satisfied the blueprint requirements to best match student ability. When administered adaptively, RISE provides better measurement precision across the range of abilities for all students—general education students, limited English proficiency (LEP) students, and Special Education students—than would be possible with a fixed-form assessment. The "general education students" subgroup excludes LEP students and students in special education from the total number of students in each grade and content area. Appendix 3-B, Standard Error of Measurement Curves by Subgroup, shows SEM curves by subgroup, and Appendix 3-C, Standard Error of Measurement Curves by Reporting Category, shows SEM curves by reporting category.

Figure 9: 2020–2021 Conditional Standard Error of Measurement (CSEM) for Reading

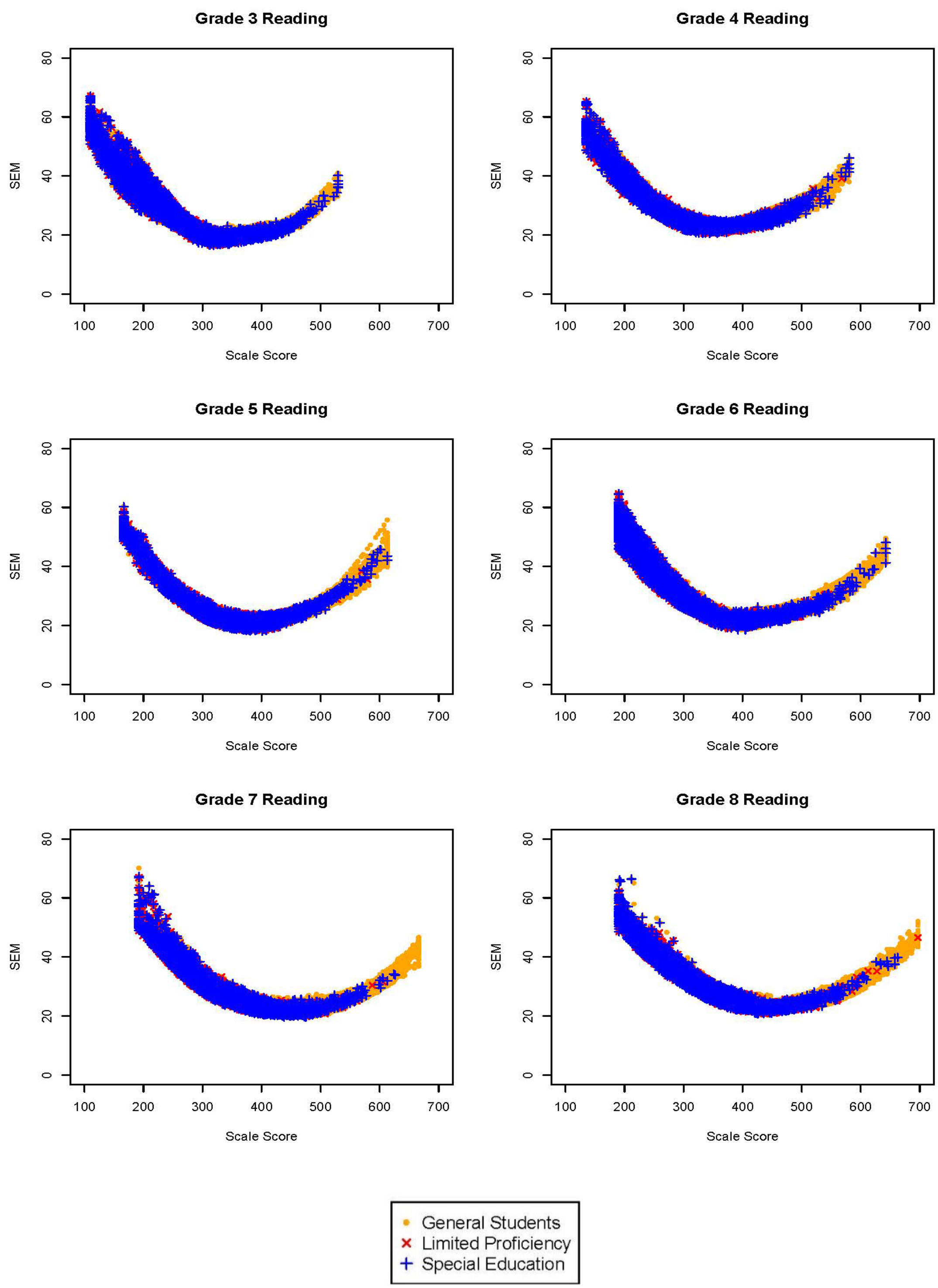
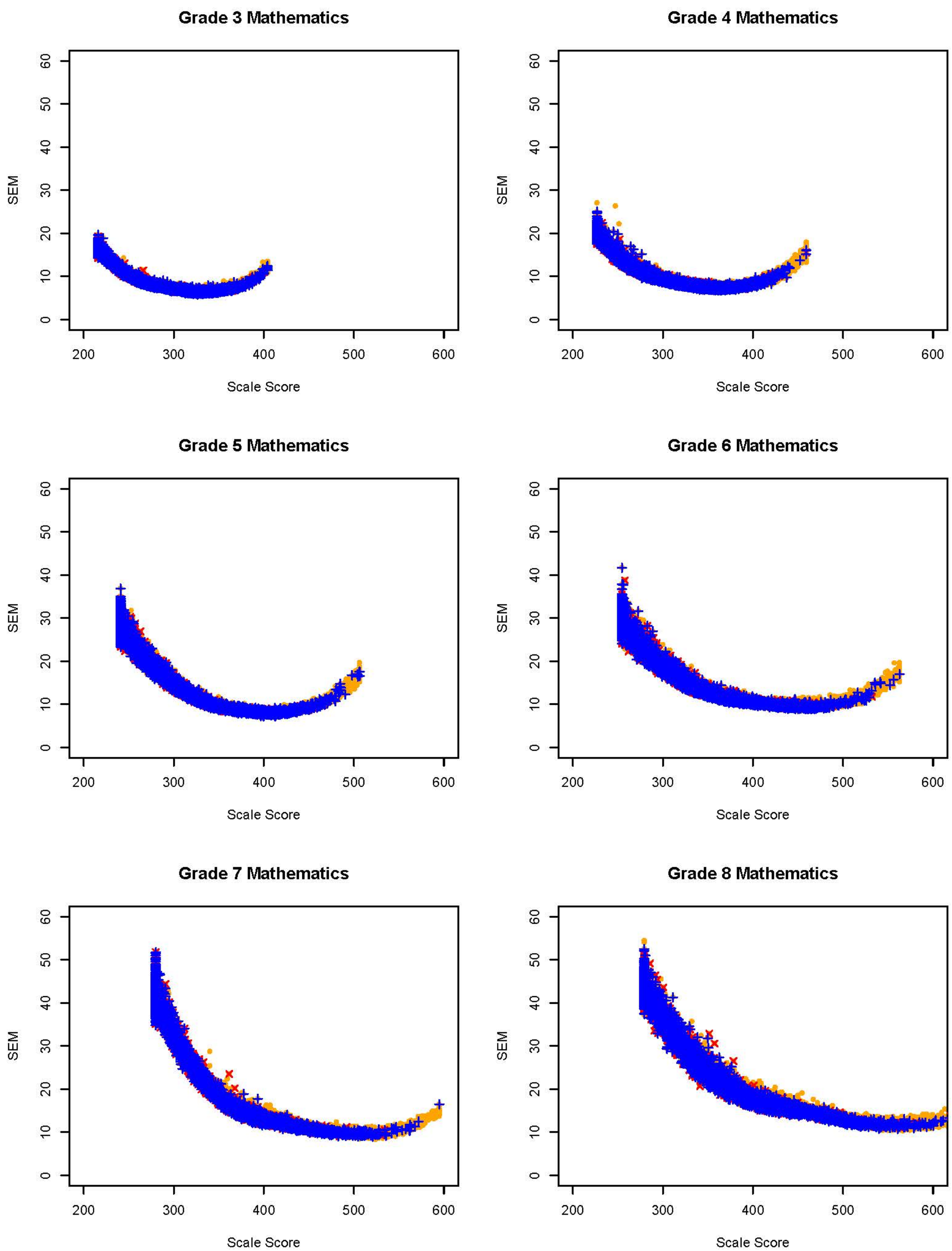


Figure 10: 2020–2021 Conditional Standard Error of Measurement (CSEM) for Mathematics



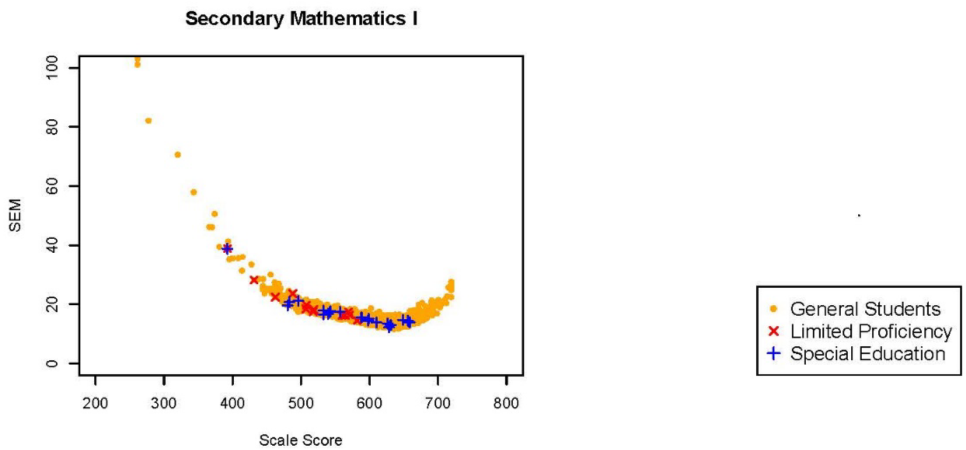
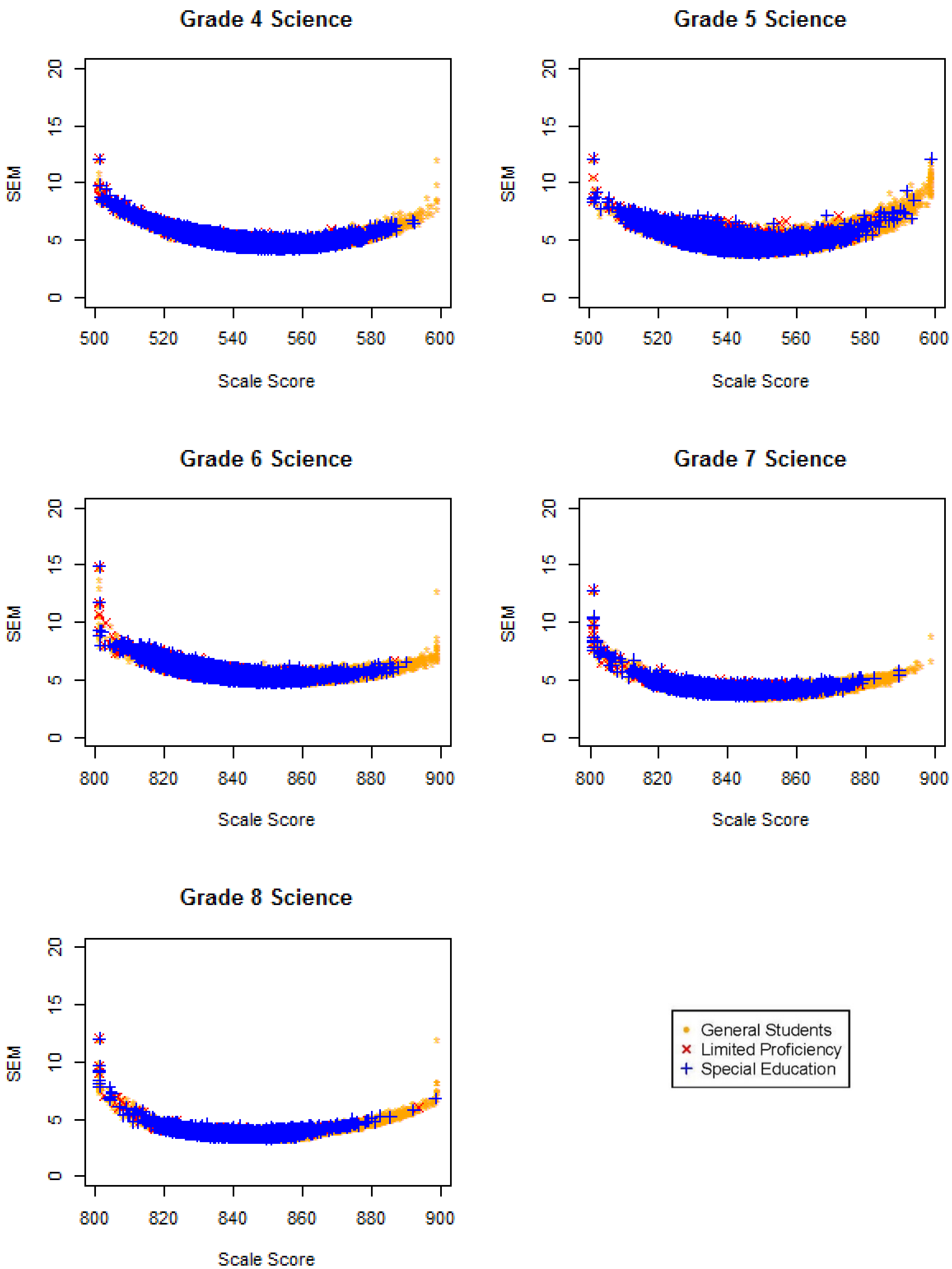

Secondary Mathematics I
SEM
100
80
60
40
20
0
200
300
400
500
600
700
800
Scale Score
General Students
Limited Proficiency
Special Education

Figure 11: 2020–2021 Conditional Standard Error of Measurement (CSEM) for Science



3.4.3 STUDENT CLASSIFICATION RELIABILITY

When student performance is reported in terms of performance categories, a reliability index is computed in terms of the probabilities of consistent classification of students as specified in Standard 2.16 in the *Standards for Educational and Psychological Testing* (American Educational Research Association [AERA], American Psychological Association [APA], & National Council on Measurement in Education [NCME], 2014)). This index considers the consistency of classifications for the percentage of test takers who would, hypothetically, be classified in the same category on a second RISE administration, using either the same form or an alternate, equivalent form.

Students can be misclassified in one of two ways. Students who are truly below a proficiency cut point but are classified based on the assessment as being above the cut point are considered to be *false positives*. Similarly, students who are truly above a proficiency cut point but are classified as being below the cut point are considered to be *false negatives*.

Decision accuracy refers to the agreement between the classifications based on the form taken and the classifications that would be made based on the test taker's true scores. *Decision consistency* refers to the agreement between the classifications based on the form actually taken and the classifications that would be made on the basis of an alternate form, that is, the percentages of students who are consistently classified in the same proficiency levels on two equivalent administrations of the test.

When student performance is reported in terms of performance categories, a reliability index is computed in terms of the probabilities of consistent classification of students as specified in Standard 2.16 in the Standards for Educational and Psychological Testing (AERA, APA, & NCME, 2014). This index considers the consistency of classifications for the percentage of test takers who would, hypothetically, be classified in the same category on an alternate, equivalent form.

For a fixed-form test, the consistency of classifications is estimated on single-form test scores from a single test administration based on the true-score distribution that is estimated by fitting a bivariate beta-binomial model or a four-parameter beta model (Huynh, 1976; Livingston & Lewis, 1995). For the spring 2015 administration and all future CAT administrations, the consistency classification is based on all sets of items administered across students because the item selection algorithm constructs a test form unique to each student.

The classification index can be examined for decision accuracy and decision consistency. Decision accuracy refers to the agreement between the classifications based on the form actually taken and the classifications that would be made on the basis of the test takers' true scores, if their true scores could somehow be known. Decision consistency refers to the agreement between the classifications based on the form (adaptively administered items) actually taken and the classifications that would be made on the basis of an alternate, equivalently constructed test form or test administration (e.g., another set of adaptively administered items given the same ability)—that is, the percentages of students who are consistently classified in the same performance levels on two equivalent test administrations.

In reality, the true ability is unknown, and students are not administered an alternate, equivalent form. Therefore, classification accuracy and consistency are estimated based on students' item scores, the item parameters, and the assumed underlying latent ability distribution as described later in this section. The true score is an expected value of the test score with measurement error.

For a student with estimated ability $\hat{\theta}$ and associated standard error $\mathrm{se}(\hat{\theta})$, we can assume that $\hat{\theta}$ follows a normal distribution with mean of true ability θ and standard deviation of $\mathrm{se}(\hat{\theta})$, that is, $\hat{\theta} \sim N\left(\theta, \mathrm{se}(\hat{\theta})^2\right)$. The probability of the true score at or above the cut score θ_c is estimated as

$$P(\theta \geq \theta_c) = P\left(\frac{\theta - \hat{\theta}}{\mathrm{se}(\hat{\theta})} \geq \frac{\theta_c - \hat{\theta}}{\mathrm{se}(\hat{\theta})}\right) = P\left(\frac{\hat{\theta} - \theta}{\mathrm{se}(\hat{\theta})} < \frac{\hat{\theta} - \theta_c}{\mathrm{se}(\hat{\theta})}\right) = \Phi\left(\frac{\hat{\theta} - \theta_c}{\mathrm{se}(\hat{\theta})}\right),$$

where $\Phi(\cdot)$ is the cumulative function of standard normal distribution. Similarly, the probability of the true score being below the cut score is estimated as

$$P(\theta < \theta_c) = 1 - \Phi\left(\frac{\hat{\theta} - \theta_c}{\mathrm{se}(\hat{\theta})}\right).$$

3.4.4 CLASSIFICATION ACCURACY

Instead of assuming a normal distribution, we can directly estimate the probability of consistent classification using the likelihood function. The likelihood function of the achievement attribute, designated θ, given a student's item scores, represents the likelihood of the student's ability at that theta value. Integrating the likelihood values over the range of theta at and above the cut score (with proper normalization) represents the probability of the student's latent ability or the true score being at or above that cut point.

If a student's estimated theta is below the cut score, the probability of *at or above* the cut score is an estimate of the chance that this student is misclassified as below the cut score, and 1 minus that probability is the estimate of the chance that the student is correctly classified as below the cut score. Using this logic, we can define various classification probabilities.

The probability of a student with true ability θ being classified at or above the cut score θ_c, given the student's item scores $\boldsymbol{x} = (x_1, \cdots, x_N)$, can be estimated as

$$P(\theta \geq \theta_c|\boldsymbol{x}) = \frac{\int_{\theta_c}^{+\infty} L(\theta|\boldsymbol{x})d\theta}{\int_{-\infty}^{+\infty} L(\theta|\boldsymbol{x})d\theta},$$

where the likelihood function is

$$L(\theta|\boldsymbol{x}) = \prod_{i=1}^{N} P(x_i|\theta),$$

and $P(x_i|\theta)$ is calculated from the Rasch model or partial credit model based on the estimated item parameters.

Similarly, we can estimate the probability of below the cut score as:

$$P(\theta < \theta_c|\boldsymbol{x}) = \frac{\int_{-\infty}^{\theta_c} L(\theta|\boldsymbol{x})d\theta}{\int_{-\infty}^{+\infty} L(\theta|\boldsymbol{x})d\theta}$$

Mathematically, we have

$$N_{11} = \sum\nolimits_{i \in N_1} P(\theta_i \geq \theta_c|\boldsymbol{x}),$$

$$N_{01} = \sum\nolimits_{i \in N_1} P(\theta_i < \theta_c|\boldsymbol{x}),$$

$$N_{10} = \sum\nolimits_{i \in N_0} P(\theta_i \geq \theta_c|\boldsymbol{x}), \text{ and}$$

$$N_{00} = \sum\nolimits_{i \in N_0} P(\theta_i < \theta_c|\boldsymbol{x}),$$

where N_1 consists of the students with estimated $\hat{\theta}_i$ being at and above the cut score, and N_0 contains the students with estimated $\hat{\theta}_i$ being below the cut score. The accuracy index is then computed as:

$$\frac{N_{11} + N_{00}}{N_1 + N_0}.$$

In Exhibit A, accurate classifications occur when the decision made based on the true score agrees with the decision made based on the form taken. Misclassifications, false positives, and false negatives occur when students' true-score classifications differ from their observed-score classifications (e.g., a student whose true score results in a Proficient level classification but is classified incorrectly as Partially Proficient). N_{11} represents the expected numbers of students who are truly above the cut score; N_{01} represents the expected number of students falsely above the cut score; N_{00} represents the expected number of students truly below the cut score; and N_{10} represents the number of students falsely below the cut score.

Exhibit A: Classification Accuracy

		Classification on a Form Actually Taken	
		At or Above the Cut Score	**Below the Cut Score**
Classification on True Score	**At or Above the Cut Score**	N_{11} (Truly above the cut score)	N_{10} (False negative)
	Below the Cut Score	N_{01} (False positive)	N_{00} (Truly below the cut)

3.4.5 CLASSIFICATION CONSISTENCY

To estimate the consistency, we assume students are tested twice independently; hence, the probability of the student being classified as at or above the cut score θ_c in both tests can be estimated as

$$P(\theta_1 \geq \theta_c, \theta_2 \geq \theta_c) = P(\theta_1 \geq \theta_c)P(\theta_2 \geq \theta_c) = \left(\frac{\int_{\theta_c}^{+\infty} L(\theta|\boldsymbol{x})d\theta}{\int_{-\infty}^{+\infty} L(\theta|\boldsymbol{x})d\theta}\right)^2.$$

Similarly, the probability of consistency for at or above the cut score is estimated as

$$P(\theta_1 \geq \theta_c, \theta_2 \geq \theta_c|\boldsymbol{x}) = \left(\frac{\int_{\theta_c}^{+\infty} L(\theta|\boldsymbol{x})d\theta}{\int_{-\infty}^{+\infty} L(\theta|\boldsymbol{x})d\theta}\right)^2.$$

The probability of consistency for below the cut score is estimated as

$$P(\theta_1 < \theta_c, \theta_2 < \theta_c|\boldsymbol{x}) = \left(\frac{\int_{-\infty}^{\theta_c} L(\theta|\boldsymbol{x})d\theta}{\int_{-\infty}^{+\infty} L(\theta|\boldsymbol{x})d\theta}\right)^2.$$

The probability of inconsistency is estimated as

$$P(\theta_1 \geq \theta_c, \theta_2 < \theta_c | \boldsymbol{x}) = \frac{\int_{\theta_c}^{+\infty} L(\theta|\boldsymbol{x}) d\theta \int_{-\infty}^{\theta_c} L(\theta|\boldsymbol{x}) d\theta}{\left[\int_{-\infty}^{+\infty} L(\theta|\boldsymbol{x}) d\theta\right]^2}, \text{ and}$$

$$P(\theta_1 < \theta_c, \theta_2 \geq \theta_c | \boldsymbol{x}) = \frac{\int_{-\infty}^{\theta_c} L(\theta|\boldsymbol{x}) d\theta \int_{\theta_c}^{+\infty} L(\theta|\boldsymbol{x}) d\theta}{\left[\int_{-\infty}^{+\infty} L(\theta|\boldsymbol{x}) d\theta\right]^2}.$$

The consistent index is computed as

$$\frac{N_{11} + N_{00}}{N},$$

where

$$N_{11} = \sum\nolimits_{i \in N} P\left(\theta_{i,1} \geq \theta_c, \theta_{i,2} \geq \theta_c | \boldsymbol{x}\right),$$

$$N_{01} = \sum\nolimits_{i \in N} P\left(\theta_i < \theta_c, \theta_{i,2} \geq \theta_c | \boldsymbol{x}\right),$$

$$N_{10} = \sum\nolimits_{i \in N} P\left(\theta_i \geq \theta_c, \theta_{i,2} < \theta_c | \boldsymbol{x}\right),$$

$$N_{00} = \sum\nolimits_{i \in N} P\left(\theta_i < \theta_c, \theta_{i,2} < \theta_c | \boldsymbol{x}\right), \text{ and}$$

$$N = N_{11} + N_{10} + N_{01} + N_{00}.$$

As shown in Exhibit B, consistent classification occurs when two forms agree on the classification of a student as either *at or above* or *below* the performance standard, whereas inconsistent classification occurs when the decisions made by the forms differ.

Exhibit B: Classification Consistency

		Classification on the Second Form Taken	
		Above the Cut Score	**Below the Cut Score**
Classification on the First Form Taken	**At or Above the Cut Score**	N_{11} (Consistently above the cut)	N_{10} (Inconsistent)
	Below the Cut Score	N_{01} (Inconsistent)	N_{00} (Consistently below the cut)

3.4.6 CLASSIFICATION ACCURACY AND CONSISTENCY ESTIMATES

The analysis of the classification index is performed for test scores in the 2020–2021 administration. Table 29 presents the decision accuracy and consistency indices. Accuracy classifications are slightly higher than the consistency classifications in all performance standards. The consistency classification rate can be somewhat lower than the accuracy rate because consistency assumes two test scores, both of which include measurement error, while the accuracy rate assumes a single test score and the true score, which does not include measurement error. The classification index ranged from 89% to 99% for accuracy, and from 84% to 98% for consistency across all grades and subjects. The accuracy and consistency rates for each performance standard are greater for the performance standards associated with smaller standard errors. The better the test is targeted to the student's ability, the higher the classification index.

Table 29: 2020–2021 Decision Accuracy and Consistency Indices for Performance Standards

Grade	Accuracy			Consistency (%)		
	Approaches	Meets	Exceeds	Approaches	Meets	Exceeds
Reading						
3	93	93	95	90	90	93
4	92	92	94	89	88	92
5	94	92	93	91	89	90
6	93	92	93	90	88	90
7	93	92	94	90	89	92
8	93	92	93	91	89	91
Mathematics						
3	95	94	95	93	92	93
4	95	95	95	93	93	94
5	95	95	96	93	93	94
6	94	95	97	92	93	95
7	94	94	97	92	92	95
8	94	94	97	92	92	96
SM I	99	94	90	98	92	86
Science						
4	91	89	92	87	85	89
5	91	90	93	87	86	90
6	90	89	92	86	84	89
7	92	91	93	89	87	91
8	93	91	93	90	87	90

3.4.7 RELIABILITY FOR SUBGROUPS IN THE POPULATION

State summary results for the average scale scores and the percentage of students in each proficiency level by grade and content area was calculated for several subcategories—including female, male, African American, American Indian/Alaskan, Asian, Hispanic/Latino, Multi-Racial, Native Hawaiian/Pacific Islander, White, limited English proficiency (LEP), special education (SPED), and low income. The percentage of students by performance levels overall and within subgroups is presented in Appendix 3-A, Percentage of Students in Performance Levels for Overall and by Subgroup.

The 2020–2021 marginal reliability results for each of the identified subgroups (gender, ethnicity [African American, American Indian/Alaskan, Asian, Hispanic/Latino, Multi-Racial, Native Hawaiian/Pacific Islander, White], special groups [limited English proficiency students], special education students [SPED], and low-income students were calculated. Each racial and/or ethnic group was composed of approximately equal numbers of males and females. The marginal reliability coefficients for subgroups are provided in Appendix 3-D, Marginal Reliability Coefficients for Overall and by Subgroup. As the appendix indicates, reliabilities are consistent across subgroups, indicating that the RISE assessments measure a common underlying achievement dimension across all subgroups. Where reliability estimates are attenuated, there is an associated decrease in variance within the subgroup population, indicating that the decrease in reliability is likely due to a restriction in range.

3.4.8 REPORTING CATEGORY RELIABILITY

The marginal reliability coefficients and the measurement errors are computed for the reporting categories. Table 30 through Table 32 present the marginal reliability coefficients for reporting categories.

Table 30: Marginal Reliability Coefficients for ELA Reporting Categories

Grade	Reporting Categories	Number of Items Specified in Test Blueprint		Marginal Reliability	N	Mean	SD	SEM
		Min	Max					
3	Language	8	10	0.61	45,290	327	101.22	63.51
	Informational Text	14	14	0.65	45,290	304	99.83	59.02
	Literature	14	14	0.73	45,290	307	97.54	50.80
	Listening Comprehension	8	8	0.61	45,290	310	103.77	64.89
4	Language	8	10	0.64	46,496	354	108.16	64.58
	Informational Text	14	14	0.69	46,496	337	101.87	56.88
	Literature	14	14	0.69	46,496	345	98.37	54.45
	Listening Comprehension	9	9	0.61	46,496	355	110.56	69.31
5	Language	8	10	0.66	47,000	388	107.40	62.21
	Informational Text	14	14	0.70	47,000	394	102.15	56.33
	Literature	14	14	0.76	47,000	388	103.17	50.67
	Listening Comprehension	8	8	0.60	47,000	376	114.05	71.82
	Writing	1	1	0.70	46,998	378	100.14	54.66
6	Language	8	10	0.65	47,715	415	104.79	61.99
	Informational Text	16	16	0.75	47,715	411	100.24	49.90
	Literature	13	13	0.71	47,715	412	108.91	59.01
	Listening Comprehension	9	9	0.63	47,715	423	113.64	69.08
7	Language	8	10	0.60	47,169	420	103.39	65.33
	Informational Text	16	16	0.77	47,169	419	97.01	46.17
	Literature	13	13	0.71	47,169	426	108.05	58.25
	Listening Comprehension	9	9	0.60	47,169	440	105.77	66.99
8	Language	9	10	0.70	46,311	438	112.23	61.25

Grade	Reporting Categories	Number of Items Specified in Test Blueprint		Marginal Reliability	N	Mean	SD	SEM
		Min	Max					
	Informational Text	16	16	0.76	46,311	444	104.11	50.66
	Literature	13	13	0.76	46,311	451	109.22	53.93
	Listening Comprehension	9	9	0.64	46,311	455	129.65	77.93
	Writing	1	1	0.76	46,430	438	119.51	58.18

Table 31: Marginal Reliability Coefficients for Mathematics Reporting Categories

Grade	Reporting Categories	Number of Items Specified in Test Blueprint		Marginal Reliability	N	Mean	SD	SEM
		Min	Max					
3	Geometry/Measurement and Data	1	2	0.74	45,177	306	42.76	21.98
	Number and Operations in Base Ten	8	10	0.80	45,177	310	42.99	19.45
	Number and Operations – Fractions	12	14	0.84	45,177	311	41.38	16.36
	Operations and Algebraic Thinking	13	17	0.86	45,177	307	41.23	15.59
4	Geometry/Measurement and Data	1	3	0.74	46,281	333	52.26	26.77
	Number and Operations in Base Ten	14	16	0.85	46,281	340	50.17	19.68
	Number and Operations – Fractions	14	16	0.87	46,281	340	48.20	17.07
	Operations and Algebraic Thinking	9	11	0.81	46,281	336	51.14	22.43
5	Geometry/Measurement and Data	2	2	0.73	46,621	366	59.22	30.78
	Number and Operations in Base Ten	15	18	0.85	46,621	368	57.68	21.98
	Number and Operations – Fractions	14	17	0.70	46,621	365	59.52	32.56
	Operations and Algebraic Thinking	8	10	0.74	46,621	369	59.54	30.14
6	Expressions and Equations	14	17	0.86	47,277	400	64.61	24.03
	The Number System	9	11	0.77	47,277	398	67.42	32.63
	Ratios and Proportional Relationships	14	16	0.88	47,277	401	63.83	22.53
	Geometry/Statistics and Probability	1	6	0.45	47,277	387	75.27	56.07
7	Expressions and Equations	8	10	0.22	44,439	426	74.38	65.88
	The Number System	9	11	0.72	44,439	426	70.90	37.56
	Ratios and Proportional Relationships	11	13	0.71	44,439	428	71.06	38.20
	Geometry	9	11	0.60	44,439	419	75.56	47.70
	Statistics and Probability	9	11	0.50	44,439	417	72.99	51.83
8	Expressions and Equations	10	12	0.75	44,290	462	83.59	41.65

Grade	Reporting Categories	Number of Items Specified in Test Blueprint		Marginal Reliability	N	Mean	SD	SEM
		Min	Max					
	Functions	10	12	0.66	44,290	464	84.26	49.12
	Geometry/The Number System	11	15	0.83	44,290	460	80.82	33.06
	Statistics and Probability	8	10	0.74	44,290	468	87.88	44.73
SM I	Algebra	12	14	0.62	3,337	586	58.65	36.01
	Geometry	12	14	0.55	3,337	577	69.20	46.52
	Number and Quantity/Functions/Statistics and Probability	10	15	0.64	3,337	588	63.66	38.39

Table 32: Marginal Reliability Coefficients for Science Reporting Categories

Grade	Reporting Categories	Number of Items Specified in Test Blueprint		Marginal Reliability	N	Mean	SD	SEM
		Min	Max					
4	Organisms Functioning in Their Environment	2	2	0.63	46,505	550	18.56	10.95
	Energy Transfer	2	2	0.62	46,492	551	14.61	8.95
	Wave Patterns	2	2	0.62	46,476	549	18.05	11.02
	Observable Patterns in the Sky	2	2	0.67	46,477	548	18.65	10.62
5	Characteristics and Interactions of Earth’s Systems	3	3	0.76	46,976	551	17.15	8.26
	Properties and Changes of Matter	3	3	0.71	46,982	549	16.40	8.62
	Cycling of Matter in Ecosystems	2	2	0.59	46,983	550	16.10	10.09
6	Structure and Motion within the Solar System	2	2	0.52	47,638	846	20.36	13.84
	Energy Affects Matter	2	2	0.56	47,710	848	16.08	10.52
	Earth’s Weather Patterns and Climate	2	2	0.57	47,693	849	15.55	10.11
	Stability and Change in Ecosystems	2	2	0.62	47,739	851	18.73	11.33
7	Forces are Interactions Between Matter	2	2	0.61	47,242	848	14.62	9.00
	Changes to Earth Over Time	2	2	0.65	47,254	850	17.01	9.81
	Structure and Function of Life	2	2	0.65	47,197	848	14.20	8.35
	Reproduction and Inheritance	2	2	0.65	47,191	851	23.35	13.66
	Changes in Species Over Time	2	2	0.63	47,230	847	17.66	10.53

Grade	Reporting Categories	Number of Items Specified in Test Blueprint		Marginal Reliability	N	Mean	SD	SEM
		Min	Max					
8	Matter and Energy Interact in the Physical World	3	3	0.74	46,629	849	14.48	7.30
	Energy is Stored and Transferred in Physical Systems	3	3	0.78	46,584	850	15.07	6.99
	Life Systems Store and Transfer Matter and Energy	2	2	0.68	46,550	850	17.07	9.65
	Interactions with Natural Systems and Resources	2	2	0.64	46,612	849	14.96	8.80

3.4.9 RELIABILITY FOR ACCOMMODATED TESTERS

We also examined the internal consistency reliability of accommodated test administrations. The number of students provided any accommodation is quite small, as indicated in Table 33 below. We therefore collapsed all accommodated test administrations into a single category to conduct the reliability analysis.

Table 33: Frequency of Accommodated Testers

Accommodation	Count
American Sign Language	45
Braille	11
Print-on-Request: Stims and Items	40
Scribe	190

Table 34 shows the marginal reliabilities for accommodated versus non-accommodated test administrations. Note that even when collapsing across all accommodations, some assessments had no accommodated test administrations, and for others, the number of accommodated testers was very small, limiting the generalizability of the results. Nevertheless, the internal consistency reliability of accommodated test administrations was comparable to that of non-accommodated test administrations, indicating that, like the non-accommodated assessments, accommodated test administrations result in test scores of similar precision as non-accommodated test administrations.

Table 34: Marginal Reliability Coefficients for Accommodated vs. Non-Accommodated Students

Grade	Accommodated		Non-Accommodated	
	N	Reliability	N	Reliability
		Reading		
3	11	0.42	45,279	0.90
4	22	0.78	46,474	0.89
5	65	0.83	46,935	0.91

Grade	Accommodated		Non-Accommodated	
	N	Reliability	N	Reliability
6	36	0.71	47,679	0.91
7	14	0.84	47,155	0.91
8	23	0.90	46,288	0.91
		Mathematics		
3	11	0.75	45,166	0.96
4	23	0.89	46,258	0.96
5	64	0.91	46,557	0.95
6	35	0.84	47,242	0.96
7	15	0.79	44,424	0.94
8	21	0.92	44,269	0.95
SM I	0	N/A	3,337	0.88
		Science		
4	15	0.80	46,505	0.87
5	15	0.86	46,976	0.87
6	24	0.80	47,743	0.84
7	7	0.81	47,324	0.89
8	11	0.93	46,671	0.91

3.5 SUBSCALE INTERCORRELATIONS

The correction for attenuation indicates what the correlation would be if reporting category scores could be measured with perfect reliability. The correction for attenuation indicates what the correlation would be if reporting category scores could be measured with perfect reliability. The observed correlation between two reporting category scores with measurement errors can be corrected for attenuation as

$$r_{x'y'} = \frac{r_{xy}}{\sqrt{r_{xx}r_{yy}}}$$

Where $r_{x'y'}$ is the correlation between x and y corrected for attenuation, r_{xy} is the observed correlation between x and y, r_{xx} is the reliability coefficient for x, and r_{yy} is the reliability coefficient for y. When corrected for attenuation, the correlations among reporting scores are quite high, indicating that the assessments measure a common underlying construct. Disattenuated correlation is capped if the correlation is greater than 1. Table 35 through Table 41 presents the correlations among reporting categories.

Table 35: Correlations Among Reporting Category Scores for ELA, Grades 3–8

Grade	Reporting Category	Observed Correlation				Disattenuated Correlation			
		L	RI	RL	SL	L	RI	RL	SL
3	RI	0.58				0.92			
	RL	0.63	0.66			0.95	0.95		
	SL	0.54	0.56	0.61	--	0.88	0.90	0.91	--
4	RI	0.63				0.95			
	RL	0.63	0.69			0.95	0.99		
	SL	0.58	0.63	0.63	--	0.92	0.97	0.98	--
5	RI	0.62				0.92			
	RL	0.66	0.70			0.93	0.95		
	SL	0.57	0.62	0.65		0.90	0.96	0.96	
	W	0.55	0.55	0.56	0.49	0.81	0.79	0.77	0.76
6	RI	0.66				0.95			
	RL	0.64	0.71			0.95	0.98		
	SL	0.59	0.66	0.63	--	0.92	0.96	0.93	--
7	RI	0.62				0.91			
	RL	0.59	0.73			0.90	0.98		
	SL	0.52	0.65	0.60	--	0.87	0.95	0.93	--
8	RI	0.67				0.91			
	RL	0.65	0.73			0.90	0.96		
	SL	0.58	0.66	0.65		0.87	0.94	0.93	
	W	0.55	0.57	0.56	0.51	0.75	0.75	0.73	0.73

RI = Informational Text, RL = Literature, L = Language, SL = Speaking and Listening, W = Writing

Table 36: Correlations Among Reporting Category Scores for Mathematics, Grades 3–5

Grade	Reporting Category	Observed Correlations			Disattenuated Correlations		
		GMD	NBT	NF	GMD	NBT	NF
3	Number and Operations in Base Ten (NBT)	0.77			1.00		
	Number and Operations – Fractions (NF)	0.78	0.76		0.99	0.92	
	Operations and Algebraic Thinking (OA)	0.81	0.83	0.79	1.00	1.00	0.93
4	Number and Operations in Base Ten (NBT)	0.80			1.00		
	Number and Operations – Fractions (NF)	0.82	0.84		1.00	0.98	
	Operations and Algebraic Thinking (OA)	0.79	0.84	0.83	1.00	1.00	0.99

Grade	Reporting Category	Observed Correlations			Disattenuated Correlations		
		GMD	NBT	NF	GMD	NBT	NF
5	Number and Operations in Base Ten (NBT)	0.82			1.00		
	Number and Operations – Fractions (NF)	0.81	0.83		1.00	1.00	
	Operations and Algebraic Thinking (OA)	0.77	0.79	0.77	1.00	1.00	1.00

GMD = Geometry/Measurement and Data

Table 37: Correlations Among Reporting Category Scores for Mathematics, Grade 6

Grade	Reporting Category	Observed Correlations			Disattenuated Correlations		
		EE	GSP	NS	EE	GSP	NS
6	Geometry/Statistics and Probability (GSP)	0.70			1.00		
	The Number System (NS)	0.83	0.68		1.00	1.00	
	Ratios and Proportional Relationships (RP)	0.86	0.69	0.83	0.99	1.00	1.00

EE = Expressions and Equations

Table 38: Correlations Among Reporting Category Scores for Mathematics, Grade 7

Grade	Reporting Category	Observed Correlations				Disattenuated Correlations			
		EE	G	NS	RP	EE	G	NS	RP
7	Geometry (G)	0.71				1.00			
	The Number System (NS)	0.73	0.74			1.00	1.00		
	Ratios and Proportional Relationships (RP)	0.76	0.77	0.79		1.00	1.00	1.00	
	Statistics and Probability (SP)	0.69	0.70	0.71	0.75	1.00	1.00	1.00	1.00

EE = Expressions and Equations

Table 39: Correlations Among Reporting Category Scores for Mathematics, Grade 8

Grade	Reporting Category	Observed Correlations			Disattenuated Correlations		
		EE	F	GNS	EE	F	GNS
8	Functions (F)	0.78			1.00		
	Geometry/The Number System (GNS)	0.82	0.77		1.00	1.00	
	Statistics and Probability (SP)	0.75	0.73	0.77	1.00	1.00	1.00

EE = Expressions and Equations

Table 40: Correlations Among Reporting Category Scores for Mathematics, Secondary Mathematics I

Grade	Reporting Category	Observed Correlations		Disattenuated Correlations	
		A	G	A	G
SM I	Geometry (G)	0.60		1.00	
	Number and Quantity/Functions/Statistics and Probability (NFS)	0.67	0.61	1.00	1.00

A = Algebra

Table 41: Correlations Among Reporting Category Scores for Science, Grades 4–8

Grade	Reporting Category	Observed Correlations				Disattenuated Correlations			
		I	II	III	IV	I	II	III	IV
4	II. Energy Transfer	0.59				0.95			
	III. Wave Patterns	0.60	0.60			0.95	0.97		
	IV. Observable Patterns in the Sky	0.63	0.62	0.64	--	0.97	0.97	0.99	--
5	II. Properties and Changes of Matter	0.71			--	0.97			--
	III. Cycling of Matter in Ecosystems	0.63	0.60	--	--	0.94	0.92	--	--
6	II. Energy Affects Matter	0.51				0.95			
	III. Earth's Weather Patterns and Climate	0.56	0.57			1.00	1.00		
	IV. Stability and Change in Ecosystems	0.56	0.56	0.61	--	0.98	0.95	1.00	--
7	II. Changes to Earth Over Time	0.60				0.95			
	III. Structure and Function of Life	0.60	0.62			0.96	0.95		
	IV. Reproduction and Inheritance	0.63	0.65	0.65		1.00	1.00	1.00	
	V. Changes in Species Over Time	0.58	0.61	0.61	0.64	0.93	0.94	0.95	0.99
8	II. Energy is Stored and Transferred in Physical Systems	0.76				1.00			
	III. Life Systems Store and Transfer Matter and Energy	0.68	0.71			0.97	0.98		
	IV. Interactions with Natural Systems and Resources	0.67	0.68	0.63	--	0.97	0.97	0.95	--

Note. 4.I = Organisms Functioning in Their Environment, 5.I = Characteristics and Interactions of Earth's Systems, 6.I = Structure and Motion within the Solar System, 7.I = Forces are Interactions Between Matter, 8.I = Matter and Energy Interact in the Physical World

4. ITEM DEVELOPMENT AND TEST CONSTRUCTION

4.1 TEST SPECIFICATIONS

The assessment test specifications represent the information provided in the Utah Core Standards. The primary purpose of these assessment test specifications is to describe the underlying principles and organization of the RISE assessments in order to ensure the highest degree of consistency, quality, and transparency. Test specifications provide guidelines for item writers with respect to the range of content that may be tested and how items must be written. These specifications lead to the creation of blueprints that outline the test design and estimate the number of test questions for each score reporting category.

4.1.1 ELA AND MATHEMATICS

The SAGE (now RISE) English language arts (ELA) and mathematics assessments were administered online from fall 2014 through spring 2018, in fall 2019, fall 2020, and spring 2021. Test administrations were designed to meet RISE test specifications following the operational field test of spring 2014. Assessments were administered in the following grades and courses:

- ELA, grades 3–8
- mathematics, grades 3–8 and Secondary Mathematics I

Blueprints for these tests were developed by CAI's content specialists and reviewed by the CAI psychometrics team. Utah State Board of Education (USBE) content specialists provided feedback. The blueprints included the following key features:

- Reporting categories
- Test length
- Minimum and maximum number of items for each high-level and low-level element of the blueprint
- Depth of Knowledge (DOK) requirements
- Subject-specific information such as passage requirements for ELA

Additionally, CAI content specialists used item specifications to guide the development of the embedded field-test items that were part of the spring 2021 administration and the writing prompts for the operational field test in writing.

ELA and Mathematics Item Specifications

CAI developed the RISE ELA and mathematics item bank using a rigorous, structured process that engages stakeholders at critical junctures. This process is managed by CAI's Item Tracking System (ITS), which is an auditable content-development tool that enforces workflow and captures every change to, and comment about, each item. Reviewers, including internal CAI reviewers or stakeholders in committee meetings, can review items in ITS as they will appear to the student, with all accessibility features and tools.

The process begins with the definition of passage and item specifications, and continues with

- selection and training of item writers;
- writing and internal review of items;
- review by state personnel and stakeholder committees;
- markup for translation and accessibility features;
- field-testing; and
- post field-test reviews.

Each of these steps has a role in ensuring that the items can support the claims that will be based on them. Exhibit C describes how the steps contribute to these goals, and later sections of this report include detailed discussions of every step in the process.

Exhibit C: Summary of How Each Step of Development Supports the Validity of Claims

Development steps	Supports alignment to the standards	Reduces construct-irrelevant variance through universal design	Expands access through linguistic and other supports
Passage and item specifications	Specifies item types, content limits, and guidelines for meeting Depth of Knowledge (DOK) requirements and adjusting difficulty	Avoids the use of any item types with accessibility constraints and provides language guidelines; allows for multiple response modes to accommodate different styles	
Selection and training of item writers	Ensures that item writers have the background to understand the standards and specifications; teaches item writers about selection of item types for measurement and accessibility	Training in language accessibility, bias, and sensitivity, helping item writers to avoid unnecessary barriers	
Writing and internal review of items	Checks content and DOK alignment and evaluates and improves overall quality	Eliminates editorial issues and flags and removes bias and accessibility issues	
Markup for translation and accessibility features		Adds universal features, such as text-to-speech for mathematics, that reduce barriers	Adds text-to-speech, braille, American Sign Language (ASL), translations, and glossaries
Review by state personnel and stakeholder committees	Checks content and DOK alignment and evaluates and improves overall quality	Flags sensitivity issues	
Field testing	Provides statistical check on quality and flags issues	Flags items that appear to function differently for subsequent review for issues	May reveal usability or implementation issues with markup
Post field-test reviews	Provides final, more focused check on flagged items; rubric validation and rangefinding ensure that scoring reflects standards and expectations	Final, focused review on items flagged for differential item functioning	

Passage and Item Specifications

Items and passage specifications were developed in collaboration between USBE content experts and CAI content experts. Over time, the specifications have been expanded to reflect continuous improvement and the availability of new interaction types.

Passage Specifications

ELA development begins with passage specifications. Detailed passage specifications ensure that all passages align to the correct grade level and provide sufficient complexity for close analytical reading. These specifications augment, rather than replace, quantitative syntactic measures, such as Lexile measures. The qualities called out in the specifications are derived from the Utah Core Standards for ELA and accompanying material.

Exhibit D provides a sample passage specification.

Exhibit D: Sample Passage Specifications

Difficulty Factor	Passage Metric Description	Grade-Level Details (Sample for Grades 9–10)	Research-Based Evidence
Levels of Meaning in Literature	1. Single, concrete interpretation with few generalizations necessary 2. Some themes not explicitly stated 3. Multiple, successively abstract or general, levels of meaning; key theme or themes implied	1. a. Characters are static, and characteristics are explicitly stated. b. Setting is used as an aesthetic enhancement, not as a way to convey meaning. c. Mood and tone are used to enhance the setting of the story but are not critical in conveying the meaning or theme. d. Actions have straightforward meanings and clear, immediate effects. e. Symbols are straightforward, common, and closely linked to their meanings, both in terms of proximity and explanatory language. 2. a. Characters are dynamic, and a single character may have multiple motives. b. Characteristics are implied through clear action or dialogue. c. Setting serves to underscore the theme and conveys mood or tone, which supports understanding of the explicit theme. d. Actions have straightforward, explicit meanings, but the effects are not fully realized until later in the passage. e. Symbols are straightforward and common but may not be supported by explanation or elaboration (e.g., children’s bare feet symbolize poverty, which is not explained but can be deduced through context). f. There may be some simple analogies or allusions to other works. 3. a. Characters are complex with multiple motives and/or inner conflicts. b. Characterization is implied through subtle actions, others’ reactions, and oblique dialogue.	Research shows that concrete passages are more comprehensible and easier to recall than abstract passages (Sadoski, Goetz, & Fritz, 1993). Comprehension for concrete passages also increases in relation to how easily the reader can imagine the contents of the text (Riding & Taylor, 1976). Characterization, in particular, plays a role in a text’s difficulty. When a character’s actions are clearly linked to the character’s emotional state, the text is much more readily comprehensible (Gillioz, Gygax, & Tapiero, 2012). Similarly, readers draw inferences from descriptions of a character's actions and stated preferences (i.e., descriptions of specific traits as being either positive or negative) (Rapp & Mensink, 2011). However, when a character exhibits behavior that is inconsistent with a perceived trait, the characterization takes longer for readers to process and comprehend (Sparks & Rapp, 2011). An increase in dialogue between characters has a similar effect, as tested readers’ response times to items about dialogue scenes were slower than for nondialogue scenes (Long & De Ley, 2000).

Difficulty Factor	Passage Metric Description	Grade-Level Details (Sample for Grades 9–10)	Research-Based Evidence
		c. The setting is used to reveal the theme. d. Setting conveys mood or tone, which is crucial to understanding the implicit theme. e. Reader may need to understand historical context to fully comprehend text. f. Actions have subtle and/or complex meanings, the effects of which may not be immediately realized. g. Symbols are complex, uncommon, and/or make assumptions about students' historical, scientific, or literary knowledge. h. There may be complex analogies or allusions to other works.	Beyond-text inferences involving aspects of stories such as morals, authors' messages, and relations to the readers' lives proved the most difficult for students (McConaughy, 1985). The use of figurative language and meanings also increases the difficulty of a text (Rommers, Dijkstra, & Bastiaansen, 2013). It is easier to understand texts when their words stand for their literal meanings. Figurative language such as satire, irony, and allusions are more difficult to interpret than figurative language like imagery or metaphors (Fisher, Frey, & Lapp, 2012).
Structure	1. Clear, consistent narrative structure, single point of view, events in chronological order 2. One factor varies (structure, point of view, chronology) 3. Two or more factors vary (avoid requiring graphics for comprehension for accessibility reasons)	1. Story is presented in a straightforward fashion without any shifts in time or narrator. At this grade level, this includes significant digression into details and setting, as long as the chronology is consistent. 2. a. Narrator shifts with a clear signal that he or she is doing so. b. Story includes simple chronology shifts, such as clearly introduced flashbacks or memories. c. Structure varies with a mixture of prose and verse or progresses in a nonlinear fashion. 3. a. Narrator shifts but may not give a clear signal that he or she is doing so. b. Story includes complex chronology shifts, such as flashbacks or memories. c. Structure varies with a mixture of prose and verse or progresses in a nonlinear fashion.	Research shows that texts structured in a linear and/or hierarchical manner are easier to comprehend (Calisir & Gurel, 2003). A number of aspects of text structure affect the ease of comprehension, including shifts in perspective (Fisher, Frey, & Lapp, 2012) and shifts in character (Rich & Taylor, 2000). Flashbacks and narrator changes in a story significantly impact readers' abilities to recall or retell stories, with more flashbacks and more narrator changes throughout a story compounding this effect (Kucer, 2010).
Language	1. Simple, common word choice; explicit and literal use 2. May include unfamiliar vocabulary, abstract meaning, figurative, ironic, or sarcastic use	1. Uses high-frequency, grade-appropriate vocabulary that relies on denotative meaning. Minimal use of literary devices. Syntax is clear and consistent. 2. a. Uses unfamiliar, above-grade-level words b. Uses at-grade-level words with intended multiple connotations in order to convey multiple meanings	Texts that use common, high-frequency words are easier to understand than texts that use archaic or unfamiliar words. As the amount of familiar vocabulary increases, so does the level of text comprehension (Schmitt, Jiang, & Grabe, 2011).

Difficulty Factor	Passage Metric Description	Grade-Level Details (Sample for Grades 9–10)	Research-Based Evidence
	3. Generally dense, using figurative or purposefully ambiguous, often unfamiliar language	c. Uses common colloquialisms and/or simple dialect d. Uses simple literary devices and figurative language 3. a. Words are unfamiliar, archaic, or academic b. Some words cannot be fully comprehended with context clues c. Uses authentic, complex dialect, colloquialisms, and/or vernacular, which may make assumptions about students' prior experience d. Uses complex or abstract figurative language or literary devices	Texts that use unfamiliar language (e.g., Old English), and/or unfamiliar cultural references are more difficult to understand (Fisher, Frey, & Lapp, 2012). Archaic, formal, and domain-specific vocabulary is more difficult than casual or familiar vocabulary (Fisher, Frey, & Lapp, 2012). Both commonness of words and a reader's prior experience impact comprehension. That is, those who read texts with easy vocabulary and are familiar with the topic are able to more easily recall and summarize a text (Freebody & Anderson, 1983).
Total Score			
Key	1. Scores below 5 indicate easy content. 2. Scores from 5–8 indicate medium-difficulty content. 3. Scores from 9–12 indicate difficult content.		

The specifications help test developers create or select passages that will support a range of difficulty, furthering the goal of measuring the full range of performance found in the population, but remaining on grade level.

Item Specifications

Both ELA and mathematics item specifications guide the RISE item development process. To support the claims in mathematics, the specifications begin by grouping the practices defined in the standards into three practice clusters as follows:

- Practice Cluster 1: Use Mathematics to Solve Problems
  - MP1: Make sense of problems and persevere in solving them.
  - MP4: Model with mathematics.
  - MP5: Use appropriate tools strategically.
- Practice Cluster 2: Use Mathematical Reasoning
  - MP2: Reason abstractly and quantitatively.
  - MP3: Construct viable arguments and critique the reasoning of others.
  - MP6: Attend to precision.
- Practice Cluster 3: Use Characteristics of Problems to Generalize
  - MP7: Look for and make use of structure.
  - MP8: Look for and express regularity in repeated reasoning.

Item specifications indicate the mathematics practices implied in each standard. Specifications in mathematics include the following:

- **Content Limits.** This section delineates the specific content measured by the standard and the extent to which the content is different across grade levels. In mathematics, for example, content limits can include acceptable denominators, number of place values for rounding or computation, acceptable shapes for geometry standards, etc.
- **Acceptable Response Mechanisms.** This section identifies the various ways in which students may respond to a prompt, such as multiple-choice, graphic response, proposition response, equation response, and multiple-select items. The identified acceptable response mechanisms were identified with accessibility concerns taken into consideration. For example, a graphic response item should only be used when the standard or task demand requires a graphic representation (e.g., graphing a system of equations). Other items, such as multiple-choice, can still use static images that work for all student populations.
- **Mathematics Practice Cluster.** For mathematics, the practices described in the standards have been grouped into clusters of practices. The item specifications outline to which practice cluster (PC) or clusters a particular standard could be aligned: PC1, PC2, PC3, or none.
- **Depth of Knowledge.** The task demands of each standard can be classified as DOK 1, DOK 2, or DOK 3.
- **Task Demands.** In this section, the standards are broken down into specific task demands aligned to each standard. Task demands denote the specific ways in which students will provide evidence of their understanding of the concept or skill. In addition, each task demand is assigned appropriate response mechanisms, DOK, and PCs specifically relevant to that particular task demand.
- **Relationship to Range Achievement-Level Descriptors (ALDs).** In this section, each task demand is further discussed considering the Range ALDs. Each task demand corresponds to part of a particular standard, and the discussion of the Range ALDs demonstrates how that task demand relates to a student's level of proficiency with respect to the particular standard.
- **Examples and Sample Items.** In this section, sample items are delineated along with their corresponding expected difficulties (easy, medium, and difficult). Notes for modifying the difficulty of each task demand are detailed with suggestions for the item writer. The suggestions for adapting the difficulty based on the task demands are research-based and have been reviewed by both content experts and a cognitive psychologist.

Exhibit E and Exhibit F provide samples of the item specifications developed by content experts for grade 5 ELA and grade 3 mathematics.

Exhibit E: Sample Item Specifications for Grade 5 ELA

Content Standard	**Literacy RI.5.1:** Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.
Content Limits	Items may ask the student to use phrases or sentences from the text to explain what the text states explicitly or implicitly. Items may require the student to draw inferences about the text.
Acceptable Response Mechanisms	Hot Text • Requires the student to select words or phrases from the text to answer questions using explicit information in the text as support • Requires the student to select an inference from four choices AND then to select words or phrases from the text to support the inference (Two-Part Hot Text) Multiple-Choice • Requires the student to select from four choices to answer questions using direct quotes from the text as support
DOK	1, 2

<table>
<tr><th colspan="5">DOK Demands</th></tr>
<tr><th>DOK</th><th colspan="2">Task demand</th><th colspan="2">Response mechanism</th></tr>
<tr><td>DOK 1</td><td colspan="2">Identify details that support a statement in the text where both the statement and the details are explicit.</td><td colspan="2">1. Hot Text Response
2. Multiple-Choice Response</td></tr>
<tr><td>DOK 2</td><td colspan="2">Provide text-based support for an inference drawn from the text. The item writer may or may not provide the inference for the student.</td><td colspan="2">1. Hot Text Response
2. Multiple-Choice Response</td></tr>
<tr><td>DOK 3</td><td colspan="2">N/A</td><td colspan="2"></td></tr>
<tr><th>Item Models</th><th>Sample Item</th><th>Difficulty</th><th>Notes, Comments</th><th>Passage</th></tr>
<tr><td>DOK 1</td><td>What is the primary reason many schools are offering healthier options in school lunches?

[Multiple-Choice]</td><td>Easy</td><td>The student must interpret the information provided in the passage in order to answer the question. Although different schools are making different decisions, the text explicitly states that schools are “making an effort to change kids’ eating habits” in response to the increasing number of overweight children in the U.S. Students will be provided with four direct quotes from the passage and must identify the correct support. The item difficulty is easy because the connection between the decision and the reason is provided explicitly in the passage.

Difficulty: Choose the quote that explicitly addresses the question in the stem.</td><td>Food for Thought</td></tr>
<tr><td>DOK 1</td><td>Select two phrases from the passage that show the changes that schools are making to the lunches they offer to students.

[Hot Text]</td><td>Medium</td><td>The statement that schools are making changes is made explicitly in the passage, making this is a low complexity item. The student will be asked to select multiple pieces of evidence from an excerpt of the passage. The student must read closely to distinguish between changes being made by schools and changes being suggested by nutritionists, increasing the difficulty of the item.

Difficulty: Select two phrases from among four paragraphs that explicitly support the idea provided.</td><td>Food for Thought</td></tr>
<tr><td>DOK 2</td><td>Which sentence from the text shows that parents would most likely agree with the idea that it is better for students to complete an e-day on a snow day than to make up the day at the end of the year?</td><td>Easy</td><td>The student must use details from the text to show that parents most likely prefer an idea. The student will be provided with four direct quotes from the text and must interpret their meaning in order to determine which one supports the provided inference. Although the student must support an inference, the inference is provided, reducing the difficulty of the item.</td><td>News Debate: Snowed Out!</td></tr>
</table>

	[Multiple-Choice]		Difficulty: Select the quote from the passage that provides explicit support for the inference drawn in the stem.	
DOK 2	Part A: How would student Patrick Long *most likely* want to spend his time on a day his school is closed due to a power outage? Part B: Which sentence from the text best supports your answer in Part A. [Two-Part Hot Text]	Medium	Part A includes four possible activities that Patrick would engage in. Distractors include plausible but incorrect answers. Part B includes four direct quotes from the text. The item requires the student to analyze the text and then to make an inference about how Patrick would apply his feelings about snow days to other causes for school closing. Although the student must make an inference, increasing the difficulty of the item, the inference to be made directly parallels explicit evidence in the text; thus, the difficulty is medium. Difficulty: Complete the inference in the stem based on explicit details in the text; then, support the inference with a direct quote from the text.	*News Debate: Snowed Out!*
DOK 2	Part A: Based on the information in the text, how are parents *most likely* to feel about how to make up school days missed due to snow? Part B: Which sentence from the text best supports your answer in Part A? [Two-Part Hot Text]	Hard	Part A includes four possible explanations of parents' opinions on the issue. Distractors include multiple opinions presented in the text. Part B includes four direct quotes from the text. This item requires the student to interpret information regarding how make-up days at the end of the school year might impact families' travel plans in order to infer how parents will feel about the issue. The difficulty of this item is hard because the inference to be made requires the student to sift through multiple details and opinions. Students must additionally support their selection with evidence in the text, requiring them to identify which detail must be used in order to make the correct inference. Difficulty: Complete the inference in the stem based on implicit details in the text; then, support the inference with a direct quote from the text.	*News Debate: Snowed Out!*

Exhibit F: Sample Item Specifications for Grade 3 Mathematics

Content Standard	**Math.Content.3.G.A.1:** Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.
Content Limits	Shapes include rhombuses, rectangles, squares, parallelograms, trapezoids, quadrilaterals (p. 13 of progressions document).

Acceptable Response Mechanisms	Table match response - May require sorting and classifying shapes Multi-select response or multiple-choice response - May require selecting shape(s) with given attributes Graphic response - May require constructing shapes with given attributes
Mathematics Practice Cluster	PC2
DOK	1, 2, 3

	Model Task
Context	Any situation where students apply knowledge of attributes and categories to classify and draw shapes

	DOK Demands					
DOK	**Task demand**	**Response mechanism**	**PC1**	**PC2**	**PC3**	**None**
DOK 1	Identify shapes based on given attributes.			x		
DOK 2	Use a set of qualifications to construct a shape. Classify shapes based on attributes.	1. Graphic response 2. Drag-and-drop response		x		
DOK 3	Sort the shapes shown into two groups with similar features; then explain why you grouped them the way you did.	1. Proposition response		x		

	Example
Context	A set of shapes is shown.
Context easier	Limit number of shapes in the set. Use only common shapes in traditional format.
Context more difficult	Increase number and types of shapes. Include different orientations, such as rotated figures.

Item Models	**Sample Item**	**Difficulty**		**Notes, Comments**
DOK 1	A set of shapes is shown. Select all shapes that are rectangles.	Easy		Identifying shapes with given attributes
DOK 2	A set of quadrilaterals is shown. Construct a quadrilateral that is not a rectangle.	Medium		Constructing shapes based on given attributes

DOK 2	A set of shapes is shown. Place each shape in the correct category. Some shapes may not be used.	Hard		Categorizing shapes based on attributes
DOK 3	A set of shapes is shown. Sort the given shapes into two categories. What are the common characteristics of the shapes in category one? What are the common characteristics of the shapes in category two?	Medium		Categorizing shapes based on given attributes. Explaining process used in categorizing shapes.

4.1.2 SCIENCE CLUSTERS

The cluster-based science assessments were first administered online in grades 6–8 in spring 2018 and in grades 4–5 in spring 2021.

CAI developed the Shared Science Assessment Item Bank in collaboration with the states that were part of the MOU using a rigorous, structured process that engaged stakeholders at critical junctures. This process was managed by CAI's Item Tracking System (ITS), which is an auditable content-development tool that enforces rigorous workflow and captures each item change and comment. Reviewers, including internal CAI reviewers or stakeholders in committee meetings, can review items in ITS as they will appear to the student, with all accessibility features and tools.

The process begins with the definition of item specifications and continues with

- selection and training of item writers;
- writing and internal review of items;
- review by state personnel and stakeholder committees;
- markup for translation and accessibility features;
- field testing; and
- post-field-test reviews.

Each of these steps has a role in ensuring that the items can support the claims on which they will be based. Exhibit G describes how each step contributes to these goals. Each step in the process is discussed in more detail below.

Exhibit G: Summary of How Each Step of Development Supports the Validity of Claims

	Supports alignment to the standards	Reduces construct-irrelevant variance through universal design	Expands access through linguistic and other supports
Item specifications	Specifies item interactions, content limits, and guidelines for meeting task demands and levels of cognitive engagement requirements and adjusting difficulty.	Avoids the use of any item interactions with accessibility constraints and provides language guidelines. Allows for multiple response modes to accommodate different styles.	
Selection and training of item writers	Ensures that item writers have the background to understand the standards and	Training in language accessibility, bias, and	

	Supports alignment to the standards	Reduces construct-irrelevant variance through universal design	Expands access through linguistic and other supports
	specifications. Teaches item writers about selection of item interactions for measurement and accessibility.	sensitivity helps item writers avoid unnecessary barriers.	
Writing and internal review of items	Checks content alignment and evaluates and improves overall quality.	Eliminates editorial issues and flags and removes bias and accessibility issues.	
Markup for translation and accessibility features		Adds universal features, such as text-to-speech (TTS) for science that reduce barriers.	Adds TTS, braille, ASL, translations, and glossaries.
Review by state personnel and stakeholder committees	Checks content and cognitive complexity alignment; evaluates and improves overall quality.	Flags sensitivity issues.	
Field testing	Provides statistical checks on quality and flags issues.	Flags items that appear to function differently for subsequent review for issues.	May reveal usability or implementation issues with markup.
Post-field-test reviews	Final, more focused check on flagged items. Rubric validation ensures that scoring reflects standards.	Final, focused review on items flagged for differential item functioning (DIF).	

Science Cluster Item Specifications

CAI worked with a group of states, psychometricians, and science experts, including the authors of the Next Generation Science Standards (NGSS), to develop powerful innovative solutions to the challenges of measuring three-dimensional science standards based on the National Research Council's *A Framework for K–12 Science Education* (2012). Participating states included Connecticut, Hawaii, Idaho, Montana, Oregon, Rhode Island, Utah, Vermont, West Virginia, and Wyoming. New Hampshire, North Dakota, and South Dakota participated in some activities. This collaboration yielded item specifications for performance expectations (PEs), sample item clusters for some specifications, and hundreds of science item clusters and stand-alone items in various stages of development. Under this collaboration, utilizing guidelines for item specifications proposed by WestEd in collaboration with the Council of Chief State School Officers (CSSO), state members, and content experts (CCSSO, 2015), states developed item specifications jointly. Utah's item specifications were also reviewed and approved by Utah educators and USBE to ensure adherence to Utah's Science with Engineering Education (SEEd) standards, which are mostly cross-walked with NGSS PEs used by other MOU states.

Item specifications are documents designed to guide item writers as they craft test questions and stakeholders as they review those items. These specifications are intended to serve writers as a roadmap to facilitate the creation of items that are properly aligned to the three dimensions comprising each science standard and that together form coherent item clusters. Exhibit H provides a sample of the item specifications developed by content experts for a middle school standard. Item specifications in science include the following:

- **Standard.** This identifies the standard being assessed.
- **Dimensions.** This identifies the Science and Engineering Practices (SEPs), Crosscutting Concepts (CCCs), and Disciplinary Core Ideas (DCIs) that the standard assesses.

- **Clarifications and Content Limits.** This delineates the specific content that the standard measures and the parameters in which items must be developed to assess the standard accurately, including the lower and upper complexity limits of items. Specifically, content limits refine the intent of the standard and provide limits of what may be asked of test takers. For example, content limits may identify the specific formulae that students are expected to know or not know.
- **Science Vocabulary.** This section identifies the relevant technical words that students are expected to know, and related words that they are explicitly not expected to know. These categories should not be considered exhaustive, as the boundaries of relevance are ambiguous, and the list is limited by the imagination of the writers.
- **Content/Phenomena.** This section provides examples of the types of phenomena that would support the effective items related to the standard in question. In general, these are guideposts, and item writers seek comparable phenomena, rather than drawing on those within the documents.
- **Task Demands.** In this section, the standard and associated evidence statements are broken down into specific task demands aligned to each standard. Task demands denote the specific ways in which students will provide evidence of their understanding of the concept or skill. Specifically, the task demands identify the types of interactions and activities that item writers should employ. Each item should be clearly linked to one or more of the task demands, and the verbs guide the types of interactions writers might employ to elicit the student response.

Exhibit H: Sample Science Item Cluster Specifications for a Middle School Standard

Standard	**6.1.2** **Develop and use a model** to describe the role of gravity and inertia in orbital motions of objects in our solar system.		
Dimensions	**Developing and Using Models** • Develop and use a model to describe phenomena.	**ESS1.A: The Universe and Its Stars** • The Earth and its solar system are part of the Milky Way galaxy, which is one of many galaxies in the universe. **ESS1.B: Earth and the Solar System** • The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them. • The solar system appears to have formed from a disk of dust and gas, drawn together by gravity.	**Systems and System Models** • Models can be used to represent systems and the interactions in a system.

Clarifications and Content Limits	**Assessment Clarifications** • Emphasis is on understanding that inertia and gravity work together to keep the objects of the Solar System (the planets, the moons, the space station, and satellites) in orbit. The emphasis is on conceptual understanding that inertia is a property that works with gravity to keep objects in orbit. The concept of, and the term *balance* is included in this definition. • Understanding that gravity is a force and is a function of mass and distance. • Emphasis is on knowing the mass of an object and not the concept of weight, which is a force. At this grade level, those terms can be used interchangeably. **Assessment Content Limits** • <u>Students do not need to know</u>: The mathematical formula for calculating force, inertia, gravity, or Kepler's law, or how to calculate trajectories or perform any computational analysis.
Terms That Do Not Need Definition	inertia, gravity, force, mass, orbit, Earth, moon, names of planets
Terms That MUST Be Defined	perihelion, aphelion, names of specific moons, names of space shuttles, moment of inertia, Kepler's laws of planetary motion, black hole, specific facts on any planets or moons, computational analysis on any relative motions
Phenomena	
Context/ Phenomena	Example phenomena for 6.1.2: • Satellites orbit Earth but can fall out of orbit (Skylab, UART satellite). • Halley's Comet can be seen as it travels past Earth every 75–76 years. • Rings are present around some planets. • Mars has two moons at different distances from the planet, which orbit the planet at different speeds. • Objects that are very distant can still be held in orbit around the sun. • A belt of rocks and gases circles the sun between Mars and Jupiter.
Task Demands	
1. Identify from a collection, including distractors, the components of a model that include depictions of celestial bodies and/or man-made objects and the forces among them.	
2. Assemble or complete, from a collection of potential model components, an illustration, diagram, or description that is capable of representing forces and their influences on the motion of celestial bodies and/or man-made objects in orbit. This <u>does not</u> include the simple labeling of an existing diagram.	
3. Make predictions about the effects of changes in mass/distance/how fast an object travels in a given model on other objects in the system. Predictions can be based on manipulating model components, completing illustrations, or selecting from a list including distractors.	
4. Summarize data or evidence to highlight trends, patterns, or correlations.	
5. Describe, select, or identify the relationships among components of a model that describe the role of gravity and/or inertia in orbital motions, or explains how gravity and/or inertia affect the orbital motion of objects in our solar system.	

The specifications help test developers create item clusters that will support a range of difficulties, furthering the goal of measuring the full range of performance found in the population, but remaining at grade level.

4.1.3 TARGET BLUEPRINTS

Summative Target Blueprints

Blueprints specify a range of items to be administered in each reporting category (or strand). The target blueprints include the requirements for the total test length and the minimum and maximum number of operational items for each score reporting category. Allowing a range in the number of required items allows the computer-adaptive testing (CAT) algorithm the flexibility to select items that balance matching items to the ability of the student while matching the blueprints.

To ensure that the CATs accurately reflect the content of the curriculum standards, the blueprints require that at least 50% of the benchmarks for each reporting category be assessed on each test. In the aggregate, however, all the benchmarks are assessed. Providing the student performance on all benchmarks at an aggregate level is very beneficial for instructional purposes. The blueprints require a minimum of eight points for each reporting category.

Table 42 through Table 44 present the summative test blueprint requirements specified in the Test Delivery System (TDS) for the 2020–2021 school year. Each test must include items within the range of the minimum and maximum number of items for the total test and for the score-reporting categories.

Note: For ELA and mathematics, the only summative blueprint changes after the spring 2014 operational field test were made to Secondary Mathematics I. The test length dropped from 50 operational items to 40 operational items and 10 embedded field-test items to five embedded field-test items. This change was made in response to feedback from the field that the previous administration took too much testing time. CAI worked with USBE to modify the blueprints, as noted in the tables below, often by combining reporting categories. The science blueprints presented below were adopted after the adoption of the updated science standards.

Table 42: Minimum/Maximum Percentages of Test Items by Score-Reporting Category for Summative ELA

Strands	Min	Max
Grade 3 ELA (44 scored items)		
Reading Standards for Literature	19%	23%
Reading Standards for Informational Text	19%	37%
Listening Comprehension (informational)	19%	37%
Language (vocabulary items, 2 editing task sets)	16%	19%
DOK 1	21%	30%
DOK 2	27%	41%
DOK 3	24%	34%
Grade 4 ELA (45 scored items)		
Reading Standards for Literature	19%	23%
Reading Standards for Informational Text	14%	37%
Listening Comprehension (informational)	19%	37%
Language (vocabulary items, 2 editing task sets)	16%	19%

Strands	Min	Max
DOK 1	21%	30%
DOK 2	27%	41%
DOK 3	24%	34%
Grade 5 ELA (44 scored items)		
Reading Standards for Literature	19%	23%
Reading Standards for Informational Text	26%	37%
Listening Comprehension (informational)	19%	37%
Language (vocabulary items, 2 editing task sets)	16%	19%
DOK 1	21%	30%
DOK 2	27%	41%
DOK 3	24%	34%
Grade 5 Writing (1 prompt)		
Writing	100%	100%
DOK 4	100%	100%
Grade 6 ELA (46 scored items)		
Reading Standards for Literature	18%	22%
Reading Standards for Informational Text	24%	36%
Listening Comprehension (informational)	18%	36%
Language (vocabulary items, 2 editing task sets)	16%	18%
DOK 1	21%	30%
DOK 2	27%	41%
DOK 3	24%	34%
Grade 7 ELA (46 scored items)		
Reading Standards for Literature	18%	22%
Reading Standards for Informational Text	24%	36%
Listening Comprehension (informational)	18%	36%
Language (vocabulary items, 2 editing task sets)	16%	18%
DOK 1	21%	30%
DOK 2	27%	41%
DOK 3	24%	34%
Grade 8 ELA (47 scored items)		
Reading Standards for Literature	18%	22%
Reading Standards for Informational Text	24%	36%
Listening Comprehension (informational)	18%	36%

Strands	Min	Max
Language (vocabulary items, 2 editing task sets)	16%	18%
DOK 1	21%	30%
DOK 2	27%	41%
DOK 3	24%	34%
Grade 8 Writing (1 prompt)		
Writing	100%	100%
DOK 4	100%	100%

Table 43: Minimum/Maximum Percentages of Test Items by Score-Reporting Category for Summative Mathematics

Domains	Min	Max
Grade 3 Mathematics (45 scored items)		
Operations and Algebraic Thinking	29%	38%
Number and Operations in Base Ten	18%	22%
Number and Operations—Fractions	27%	31%
Measurement and Data and Geometry	18%	22%
DOK 1	18%	31%
DOK 2	38%	58%
DOK 3	9%	20%
Grade 4 Mathematics (50 scored items)		
Operations and Algebraic Thinking	18%	22%
Number and Operations in Base Ten	28%	32%
Number and Operations—Fractions	28%	32%
Measurement and Data and Geometry	16%	22%
DOK 1	22%	44%
DOK 2	44%	58%
DOK 3	12%	22%
Grade 5 Mathematics (50 scored items)		
Operations and Algebraic Thinking	16%	20%
Number and Operations in Base Ten	30%	36%
Number and Operations—Fractions	28%	34%
Measurement and Data and Geometry	18%	22%

Domains	Min	Max
DOK 1	16%	28%
DOK 2	50%	64%
DOK 3	10%	24%
Grade 6 Mathematics (50 scored items)		
Ratios and Proportional Relationships (Segment 1)	28%	32%
The Number System (Segment 1)	18%	22%
Expressions and Equations (Segment 1)	28%	34%
Geometry/Statistics and Probability (Segment 2)	16%	20%
DOK 1	18%	32%
DOK 2	46%	62%
DOK 3	8%	20%
Grade 7 Mathematics (50 scored items)		
Ratios and Proportions	22%	26%
Expressions and Equations	16%	20%
The Number System	18%	22%
Geometry	18%	22%
Statistics and Probability	18%	22%
DOK 1	12%	24%
DOK 2	48%	60%
DOK 3	20%	26%
Grade 8 Mathematics (50 scored items)		
Functions	20%	24%
Expressions and Equations	20%	24%
Geometry/The Number System	34%	40%
Statistics and Probability	16%	20%
DOK 1	20%	30%
DOK 2	40%	50%
DOK 3	20%	26%
Secondary Mathematics I (40 scored items)		
Algebra	30%	35%
Number and Quantity/Functions/Statistics and Probability	33%	38%
Geometry	30%	35%
DOK 1	16%	24%
DOK 2	44%	56%

Domains	Min	Max
DOK 3	24%	28%

Table 44: Minimum/Maximum Percentages of Test Items by Score-Reporting Category for Summative Science

Strands	Min	Max
Grade 4 Science (8 scored item clusters)		
Strand 4.1	25%	25%
Strand 4.2	25%	25%
Strand 4.3	25%	25%
Strand 4.4	25%	25%
Grade 5 Science (8 scored item clusters)		
Strand 5.1	38%	38%
Strand 5.2	38%	38%
Strand 5.3	25%	25%
Grade 6 Science (8 scored item clusters)		
Strand 6.1	25%	25%
Strand 6.2	25%	25%
Strand 6.3	25%	25%
Strand 6.4	25%	25%
Grade 7 Science (10 scored item clusters)		
Strand 7.1	20%	20%
Strand 7.2	20%	20%
Strand 7.3	20%	20%
Strand 7.4	20%	20%
Strand 7.5	20%	20%
Grade 8 Science (10 scored item clusters)		
Strand 8.1	30%	30%
Strand 8.2	30%	30%
Strand 8.3	20%	20%
Strand 8.4	20%	20%

Interim Target Blueprints

The two types of interim test blueprints specified in the TDS beginning with the fall 2015 administration of interim assessments are presented in Appendix 4-A, Interim Target Blueprints and Summary of Modular Benchmarks. The

Classroom Period test was designed to administer items from all reporting categories and represents a roughly 70% version of the full summative test. Note that only the Classroom Period tests in grades 3–8 for ELA, and grades 3–8 for mathematics and Secondary Mathematics I have been available since fall 2019. Modular Benchmarks for science clusters have been available since fall 2020, administering one item cluster per test.

4.1.3.1 Reading Score-Reporting Categories

Reading Standards for Literature

The reporting subscores in Reading Standards for Literature represent the combination of student performance across Key Ideas and Details, Craft and Structure, and the Integration of Knowledge and Ideas. In Reading Standards for Literature, the standards assess the skills and ability used to identify key ideas and details: to determine how literary elements (theme, setting, characterization, conflict, [sequence of] plot) and literary devices (personification, simile, metaphor, irony, allusion, rhyme, repetition, etc.) are used, developed, and conveyed for comprehending the text; to show understanding of the craft and structure of a narrative or a poem by understanding and differentiating between the literal and non-literal meaning of words in text, identifying author’s purpose, identifying the point of view, understanding the structure of a text (parallel plots, flashback, pacing), and understanding how the mood of a text is created and sustained through language; and to show understanding of how to use reading skills to discover connections made between stories and/or across genres by comparing/contrasting elements of similarly themed stories, including characters, settings, etc., or the interaction of narrative and poetic elements and devices.

Reading Standards for Informational Text

The reporting subscores in Reading Standards for Informational Text represent the combination of student performance across Key Ideas and Details, Craft and Structure, and the Integration of Knowledge and Ideas.

In Reading Standards for Informational Text, the standards assess the skills and ability used to identify key ideas and details: to make inferences about the information contained in a text, identify the main idea(s) and use details to support the main idea(s), summarize the text, make connections about how information is presented within or across texts about similar topics, and show understanding of how ideas develop within a text, relying on the main ideas and details presented; to show understanding of the craft and structure of an informational text by understanding the meaning of unfamiliar words and how the use of the words helps to convey meaning and tone, understand the author’s purpose, identify the author’s point of view, recognize how different authors can present contrary viewpoints on the basis of similar information and context, and understand the structure of a text (chronological, compare/contrast, cause/effect, problem/solution) and why that is the most appropriate way to organize the text; and to show understanding of how to use reading skills to integrate information within or across texts, compare/contrast information within and across texts, and synthesize information garnered from text features.

Listening Comprehension (Informational Text)

The reporting subscores in Listening Comprehension of Informational Text represent the combination of student performance across the standards within Comprehension and Collaboration.

In Comprehension and Collaboration, the standard assesses the comprehension skills used when listening to information presented in text that is read aloud or in various media formats. Skills and abilities include being able to determine the main idea(s) and details, summarize the main ideas and key details, ask and answer questions, and determine the validity of an author’s argument and/or point of view based on evidence, and either supporting or refuting those claims.

Writing

Summative writing tests are administered in grades 5 and 8. Students receive a prompt for either opinion/argumentative or informational/explanatory genres of expression.

In Writing, the standards assess the skills and ability used for understanding and identifying the text type and purposes: to prewrite (gather ideas/outline, organize supporting ideas, determine the thesis or plot, define the structure) and to develop the argumentative or informational piece with facts and details that support a specific point of view and sustain the main idea/thesis throughout the piece. Additionally, the standards assess the skills and ability used for the production and distribution of writing: revising to fully develop and present a logical, well-structured, well-organized written work using technology or an appropriate forum for publishing with an understanding of who the audience is and for what purpose the piece is authored.

Language

The Language subscores represent the combination of student performance of language across the standards of the Conventions of Standard English, Knowledge of Language, and Vocabulary Acquisition and Use.

In Language, the standards assess the skills and ability used for demonstrating a command of the conventions of writing (correct grammar, usage, capitalization, punctuation, and spelling) in listening, speaking, and reading, as well as student-generated essays for demonstrating knowledge of language (varied sentence structure, consistency in style and tone); and for applying techniques (using context or the root of the word, using a dictionary/thesaurus) to decode meanings and nuances of unknown words and phrases.

Key Ideas and Details (Literature and Informational Text)

The Key Ideas and Details in Literature and Informational Text subscores represent the combination of student performance in reading text closely to determine what the text says explicitly and drawing logical inferences from the text; answering questions that demonstrate understanding of the text by citing details from the text; being able to determine and/or summarize the main idea or theme of a text; understanding how a text develops; and discovering connections within or across texts and narratives.

Craft and Structure (Literature and Informational Text)

The Craft and Structure in Literature and Informational Text subscores represent the combination of student performance in reading text closely to determine the meaning of unknown or above-grade words and phrases used in the text (to include technical, connotative, and figurative meanings) and the impact that word choice has on the meaning and tone of the text; to analyze the structure of the text (sentence structure, organization, etc.) to determine its overall effect on the purpose of a text; and to evaluate how the point of view of a text affects its content and style.

Integration of Knowledge and Ideas (Literature and Informational Text)

The Integration of Knowledge and Ideas in Literature and Informational Text subscores represent the combination of student performance in reading text closely to integrate and evaluate content presented in diverse media and formats; to describe and assess arguments and specific claims made in a text; and to analyze how a single text or multiple texts address similar themes or topics to build knowledge or draw parallels and offer contrasts between the authors’ approaches.

Use of Information (Writing)

The Use of Information in Writing subscores represent the combination of student performance in using information from single or multiple informational texts/sources to produce a prewriting draft of an argumentative or informational essay and a substantial, revised, and final piece of cohesive writing using the prewriting activity as the basis for developing a piece into its published form.

Production and Distribution (Writing)

The Production and Distribution of Writing subscores represent the combination of student performance in writing to produce clear and concise writing in which the development, organization, and style are suitable for task, purpose, and audience; to develop and improve writing by planning, revising, editing, and rewriting; and to use technology or the appropriate medium to produce and publish writing.

4.1.3.2 Mathematics Score-Reporting Categories

The RISE mathematics assessments measure students' understanding of the standards at the end of grades 3, 4, 5, 6, 7, 8, and the Secondary Mathematics I course. These assessments measure students' proficiency in knowledge and skills and whether they are adept in demonstrating the process standards. The RISE mathematics assessments are designed to assess the following reporting categories:

Grade 3

- ***Operations and Algebraic Thinking.*** Students represent and solve problems involving multiplication and division; understand properties of multiplication and the relationship between multiplication and division; multiply and divide within 100; solve problems involving the four operations; and identify and explain patterns in arithmetic.
- ***Number and Operations in Base Ten.*** Students use place-value understanding and properties of operations to perform multi-digit arithmetic.
- ***Number and Operations—Fractions:*** Students develop understanding of fractions as numbers.
- ***Measurement and Data and Geometry.*** Students solve problems involving measurement and estimation of time intervals, liquid volumes, and masses of objects; represent and interpret data; understand concepts of area and relate area to multiplication and addition; recognize perimeter as an attribute of plane figures and distinguish between linear and area measures; and reason with shapes and their attributes.

Grade 4

- ***Operations and Algebraic Thinking.*** Students use four operations with whole numbers; understand factors and multiples; and generate and analyze patterns.
- ***Number and Operations in Base Ten.*** Students understand place value to the millions place; understand and use properties of operation with multi-digit arithmetic.
- ***Number and Operations—Fractions.*** Students understand equivalent fractions; can build fractions from unit fractions; understand decimal notation for fractions; and compare decimals and fractions.
- ***Measurement and Data and Geometry.*** Students draw and identify lines and angles; classify shapes according to properties of their lines and angles.

Grade 5

- ***Operations and Algebraic Thinking.*** Students write and interpret numerical expressions using four operations; analyze patterns and relationships.
- ***Number and Operations in Base Ten.*** Students understand the place-value system; perform operations with multi-digit whole numbers and decimals to the hundredths place.
- ***Number and Operations—Fractions.*** Students use equivalent fractions to add and subtract; use prior knowledge to understand multiplying and dividing fractions.
- ***Measurement and Data and Geometry.*** Students graph on the coordinate plane; classify two-dimensional figures and their properties.

Grade 6

- ***Ratios and Proportional Relationships.*** Students understand ratio concepts; use ratio reasoning to solve problems.

- ***Number System.*** Students apply prior knowledge to divide fractions by fractions; compute multi-digit numbers fluently; and calculate common factors and multiples.
- ***Expressions and Equations.*** Students solve one-variable equations and inequalities; represent and draw conclusions about dependent and independent variables.
- ***Geometry and Statistics and Probability.*** Students solve problems involving area, surface area, and volume; understand statistical variability; and describe statistical distributions.

Grade 7

- ***Ratios and Proportional Relationships.*** Students analyze and solve problems with proportional relationships.
- ***Number System.*** Students apply and extend prior knowledge of operations with fractions to use all four operations on rational numbers.
- ***Expressions and Equations.*** Students use properties of operation to create equivalent expressions; solve problems using numerical and algebraic expressions and equations.
- ***Geometry.*** Students draw, construct, and describe geometrical figures and their relationships; solve problems involving angle measure, area, surface area, and volume.
- ***Statistics and Probability.*** Students use random sampling to draw conclusions about populations; draw informal inferences to compare two populations; and investigate chance probability models.

Grade 8

- ***Expressions and Equations.*** Students work with radicals and integer exponents; understand the connection between proportional relationship, lines, and linear equations; and solve linear equations and pairs of linear equations.
- ***Functions.*** Students understand, solve, and compare functions; use functions to model relationships.
- ***Geometry and Number System.*** Students understand congruence and similarity; use the Pythagorean Theorem; solve problems involving volume of cylinders, cones, and spheres; and understand that numbers can be irrational and approximate that concept with rational numbers.
- ***Statistics and Probability.*** Students explore patterns of association in bivariate data.

Secondary Mathematics I

- ***Algebra.*** Students interpret, create, and graph linear and exponential expressions, equations, and inequalities with integer exponent and/or one variable; solve systems of linear equation.
- ***Number and Quantity/Functions/Statistics and Probability.*** Students reason quantitatively and use units to solve problems. Students summarize, represent, and interpret data on a single-count or measurement variable; summarize, represent, and interpret data on two categorical and quantitative variables; and interpret linear models.
- ***Geometry.*** Students explore transformation in the plane; understand congruence in terms of rigid motions; make geometric constructions; and use coordinates to prove simple geometric theorems algebraically.

4.1.3.3 Science Score-Reporting Categories

Science education, in the context of Utah's standards-driven system, consists of curricula that support student learning and attainment of the science standards and benchmarks. The Utah Core Standards provide the content foundation upon which the science curriculum should be based. The RISE science assessments are designed to assess the following reporting categories:

Grade 4

- ***Organisms Functioning in their Environment.*** Through the study of organisms, inferences can be made about environments both past and present. Plants and animals have both internal and external structures that serve various functions for growth, survival, behavior, and reproduction. Animals use different sense receptors specialized for particular kinds of information to understand and respond to their environment. Some kinds of plants and animals that once lived on Earth can no longer be found. However, fossils from these organisms provide evidence about the types of organisms that lived long ago and the nature of their environments. Additionally, the presence and location of certain fossil types indicate changes that have occurred in environments over time.
- ***Energy Transfer.*** Energy is present whenever there are moving objects, sound, light, or heat. The faster a given object is moving, the more energy it possesses. When objects collide, energy can be transferred from one object to another causing the objects' motions to change. Energy can also be transferred from place to place by electrical currents, heat, sound, or light. Devices can be designed to convert energy from one form to another.
- ***Wave Patterns.*** Waves are regular patterns of motion that transfer energy and have properties such as amplitude (maximum distance of the wave crest from equilibrium) and wavelength (spacing be-tween wave peaks). Waves in water can be directly observed. Light waves cause objects to be seen when light reflected from objects enters the eye. Humans use waves and other patterns to transfer information.
- ***Observable Patterns in the Sky.*** The Sun is a star that appears larger and brighter than other stars because it is closer to Earth. The rotation of Earth on its axis and orbit of Earth around the Sun cause observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the Sun and stars at different times of the day, month, and year.

Grade 5

- ***Characteristics and Interactions of Earth's Systems.*** Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). Within these systems, the location of Earth's land and water can be described. Also, these systems interact in multiple ways. Weathering and erosion are examples of interactions between Earth's systems. Some interactions cause landslides, earthquakes, and volcanic eruptions that impact humans and other organisms. Humans cannot eliminate natural hazards, but solutions can be designed to reduce their impact.
- ***Properties and Changes of Matter.*** All substances are composed of matter. Matter is made of particles that are too small to be seen but still exist and can be detected by other means. Substances have specific properties by which they can be identified. When two or more different substances are combined a new substance with different properties may be formed. Whether a change results in a new substance or not, the total amount of matter is always conserved.
- ***Cycling of Matter in Ecosystems.*** Matter cycles within ecosystems and can be traced from organism to organism. Plants use energy from the Sun to change air and water into matter needed for growth. Animals and de-composers consume matter for their life functions, continuing the cycling of matter. Human behavior can affect the cycling of matter. Scientists and engineers design solutions to con-serve Earth's environments and resources.

Grade 6

- ***Structure and Motion Within the Solar System.*** The solar system consists of the Sun, planets, and other objects within Sun's gravitational influence. Gravity is the force of attraction between masses. The Sun-

Earth-Moon system provides an opportunity to study interactions between objects in the solar system that influence phenomena observed from Earth. Scientists use data from many sources to determine the scale and properties of objects in our solar system.

- ***Energy Affects Matter.*** Matter and energy are fundamental components of the universe. Matter is anything that has mass and takes up space. Transfer of energy creates change in matter. Changes between general states of matter can occur through the transfer of energy. Density describes how closely matter is packed together. Substances with a higher density have more matter in a given space than substances with a lower density. Changes in heat energy can alter the density of a material. Insulators resist the transfer of heat energy, while conductors easily transfer heat energy. These differences in energy flow can be used to design products to meet the needs of society.
- ***Earth's Weather Patterns and Climate.*** All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. Heat energy from the Sun, transmitted by radiation, is the primary source of energy that affects Earth's weather and drives the water cycle. Uneven heating across Earth's surface causes changes in density, which result in convection currents in water and air, creating patterns of atmospheric and oceanic circulation that determine regional and global climates.
- ***Stability and Change in Ecosystems.*** The study of ecosystems includes the interaction of organisms with each other and with the physical environment. Consistent interactions occur within and between species in various ecosystems as organisms obtain resources, change the environment, and are affected by the environment. This influences the flow of energy through an ecosystem, resulting in system variations. Additionally, ecosystems benefit humans through processes and resources, such as the production of food, water and air purification, and recreation opportunities. Scientists and engineers investigate interactions among organisms and evaluate design solutions to preserve biodiversity and ecosystem resources.

Grade 7

- ***Forces Are Interactions Between Matter.*** Forces are push or pull interactions between two objects. Changes in motion, balance and stability, and transfers of energy are all facilitated by forces on matter. Forces, including electric, magnetic, and gravitational forces, can act on objects that are not in contact with each other. Scientists use data from many sources to examine the cause-and-effect relationships determined by different forces.
- ***Changes to Earth Over Time.*** Earth's processes are dynamic and interactive and are the result of energy flowing and matter cycling within and among Earth's systems. Energy from the Sun and Earth's internal heat are the main sources driving these processes. Plate tectonics is a unifying theory that explains crustal movements of Earth's surface, how and where different rocks form, the occurrence of earthquakes and volcanoes, and the distribution of fossil plants and animals.
- ***Structure and Function of Life,*** Living things are made of smaller structures, which function to meet the needs of survival. The basic structural unit of all living things is the cell. Parts of a cell work together to function as a system. Cells work together and form tissues, organs, and organ systems. Organ systems interact to meet the needs of the organism.
- ***Reproduction and Inheritance.*** The great diversity of species on Earth is a result of genetic variation. Genetic traits are passed from parent to offspring. These traits affect the structure and behavior of organisms, which affect the organism's ability to survive and reproduce. Mutations can cause changes in traits that may affect an organism. As technology has developed, humans have been able to change the inherited traits in organisms, which may have an impact on society.
- ***Changes in Species Over Time.*** Genetic variation and the proportion of traits within a population can change over time. These changes can result in evolution through natural selection. Additional evidence of change

over time can be found in the fossil record, anatomical similarities and differences between modern and ancient organisms, and embryological development.

Grade 8

- ***Matter and Energy Interact in the Physical World.*** The physical world is made of atoms and molecules. Even large objects can be viewed as a combination of small particles. Energy causes particles to move and interact physically or chemically. Those interactions create a variety of substances. As molecules undergo a chemical or physical change, the number of atoms in that system remains constant. Humans use energy to refine natural resources into synthetic materials.
- ***Energy is Stored and Transferred in Physical Systems.*** Objects can store and transfer energy within systems. Energy can be transferred between objects, which involves changes in the object's energy. There is a direct relationship between an object's energy, mass, and velocity. Energy can travel in waves and may be harnessed to transmit information.
- ***Life Systems Store and Transfer Matter and Energy.*** Living things use energy from their environment to rearrange matter to sustain life. Photosynthetic organisms are able to transfer light energy to chemical energy. Consumers can break down complex food molecules to utilize the stored energy and use the particles to form new, life-sustaining molecules. Ecosystems are examples of how energy can flow while matter cycles through the living and nonliving components of systems.
- ***Interactions with Natural Systems and Resources.*** Interactions of matter and energy through geologic processes have led to the uneven distribution of natural resources. Many of these resources are nonrenewable, and per-capita use can cause positive or negative consequences. Global temperatures change due to various factors and can cause a change in regional climates. As energy flows through the physical world, natural disasters that affect human life can occur. Humans can study patterns in natural systems to anticipate and forecast some future disasters and work to mitigate the outcomes.

4.1.4 ITEM SELECTION ALGORITHM

4.1.4.1 Item Selection Algorithm for the Initial Administration

The spring 2014 test administration enacted a linking design that allowed all items in the SAGE item banks to be administered to representative samples of Utah students so that the items could be calibrated and equated to a common scale. The linking design was executed using CAI's adaptive algorithm, which allows users to configure test administrations to simultaneously satisfy requirements for blueprint match and measurement precision through assignment of weights to prioritize measurement goals in item selection. For purposes of implementing the linking design, the adaptive components of the item selection algorithm were essentially turned off, so that item selection was random under the constraint of meeting blueprint specifications.

4.1.4.2 Item Selection Algorithm for the 2020–2021 Administration

CAI's adaptive algorithm takes as input two sources of information: an item pool and a test blueprint. The adaptive algorithm is then configured to execute maximally adaptive test administrations under the constraint of blueprint match. Configuration of the adaptive algorithm is critical because the composition of the item pool, which changes from administration to administration, interacts with the blueprint to influence the performance of the adaptive algorithm.

Item Pool

CAI's ability to administer various state item pools is proven. For example, CAI administered items from the Smarter Balanced item bank during the 2013 pilot test and the 2014 field test. CAI designed and built the item renderers shared by the open-source version of the test delivery engine and CAI's own version of the item-rendering software. These renderers ensure that the items appear to students exactly as they did in the field test.

Test Blueprint

Test blueprints may contain specifications from the content hierarchy (strand, benchmark, standard, etc.) and other constraints, such as DOK, item type, or any other test item attribute that may be stored.

CAI's adaptive engine supports blueprints that meet the following conditions (which have been advocated by the Consortium for Citizens with Disabilities, an umbrella group encompassing most national advocacy groups for students with disabilities and other exceptional students):

1. Every student is tested on the full range of grade-level content, with no discernible differences in the content assessed.
2. Every student is tested on items measuring the same mix of cognitively complex skills, with no discernible difference—regardless of student proficiency.
3. Every student is tested on items reflecting the full range of other aspects of the grade-level curriculum as may be appropriate for the grade and subject.
4. Students are tested on items that provide the best measurement possible within these constraints.

These four principles ensure that every student can accurately demonstrate his or her academic skills and knowledge across the entire grade-level curriculum. CAI's adaptive algorithm supports blueprints that align with these principles.

Item Selection

The adaptive algorithm, built on our partnerships with client states over the years, ensures that each student will receive a test that (1) matches the blueprint and (2) contains the items that best match their performance level, as defined by the blueprint.

To accomplish this goal, the algorithm implements a highly parameterized multiple-objective utility function that includes

- a measure of the content match to the blueprint,
- a measure of overall test information, and
- measures of test information for each reporting category on the test.

We define an objective function that measures an item's contribution to each of these objectives, weighting them to achieve the desired balance among them. The equation below sketches this objective function for a single item.

$$f_{ijt} = w_2 \left(\frac{\sum_{r=1}^{R} s_{rit} p_r d_{rj}}{\sum_{r=1}^{R} d_{rj}} \right) + w_1 \sum_{k=1}^{K} q_k h_{1k}(v_{kijt}, V_{kit}, t_k) + w_0 h_0(u_{ijt}, U_{it}, t_0)$$

Where the *w* terms represent user-supplied weights that assign relative importance to meeting each of the objectives, d_{rj} indicates whether item *j* has the blueprint-specified feature *r*, and p_r is the user-supplied priority weight for feature *r*. The term s_{rit} is an adaptive control parameter that is described below. In general, s_{rit} increases for features that have not met their designated minimum as the end of the test approaches.

The remainder of the terms represent an item's contribution to measurement precision:

- v_{kjit} is the value of item *j* toward reducing the measurement error for reporting category *k* for test taker *i* at time of selection *t*; and
- u_{ijt} is the value of item *j* in terms of reducing the overall measurement error for test taker *i* at time of selection *t*.

The terms U_{it} and V_{kit} represent the total information overall and on reporting category *k*, respectively.

The term q_k is a user-supplied priority weight associated with the precision of the score estimate for reporting category *k*. The *t* terms represent precision targets for the overall score (t_0) and each score reporting category score. The functions h(.) are given by:

$$h_0(u_{ijt}, U_{it}, t_0) = \begin{cases} au_{ijt} \text{ if } U_{it} < t_0 \\ bu_{ijt} \text{ otherwise} \end{cases}$$

$$h_{1k}(v_{kijt}, V_{kit}, t_k) = \begin{cases} c_k v_{kijt} \text{ if } V_{kit} < t_k \\ d_k v_{kijt} \text{ otherwise} \end{cases}$$

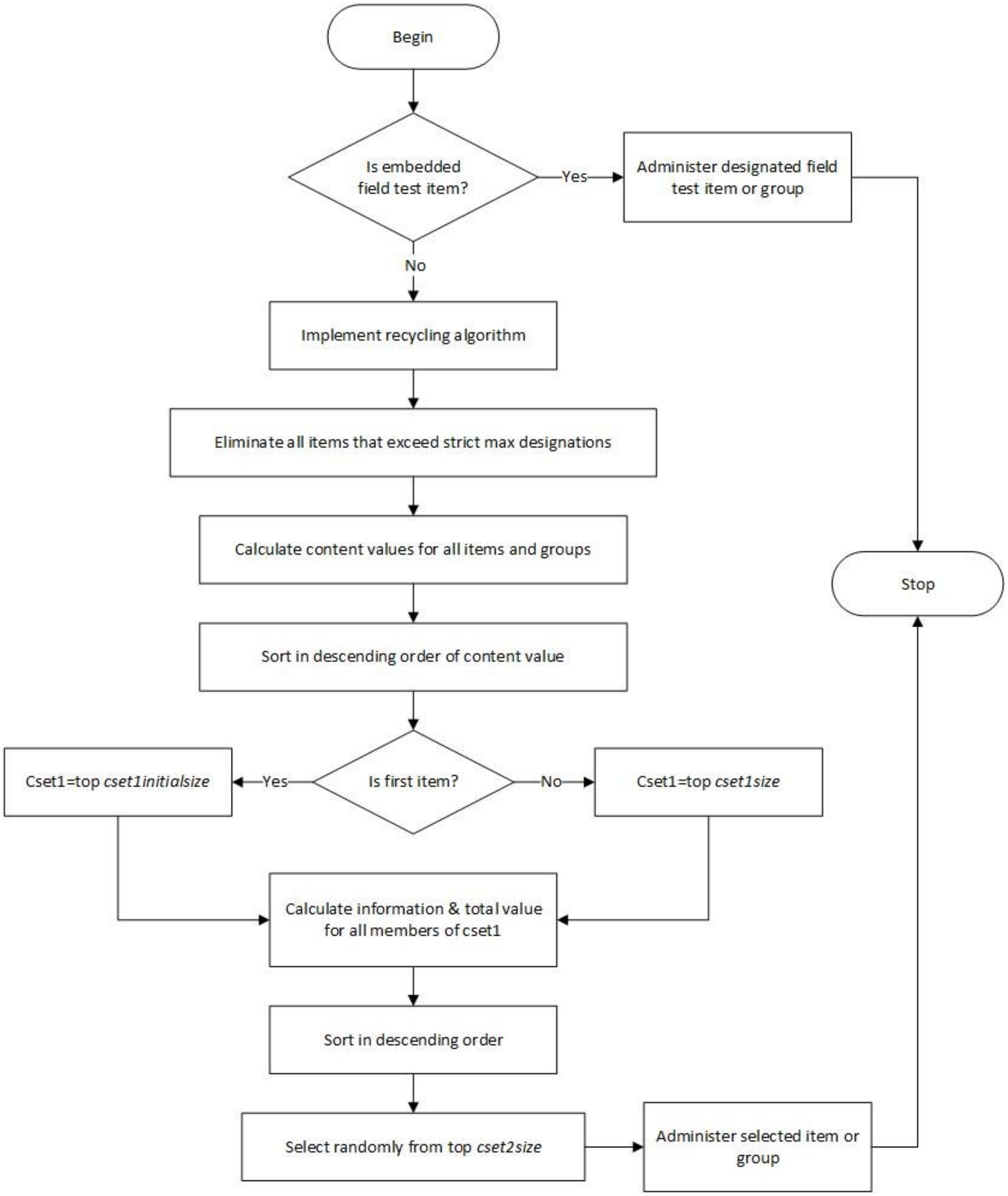
Items can be selected to maximize the value of this function. This objective function can be manipulated to produce a pure, standards-free adaptive algorithm by setting w_2 to zero or to produce a completely blueprint-driven test by setting $w_1 = w_0 = 0$. Adjusting the weights to optimize performance for a given item pool will enable users to maximize information subject to the constraint that the blueprint is virtually always met.

We note that the computations of the content values and information values generate values on very different scales and that the scale of the content value varies as the test progresses. Therefore, we normalize both the information and content values before computing the value of Equation 1.

This normalization is given by $x = \begin{cases} 1 \ if \ min = max \\ \frac{v - min}{max - min} \ otherwise \end{cases}$, where min and max represent the minimum and maximum, respectively, of the metric computed over the current set of items or item groups.

Figure 12 summarizes the item selection process. If the item position has been designated for a field-test item, then that item is administered. Otherwise, the adaptive algorithm is triggered.

Figure 12: Summary of Item Selection Process



Items (or groups of items in the case of ELA tests) are sorted by their "content value," their value toward meeting the content constraints in the blueprint. Information measures are added to the content measures, and the items are sorted based on their overall value for the objective function. The final item selection is made based on a random selection from among the small subset of items that have the highest combined content and information value.

We further note that at startup for each test administration, the item pool is customized based on the student's access needs. Any items indicated as access-limited for characteristics associated with the student are removed from the item pool at the initiation of the test; therefore, all item selection computations are based only on items to which the student has access. For example, this applies to items that have been brailled and can be delivered to students who require the accommodation of braille. Further, any items that do not have any audio files associated to them, or audio files that have an associated ASL video file, would be administered to students with the ASL accommodation.

4.1.5 BLUEPRINT MATCH

Configuration of the adaptive algorithm for the spring 2015 administration was designed to administer tests meeting blueprint specifications while also maximizing test information to student ability. In the adaptive item-selection algorithm, item selection takes place in two discrete stages: blueprint satisfaction and match-to-ability. While simulation results described in the spring 2021 Simulation Summary Report indicated that the configuration resulted in test administrations meeting all blueprint match requirements, it is also important to evaluate the blueprint match rate for actual test administrations.

The statistical information of content distribution is summarized in the blueprint match rate for all tests. Blueprints specify a range of items to be administered in each strand (reporting category) and item type. Table 45 presents the percentages of tests aligned with the test specifications. The test blueprints do not require each test to include items for every benchmark; however, almost all tests delivered covered all benchmarks in mathematics and science. The item selection algorithm delivers a test covering more benchmarks and with better precision compared with a fixed-form test. Across all grades and subjects, almost all tests met the blueprint specifications with a 100% match. The spring 2021 Simulation Summary Report is presented as Appendix 4-B, Spring 2021 Simulation Summary Report.

Table 45: 2020–2021 Blueprint Match for the Tests Delivered

Grade	Blueprint Match
Reading	
3	All subscores 100%
4	All subscores 100%
5	All subscores 100%
6	All subscores 100%
7	All subscores 100%
8	All subscores 100%
Mathematics	
3	All subscores 100%
4	All subscores 100%
5	All subscores 100%
6	All subscores 100%
7	All subscores 100%
8	All subscores 100%
SM I	All subscores 100%
Science	
4	All subscores 100%
5	All subscores 100%
6	All subscores 100%

Grade	Blueprint Match
7	All subscores 100%
8	All subscores 100%

4.2 ITEM DEVELOPMENT PROCESS

All items developed for RISE follow a rigorous development process that meets and often exceeds industry standards for best practices in assessment. Every item, written by Utah teachers, goes through an extensive review designed to ensure adherence to high quality and the principles of universal design.

The content development process is managed by CAI's Item Tracking System (ITS), which serves the following three purposes:

- Content development and management tool
- Item bank
- Publication system supporting both paper and online publication

ITS is a customizable item content management and banking system that enforces agreed-upon item review levels throughout the development process. This item development workflow leads items from inception, through a series of content, fairness, graphic, and other reviews, to final publication.

The system captures the outcomes and rationales at each review and maintains previous drafts of each item. The workflow management ensures that each item receives each review in the designated sequence, and that the review is conducted (or recorded in the case of committee review) by an authorized person. Every version of every item is archived, along with each comment received in any review. Reviewers have immediate access to all older versions, providing version control throughout development.

ITS allows remote Internet access by item writers and reviewers and by our clients while ensuring complete security with individualized passwords for all users, limited access for external users, and strong encryption of all information.

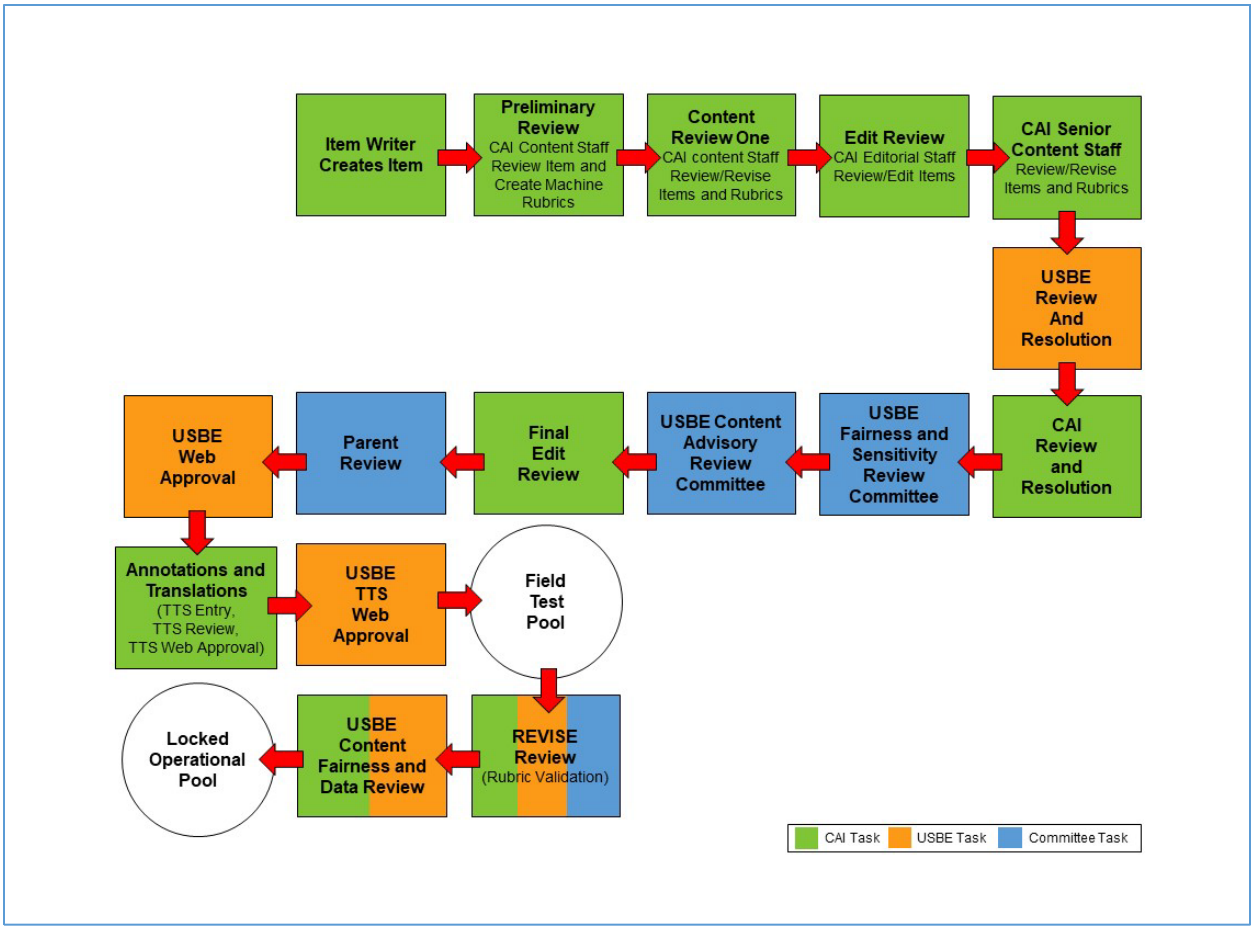
Upon publication, ITS tracks the item's use on a form or in an adaptive item pool. After items are used, ITS stores the resulting statistics, including exposure statistics, classical item statistics, and statistics based on item response theory (IRT).

ITS ensures that every item follows through the entire sequence of development and provides clients and CAI management on-demand reports of the content and status of the inventory of items. Each item is shepherded through a sequence of reviews (described in this section) and signoffs before it is locked for field-test or operational administration.

ITS is integrated with the item display engine used by CAI's TDS. This feature, combined with our "web approval" process, allows the display of online items to be "locked" well before forms are built, taking the "blackline" process off the critical path for online tests. Reviewers can look at the items exactly as they will appear to students and "lock" them for publication in exactly that format.

The flow chart in Figure 13 shows the process an item goes through from inception to its potential inclusion on an operational assessment. The paragraphs that follow provide greater detail on each step in that process.

Figure 13: Test Development Process



4.2.1 ITEM-WRITER WORKSHOP

4.2.1.1 Selection and Training of ELA and Mathematics Item Writers

CAI worked closely with USBE to create detailed item and passage specifications, which clearly delineate the ways in which reading passages and test questions can best assess the Utah Core Standards. These specifications, developed with input from Utah's teachers, provide greater detail on the content limits of each standard, the types of items that assess those standards, the DOK that each standard supports, and sample items that demonstrate each skill. These comprehensive specifications were used as the basis for item-writer workshops with Utah teachers.

In addition to the specifications, CAI and USBE also provided teachers with a training on item-writing best practices. Based on industry standards and years of research at CAI, these trainings represent the most effective item-writing techniques—designed to minimize the effects of construct-irrelevant interference in measurement. They include techniques to help teachers write questions that

- are clear and concise,
- avoid any unintended bias, and
- make the best use of technology without disadvantaging any students.

Finally, in addition to providing training and specifications, CAI and USBE also developed explicit item-writing assignments for teachers that ensure the items being developed will match the test blueprints. CAI's intimate knowledge of the existing item banks and the adaptive algorithm played an integral role in developing these assignments. They have proven especially critical in English language arts, where the numbers and types of items per passage are based on months of CAI-conducted research on simulating tests in an adaptive environment. We know, for instance, that while some passages may contain many items, the passage may not be selected by the adaptive algorithm if the items do not fulfill key areas of the blueprint. All the item-writing assignments given to teachers were carefully reviewed by senior staff at CAI to ensure they were logical, purposeful, and consistent with the test design.

As teachers write items for RISE, they are given regular and consistent feedback by CAI staff. Each teacher receives at least one round of feedback on his or her item assignments. CAI staff communicate with teachers by email and sometimes over the phone to discuss items. In addition, CAI provides written feedback in the online ITS, where items are housed. Each edit to an item in ITS is annotated and recorded for future reference. As teachers receive and implement this feedback, we see that their items improve and become more closely aligned to the industry's best practices.

4.2.1.2 Selection and Training of Science Cluster Item Writers

All item writers developing science items at CAI have at least a bachelor's degree, and many bring teaching experience. All item writers are trained in

- the principles of universal design;
- the appropriate use of item interactions; and
- the science item specifications.

Key materials are shown in Appendix 4-C and Appendix 4-D. These include the following

- CAI's Language Accessibility, Bias, and Sensitivity Guidelines (Appendix 4-C, Language Accessibility, Bias, and Sensitivity Guidelines and Checklist); and
- a training (presented using Microsoft PowerPoint) for the appropriate use of item interactions (Appendix 4-D, Overview of Interaction Types).

4.2.1.3 Universal Design

All the items developed for the RISE assessments were written and reviewed using the principles of universal design. In order to provide equal access to the assessments for all students, even those with disabilities such as limited vision or learning disabilities, item writers used these principles when writing and reviewing items. Although some concepts may have to be tested using complex graphics, every effort is made to give universal design consideration when writing and reviewing test items.

Table 46 lists the seven principles of universal design that CAI test development specialists refer to when writing and reviewing items for the RISE assessments.

Table 46: Principles of Universal Design Applicable to Item Writing and Reviewing

Universal Design Principle	Elements of Universally Designed Assessments
Equitable Use: Design is useful and marketable to people with diverse abilities	Reflected in all elements
Flexibility in Use: Design accommodates a wide range of individual preferences and abilities	Especially reflected in elements #1 (inclusive assessment population), #3 (accessible, non-biased items), #4 (amenable to accommodations), and #6 (maximum readability and comprehensibility)

Universal Design Principle	Elements of Universally Designed Assessments
Simple and Intuitive Use: Design is easy to understand, regardless of user's experience, knowledge, language skills, or current concentration level	Especially reflected in elements #5 (simple, clear, intuitive instructions and procedures), #6 (maximum readability and comprehensibility), and #7 (maximum legibility)
Perceptible Information: Design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities	Especially reflected in elements #4 (amenable to accommodations), #5 (simple, clear, intuitive instructions and procedures), and #7 (maximum legibility)
Tolerance for Error: Design can be used efficiently and comfortably and with a minimum of fatigue	Reflected in elements #2 (precisely defined constructs) and #5 (simple, clear, intuitive instructions and procedures)
Low Physical Effort: Design can be used efficiently and comfortably and with a minimum of fatigue	Primarily reflected in element #7 (maximum legibility)
Size and Space for Approach and Use: Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility	Primarily reflected in elements #4 (amenable to accommodations) and #7 (maximum legibility)

4.2.1.4 Implementing Universal Design Principles for English Language Learner Students

Test developers at CAI are trained to write items that are accessible to all students. In addition, all CAI test developers must be certified in the implementation of CAI's Language Accessibility Guidelines. Before an item is presented to the Utah review committees, it is reviewed by three content experts at CAI and an editor. At each review level, every item is checked for language accessibility and for adherence to universal design principles.

Table 47 outlines the Language Accessibility Guidelines used by CAI when writing and reviewing items. CAI's Language Accessibility, Bias, and Sensitivity Guidelines and Checklists are presented in Appendix 4-C, Language Accessibility, Bias, and sensitivity Guidelines and Checklist.

Table 47: Language Accessibility Guidelines

Guideline	Details
1. Flexibility	Provide equal availability for access to the item. Design the items to be appealing and accessible to all.
2. Simple and Intuitive Use	Eliminate unnecessary complexity particularly in language and visuals.
3. Perceptible Information	Provide adequate contrast between essential information and the surrounding information. Eliminate any extraneous information.
4. Tolerance for Error	Maintain the cognitive complexity being measured by eliminating unnecessary clutter that may artificially raise the complexity of the item.
5. Low Physical Effort	Eliminate the need for excessive writing and unnecessary calculations.

Language should be as direct, clear, and inclusive as possible. The following should be avoided or used with care:

- Passive construction
- Idioms
- Multiple subordinate clauses
- Pronouns with unclear antecedents
- Multiple-meaning words
- Nonstandard grammar
- Dialect
- Jargon

4.2.2 SUMMARY OF ITEM SOURCES

In the 2020–2021 RISE administration, the online operational item pool included those items which survived rubric validation and data review following the spring 2014 operational field test and the spring 2015, spring 2016, spring 2017, and spring 2018 embedded field tests, namely items from the following sources:

- Legacy multiple-choice items from the previous criterion-referenced test (CRT) administrations (mathematics and science grades 4–5 only)
- Shared multiple-choice items, grid items, and equation response items from Hawaii, Delaware, and selected-response and constructed-response items (all three subject areas)
- CAI-developed passages (ELA) and simulations (science)

Embedded field-test items for the spring 2021 administration included items from the following sources:

- Items developed by Questar (during their contract with Utah) and imported by CAI (ELA and mathematics only)
    - Items in the 2018–2019 Questar import were edited for style and correct scoring only and field tested as-is.
    - Items in the 2019–2020 Questar import went through the CAI review process and were more heavily edited to better mirror CAI item development.
- Items (ELA and mathematics) and clusters (science) developed by Utah educators and reviewed by CAI
    - Items/clusters were developed according to the CAI/USBE Item Development Plan to increase the item pool in specific areas.
- Clusters developed by the NGSS MOU and ICCR (science only)

4.2.3 ALIGNMENT OF RISE ITEMS TO THE UTAH CORE STANDARDS

All bank items are aligned to the Utah Core Standards for ELA, mathematics, and science. The item pools contain both previously administered items (mathematics and science only) and newly developed items (all three subject areas). These items underwent internal reviews conducted by content-area experts before they were field tested. The internal review was conducted by content-area experts from CAI along with representatives from USBE.

Specifically, at these levels of internal review, CAI content experts reviewed not only the content of the items, but also their alignment, as follows:

- **Preliminary Review.** Often this is a group review of two or three CAI Content Experts. Members of the group review verified the alignment of each item, and if it did not align, re-aligned as needed.
- **Content Review 1.** An experienced content expert independently reviewed the content and alignment of each item, similar to group review. However, the content reviewer was not a member of the group review.

- **Senior Content Review 2.** A senior content expert reviewed the item one more time before sending to USBE and committee.

During these three levels of internal review, CAI content experts relied upon item specifications (for mathematics and ELA) and curriculum guides (for mathematics) to verify the alignment of all items.

A committee comprising content area experts such as teachers and curriculum staff from USBE also reviewed the items in the banks to ensure alignment with the Utah Core Standards and the Webb DOK levels. The Item Review Criteria were used to evaluate each item (refer to Appendix 4-E, Sample Item Review Criteria). The alignment process involved USBE, CAI, and committees composed of Utah content area experts. USBE content specialists reviewed items either before or immediately after Content Committee Reviews in order to verify all proposed alignment changes by committee.

All items were also reviewed for potential bias because of factors unrelated to content and processes specified in the standards. The Bias Committee is chosen membership, and the Content Advisory Committee (CAC) is specifically charged with ensuring that test content is aligned with academic content standards and is grade appropriate. Before items can be placed in the operational item bank, committees must review them twice during the item development process, once more prior to their inclusion in the operational field test, and again after field testing, when machine-scored constructed-response items undergo rubric validation and any items flagged for statistical reasons are subjected to data review.

4.2.4 DEVELOPMENT OF NEW ITEMS

In each operational administration, new embedded field-test items are developed to augment the operational item pool. For the Utah teacher-developed items, CAI staff used the item specifications to train qualified item writers, each of whom had prior item-writing experience. For example, item writers were trained at CAI item-writing workshops between February and April 2015. A CAI content-area assessment specialist worked with the item writers to explain the purpose of the assessment, review measurement practices in item writing, and interpret the meaning of the Utah Core Standards as illustrated by the test/item specification documents. Sample item stems in the test/item specification documents served as models for the writers to use in creating items that match the standards. To ensure that the items covered the range of difficulty and taxonomic levels required by USBE, item writers used a method based on Webb's cognitive demands (Webb, N. L. [2002]. Depth-of-knowledge levels for four content areas) to develop item types that incorporate a variety of cognitive processing levels from "Recall" to "Strategic Thinking." Eligible DOK levels are indicated in the test/item specification documents.

Item writing and passage selection are guided by the following principles for each of the item types. When writing multiple-choice items, item writers are trained to develop items that

- have one correct response option;
- contain plausible distractors that represent feasible misunderstandings of the content;
- represent the range of cognitive complexities and include challenging items for students performing at all levels;
- are appropriate for students in the assigned grade in terms of reading level, vocabulary, interest, and experience;
- are embedded in a real-world context (where appropriate and where the Standards call for a real-world context);
- do not provide answers or hints to other items in the set or test;
- are in the form of questions or sentences that require completion;
- use clear language and are not worded in the negative unless doing so provides substantial advantages in item construction;

- are free from absolute wording, such as "always" and "never," and have qualifying words (e.g., least, most, except) printed in small caps for emphasis; and
- are free of ethnic, gender, political, and religious bias.

Similarly, reading passages should

- represent literary (fiction), informative (nonfiction), and practical selections (e.g., nontraditional pieces including tables, charts, glossaries, indices);
- have a definite beginning, middle, and end and a sense of completeness;
- be of high interest and appropriate readability for the grade level;
- be of appropriate length for the grade level;
- not involve death, violence, drug and alcohol abuse, criminal activities, or the occult;
- be free of ethnic, gender, political, and religious bias;
- not provide answers or hints to other items in the test; and
- include real-world texts (consumer or workplace documents, public documents such as letters to the editor, newspaper and magazine articles, thesaurus entries) to the extent possible.

The item writers also consider DOK while writing test items for ELA and mathematics. When determining these levels, content experts make judgment calls, taking the following characteristics into account.

Reading/ELA

DOK 1: Recall

- Recalling elements and details of story structure, such as characterization, setting, plot sequence
- Answering "who, what, where, when, and why" questions
- Identifying text elements and features in an informational text

DOK 2: Skill/concept

- Going beyond basic understanding to develop an interpretation
- Making inferences about content, characters, events, setting
- Identifying patterns in texts; identifying causes and effects
- Identifying and interpreting figurative language

DOK 3: Strategic thinking

- Standing apart from the text and critically evaluating it
- Synthesizing information from different sources
- Explaining how the author's purpose affects the reader
- Recognizing the effect of point of view
- Evaluating how persuasive texts affect readers

Mathematics

DOK 1: Recall

- Recalling information, such as a fact, a definition, a term, or a simple procedure
- Performing a simple algorithm
- Applying a formula

DOK 2: Skill/Concept

- Carrying out experimental procedures
- Making observations and collecting data
- Classifying, organizing, and comparing data
- Organizing and displaying data in tables, graphs, and charts

DOK 3: Strategic Thinking

- Drawing conclusions from observations
- Citing evidence and developing a logical argument for concepts
- Explaining phenomena in terms of concepts
- Using concepts to solve problems

All newly developed ICCR items (ELA, mathematics, and science) were originally developed by content specialists at CAI. These items, as well as the Utah teacher-written items (ELA, mathematics, and science) were reviewed internally by content, editorial, and senior content specialists. After the items were written, CAI content and assessment specialists reviewed them internally. Each item went through an extensive five-step review process: preliminary review (group review), content 1 review, edit review, senior content review, and batch review. Each step required either a content expert or an assessment editor to review the item. Items were reviewed for alignment to the curriculum standards and benchmarks, language and accessibility, fairness and sensitivity, best uses of item formats, and basic item construction. The CAI content and assessment staff discussed revised items as needed. A different person reviewed the item at each review level. Approved items were then sent to USBE for review. These reviews are detailed more thoroughly in Appendix 4-F, Item Review Processes.

Following the completion of the CAI and USBE internal reviews, the items were reviewed by the Content Advisory Committee (CAC). The CAC is made up of expert representatives, including USBE reading, mathematics, and science curriculum staff and Utah educators, including special education (SPED) teachers and English language learner (ELL) teachers. This item review consisted of a short training after which the reviewers reviewed each item independently and discussed issues or potential problems and solutions. Furthermore, the Bias Committee identified any potential bias or stereotypes in items; the content review determined whether the items are properly aligned to the content standards and grade-level expectations, accurately measure intended content, and are grade-level appropriate. The items were accepted with no changes, accepted with approved changes, or rejected from the item pool.

Prior to text-to-speech (TTS) tagging and inclusion in the embedded field-test slots, all potential items were reviewed by the Parent Review Committee. The Parent Review Committee includes Utah community panelists who also reviewed all test items for appropriateness of test content. This checkpoint in the process occurred after content and fairness committees had convened, and the Parent Review Committee reviewed items to be field tested in their nearly final form. Using the ITS content rater system, items were divided into batches, and every item was reviewed by two or three parents as part of their daily batches. Using the ITS content rater system, parents noted which items were acceptable and which ones were not, and they also entered comments to justify their recommendation. USBE facilitated this meeting, with CAI supporting the logistics of the meeting, which lasted for three days. After Parent Review, USBE specialists met with CAI content specialists to review Parent Review Committee comments and took the following actions:

- Accepted the items “as is” (the majority of the items)
- Made minor wording edits to items
- Rejected items—meaning they would not be field tested in Utah

Finally, after the field test was completed, members of the Rubric Validation Committee reviewed the responses provided to every machine-scored constructed-response (MSCR) item and either approved the scoring rubric or suggest a revised score based on their interpretation of the item task and the rubric.

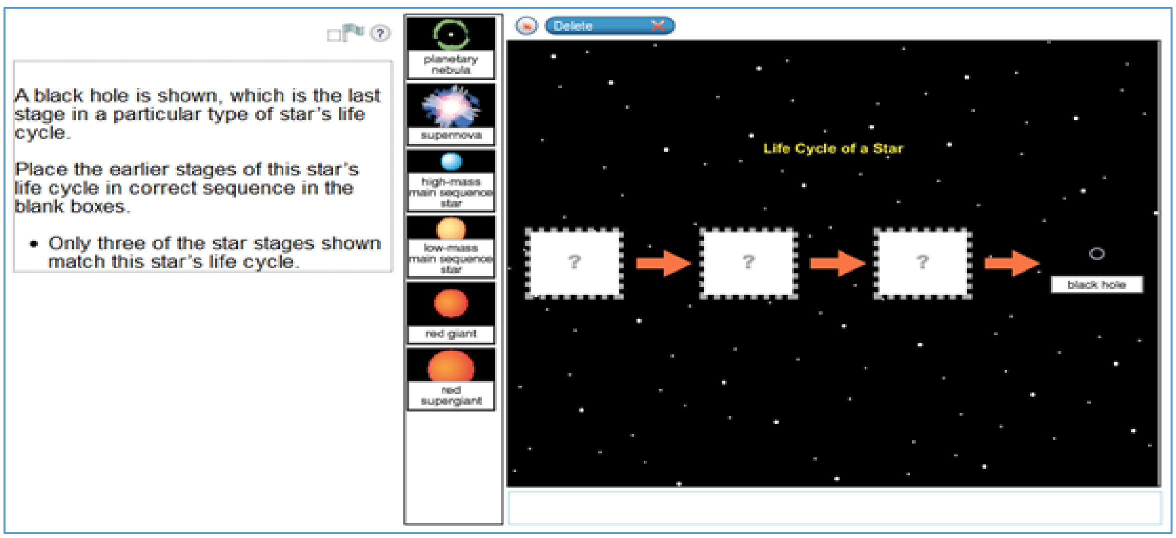
4.2.5 DEVELOPING MACHINE-SCORED CONSTRUCTED-RESPONSE ITEMS

The RISE operational item pool includes a variety of selected-response items and MSCR items in each content area. Five types of MSCR items were included: graphic response format, natural language format, equation response, hot text, and table input. The graphic response format requires students to place objects or move objects around in the answer space. A student can also plot points, draw lines, and draw shapes. The natural language format requires students to type an English language answer. The equation response format requires students to enter a value or equation. The table input format requires students to input numerical values into a table. The validity of computer-assigned scores for constructed-response items was evaluated following the spring 2016 online administration of the embedded field-test items.

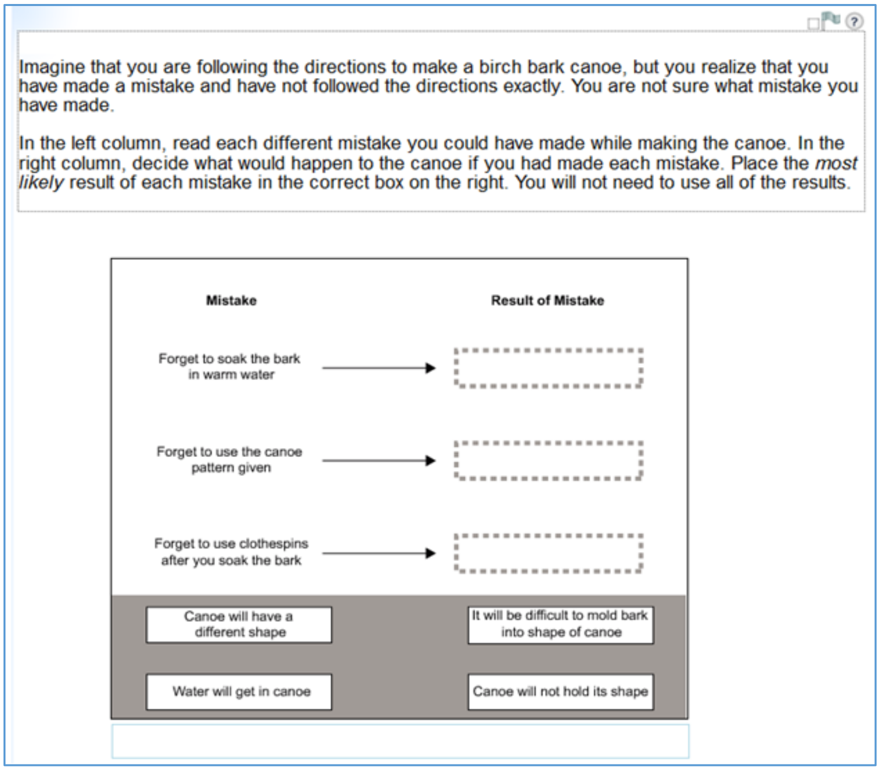
Grid Items

The grid items require a student to place objects or move objects around in the answer space. The student can also plot points and draw lines and shapes. Grid items allow assessing a high level of complexity that usually cannot be achieved with multiple-choice items. Grid items are rendered online only. The four basic types of grid items are presented below:

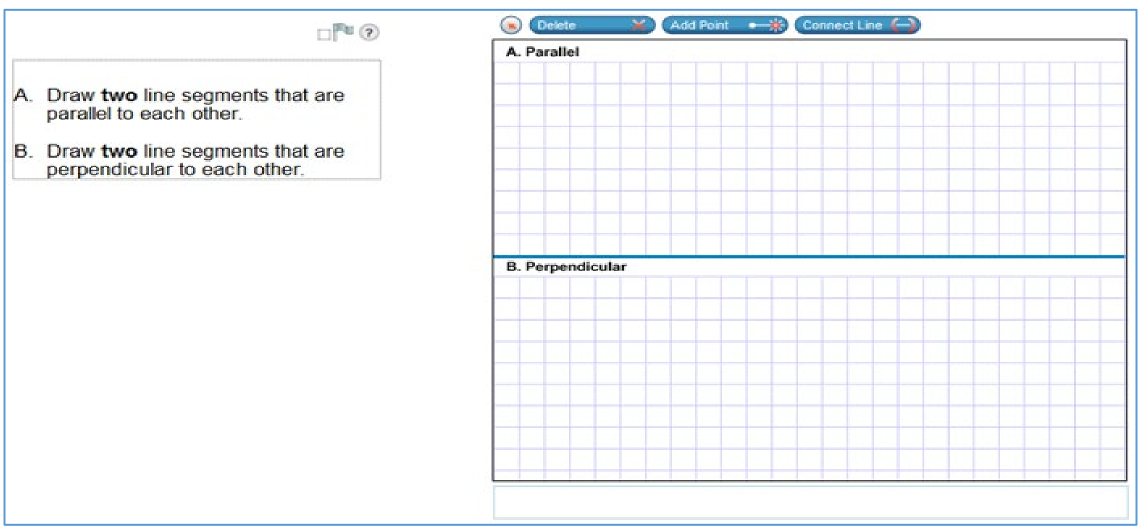
- Palette drag-and-drop: The student is given a choice of images, housed in the palette, and is able to drag those images onto the answer space to show their answer. The palette images refresh an unlimited number of times—a student may drag the same image onto the answer space multiple times if they choose. The example below demonstrates one such science item.



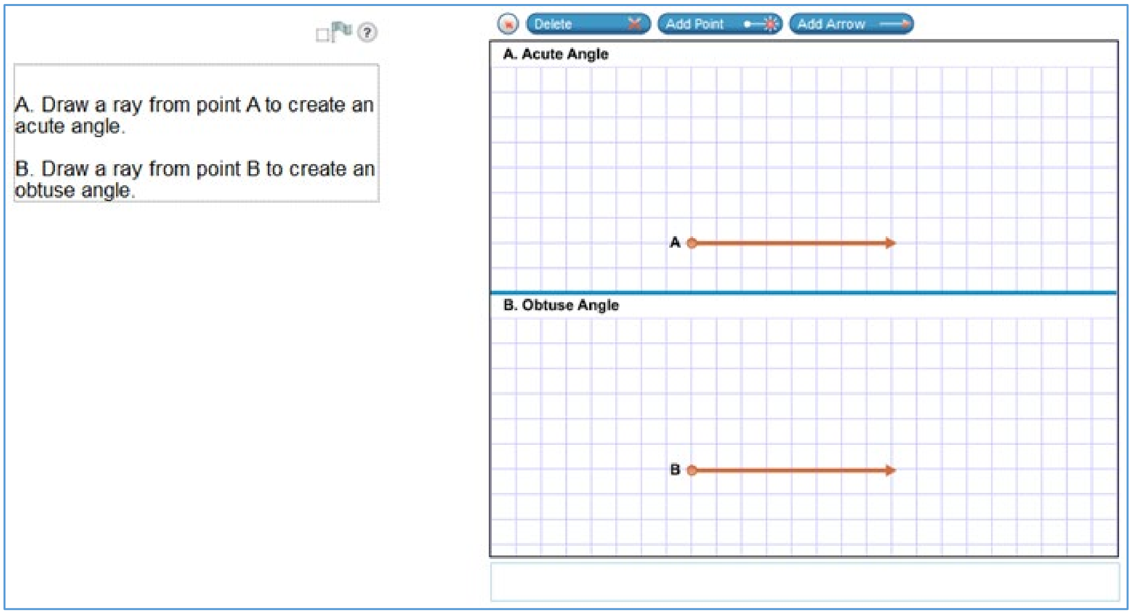
- Preplaced drag-and-drop: This type of item allows the student to “preplace” palette images onto the answer space. Then, the student can drag those images to different areas of the answer space to show their answer. When images are preplaced, there is no palette; only the answer space is presented to the student. In the example below, the “Facts” images are preplaced palette images.



- Points and lines: An item might use the draw line feature to ask students to make connections between objects on the grid (refer to the following example).

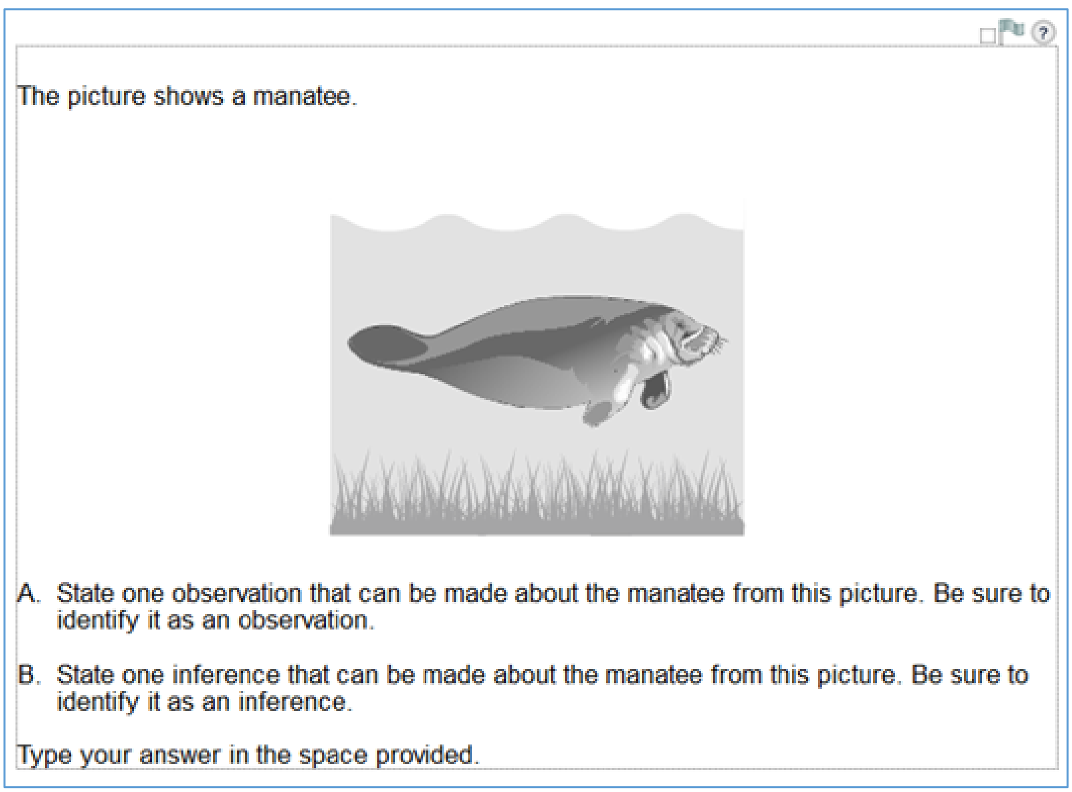


- Lines and rays: The student can use tools to plot points and to draw line segments, rays, and lines. These objects can be used in many different types of contexts—for example, connecting line segments to create shapes with given characteristics or plotting points and drawing a line of best fit for those points.



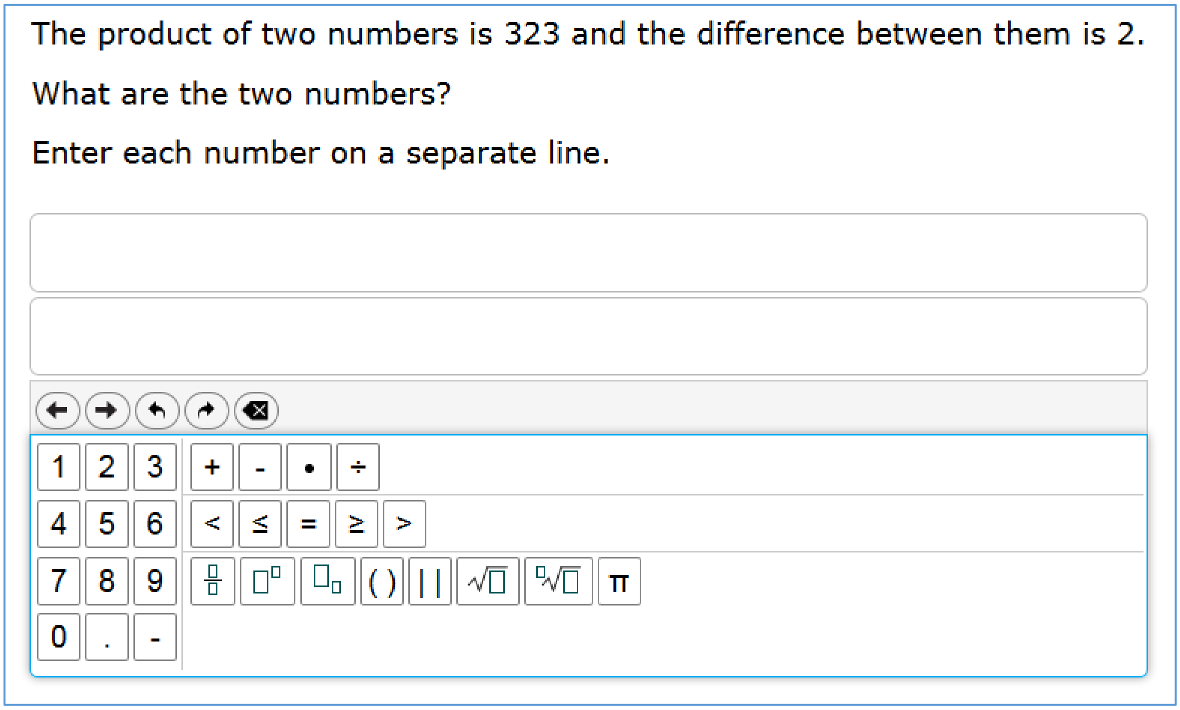
Natural Language Items

The natural language items require students to type a written answer and are scored using a predetermined rubric. They allow assessing a high level of complexity, which usually cannot be achieved with multiple-choice items. Natural language items are rendered online only. An example of a natural language item is presented below.



Equation Response Items

The equation response items allow students to enter numerical answers (whole numbers, decimals, fractions, integers, etc.), expressions (e.g., x + 3), and equations. A standardized keypad is available for each grade level, with additional buttons available based on the grade (such as operators, variables, inequalities, trig functions). The scoring engine allows for equivalent values, expressions, and equations to be scored correctly (if allowed by the construct; for example, if a student is presented with an equation in the stem, and the item requires the student to rewrite the equation in a different form, the scoring engine can be configured so as not to award credit for a mere replication of the equation in the stem). Conversely, if multiple correct forms of an equation or expression ARE desired, then the scoring engine can be configured to allow for them. An example of an equation response item for Secondary Mathematics I is shown below.



Hot Text Items

The hot text item allows students to select words, phrases, and/or complete sentences in a given text. For example, students may select part of a passage that supports a main idea or give evidence for a scientific claim. Alternatively, students may rearrange sentences to create an ordered sequence that summarizes a reading passage. An example of a hot text item is shown below.

Read the passage about the mission to explore Mars.

Click on the sentence that indicates how the study of Mars might help people on Earth.

Mission to Explore Mars

The National Aeronautics and Space Administration (NASA) successfully launched an unmanned mission to explore the planet Mars on November 26th, 2011. The mission was named the Mars Science Laboratory and the vehicle successfully landed on August 5th, 2012. The laboratory contains a robotic rover named Curiosity. Curiosity has many pieces of technology and scientific instruments to send images back to Earth and to identify the chemistry of the planet.

The mission has four science goals. The first is to determine whether there has ever been life on Mars. Scientists can analyze the rocks and soil of Mars to look for water activity. There is no liquid water on Mars currently because the conditions are not favorable, but there is evidence from the rocks that water was once present. The second goal is to characterize the climate of Mars. Understanding how the climate changed over time will give scientists insight into how a planet that once had liquid water became the dusty planet it is now. The third goal is to characterize the geology of Mars. To do this, Curiosity grinds rock samples and sends information about the minerals on Mars. The final science goal of the mission is to prepare for human exploration.

Editing Task Items

The editing task item (ELA) allows students to correct a grammar, spelling, punctuation, etc., usage error within the context of a multi-paragraph essay or narrative. Each editing task set includes five possible errors, and students correct the error by typing in the corrected version in-text. For example, refer to the sample editing task item from the training test as shown below.

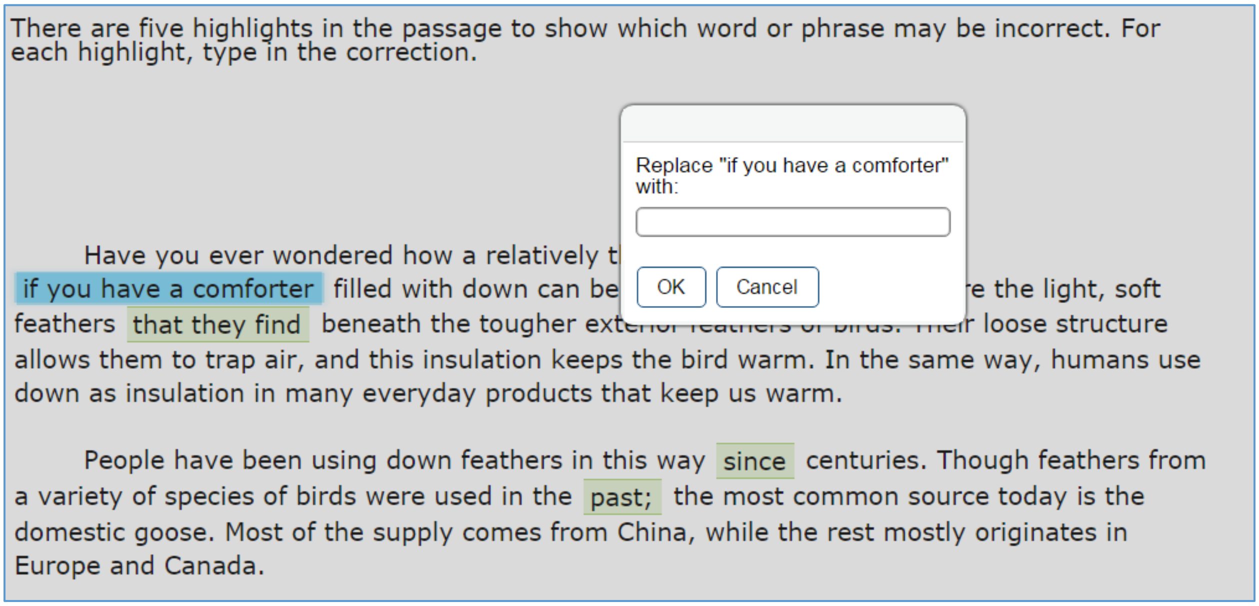


Table Input Items

The table input item (mathematics) allows students to input numeric values in a preformatted table. For example, students may show the relationship between dependent and independent variables or domain and range for a function.

An equation is shown.

$d = 65t$

Complete the table to show the relationship between t and d.

t	d
1	
2	
3	

4.3 ITEM REVIEW

4.3.1 ITEM REVIEW PROCESSES

4.3.1.1 Item Review Processes for ELA and Mathematics

Once the feedback loop with teachers is complete and items are submitted to CAI for review, they then undergo CAI's internal review process, which is among the most rigorous in the industry. Items pass through no fewer than four levels of internal review at CAI, where they are carefully vetted by editors and test development content experts.

CAI's ITS ensures that each review phase is completed before an item advances to the next level. The entire review process comprises the following steps:

- Preliminary Review
- Content Review One
- Edit Review
- Senior Review
- Batch Review
- Client Review and Resolution
- Committee Review (performed by both content and bias committees)
- Client web approval
- Annotations and Translations
- Rubric Validation
- Data Review

These processes are outlined in greater detail in Appendix 4-F, Item Review Processes.

4.3.1.2 Item Review Processes for Science Clusters

The entire review process comprises the following steps:

- Internal Review
- Preliminary Review
- Scoring Entry and Review
- Content Review One
- Edit Review
- Senior Review
- Review by State Personnel and Stakeholder Committees
- State Review
- Content Advisory Committee Reviews
- Language Accessibility, Bias, and Sensitivity Committee Reviews
- Client web approval
- Markup for Translation and Accessibility Features
- Rubric Validation
- Data Review

These processes are outlined in greater detail in Appendix 4-F, Item Review Processes.

4.3.2 SECURITY IN ITEM REVIEW PROCESSES

Item development is a multistep review process that involves various stakeholders. At each stage, keeping the items secure is crucial. USBE content specialists are the only individuals who have access to CAI's ITS. This system requires individualized passwords and utilizes strong encryption in order to keep the test items secure.

When committees meet in order to review items, other steps are taken to ensure test security. Each committee has a facilitator, either from USBE or CAI, to ensure that security measures are in place and enforced. All committee members are required to sign a nondisclosure agreement before being able to view test items.

For some review committees, test items are printed on paper. In these cases, the papers are not allowed to leave the room. To ensure this, they are printed on green paper, which makes test items immediately distinguishable from plain white paper. After the committee, the secure documents are secure destroyed. Other committees, such as the Parent Review Committee, reviewed test items on computers. In this case, the laptop computers were provided by USBE, reviewers were provided with passwords, and the test items were accessed via the CAI Secure Browser. At the end of the meeting each day, the laptops were collected and kept secure overnight by USBE staff.

4.3.3 DEPARTMENT ITEM REVIEW AND APPROVAL

4.3.3.1 Department Item Review and Approval for ELA and Mathematics

Once the newly developed items were reviewed and approved internally, they were submitted to USBE content specialists for review. CAI made USBE’s revisions to the items, which usually were finalized before the Content Advisory Committee (CAC) reviewed them. (Sometimes, the USBE content specialists waited until after committee reviews to incorporate all requested edits.) The CAC is made up of expert representatives, including USBE reading, mathematics, and science curriculum staff and Utah educators, including English language learner (ELL) teachers. This item review consisted of a short training after which the reviewers reviewed each item independently and discussed issues or potential problems as well as solutions. The items were accepted with no changes, accepted with approved changes, or rejected from the item pool.

4.3.3.2 Department Item Review and Approval for Science Clusters

After items have been developed for a state participating in the MOU, content experts from the state that owns the item review any eligible items prior to committee review. At this stage in the review process, clients can request edits, such as wording edits, scoring edits, alignment changes, or task demand updates. A CAI director for science reviews all client-requested edits considering the science item specifications, other clients’ requests, and existing items in the bank to determine whether the requested edits will be made. At this stage, clients have the option to present these items to the committee (based on the edits made) or withhold them from committee review.

ICCR items are reviewed by at least one or two states. The states provide feedback on the ICCR items, and CAI science leadership gathers suggestions and makes edits that improve the ICCR item. Not all suggestions are implemented, as these items are owned by CAI. Further, most MOU states accept or reject ICCR and MOU items (as they appear at the time), to be presented to their committees. Some clients skip this step and allow CAI to review all items with their committees before reviewing them. These items can be either set for field testing in a future administration or already at locked operational pool.

4.3.4 COMMITTEE REVIEW OF ITEM POOL

After a general introductory session, the CAC was divided into subgroups by content area and grade to learn how to conduct an item review. After a training presentation, the subgroups began reviewing each item. The reviews started as a group effort. However, once the committee members felt confident in their task, they began reviewing the items independently. After a predetermined set of items was reviewed independently, the group came back together to discuss concerns and solutions, eventually agreeing on the outcome for each item.

The discussion centered on alignment of the item to the Utah Core Standards, alignment to the DOK level, grade-level appropriateness, and readability of each item. The CAC used the Utah Core Standards and the Curriculum Guides for Mathematics to review the content that each item measured. Participants used the Item Review Criteria to review each item (Appendix 4-E, Sample Item Review Criteria).

During the CAC item review meeting, Bias Committee members also reviewed all the items using the Language Accessibility, Bias, and Sensitivity (LABS) Guidelines (Appendix 4-C). CAI leaders outlined the purpose of this review, discussed the guidelines, and worked through a few of the items with the group as a sample so that the committee members knew what to look for as they completed the reviews on their own. During some meetings, the content and bias reviews were conducted simultaneously, with members of both committees reviewing the same items as a group. During other meetings, there were separate Content and Bias Committee reviews of the items. In either case, all reviewer comments were reviewed by USBE Content Specialists and necessary edits were made to all relevant items.

4.3.5 RUBRIC VALIDATION

Prior to the statistical analysis of the bank items, the rubrics for the MSCR items go through a validation process to verify and make any necessary revisions to the machine-scored rubrics. The rubric validation process is analogous to rangefinding for handscored items, checking the validity of scoring rubrics and the scoring technology. The samples of student responses selected for rangefinding are designed to identify likely flaws in the scoring rubrics. To identify student responses for rangefinding, responses are sampled randomly from among three groups of students, including (1) students who performed worse than expected on the MSCR items based on their test performance overall, (2) students who performed better than expected on the MSCR items, and (3) students who performed about as expected. By using this stratified sampling approach and oversampling responses with unexpectedly high or low scores, we increase the likelihood of identifying possible scoring errors or unanticipated correct student responses.

The rubric validation began with a review of student responses from an internal committee of CAI content-area experts. While under review, any samples found with clear errors in the rubrics were corrected accordingly, and proposed changes were given to the machine-scored rubric. CAI implemented these changes and reviewed the resulting changes in scores.

For all embedded field-test items, through spring 2018, two separate rubric validation processes or meetings were held. Utah teacher-written items were reviewed in a face-to-face rubric validation meeting in June following the administration. The reviews followed the process below:

- Each item was displayed using a projector.
- The rangefinding committee discussed how to answer the item and how each point was earned.
- A projector was used to display each of the 45 student response papers and its machine-assigned score.
- If the committee members reached a consensus that a score was incorrect, the committee proposed modifications to the rubric.
- CAI rescored the responses using the revised rubric.
- CAI and USBE reviewed the responses that received changed scores once the revised rubric was implemented.
- USBE reviewed the rescored responses and approved the rubric.

The ICCR items followed a similar rubric validation process, but they were not actual meetings held with Utah teachers. For the items deemed necessary for review, as determined by CAI content specialists, USBE participated in making the final determination in items that had conflicting reviews. In most cases, changes were made to the rubric based on USBE's feedback. If USBE did not agree with the final rubric, the item was rejected from the Utah bank.

CAI and USBE evaluated the impact of the revised rubrics on the scores of individual student responses for the spring embedded field-test items, and a final determination was made about changes to the rubrics. As with rangefinding for handscored items, the committee found that a small number of items simply did not work and recommended to USBE that they be rejected. The rejected items were excluded from the online item pool and were not used for future administrations.

Only items that survived the rubric validation process were included in analysis for data review, and assuming the items survived data review, they were added to the operational pool for the following administration. Typically, rubric validation occurs after field testing of MSCR items to allow for immediate scoring and reporting of test results in subsequent operational administrations.

4.4 FIELD TESTING

As previously indicated, all field-tested items had already been reviewed and approved for field-test administration by the Content and Fairness Advisory Committee (CFAC). Any field-test items flagged for any out-of-range statistics were further reviewed by the Content Data Review Committee and the Fairness Data Review Committee. The Content Data Review Committee consisted of USBE curriculum and assessment specialists and a few content area teachers. The Fairness Data Review Committee included community members, teachers, and USBE content area experts. Appendix 4-G, Item Data Review PowerPoints, includes the PowerPoint presentations used to train committee members on evaluating items for content and fairness. For science items that are not Utah-owned, the MOU items went through a similar review process in the owner state or in a MOU cross-state data review meeting.

Content Data Review Committee Meeting

The Content Data Review Committee reviewed the items flagged for item difficulty, item discrimination, and item fit index. Committee members examined the items for any indication that item content or construction might have caused the items to perform unexpectedly. For each rejected item, the committee provided the content reason for the rejection. USBE and CAI content specialists reviewed the reasons and incorporated the reasons into the future item development process.

Fairness Data Review Committee Meeting

The Fairness Data Review Committee reviewed items flagged for differential item functioning (DIF). For each flagged item, committee members reevaluated whether the item violated any of the bias and sensitivity guidelines, which may have given rise to DIF. Any items violating the bias and sensitivity guidelines were rejected from the pool. Table 48 presents the number of field-test items rejected at rubric validation and item data review. Appendix 4-H, Summary of Rejected Field Test Items provides a more detailed summary of the rejected field-test items.

Table 48: 2020–2021 Number of Rejected Items

Subject	Grade	Spring 2021 Item Pool			Items Rejected at Rubric Validation			Items Rejected at Data Review			Final Item Pool		
		Total	MC	MSCR	Total	MC	MSCR	Total	MC	MSCR	Total	MC	MSCR
Reading	3	120	67	53				11	6	5	109	61	48
	4	102	56	46				9	5	4	93	51	42
	5	111	59	52				2	2		109	57	52

Subject	Grade	Spring 2021 Item Pool			Items Rejected at Rubric Validation			Items Rejected at Data Review			Final Item Pool		
		Total	MC	MSCR	Total	MC	MSCR	Total	MC	MSCR	Total	MC	MSCR
	6	122	65	57				7	4	3	115	61	54
	7	89	38	51				12	2	10	77	36	41
	8	108	61	47				16	10	6	92	51	41
Math	3	126	64	62	2		2	3	1	2	121	63	58
Math	4	113	57	56				2	2		111	55	56
Math	5	103	63	40				5	4	1	98	59	39
Math	6	118	66	52				5	3	2	113	63	50
Math	7	114	59	55	1		1	10	8	2	103	51	52
Math	8	100	54	46				6	4	2	94	50	44
		Total	Owned by Utah	Others	Total	Owned by Utah	Others	Total	Owned by Utah	Others	Total	Owned by Utah	Others
Science	4	27	27	0	1	1	0	1	1	0	25	25	0
Science	5	27	27	0	1	1	0	2	2	0	24	24	0
Science	6	11	0	11	3	0	3	2	0	2	6	0	6
Science	7	12	0	12	4	0	4	0	0	0	8	0	8
Science	8	22	0	22	2	0	2	2	0	2	18	0	18

4.5 ITEM STATISTICS

Once the scoring rubrics for all MSCR items were validated, all MSCR items were rescored using the final rubrics, and the final data file were extracted for the item analyses. The item analyses included classical item statistics and item calibrations using the three-parameter logistic (3PL) and generalized partial credit (GPC) item response theory (IRT) models for ELA and mathematics, and multigroup Rasch testlet model for science. Classical item statistics are designed to evaluate the item difficulty and the relationship of each item to the overall scale (item discrimination) and to identify items that may exhibit a bias across subgroups (DIF analyses).

4.5.1 CLASSICAL STATISTICS

4.5.1.1 ELA and Mathematics Classical Statistics

Item Discrimination

The item discrimination index indicates the extent to which each item differentiates between those test takers who possess the skills being measured and those who do not. In general, the higher the value, the better the item is able to differentiate between high- and low-achieving students. The discrimination index is calculated as the correlation between the item score and the student's IRT-based ability estimate (biserial correlations for multiple-choice items and polyserial correlations for constructed-response items). Items are flagged for review if biserial/polyserial values are less than 0.25.

Item Difficulty

Extremely difficult or extremely easy items are flagged for review but are not necessarily rejected if the item discrimination index is not flagged. For multiple-choice items, the proportion of test takers in the sample selecting the correct answer (*p*-values) and those selecting each of the incorrect responses, is computed. For constructed-response items, item difficulty is calculated both as the item's mean score and as the average proportion correct (analogous to *p*-value and indicating the ratio of the item's mean score divided by the number of points possible).

Multiple-choice items are flagged for review if the *p*-value is less than .25 or greater than .95. Constructed-response items are flagged if the proportion of students in any score-point category is greater than .95. A very high proportion of students in any single score-point category may suggest that the other score points are not useful or, if the score point is in the minimum or maximum score-point category, that the item may not be grade appropriate. Constructed-response items are also flagged if the average IRT-based ability estimate of students in a score-point category is lower than the average IRT-based ability estimate of students in the next lower score-point category. For example, if students who receive three points on a constructed-response item score, on average, lower on the total test than students who receive only two points on the item, then the item is flagged. This situation may indicate that the scoring rubric is flawed.

The criteria used for flagging based on the classical statistics are as follows:

- Adjusted biserial/polyserial correlation statistic is less than .25 for multiple-choice or constructed-response items.
- Adjusted biserial correlations for multiple-choice item distractors is greater than .05.
- Proportion correct value is less than .25 or greater than .95 for multiple-choice and constructed-response items; proportion of students receiving any single score point is greater than .95 for constructed-response items.
- The proportion of students responding to a distractor exceeds the proportion responding to the keyed response for MC items.
- Mean total score for a lower score point exceeds the mean total score for a higher score point for constructed-response items.

4.5.1.2 Science Cluster Classical Statistics

Item Discrimination

The item discrimination index indicates the extent to which each item differentiated between those test takers who possess the skills being measured and those who do not. Generally, the higher the value, the better the item was able to differentiate between high- and low-achieving students. For each assertion within an item, the discrimination index was calculated as the biserial correlation between the assertion score and the ability estimate for students. The average biserial correlation was then be calculated across the assertions within an item. Items are flagged for review if the average biserial correlations are less than 0.25, or one or more assertions have biserial correlations less than 0.05.

Item Difficulty

Both the percentage correct (often referred to as a *p*-value) for individual assertions and the average *p*-value across all assertions of a cluster item were calculated by grade for items field tested in science assessments. The average *p*-value across the assertions within an item cluster is defined as the item difficulty of an item cluster. Items are flagged for review if the average *p*-values are less than 0.30 or greater than 0.85.

Response Time

Because these items require students to perform multiple interactions, they may require more time for students to complete. To ensure a good balance between the amount of information an item provides, and the time students spend on the item, item response time were recorded and analyzed. Specifically, the statistic "percentile 80" was computed for each item. A percentile 80 of x minutes means that 80% of the students spend *x* minutes or fewer on the item. An item is flagged for review when the percentile 80 is greater than 15 minutes, or the assertions per (percentile 80) minute is less than 0.5.

The classical item statistics for the field-test items are presented in Appendix 4-I, Field Test Item Classical Statistics.

4.5.2 ITEM RESPONSE THEORY STATISTICS

4.5.2.1 ELA and Mathematics Item Response Theory Statistics

Traditional item response models assume a single underlying trait, and they assume that items are independent given that underlying trait. In other words, the models assume that given the value of the underlying trait, knowing the response to one item provides no information about responses to other items. This basic simplifying assumption allows the likelihood function for these models to take the relatively simple form of a product over items for a single student:

$$L(Z) = \prod_{j=1}^{n} P(z|\theta),$$

where Z represents the pattern of item responses and ϑ represents a student's true proficiency.

The RISE items are calibrated using the 3PL item response theory (IRT) model for multiple-choice items and the generalized partial credit model for constructed-response items, scored polytomously.

For multiple-choice models, the three-parameter logistic (3PL) model takes the form

$$P\left(x_j = 1|\theta_{k,}a_j, b_j, c_j\right) = c_j + \frac{1-c_j}{1+e^{-1.7a_j\left(\theta_k - b_j\right)}} = P_{j1}(\theta_k).$$

The *b* parameter is called the *location* or *difficulty* parameter. The*a* parameter is referred to as the *slope* or *discrimination* parameter. The slope parameter is essentially the inverse of the standard deviation of the measurement error associated with the item. The third parameter, c, defines a lower asymptote. In the absence of the *c* parameter, the probability of a correct response approaches zero as proficiency decreases toward negative infinity. The *c* parameter allows the probability to approach some other lower bound. Given multiple-choice questions, a student with very little ability on the target trait could guess a correct answer. The *c* parameter captures the effect of such guessing.

For items that have multiple, ordered response categories (i.e., partial credit items), we again have the choice of a simple Rasch family model (Masters' 1982 partial credit model) or a more general variant such as Muraki's (1992) generalization of Samejima's (1972) graded response model. For smaller-sample tests, such as state-specific alternate assessments, we recommend the Rasch-family variants because they can be reliably estimated with fewer cases. Under Masters' model, the probability of a response in category *i* for an item with m_j categories can be written as

$$P\left(x_j = i|\theta_k, b_{j0} \dots b_{jm_j-1}\right) = \frac{e^{\sum_{v=0}^{i} 1.7\left(\theta_k - b_{jv}\right)}}{\sum_{g=0}^{m_j-1} e^{\sum_{v=0}^{g} 1.7\left(\theta_k - b_{jv}\right)}}.$$

Muraki's generalization adds an item-dependent discrimination parameter as follows (again, Masters' formulation does not usually include the arbitrary constant 1.7):

$$P\left(x_j = i|\theta_k, b_{j0} \ldots b_{jm_j-1}\right) = \frac{e^{\sum_{v=0}^{i} 1.7a_j\left(\theta_k - b_{jv}\right)}}{\sum_{g=0}^{m_j-1} e^{\sum_{v=0}^{g} 1.7a_j\left(\theta_k - b_{jv}\right)}}.$$

Returning to the likelihood equation, the contribution of each item to the overall likelihood function remains independent of all other items, given ϑ. This is convenient for two reasons: mixing models within an analysis (e.g., one-parameter and partial credit items on the same scale) becomes no more complicated, and the likelihood of the response pattern may be calculated as the product of the likelihood of responses to individual items.

AM Statistical Software (AM) was used in the item calibration process prior to the 2021 administration. AM employs a marginal maximum likelihood approach to estimation (MMLE), which estimates the item parameters along with parameters associated with the latent distribution. Starting from spring 2021, the field test item calibration is conducted using IRTPRO 5.0. IRTPRO implements the method of Maximum Likelihood (ML) for item parameter estimation. The item parameter estimates of the field-test items are presented in Appendix 4-J, Field Test Item Parameters.

4.5.2.2 Science Item Response Theory Statistics

In discussing item response theory (IRT) models for the Utah science assessments, we distinguish between the underlying latent structure of a model and the parameterization of the item response function conditional on that assumed latent structure. Subsequently, we discuss how group effects are considered. Note that only item clusters are administered in Utah; other members of the MOU administer both item clusters and stand-alone items.

Latent Structure

Most operational assessment programs rely on a unidimensional IRT model for item calibration and computing scores for students. These models assume a single underlying trait, and they assume that items are independent given that underlying trait. In other words, the models assume that given the value of the underlying trait, knowing the response to one item provides no information about responses to other items. This assumption of conditional independence implies that the conditional probability of a pattern of I item responses takes the relatively simple form of a product over items for a single student as shown below:

$$P\left(\boldsymbol{z_j}|\theta_j\right) = \prod_{i=1}^{I} P\left(z_{ij}|\theta_j\right) \tag{1}$$

where z_{ij} represents the scored response of student j $(j = 1, \ldots, N)$ to item i $(I = 1, \ldots, I)$, $\boldsymbol{z}_j$ represents the pattern of scored item responses for student j, and θ_j represents student j's proficiency. Unidimensional IRT models differ with respect to the functional relation between the proficiency θ_j and the probability of obtaining a score z_{ij} on item i.

The items in the Utah science assessments are more complex than traditional item types. A single item may contain multiple parts, and each part may contain multiple student interactions. For example, a student may be asked to select a term from a set of terms at several places in a single item. Instead of receiving a single score for each item, multiple inferences are made about the knowledge and skills that a student has demonstrated based on specific features of the student's responses to the item. These scoring units are called assertions and are the basic unit of analysis in our IRT analysis. That is, they fulfill the role of items in traditional assessments; however, for the Utah assessment items, multiple assertions are typically developed around a single item so that assertions are clustered within items.

One approach is to apply one of the traditional IRT models to the scored assertions; however, a substantial complexity that arises from the use of this new item types is that local dependencies exist between assertions pertaining to the same stimulus (i.e., item or item cluster). The local dependencies between the assertions pertaining to the same stimulus constitute a violation of the assumption that a single latent trait can explain all dependencies between assertions. Fitting a unidimensional model in the presence of local dependencies may result in biased item parameters and standard errors of measurement. In particular, it is well documented that ignoring local item dependencies leads to an overestimation of the amount of information conveyed by a set of responses and an underestimation of the SEM (e.g., Sireci, Wainer, & Thissen, 1991; Yen, 1993).

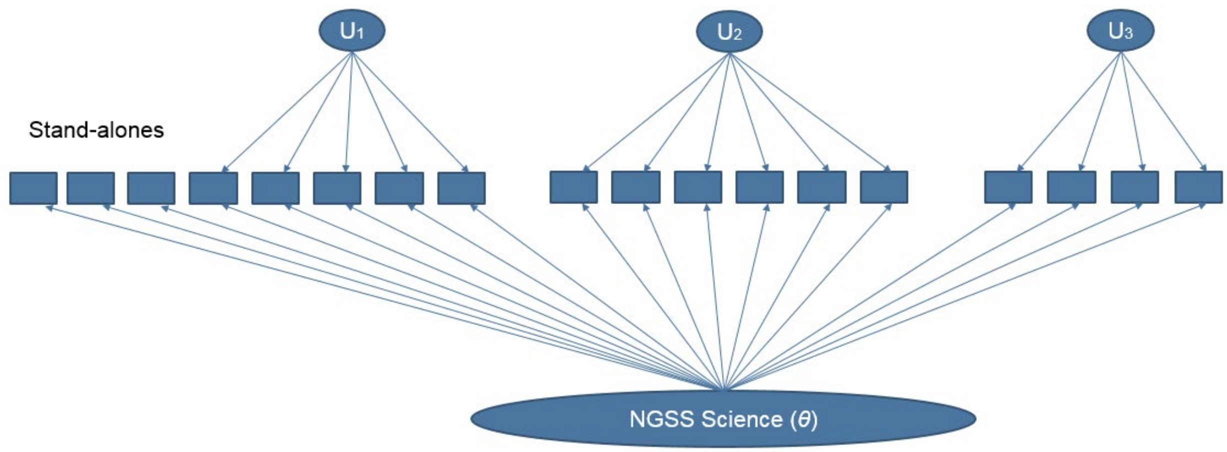
The effects of groups of assertions developed around a common stimulus can be accounted for by including additional dimensions corresponding to those groupings in the IRT model. These dimensions are considered nuisance dimensions. Whereas traditional unidimensional IRT models assume that all assertions (the basic units of analysis) are independent given a single underlying trait θ, we now assume the conditional independence of assertions, given the underlying latent trait θ and all nuisance dimensions:

$$P(\boldsymbol{z_j}|\theta_j, \mathbf{u}_j) = \prod_{i \in \mathrm{SA}} P(z_{ij}|\theta_j) \prod_{g=1}^{G} \prod_{i \in g} P(z_{ij}|\theta_j, u_{jg}) \qquad (2)$$

where SA indicates stand-alone assertions, u_g indicates the nuisance dimension for assertion group g (with the position of student j on that dimension denoted as u_{jg}), and u is the vector of all G nuisance dimensions. It can be seen that the conditional probability $P(z_{ij}|\theta_j, u_{jg})$ becomes a function of two latent variables: the latent trait θ, representing a student's proficiency in science (the underlying trait of interest), and the nuisance dimension u_g, accounting for the conditional dependencies between assertions of the same group. Furthermore, we assume that the nuisance dimensions are all uncorrelated with one another and with the general dimension. It is important to point out that even though every group of assertions introduces an additional dimension, models with this latent structure do not suffer from the complications of dimensionality like other multidimensional IRT models because one can take advantage of this special structure during model calibration (Gibbons & Hedeker, 1992). In this regard, Rijmen (2010) showed that it is unnecessary to assume all nuisance dimensions are uncorrelated; rather, it is sufficient that they are independent, given the general dimension θ.

The model structure of the IRT model for science is illustrated in Figure 14. Note that stand-alone items can be scored with more than one assertion. The assertions of stand-alone items with more than one assertion but fewer than four assertions were also modeled as stand-alone assertions. Even though these assertions are likely to exhibit conditional dependencies, the variance of the nuisance dimension cannot be reliably estimated if it is based on a very small number of assertions. The few stand-alone items with four or more assertions were treated as item clusters to take into account the conditional dependencies.

Figure 14: Directed Graph of the Science IRT Model



Item Response Function

The item response functions of the stand-alone assertions are modeled with a unidimensional model. For the grouped assertions, like in unidimensional models, different parametric forms can be assumed for the conditional probability of obtaining a score of z_{ij}. The Rasch testlet model is adopted as the IRT model for the Utah science assessments (Wang & Wilson, 2005). For binary data, the Rasch testlet model is defined as:

$$P\left(z_{ij}|\theta_j, u_{jg}; b_i\right) = \frac{\exp\left(\theta_j + u_{jg} - b_i\right)}{1 + \exp\left(\theta_j + u_{jg} - b_i\right)} \quad (3)$$

The item response function of the Rasch testlet model models the probability of a correct answer (i.e., a true assertion), as a function of the overall proficiency θ, the nuisance dimension u_g, and the item (i.e., assertion) difficulty b_i. The Rasch testlet model does not include item discrimination parameters; however, the same model structure as presented in Figure 14 could be employed with discrimination parameters included in Equations (2) and (3). Furthermore, only models for binary data are considered. Assertions are always binary because they are either true or false. Nevertheless, the model could easily accommodate polytomous responses by using the same response function that is incorporated in unidimensional models for polytomous data.

Multigroup Model

The science item bank was calibrated concurrently using all the items administered in any of the states that collaborate with CAI on their new science assessments. In the calibration, each state was treated as a population of students or group. Overall group differences were taken into account by allowing a group-specific distribution of the overall proficiency variable θ. Specifically, for every student j belonging to group k , $k = 1, \ldots, K$, a normal distribution was assumed,

$$\theta_j \sim N(\mu_k, \sigma_k^2),$$

where μ_k and σ_k^2 are the mean and variance of a normal distribution. The mean of the reference distribution $(k = 1)$ was set to 1 to identify the model. For each of the nuisance variables u_g, a common variance parameter across groups was assumed, and the means were set to 0 in order to identify the model,

$$u_{jg} \sim N\left(0, \sigma_{u_g}^2\right).$$

In 2018 and 2019, the IRT models were calibrated using the Bayesian networks with logistic regression (BNL) suite of Matlab functions (Rijmen, 2006) and flexMIRT (Cai, 2017). The resulting parameters from BNL were used as starting values for flexMIRT, to reduce the estimation time for flexMIRT. Starting from 2021, CAIRT (Cambium Assessment IRT) is used for calibration, which was specifically developed by CAI to calibrate advanced IRT models on very large data sets. It relies on the same estimation methods as BNL. CAI has cross-validated parameter estimates from CAIRT with BNL and flexMIRT under a variety of scenarios (Rijmen, Liao, & Lin, 2021).

4.5.3 ANALYSIS OF DIFFERENTIAL ITEM FUNCTIONING

DIF refers to items that appear to function differently across identifiable groups, typically across different demographic groups. Identifying DIF is important because it provides a statistical indicator that an item may contain cultural or other bias. DIF flagged items are further examined by content experts who are asked to re-examine each flagged item to decide whether the item should be excluded from the pool due to bias. Not all items that exhibit DIF are biased; characteristics of the educational system may also lead to DIF.

CAI uses a generalized Mantel-Haenszel (MH) procedure to calculate DIF. The generalizations include adaptation to polytomous items; and improved variance estimators to render the test statistics valid under complex sample designs. With this procedure, each student's estimated theta score on the operational items on a given test is used as the ability-matching variable. That score is divided into 10 intervals to compute the $MH\chi^2$ DIF statistics for balancing the stability and sensitivity of the DIF scoring category selection. The analysis program computes the $MH\chi^2$ value, the conditional odds ratio, and the MH-delta for dichotomous items; the $GMH\chi^2$ and the standardized mean difference (SMD [Dorans & Schmitt, 1991]) are computed for polytomous items.

The MH chi-square statistic (Holland & Thayer, 1988) is calculated as:

$$MH\chi^2 = \frac{(|\sum_k n_{R1k} - \sum_k E(n_{R1k})| - 0.5)^2}{\sum_k var(n_{R1k})},$$

where $k = \{1, 2, \dots K\}$ for the strata, n_{R1k} is the number of correct responses for the reference group in stratum k, and 0.5 is a continuity correction. The expected value is calculated as

$$E(n_{R1k}) = \frac{n_{+1k} n_{R+k}}{n_{++k}},$$

where n_{+1k} is the total number of correct responses, n_{R+k} is the number of students in the reference group, and n_{++k} is the number of students in stratum k, and the variance is calculated as

$$var(n_{R1k}) = \frac{n_{R+k} n_{F+k} n_{+1k} n_{+0k}}{n_{++k}^2 (n_{++k} - 1)},$$

where n_{F+k} is the number of students in the focal group, n_{+1k} is the number of students with correct responses, and n_{+0k} is the number of students with incorrect responses in stratum k.

The MH conditional odds ratio is calculated as

$$\alpha_{MH} = \frac{\sum_k n_{R1k} n_{F0k} / n_{++k}}{\sum_k n_{R0k} n_{F1k} / n_{++k}}.$$

The MH-delta (Δ_{MH} [Holland & Thayer, 1988]) is then defined as

$$\Delta_{MH} = -2.35 \ln(\alpha_{MH}).$$

The generalized MH statistic generalizes the MH statistic to polytomous items (Somes, 1986), and is defined as

$$GMH\chi^2 = \left(\sum_k \boldsymbol{a}_k - \sum_k E(\boldsymbol{a}_k)\right)' \left(\sum_k var(\boldsymbol{a}_k)\right)^{-1} \left(\sum_k \boldsymbol{a}_k - \sum_k E(\boldsymbol{a}_k)\right)$$

where $\boldsymbol{a}_k$ is a $(T-1)\ X\ 1$ vector of item response scores, corresponding to the T response categories of a polytomous item (excluding one response). $E(\boldsymbol{a}_k)$ and $var(\boldsymbol{a}_k)$, a $(T-1)\times(T-1)$ variance matrix are calculated analogously to the corresponding elements in $MH\chi^2$ in stratum k.

The SMD (Dorans & Schmitt, 1991) is defined as

$$SMD = \sum_k p_{FK} m_{FK} - \sum_k p_{FK} m_{RK}$$

where

$$p_{FK} = \frac{n_{F+k}}{n_{F++}}$$

is the proportion of the focal group students in stratum k,

$$m_{FK} = \frac{1}{n_{F+k}}\left(\sum_t a_t n_{Ftk}\right)$$

is the mean item score for the focal group in stratum k, and

$$m_{RK} = \frac{1}{n_{R+k}}\left(\sum_t a_t n_{Rtk}\right)$$

is the mean item score for the reference group in stratum k.

DIF analysis was conducted for all field-test items with at least 200 responses per item in each subgroup (Zwick, 2012) to detect potential item bias for major demographic groups.

DIF statistics were calculated at the item level for ELA and mathematics and at the assertion level for science. DIF analyses were performed for the following groups:

- Male vs. Female
- American Indian/Alaskan Native vs. White
- Hawaiian/Pacific Islander vs. White
- Asian vs. White
- African American vs. White
- Hispanic vs. White
- Multi-Racial vs. White
- English Language Learner (ELL) vs. Non-ELL
- Special Education (SPED) vs. Non-SPED
- Economically Disadvantaged vs. Non-Economically Disadvantaged

Appendix 4-K presents the DIF statistics for the field-test items and Table 49 details the DIF classification rules. Similar to how the general MH statistic is used to classify items on traditional tests, assertions were classified into three categories (i.e., A, B, or C) for DIF, ranging from "no evidence of DIF" to "severe DIF." Furthermore, assertions were categorized positively (i.e., +A, +B, or +C), signifying that an item favors the focal group (e.g., African American/Black, Hispanic, or female), or negatively (i.e., –A, –B, or–C), signifying that an item favors the reference group (e.g., white or male). For science, an item cluster is flagged for data review if two or more assertions show "C" DIF in the same direction. Appendix 4-L summarizes the DIF flagging results of the spring 2021 field-test items.

Table 49: DIF Classification Rules

DIF Category	Flag Criteria
Dichotomous Items	
C	$MH\chi^2$ is significant and $\lvert \hat{\Delta}_{MH} \rvert \geq 1.5$.
B	$MH\chi^2$ is significant and $\lvert \hat{\Delta}_{MH} \rvert < 1.5$.
A	$MH\chi^2$ is not significant.
Polytomous Items and Assertions	
C	$MH\chi^2$ is significant and $\lvert SMD \rvert / \lvert SD \rvert \geq .25$.
B	$MH\chi^2$ is significant and $\lvert SMD \rvert / \lvert SD \rvert < .25$.
A	$MH\chi^2$ is not significant.

4.6 ITEM BANKS

4.6.1 ESTABLISHING THE BANKS

4.6.1.1 ELA and Mathematics

New items are developed and field-tested in the spring administration of each year, using CAI's field-test engine, and then calibrated and analyzed. All bank items were aligned to the Utah Core Standards for ELA and mathematics.

All administered test items were reviewed by the Content and Fairness Advisory Committee (CFAC) prior to administration. Items were reviewed for (1) alignment to the Utah Core Standards, and (2) potential bias, including language that might be disadvantageous to a group, be considered offensive to members of a particular group, or present obstacles to a group because of factors unrelated to content and processes specified in the standards. Only the items approved by the CFAC and the USBE content specialists are embedded in the operational assessments.

Before being eligible for administration, all administered test items and stimuli passed through three external reviews with committees in Utah: (1) content committee review consisting of well-informed panelists from Utah tasked with reviewing the items for alignment to the Utah Core Standards and overall content quality; (2) fairness and sensitivity committee review consisting of panelists who represented the diverse backgrounds of the Utah student population and were trained to review items for potential bias, including language that might be disadvantageous to a group, be considered offensive to members of a particular group, or present obstacles to a group because of factors unrelated to content and processes specified in the standards; and (3) parent review committee review consisting of 15 appointed parents who reviewed items for overall quality and assurance that they are acceptable for Utah students. Parents were allowed to make comments on each item they reviewed, and USBE made the final decision regarding which edits were made, which edits were not made, and any items rejected as a result of parent review.

Following the close of the test administration window, classical and IRT statistics were performed on all administered test items. Items with any statistic outside of acceptable ranges were flagged for further review by the content review committee. Any items rejected at the item data review meetings were dropped from the bank and excluded from scoring. Section 4.5, Item Statistics, further discusses the flagging criteria used.

4.6.1.2 Science

Starting from 2018, science items are field tested in Utah and the other MOU states, as well as the states that mainly use ICCR items. Note that in 2019, Utah had a contract with Questar and did not administer any field-test items with CAI. All items administered in Utah were aligned to the Utah Core Standards for science.

There was a target of a minimum sample size of 1,500 students per item for any given state. Most items were administered in two or more states so that the item pools for all individual states were linked through common items. The common item design was used to calibrate all the items on a common science scale for each grade band. The calibration model is explained in detail in section 4.5.2.2, Science Item Response Theory Statistics.

Before being eligible for administration, science field-test items went through a similar review process as ELA and mathematics items. Following the close of the test administration window, classical statistics were performed on all administered field-test items using the data of the students testing in the state that owned the item. DIF statistics were computed based on combined states' data whenever possible (i.e., for states with an independent field test or an operational test for which the relevant demographic variable was available), following the recommendations of several Technical Advisory Committees (TACs). During the item data review meetings, items were reviewed by either the owner state committee, or the MOU cross-state data review committee; items were either accepted or rejected. All items accepted from the Utah-specific data review will be incorporated into the operational item bank. MOU items accepted at the cross-state data review or other states' data reviews will be incorporated into Utah's operational item bank if they align with Utah standards and are accepted by CFAC and parent reviews.

4.6.2 BANK MAINTENANCE

4.6.2.1 ELA, Mathematics, and Science

To maintain the RISE item banks, new items are developed and field-tested in the spring administration of each year, using CAI's field-test engine, and then calibrated and analyzed following the procedures described in Section 4.5.2, Item Response Theory Statistics.

The field-test engine that CAI employs for embedding field-test items randomly samples field-test items for each individual test administration, essentially creating thousands of unique embedded field-test (EFT) forms. This sampling approach to embedding field-test items results in several important outcomes:

- Reduction in the number of embedded field-test items that each student must respond to and more efficient "spiraling" of items, which reduces clustering of item responses, resulting in more precise parameter estimates
- More generalizable item statistics because they are not based on items appearing in a single position
- A truly representative sample of respondents for each item

The embedded field-testing algorithm actually consists of two different algorithms—one for identifying which field-test items will be administered to which student (the *distribution algorithm*), and one for selecting the position on the test for each item administered to the student (the *positioning algorithm*).

When a student starts a test, the system randomly selects a predetermined number of item groups, stopping when it has selected item groups containing at least the minimum number of field-test items designated for administration to each student. We refer to item groups rather than items because field-test items, like items in the operational tests, can either be stand-alone items or appear together as a group, such as when items are bound with a reading passage or some other common stimulus. We use the term *item groups* to refer to both cases, with stand-alone items representing item groups of one. This randomization ensures that (1) each item is seen by a representative sample of participating students, and (2) every item is as likely as every other item to appear in a class or school, minimizing the clustering effects.

Construction of item groups for reading passages or other stimulus-based item sets similarly reduces clustering. With static embedded field test (EFT) blocks, reading passages and other stimuli are typically field tested with two or more sets of fixed items, so that each administration of a passage or stimulus is associated with a fixed set of items in a fixed order. The distribution algorithm, however, randomly selects a group of items from within the stimulus or passage set for administration, so that all items within a stimulus or passage set are administered with all other items from within the set, which reduces clustering by distributing items across all students rather than within a limited number of forms, and results in a more representative sample of students responding to each item.

A second, *positioning algorithm*, determines where an item appears on a given student's test, with the result that the position of each item is randomized among the positions designated as available for field-test items. This way, the field-test items can be interspersed with operational items (making them more difficult to detect) and each item is seen across all available positions. This approach helps "average out" position effects on item functioning, yielding more robust and generalizable estimates of their statistical properties. Our algorithm accomplishes what paper test "balanced block" designs seek to approximate. For item groups, averaging out position effects also means that any effects of item cueing are removed from item parameter estimates.

The procedures for item review are discussed in Section 4.3, Item Review. Table 50 through Table 52 present the number of field-test items administered and rejected in 2020–2021.

Table 50: Number of Field-Test Items in 2020–2021 for Reading

Grade	Administered	Rejected
3	120	11
4	102	9
5	111	2
6	122	7
7	89	14
8	108	16

Table 51: Number of Field-Test Items in 2020–2021 for Mathematics

Grade	Administered	Rejected
3	126	10
4	113	13
5	103	5
6	118	9
7	114	12
8	100	6

Table 52: Number of Field-Test Items in 2020–2021 for Science

Grade	Administered	Rejected
4	27 (27)	2 (2)
5	27 (27)	3 (3)
6	11 (0)	5 (0)
7	12 (0)	4 (0)
8	22 (0)	4 (0)

Note. Utah-owned items are indicated in the parentheses.

4.6.3 BRAILLE ITEM POOLS

The RISE ELA, mathematics, and science assessments were available to students who use braille in the 2020–2021 administration. Beginning with the spring 2015 administration, the braille forms were adaptive forms which met the blueprint at all levels, including reporting categories, DOK, and other constraints (except for science grades 4–6 where the item pools are still being built). Additional field testing will continue to be conducted to make the braille pools more robust. These forms contained no embedded field-test items and contained the same number of operational items as the general tests. These students were allowed one opportunity to take each content area assessment using new technology and administration procedures.

All items in the RISE item pool were reviewed to determine whether they were appropriate for braille. In general, all item formats could be brailled except for the grid items that require a student to place objects, move objects around in the answer space, or plot points and draw lines and shapes. However, if multiple-choice, multiple-select, natural language, evidence-based selected-response, or equation response items contained graphics that could not be brailled or that presented a sight bias, those items would not be used.

Reading passages and items were presented in contracted literary braille (for items containing only text). Mathematics and science items were presented in Nemeth Braille. The test content determined whether passages and items were delivered to a braille embosser or to a Refreshable Braille Display (RBD) via JAWS.

- English Language Arts (ELA):
    - Items containing only text are sent to an RBD.
    - Items containing text and images that an RBD cannot read are sent to a braille embosser.
- Mathematics and Science:
    - Items containing only text are sent to an RBD.
    - Items containing text and images that an RBD cannot read are sent to a braille embosser
    - Mathematics objects (e.g., formulas, expressions, equations) are offered in both UEB and UEB with Nemeth Code.

RISE items are first reviewed by CAI special versions staff who make an initial determination of whether the item is braillable and record this determination in the ITS with an item attribute of “Not Braillable,” “BRF,” or “PRN.” The items are then reviewed by expert braille transcribers to verify the braille attribute and then proceed with the transcription process.

During the transcription process, the vendor alerted CAI to any instances of sight bias or graphics that would not be compatible with an embosser. Additionally, all braillable items were reviewed by the transcription vendor in accordance with the Braille Authority of North America's (BANA) *Braille Formats: Principles of Print-to-Braille Transcription* (2011). Further, braille experts at the Utah State Instructional Materials Access Center (USIMAC) reviewed a random sample of items and discussed any necessary edits with CAI. CAI reported the edits to the transcription vendor for implementation and to ensure that similar items follow USBE's specifications. Refer to Section 4.6.5, Summative vs. Interim Pools, regarding interim braille pools beginning with the fall 2016 administration.

4.6.4 AMERICAN SIGN LANGUAGE ITEM POOLS

Prior to the 2015 spring administration, all Utah-owned operational and embedded field-test listening stimuli included ASL videos for students with the ASL accommodation. Starting with the spring 2015 administration, the ASL embedded accommodation became available for ELA listening stimuli and items. Using this accommodation, students were able to retrieve ASL videos to help access test content. The videos appeared in a window on the same screen as the items, showing a human signer translating test content.

4.6.5 SUMMATIVE VS. INTERIM POOLS

During the summer of 2015, the summative and interim pools for ELA and mathematics were divided into two pools: one for summative and one for interim. This was a request from USBE to address concerns that interim items were not held "as secure" by teachers, and therefore, they wished to protect their summative pools from possible release. CAI staff worked to separate the pools in order to meet the following goals:

- Interim pools had to be adaptive to meet the new interim blueprints for Classroom Period tests.
- Summative pools had to remain sufficiently adaptive to meet the unchanged blueprints.
- Most DOK3 items remained in summative, and in most cases, only a minimum number of DOK3 items were moved to interim (as requested by USBE).
- Any ICCR items or items shared from other states had to remain in summative, per item-sharing agreements.
- Utah-owned Items leased by Florida and Tennessee (as well as a handful of items leased by Ohio and possibly Arizona) had to remain in summative to maintain their security.

Appendix 4-M summarizes the number of items available in the spring 2021 summative pools by DOK level and item type. Appendix 4-N summarizes the average item difficulty by cluster and DOK level for the items available in the spring 2021 summative pools.

As a result of the split, summative braille pools were sufficient to meet blueprint; and in the few cases where more items were needed, CAI-brailled items that survived the spring 2015 field test were included when the spring summative window opened in March 2016, allowing all students to take braille tests.

Also, as a result of the split, interim braille pools were not always sufficient to meet blueprint (mainly two grades in ELA for Speaking and Listening, some writing prompts, and a few upper grades in mathematics). The interim pools that were sufficient were available for braille students beginning in January 2016. CAI worked to braille or moved more summative items to interim so that all interim braille tests would be available by the fall 2016 administration.

4.6.6 MODULAR BENCHMARKS

4.6.6.1 Background of Modular Benchmarks

Prior to the opening of the interim window in August 2016, CAI worked with USBE to create benchmark modules as a way of responding to requests from the field for more ways to improve instruction. The benchmark modules were created using the interim items and grouped together by reporting category, at all grades assessed by RISE summative, for mathematics and ELA. These benchmark modules were designed to be fixed-form “testlets” that allowed teachers to have checkpoints along the way during instruction, prior to the RISE summative administration. Further, they were designed to help teachers guide their instruction, as all modules were reporting-category based. For science, benchmark modules consisted of one item cluster and only raw scores were reported.

4.6.6.2 Construction of the Modular Benchmarks for ELA and Mathematics

CAI content specialists reviewed the interim pools when building the benchmark modules to create these fixed forms, using some of the following general guidelines:

- Each form must contain at least 8 items (or 10 points; in the case of writing prompts, which had 1 prompt per form; and editing tasks, in which the forms contained two editing task sets for a total of 10 errors.)
- Many forms would contain 12 or more items, and a cap was placed on about 24 items to ensure no benchmark modules would take more than roughly a 30-minute classroom period.
- Whenever possible, more than one form was created: Form A and Form B (sometimes Form C), all relatively parallel in terms of their coverage of standards. Notable exceptions are:
    - Writing (only one type of prompt per grade was available in 2016–2017)
    - Speaking and Listening (the listening pools were not robust enough to generate a second form)
- Not all items in the interim pools had to be used, but as many as possible could be. (For example, in Reading, two RI or two RL passage sets were combined to create a form; but if content-area standards were sufficiently covered, “extra” items were excluded to keep the length of the forms reasonable.)
- Items in mathematics and science forms were ordered by standard. For example, in grade 3 mathematics OA (Operations and Algebraic Thinking), which has nine different standards, items were ordered sequentially by standard, in ascending order.

USBE reviewed and approved all benchmark modules before they were delivered in August 2016.

Appendix 4-A, Interim Target Blueprints and Summary of Modular Benchmarks, denotes the modular benchmarks in each grade for ELA and mathematics, the purpose of each module, the number of forms per module, and the number of items in each form.

4.6.6.3 Teacher Usage of Modular Benchmarks

At the same time these benchmark modules were deployed in August 2016, CAI launched the Reporting System. This highly functional and useful system allowed teachers, upon completion of a particular benchmark module, to:

- View student responses to all items on a particular form.
- Sort student responses by score points earned.
- View the corresponding rubric to review why students did not receive full credit.
- View the corresponding standards to which each item was aligned.

5. TEST ADMINISTRATION

The purposes of the original SAGE (now RISE) assessments were to: (1) meet or exceed the requirements of the No Child Left Behind Act (NCLB; 2001) and Utah State Legislature House Bill 15 of 2012, which required district and charter schools to administer computer-adaptive tests (CATs) aligned with Utah Core Standards no later than the 2014–2015 school year; (2) promote and measure the attainment of the Utah Core Standards; and (3) provide information to stakeholders about the assessment, assessment tools, and reports to support teaching and learning.

The Utah state reading, mathematics, and science assessments were required components of the statewide student assessment program. Student scores in reading, mathematics, and science were included in school accountability results. The English language arts (ELA) assessments were administered to students in grades 3–8. The mathematics assessments were administered to students in grades 3–8 and Secondary Mathematics I. The science assessments were administered to students in grades 4–8.

USBE used a different vendor to deliver their 2018–2019 assessments and changed the name of the tests from SAGE to RISE. In the summer of 2019, USBE entered a three-year contract with CAI (formerly AIR) to deliver the RISE assessments in grades 3–8 in reading; grades 5 and 8 in writing; grades 3–8 in mathematics and Secondary Math I; and grades 4–8 in science. To deploy the system as soon as possible, it was agreed that CAI would deliver the same tests, where possible, as were delivered in 2017–2018, using the original SAGE item bank and importing newly-developed items from Questar.

5.1 TESTING OPTIONS

5.1.1 HISTORICAL BACKGROUND OF TESTING OPTIONS

The first SAGE administration occurred in spring 2014. This was an operational field test allowing the students to take only one summative test and still providing scale scores, proficiency levels, and data for accountability. The 2013–2014 SAGE testing window spanned four months during the school year for the online assessment (February 10–June 13, 2014). Trimester schools tested in February, while the main spring summative window opened on April 1, 2014. The spring testing window for writing opened early to have the writing tests completed in time to schedule rangefinding meetings. The writing pilot window, provided in late winter 2015, was an operational field test administered over six weeks. The spring testing window was made available in April 2015 for ELA, mathematics, and science (the ELA window let students take writing if they moved to the state after the pilot window).

The initial window of the following school years occurred in the summer of each year. The second testing window occurred in the fall, where students were provided with both the interim and summative assessments. Both provided scale scores and proficiency levels in real time, as well as data for accountability. The window remained open throughout winter, where trimester schools were given the opportunity to test. The spring testing window was made available for ELA, mathematics, and science.

In September 2016, benchmark modules were made available along with the Reporting System for reporting. These are fixed-form tests for all subjects, grades, and courses using items from the interim bank. They are short tests each focused on a particular strand. Students have unlimited testing opportunities, and each opportunity expires 10 days from when the test was started.

Starting in spring 2018, grade 9 and 10 ELA students were no longer required to complete a writing essay response. Students who took the writing assessment before the spring window had their scores included in their overall ELA score, but if they did not take the assessment before March 20, 2018, their overall score was based on reading only.

5.1.2 2019–PRESENT TESTING OPTIONS

Starting in fall 2019, summative writing was only required in grades 5 and 8 and the writing results were not merged with the ELA tests taken at all grades (3–8).

During the 2020–2021 testing window, all eligible students had one opportunity for summative assessments and two opportunities for interim assessments in each content area using the web-based RISE system. In the 2020–2021 testing window, USBE decided that students should be eligible for on-grade and below-grade interims; this decision only applied to the 2020–2021 school year. The adaptive RISE ELA, mathematics, and science assessments were available to students who used braille. These students had one opportunity to take each content area assessment using new technology and administration procedures. Mathematics students were given the option to use UEB or UEB with Nemeth Code starting in spring 2018. Table 53 lists the testing options offered in 2020–2021. Once a testing option was selected for a content area, it applied to all tests in the content area.

Table 53: Summary of Tests and Testing Options in 2020–2021

Tests	Tested Grades	Number of Testing Opportunities
Summative Reading	3–8	1
Summative Writing	5, 8	1
Summative Mathematics	3–8, Secondary Mathematics I	1
Summative Science	4–8	1
Interim Reading	3–8	2
Interim Mathematics	3–8, Secondary Mathematics I	2
Benchmark Reading	3–8	999
Benchmark Writing	3–8	999
Benchmark Mathematics	3–8, Secondary Mathematics I	999
Benchmark Science	4–8	999

Note. All tests/subjects listed were also available to be administered using braille. Students had two opportunities to take the interim assessments—one in the fall window and one in the winter window. Students had unlimited opportunities to take the benchmark assessments.

5.2 ADMINISTRATION PROCEDURES

The RISE assessments were administered online. To ensure standardized administration conditions, test administrators (TAs) followed procedures outlined in the *Test Administration Manual* (TAM). TAs were provided with specific sections in the TAM for benchmark modules, interim assessments, and summative assessments. TAs were urged to review the TAM before the beginning of testing to ensure that the testing room was prepared for testing confirm procedures, and guarantee knowledge of testing policies before students took the test.

TAs were required to follow administration procedures and directions. TAs referenced the TAM before and during testing, ensuring standardized administration conditions for all assessments. The TAM is provided in Appendix 5-A, Test Administration Manual.

5.2.1 ADMINISTRATIVE ROLES

The administration of RISE summative tests required involvement of multiple individuals at each testing site, representing four different roles: School Testing Coordinator (STC), Technology Coordinator, Lab/Session Manager, and Test Administrator (TA)/Proctor. Depending on local policy, a single individual could engage in multiple roles if qualified for each (e.g., the TA/Proctor may also act as the Lab/Session Manager). These roles and responsibilities are outlined below.

School Testing Coordinator

Under the direction of the Assessment Director (AD), the STC oversaw all aspects of testing. The STC ensured that TAs executed the required policies and procedures for standardized testing and that these administrators were properly trained and certified. The STC responsibilities also included working with the ADs to confirm that all teachers and students were properly registered to test with accurate data; using the systems to mark special codes and accommodations for appropriate students; verifying proper testing assignments for students; and working with all necessary personnel to resolve testing issues.

Technology Coordinator

The Technology Coordinator's primary responsibility was to ensure that the school's hardware and software met the requirements for the online assessments. The Technology Coordinator was expected to understand the basic functionality for RISE, install the CAI Secure Browser for online testing on each computer before testing began, and work with the STCs and TAs to coordinate the technical details for testing. For more details on the secure browser used for testing and other hardware and software requirements, please refer to the *RISE Configuration, Troubleshooting, and Advanced Secure Browser Installation Guides* available on the RISE portal (https://utahrise.org/resources/technology-resources/). The *RISE Configuration, Troubleshooting, and Advanced Secure Browser Installation Guides* are also presented in Appendix 5-B, *Configuration, Troubleshooting, and Advanced Secure Browser Installation Guides*.

Lab/Session Manager

The Lab/Session Manager's role was to work with the STC or TA/Proctor to distribute student login information. In addition, Lab/Session Managers were responsible for starting, stopping, and pausing all RISE summative testing sessions; approving students for entry into the testing event using the Test Delivery System (TDS); and documenting any situations that affected testing (e.g., fire drills, technical issues). The Lab/Session Manager also provided documentation of the requirements prior, during, and after testing.

Test Administrator/Proctor

The TAs/Proctors administered the assessments to the students. TAs were expected to ensure that students were able to access the testing session, actively proctor testing, and work with the Lab/Session Manager to document and resolve any problems during testing. TAs were also responsible for reviewing the appropriate manuals and user guides on how to administer the assessments, as well as for reviewing the participation reports in TIDE with the STC. Finally, TAs had to ensure that all students who required a scheduled make-up test session or completion session were able to do so in order for all students to finish testing. The TA/Proctor responsibilities also provided documentation of the requirements prior, during, and after testing.

5.2.2 ONLINE ADMINISTRATION

RISE testing allowed schools to choose testing dates within specified testing windows, to test students in intervals rather than in one long period of time, and to administer the assessments to students for each content area.

To start a test session, the TA would first enter the TA Interface of the online testing system using his or her own computer. A session ID was generated when the test session was opened. Students who were taking the assessment with the TA had to enter their State Student Identification Number (SSID), first name, and the session ID into the Student Interface using computers provided by the school. In addition, all RISE eligibility was changed to be controlled by test event codes provided by USBE in a nightly UTREx file. The TA then verified that the students were taking the appropriate content area assessment(s) and were provided with the appropriate assessment accommodations, such as use of a Descriptive Audio (refer to Section 5.2.4, Allowable Global Resources, Tools, and Accommodations, for a list of accommodations). Students would begin testing only after the TA confirmed that the students were taking the appropriate assessments(s) and approved them to be tested. The TA would then read aloud the *Directions for Administration* to the students and walk them through the login process.

Once an assessment was started, students had to answer all test questions before proceeding to the next question; students were not allowed to skip questions. Students were permitted to select items to review at the end of the test. The online testing system allowed a student to scroll back to review and edit answers, as long as the student was in the same test session and the test session had not been paused for more than 20 minutes. The pause rule was not enforced on the writing test. In the online testing system, an assessment could be started in one test session and completed in another session(s). In a subsequent test session, answers provided in the previous test session would not be available for review or editing if the time between sessions was more than the pause rule allowed, except for writing assessments. Test sessions were not timed; therefore, students could use as much time as needed to complete an assessment.

TAs could also pause a single student's assessment, or all the assessments during a test session (for example, to give students a break). It was up to the TA to determine an appropriate stopping point; however, assessments were not paused for more than 20 minutes to ensure the integrity of the assessments with the exception of the writing test.

The TA remained in the room at all times during a test session to monitor student testing. Once the test session ended, the TA made sure that each student had successfully logged out of the system, collected any handouts or scratch paper that was used by students during the assessment, and securely shredded them.

5.2.2.1 Test Participation

There are circumstances in which a student did not participate in an expected assessment or participated in an assessment but in a non-standard way. In such instances, participation codes control and document how the test record is handled for reporting aggregates and accountability calculations. Available participation codes are presented in Table 54. For more information on test participation, please refer to the *Test Information Distribution Engine (TIDE) User Guide*, presented as Appendix 5-F.

Table 54: Participation Codes and Their Descriptions

Participation Code	State	Federal	Description
101: Did Not Test	Countable for Participation only	Countable for Participation only	Student was enrolled at the school and eligible to test (with or without reasonable accommodations) but did not test.
103: ELL First Year in U.S. April 15 or Later	Not Countable	Not Countable	The student is an English language learner (ELL) and first enrolled in the U.S. on or after April 15 of current school year. Student is not required to test, but testing is made available.

Participation Code	State	Federal	Description
104: ELL First Year in U.S. Before April 15	Counted for Participation only	Counted for Participation only	The student is ELL and first enrolled in the U.S. before April 15 of current school year. Student must take ELA, mathematics, and science.
205: ELL in Second Year of Enrollment	Counted in Participation and Growth	Counted in Participation and Growth	Student is ELL and first enrolled in the U.S. during the 2019–2020 school year. Student must take ELA, mathematics, and science.
106: Student Refused to Test	Countable	Countable	Student refuses to start the assessment or refuses to complete at least six items of the assessment.
107: Excused for Health Emergency	Not Countable	Not Countable	Student is unable to test during the testing window due to an unanticipated health circumstance.
108: Course Instruction Not Complete	Not Countable	Not Countable	Student will not complete the relevant course instruction during the current academic year. Not available for Utah Aspire Plus.
109: Course Not Provided	Not Countable	Not Countable	Student did not take a course associated with the assessment (e.g., student is assigned a test for a course they did not take at any time during the current school year).
110: Test Has Already Been Taken	Not Countable	Not Countable	Student has already taken the same assessment during a previous administration year.
111: USBE Excused – Approval Needed	Not Countable	Not Countable	Requires USBE authorization. Used in rare circumstances to capture irregular test circumstances.
112: Student Transferred Before Testing Window	Not Countable	Not Countable	Student transferred out of school before the LEA had a reasonable opportunity to administer the assessment.
200: Standard Participation	Countable	Countable	Student took the assessment under normal circumstances.
201: Accommodated	Countable	Countable	Student took the assessment with allowed accommodation(s).
202: Modified	Counted for Participation only	Counted for Participation Only	Student took the assessment with non-allowed modifications which interfere with the validity/reliability of the test.

Participation Code	State	Federal	Description
203: Invalidated	Not Countable	Not Countable	LEA determines that the test was spoiled or invalid (e.g., student cheated; TA broke protocol).
204: Parental Exclusion*	Not Countable	Countable	A parent or guardian has requested in writing that the student be exempt from the assessment.
208: Test System Irregularity	Not Countable	Not Countable	The test event was interrupted by a system error without reasonable opportunity to reset or re-open the test. USBE approval required.
209: Incorrect Course Code Assigned	Countable	Countable	An incorrect course code or grade was assigned, triggering an incorrect test. LEA correction of the course code is required.

5.2.2.2 Scheduling Make-Up Testing and Test Completion Sessions

Test completion sessions could include students working on different tests.

Unexpected circumstances (e.g., fire drills, power failures) could interrupt testing. Test completion sessions could be scheduled when normal conditions were restored. Interruptions could not reduce the total amount of time students were given to complete tests.

After a test had been paused for 20 minutes, the student could no longer view or modify responses from that testing session. Students could not view or change prior answers during a make-up session. A make-up or completion session was only to finish the remaining portions of the test. This limit did not apply to the ELA writing test, which could be modified up to the point of submission.

5.2.2.3 Test Irregularities

On rare occasions, a non-standard situation arose during test administration. Three ways to account for irregularities were provided. Steps for dealing with test irregularities are outlined in more detail in the sections on Appeals or Appeal Requests in the *TIDE User Guide*.

- ***Reset a Test.*** Resetting a test eliminates all responses for a student. When that student logged in to the test again, the test would start over. Resetting could only be implemented in situations where the test could not be appropriately completed as is (e.g., two students accidentally log in to each other's test, a student requiring braille was not given the accommodation). A test could never be reset to give a student a second opportunity.
- ***Grace Period Extension.*** Extending a test's grace period gives a student access to his or her previous responses. This extension could be granted if a test session was interrupted unexpectedly (e.g., fire drill, lockdown). The grace period extension could not be applied if the test session ended normally or if the student was given time to review his or her answers before logging out of a test.
- ***Invalidate a Test.*** Tests could be invalidated when a student's performance was not an accurate measure of his or her ability (e.g., the student cheated, used inappropriate materials). If a test was invalidated, the

student was not given another opportunity to take the test. Invalidating a test required the approval of an LEA-level user.

- ***Reopen a Test.*** Reopening a test changed the test's status from completed or reported to paused. This capability was useful if a student accidently submitted a test before reviewing it. After the test was reopened, a student could resume testing. A test was not reopened once a student saw a score.
- ***Reopen a Test Segment.*** Reopening a test segment allowed a student to return to a prior segment in cases where the student moved to the next segment in error. This could occur on both summative and interim mathematics grade 6 tests or summative writing tests. After the test segment was reopened, a student could return to the prior segment and complete his or her work.

5.2.3 BRAILLE AND AMERICAN SIGN LANGUAGE TEST ADMINISTRATION

RISE is made available to students who use braille as a mode of instruction, allowing these students to have access to the adaptive assessments.

The RISE braille interface delivers assessments to students in the following formats:

- The braille interface works with the Job Access with Speech (JAWS) Screen Reading software provided by Freedom Scientific and is an essential component that students used with the braille interface.
- Mathematics and science items are presented to students in either UEB or UEB with Nemeth Code (depending on their IEP) through the adaptive test via a braille embosser.
- Students taking the ELA tests are able to emboss both reading passages and items as they progress through the assessment. If a student has a Refreshable Braille Display (RBD), a 40-cell RBD is recommended. The ELA test is presented to the student with items in contracted Literary Braille (for items containing only text) and via a braille embosser (for items with tactile or spatial components that could not be read by an RBD).

Prior to administering RISE assessments using the braille interface, TAs are required to ensure that the technical requirements are met. These requirements apply to the student's computer, the TA's computer, and the supporting braille technologies used in conjunction with the braille interface. Any additional requirements are outlined in each of the respective TAMs and the *RISE Assistive Technology Manual*. The *RISE Assistive Technology Manual* is presented as Appendix 5-C, Assistive Technology Manual.

USBE has made the decision to transition to UEB for all subjects. USBE is allowing students' IEPs to determine whether they will receive UEB or UEB with Nemeth Code.

Starting with the spring 2015 administration, the ASL-embedded accommodation became available for ELA listening stimuli. Using this accommodation, students were able to retrieve ASL videos to help access test content. The videos appeared in a window on the same screen as the items, showing a human signer translating test content.

5.2.4 ALLOWABLE GLOBAL RESOURCES, TOOLS, AND ACCOMMODATIONS

During testing, students could use specified tools and resources, including scratch and graph paper, pencils, or pens. Table 55 provides resources that may be available to students during assessments.

Table 55: Allowable Global Resources and Tools for RISE in 2020–2021

Test	Allowable Resources and Tools
All RISE Summative and Interim Assessments	Headphones Scratch and/or graph paper Pencil and/or paper Dictionary Line Reader Masking Notes Zoom Buttons Text-to-Speech
Grades 6*, 7, 8 and Secondary Mathematics I All Science	Any non-Internet-capable calculator the student used during instruction* (an onscreen calculator will also be available) Periodic Table

*Students cannot use handheld calculators for the Grade 6 mathematics segment of the assessment that allows calculators (i.e., they can only use the onscreen calculator) unless they have a calculator accommodation documented in an IEP or Section 504 Plan.

Accommodations are changes in procedures or materials that increase equitable access during the RISE assessments. Assessment accommodations generate valid assessment results for students who need them; they allow these students to show what they know and can do. Accommodations are available for students with documented IEPs or Section 504 Plans. USBE-approved accommodations do not compromise the learning expectations, construct, grade-level standard, or intended outcome of the assessments. Table 56 lists accommodations that may be available to students during assessments.

Table 56: Accommodations for RISE in 2020–2021

Test	Accommodations
ELA	ASL (for listening stimuli) Assistive Technology Print-on-Request Refreshable Braille Scribe Visual Representation
Mathematics	Assistive Technology Print-on-Request Refreshable Braille Calculator (Grade 6) Scribe Visual Representation
Science	Assistive Technology Print-on-Request Refreshable Braille

Test	Accommodations
	Scribe Visual Representation

5.3 TRAINING AND INFORMATION FOR SCHOOL TEST COORDINATORS AND ADMINISTRATORS

School Test Coordinators (STCs) oversaw all aspects of testing at their schools and served as the main point of contact, while TAs administered the online assessments. Webinars, user guides, manuals, and training sites were used to train the STCs and TAs about the online testing requirements and the mechanics of starting, pausing, and ending a test session. Training materials for test administration were provided online.

5.3.1 ONLINE TRAINING

Multiple training opportunities were offered online to key staff throughout the year, which included webinars and training tests.

Webinars

USBE, with CAI support, offered both in-person and webinar presentations leading up to the administration for a variety of users. The first part of the trainings focused on the technology enhancements and how to access the online testing system. The second part of the trainings covered scheduling and conducting test sessions. The webinars were primarily PowerPoint presentations.

The interactive nature of these training webinars allowed the participants to ask questions during and after the presentation. There were practice activities that followed the trainings and allowed future users to get a hands-on experience with the systems. These dates and locations are listed below.

- September 23, 2020: RISE Embedded Remote Training
- October 7, 2020: Technology Coordinator Council (TCC) Meeting
- February 19, 2021: RISE Spring Summative Webinar
- March 18, 2021: TCC Meeting

Training Sites

The RISE training test site was available for TAs and students. TAs could practice administering assessments and starting and ending test sessions on the TA training site, and students could practice taking an online assessment on the student training site. The student training test site contained approximately 15–20 test items per grade band and content area. A student could log in directly to the training site as a “Guest” without a TA-generated test session ID or could log in through a training test session created by the TA in the TA training site. Items in the student training test included all item types that were included in the operational item pool (i.e., multiple-choice items, grid items, and natural language items).

The training test was also equipped with the same tools provided in the summative and interim tests, including the dictionary tool. Students with hearing impairments had the option of an ASL Video setting whereby they could watch a signed video of the listening stimulus on the training test. Braille items were also made available to practice in the training test.

The cluster-based training tests were added for science in September 2019 for grades 6–8, and in August 2020 for grades 4–5. The practice tests were created from released ICCR bank items. Each contained one cluster.

5.3.2 MANUALS AND USER GUIDES

In addition to the online training and resources, a series of manuals and user guides were available on the RISE portal (https://utahrise.org/). All manuals and user guides were available on the RISE portal before and during the testing window.

- The *Operating System Support Plan, Quick Guide for Setting Up Your Online Testing Technology* and *Configuration, Troubleshooting, and Advanced Secure Browser Installation Guides* were available online and provided both information and resources for the Technology Coordinator and TA roles. They covered the hardware and the software requirements for RISE and information about the secure browsers. The *Operating System Support Plan* and *Quick Guide for Setting Up Your Online Testing Technology* provided information about supported operating systems and related requirements, network and Internet requirements, general hardware and software requirements, and text-to-speech information. Instructions for specific software configuration changes were also described in the manual. The *Configuration, Troubleshooting, and Advanced Secure Browser Installation Guides* are presented as Appendix 5-B. The *Operating System Support Plan* is presented as Appendix 5-D. The *Quick Guide for Setting Up Your Online Testing Technology* is presented as Appendix 5-E.
- The *RISE Test Information Distribution Engine (TIDE) User Guide* was available online and provided information about the TIDE application within the RISE system. This application allowed users to manage user role assignments, set student accommodations for testing, and update user information. The *RISE TIDE User Guide* is presented as Appendix 5-F.
- The *RISE Test Administration Manual* served as a software guide on how to use the online system applications, including the TA and student testing sites. The *RISE Test Administration Manual* is presented as Appendix 5-A.
- The *RISE Reporting User Guide* provided instructions on how to view results for students who completed their assessments. The *RISE Reporting User Guide* is presented as Appendix 5-G.
- The *RISE Assistive Technology Manual* provided information about supported hardware and software requirements and how to configure JAWS. The manual shares general information about administering a test to a student with a braille accommodation; printing test material was also included. The *RISE Assistive Technology Manual* is presented as Appendix 5-C.
- The *RISE Calculator Manual* was created to provide steps for schools to access the Desmos calculators used in RISE throughout the year. The *RISE Calculator Manual* is presented as Appendix 5-H.
- The *Utah Participation and Accommodations Policy* was created by USBE to address the Board's policy on student participation and accommodations. The *Utah Participation and Accommodations Policy* is presented as Appendix 5-I.

5.4 TEST SECURITY

This section describes test security, student confidentiality, and policies on testing impropriety. The RISE assessment system incorporates security systems and procedures across the range of test activities, from item and test development through test administration, scoring, and reporting. Secure test systems prevent unauthorized access to confidential student information and test content, real-time forensic analysis reports monitor testing to detect irregularities, and extensive training reinforces standardized test administration procedures, including procedures to report and document violations. These systems and procedures are consistent with best practices described in the *TILSA Test Security Guidebook* (Olson and Fremer, 2013; also refer to Wollack and Fremer, 2013).

5.4.1 STUDENT-LEVEL TESTING CONFIDENTIALITY

The Family Educational Rights and Privacy Act (FERPA) prohibits the public disclosure of student information or test results. The following are examples of prohibited practices:

- Giving out login information (username and password) either to other authorized Test Information Distribution Engine (TIDE) users or to unauthorized individuals.
- Sending a student's name and SSID number together in an email message. If information must be sent via email or fax, include only the SSID number, not the student's name.
- Having students log in and test under another student's SSID number.

Student test materials and reports could not be exposed in such a manner that student names could be identified with student results, except by authorized individuals with an educational need to know.

All students, including home-schooled students, were required to be enrolled or registered at their testing schools in order to take the online or braille assessments. Student enrollment information, including demographic data, was uploaded to the RISE systems from the UTREx system nightly via a secured file transfer site to the online testing system.

Students logged in to RISE using their legal first name, SSID number, and a test session ID. Only students could log in to an online test session. TAs, proctors, or other personnel were not permitted to log in to the RISE system on behalf of students, although they were permitted to assist students who needed help logging in.

5.4.2 MAINTAINING TEST SECURITY

The importance of maintaining test security and the integrity of test items was stressed throughout the webinar trainings and in the user guides and manuals. Features in the testing system also protected test security.

5.4.2.1 System Built-In Test Security

- **A Hierarchy of Control.** Lab/Session Managers, Technology Coordinators, School Testing Coordinators, and TAs had well-defined roles and access to the testing system. USBE provided the list of active local educational agency (LEA) administrators. These LEA administrators were responsible for managing all other users in their LEA. Throughout the year, the LEAs were also expected to delete information in TIDE for any staff members who transferred to other schools, resigned, or no longer served as TAs or teachers.
- **Password Protection.** All access points by different roles—at the state level, LEA level, school level, and school staff level—required a password to log in to the system. Newly-added TAs and teachers received separate passwords through their personal email addresses assigned by the school. Additional password requirements were created to increase the strength of user passwords. These requirements included that passwords have a minimum of eight characters and include an uppercase letter, lowercase letter, a number, and a symbol.
- **Secure Browser.** A key role of the Technology Coordinator was to ensure that CAI's Secure Browser was installed properly on the computers used for the administration of the online assessments. Developed by the testing contractor, the Secure Browser prevented students from accessing other computers or Internet applications and from copying test information. CAI's Secure Browser suppressed access to commonly used browsers such as Internet Explorer and Firefox and prevented students from searching for answers on the Internet or communicating with other students. RISE tests could be accessed only through the Secure Browser and not by other Internet browsers.

5.4.2.2 Test Security and Ethics

RISE summative tests are highly secure and should be treated as such. Access to the RISE summative testing systems could be provided to qualified personnel only. Because students used the same personal information for each test they took, proctors could allow access to tests only for students who were physically present in the room with them. No access to secure test materials could be granted to anyone who was not a student scheduled to take an exam. Non-students could not access test content at any time.

All test materials could be handled by qualified personnel only, and a system of materials accounting could be in place to ensure that all test materials are accounted for at the conclusion of testing. TAs securely stored all used and unused test materials. Students were not allowed to remove test content from a testing session. Students could not store test content or questions on their calculators. All student writing on scratch paper, graph paper, or formula sheets must have been destroyed at the conclusion of the testing window.

Educators could not examine test content, including passages, questions, or answer options, at any time. Under no circumstances could actual passages, prompts, or questions from these tests be taught to or reviewed with students.

The validity of the test was compromised when students received assistance on the test either explicitly by prior knowledge of questions, or implicitly by modified instruction by the educator.

Reproducing the test via electronic or paper means was not permitted. Such practices violated test security and testing ethics. According to state law, evidence of these illegal activities could result in disciplinary action and/or the loss of teacher licensure.

Educators could not read passages, questions, or answer options to a student. All students had access to the TTS tool throughout each test, with the exception of the reading passages in the ELA tests.

For additional information regarding testing ethics and test security, refer to the USBE-approved *Standard Test Administration and Testing Ethics Policy*. The *Standard Test Administration and Testing Ethics Policy* is presented as Appendix 5-J.

The interim tests and benchmark modules were reported using the Reporting System and allowed teachers to view the items and student responses. Additionally, USBE allowed certain benchmark modules (Form 1/Form A of ELA and mathematics benchmarks and all science benchmarks) to be remotely proctored during the 2020–2021 test window.

5.4.3 ONLINE MANAGEMENT SYSTEM

CAI employs various measures to ensure that data are secured from breaches and identity theft through implementation of physical, network, and software security protections. Beyond breaches and theft, all CAI secure websites and software systems enforce role-based security models that protect individual privacy and confidentiality in a manner consistent with Utah's privacy laws, FERPA, and other federal laws. CAI's systems implement sophisticated, configurable privacy rules that can limit access to data to only appropriately authorized personnel. Different states interpret FERPA differently, and CAI supports customized interpretations. Our systems are designed to support these interpretations flexibly. CAI is committed to working with USBE to maintain data security according to its specifications.

With regard to the Children's Online Privacy Protection Act (COPPA), CAI does not collect any personal information directly from children and, as such, does not have procedures in place to obtain parental consent. We assume USBE is covered by statutes authorizing the use of such data in the student assessment program. However data is received, CAI will follow all COPPA requirements to maintain the confidentiality, security, and integrity of personal information we receive; retain such information collected for only as long as necessary to support testing and reporting; and delete the information using reasonable measures to protect against its unauthorized access or use.

The Federal Information Security Management Act (FISMA) addresses the confidentiality, integrity, and availability of data in federal agencies and federal contractors and does not appear to be directly applicable to the Utah data under this contract. However, as part of FISMA, the National Institute of Standards and Technology is responsible for guidance and standards, including minimum requirements, for providing adequate information security.

5.4.3.1 Secure System Design

CAI has developed a custom single sign-on application that is made available in Utah's secure portal. This application is used to support access to CAI's systems in accordance with Utah's user ID and password policy. Authorized users can log in to Utah's single sign-on using their current user IDs and passwords and can be redirected to CAI's portal, where they have access to CAI's secure applications such as TIDE, the TDS, and the Reporting System. Nightly backups protect the data. The server backup agents send alerts to notify system administration staff in the event of a backup error, at which time they will inspect the error to determine whether the backup was successful, or they will need to rerun the backup. The system can withstand failure of almost any component with little or no interruption of service.

CAI's hosting provider, Rackspace, has redundant power generators that can continue to operate for up to 60 hours without refueling. With multiple refueling contracts in place, these generators can operate indefinitely. Rackspace partners with nine different network providers, providing multiple, redundant data routes. Every installation is served by multiple servers, any one of which can take over for an individual test upon failure of another.

CAI's architecture ensures data are recoverable at all times. Each disk array is internally redundant, with multiple disks containing each data element. Immediate recovery from failure of any individual disk is performed by accessing the redundant data on another disk. CAI maintains support and maintenance agreements through our hosting provider for all hardware used by our systems.

5.4.3.2 System Security Components

CAI has built-in security controls in all its data stores and transmissions. Unique user identification is a requirement for all systems and interfaces. All of CAI's systems encrypt data at rest and in transit.

Physical Security

USBE data reside on servers at Rackspace, CAI's hosting provider. Rackspace maintains 24-hour surveillance of both the interior and exterior of its facilities. All access is keycard controlled, and sensitive areas require biometric scanning.

Secure data are processed at CAI facilities and are accessed from CAI machines. CAI's servers are in a secure, climate-controlled location with access codes required for entry. Access to our servers is limited to our network engineers, all of whom, like all CAI employees, have undergone rigorous background checks.

Staff at both CAI and Rackspace receive formal training in security procedures to ensure that they know the procedures and implement them properly. CAI and Rackspace protect data from accidental loss through redundant storage, backup procedures, and secure off-site storage.

Network Security

Hardware firewalls and intrusion detection systems protect our networks from intrusion. They are installed and configured to prevent access for services other than hypertext transfer protocol secure (HTTPS) for our secure sites.

CAI's systems maintain security and access logs that are regularly audited for login failures, which may indicate intrusion attempts.

Software Security

All of CAI's secure websites and software systems enforce role-based security models that protect individual privacy and confidentiality in a manner consistent with Utah's privacy laws, FERPA, and other federal laws.

CAI's systems implement sophisticated, configurable privacy rules that can limit access to data to only appropriately authorized personnel. Different states interpret FERPA differently, and our system is designed to support these interpretations flexibly. CAI has worked with USBE to maintain data security according to its specifications.

CAI maintains logs of key activities and indicators, including data backup, server response time, user accounts, system events and security, and load test results. In addition, CAI runs automated functional tests of our TDS every morning, and logs from these runs are available for at least one week from the time of the run.

CAI psychometricians monitor the quality and performance of test administrations statewide through a series of quality assurance (QA) reports. The QA reports provide information on item behavior, blueprint match rates, and item exposure rates, and also provide cheating analysis reports.

5.5 DATA FORENSICS PROGRAM

Throughout the testing window, TAs were to report breaches of protocol and testing irregularities to the appropriate School Testing Coordinator (STC) and USBE. STCs may submit online test invalidation requests, as appropriate, through the Appeals/Invalidations module under Administering Tests in the TIDE system.

CAI's Quality Monitor System (QM) gathers data used to detect cheating, monitors real-time item function, and evaluates test integrity. Every completed test runs through the QM System, and any anomalies (such as unscored or missing items, unexpected test lengths, or other unlikely issues) are flagged, and immediate notification goes out to the CAI psychometricians and project team through QA reports. The forensic analysis report from the QM System flags unlikely patterns of behavior aggregated at the test administration, test administrator, and school levels.

CAI psychometricians can monitor testing anomalies throughout the testing window. A variety of evidence is collected for the evaluation. These include unusual changes in test scores across administrations, much shorter or longer item response times as compared to the state average, and item response patterns using the person-fit index. The flagging criteria used for these analyses are configurable and can be changed by the user. The analyses used to detect the testing anomalies can be run anytime within the testing window.

If any unexpected results are identified, the lead psychometrician alerts the project manager immediately to resolve any issues.

6. REPORTING AND INTERPRETING RISE SCORES

The Reporting System generates a set of online score reports that includes the information describing student performance for students, parents, educators, and other stakeholders. The online score reports are generally produced immediately after students complete tests. Because the performance score report is updated each time a student completes a test, authorized users (e.g., school principals, teachers) can access available information on students' performance scores quickly and use it to improve student learning. In addition to individual student's score reports, the Reporting System also produces aggregate score reports by classes, schools, and districts. The timely accessibility of aggregate score reports can help users monitor students' performance in each subject by grade area, evaluate the effectiveness of instructional strategies, and inform the adoption of strategies to improve student learning and teaching during the school year.

This section contains a description of the types of scores reported in the Reporting System and a description of the ways to interpret and use these scores in detail.

6.1 THE REPORTING SYSTEM FOR STUDENTS AND EDUCATORS

6.1.1 CONFIDENTIALITY OF STUDENT DATA

The Reporting System is designed to help educators and students answer questions about how well students have performed on English language arts (ELA), mathematics, and science assessments. The Reporting System is the online tool that provides educators and other stakeholders with timely, relevant score reports. The Reporting System for the summative assessments has been designed with stakeholders who are not technical measurement experts in mind to make score reports easy to read. This is achieved by using simple language so that users can understand assessment results quickly and make inferences about student achievement. The Reporting System is also designed to present student performance in a uniform format. For example, similar colors are used for groups of similar elements, such as performance levels, throughout the design. This design strategy allows readers to compare similar elements and to avoid comparing dissimilar elements.

Once authorized users log in to the Reporting System, the online score reports are presented hierarchically. The system starts by presenting summaries on student performance on all assessments by subject and grade at a selected aggregate level. To view student performance for a specific aggregate unit, users can select the specific aggregate unit from a drop-down list of aggregate units (e.g., schools within a district, or rosters within a school). For more detailed student assessment results for a school, a teacher, or a roster, users can select the subject and grade on the online score reports.

Generally, the Reporting System provides two categories of online score reports: (1) aggregate score reports, and (2) student score reports. Table 57 summarizes the types of online score reports available at the aggregate level and the individual student level. Detailed information about the online score reports and instructions on how to navigate the online score reporting system can be found in the *Reporting System User Guide*, located in a help button on the Reporting System and posted in the Resources section of the assessment portal.

Table 57: Types of Online Score Reports by Aggregation Level

Type of Report	Description
District **School** **Teacher** **Roster**	Number of students (for overall students and by subgroup) Average scale score (for overall students and by subgroup) Percentage and count of students at each performance level on the overall test (for overall students and by subgroup)

Type of Report	Description
	Percentage and count of students at each performance category on the reporting category level (for overall students and by subgroup) Standard performance relative to proficiency (for overall students and by subgroup) Standard performance relative to test as a whole (for overall students and by subgroup) On-demand student roster report
Student	Overall scale score and standard error of measurement Overall performance level Average scale scores for student's school and district Performance category at the reporting category level

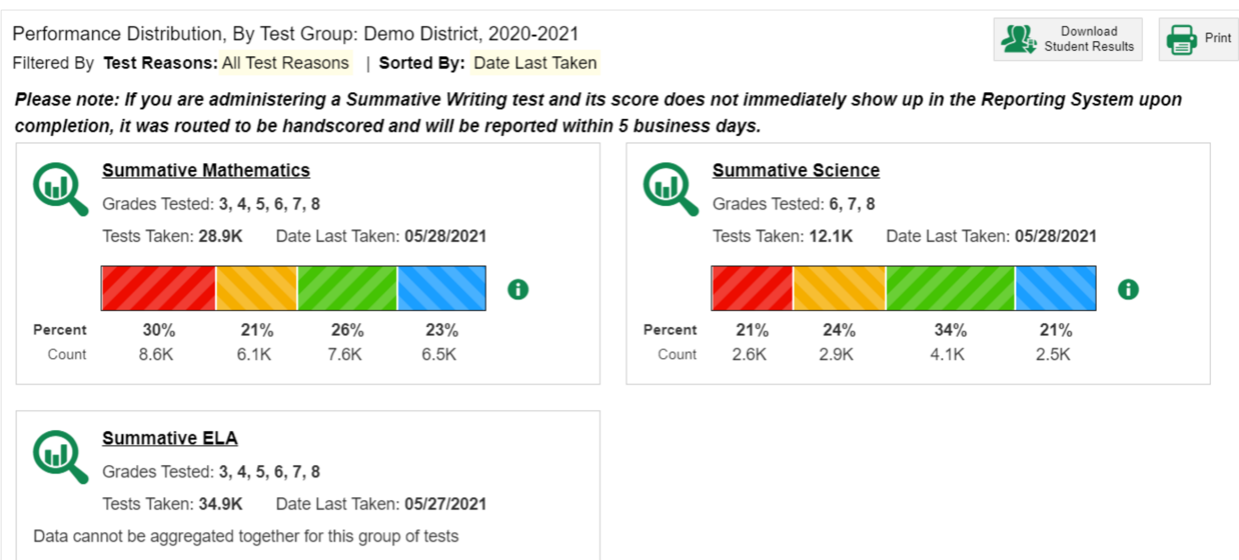
6.1.2 REPORTING SYSTEM

6.1.2.1 Dashboard

When users log on to the Reporting System, the dashboard page shows overall test results for all tests that the students have taken grouped by test family (e.g., Summative ELA). The dashboard summarizes students' performance by test family for ELA, mathematics, and science across all grades, including (1) the grades of the students who have tested, (2) the number of tests taken, (3) the test date last taken, and (4) the percentage and counts of students at each achievement level. District personnel see district summaries, school personnel see school summaries, and teachers see summaries of their students.

Figure 15 presents an example dashboard page at the district level.

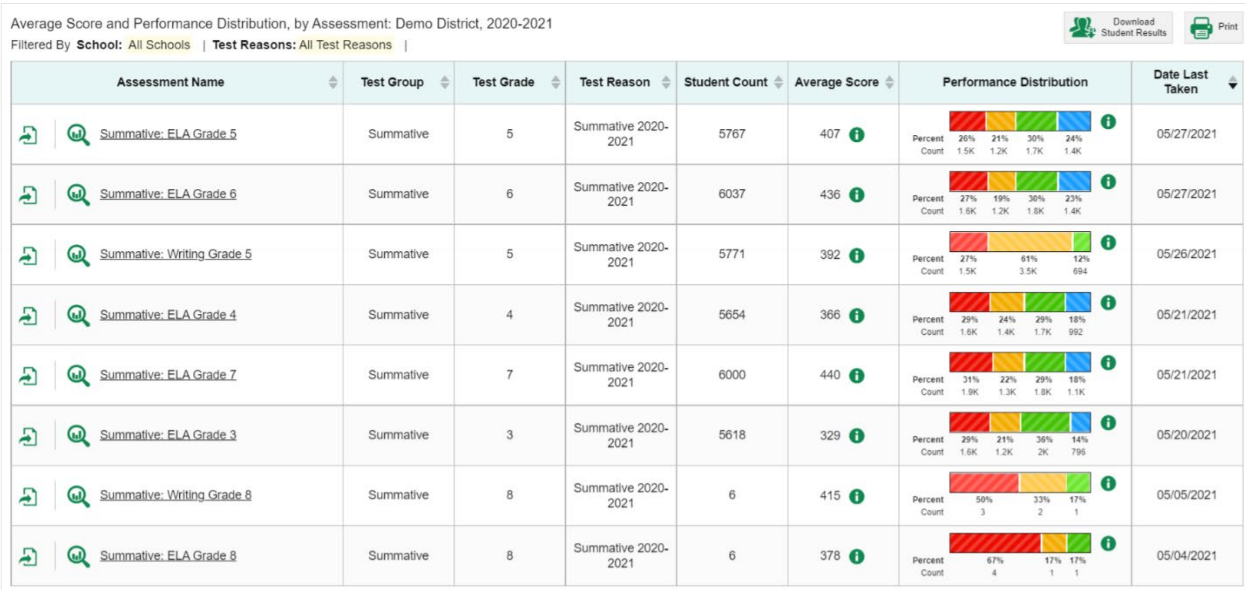
Figure 15: Dashboard: District Level



Once the user clicks on the test family that he or she wants to explore further, the system will take the user to the detailed dashboard, where the results will be displayed by test (e.g., Grade 3 ELA/L). The detailed dashboard page will appear by test in each grade. The detailed dashboard summarizes students' performance by test in each grade, including (1) student count, (2) average scale score and standard error of the average scale score, (3) the percentage and counts of students at each achievement level, and (4) test date last taken.

Figure 16 presents an example dashboard page at the district level.

Figure 16: Detailed Dashboard: District Level


Average Score and Performance Distribution, by Assessment: Demo District, 2020-2021

Filtered By **School:** All Schools | **Test Reasons:** All Test Reasons |

Download Student Results | Print

Assessment Name	Test Group	Test Grade	Test Reason	Student Count	Average Score	Performance Distribution	Date Last Taken
Summative: ELA Grade 5	Summative	5	Summative 2020-2021	5767	407	Percent 26% 21% 30% 24%; Count 1.5K 1.2K 1.7K 1.4K	05/27/2021
Summative: ELA Grade 6	Summative	6	Summative 2020-2021	6037	436	Percent 27% 19% 30% 23%; Count 1.6K 1.2K 1.8K 1.4K	05/27/2021
Summative: Writing Grade 5	Summative	5	Summative 2020-2021	5771	392	Percent 27% 61% 12%; Count 1.5K 3.5K 694	05/26/2021
Summative: ELA Grade 4	Summative	4	Summative 2020-2021	5654	366	Percent 29% 24% 29% 18%; Count 1.6K 1.4K 1.7K 992	05/21/2021
Summative: ELA Grade 7	Summative	7	Summative 2020-2021	6000	440	Percent 31% 22% 29% 18%; Count 1.9K 1.3K 1.8K 1.1K	05/21/2021
Summative: ELA Grade 3	Summative	3	Summative 2020-2021	5618	329	Percent 29% 21% 36% 14%; Count 1.6K 1.2K 2K 796	05/20/2021
Summative: Writing Grade 8	Summative	8	Summative 2020-2021	6	415	Percent 50% 33% 17%; Count 3 2 1	05/05/2021
Summative: ELA Grade 8	Summative	8	Summative 2020-2021	6	378	Percent 67% 17% 17%; Count 4 1 1	05/04/2021

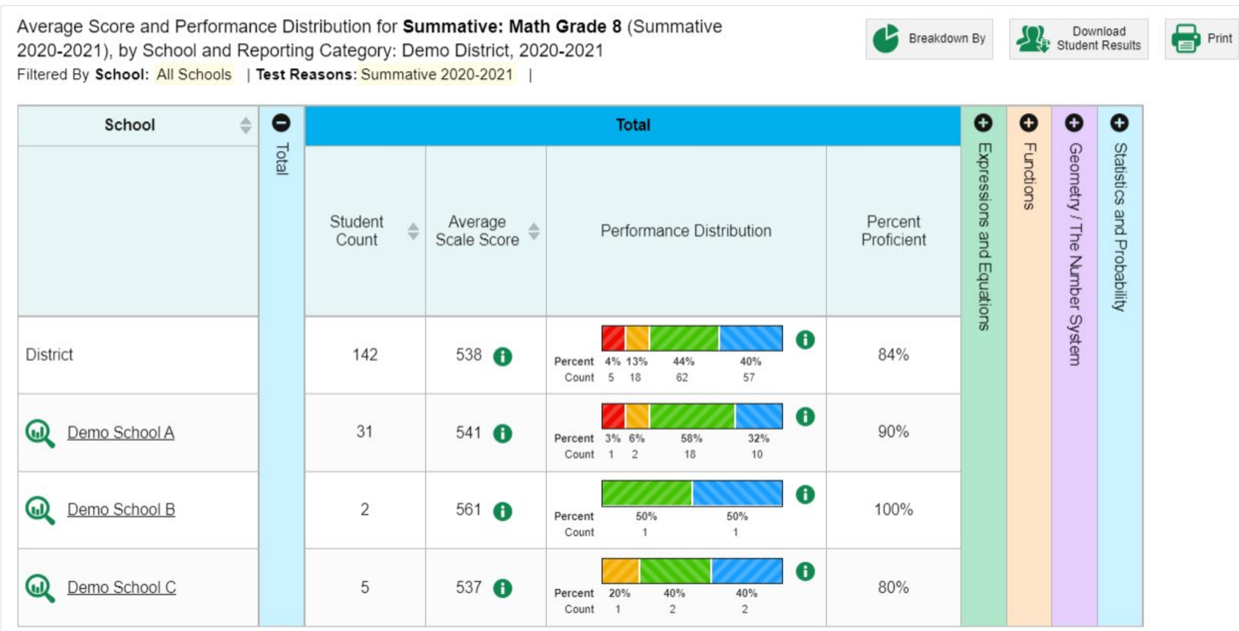
6.1.2.2 Aggregate-Level Subject Detail Page

More detailed summaries of student performance in each grade in a subject area for a selected aggregate level are presented when users select an assessment on the dashboard page. On each aggregate report, the summary report presents the summary results for the selected aggregate unit and the summary results for all aggregate units above the selected aggregate. For example, at the roster level, summaries appear for the teacher, school, and district aggregate. The roster performance can be compared with the above aggregate levels.

The subject detail page provides the aggregate summaries on a specific subject area including: (1) number of students, (2) average scale score, (3) percentage proficient, and (4) percentage of students in each performance level. The summaries are also presented for overall students and by subgroup.

Figure 17 presents an example of subject detail pages for mathematics at the district level.

Figure 17: Subject Detail Page for Mathematics: District Level



6.1.2.3 Aggregate-Level Reporting Category and Standard Report

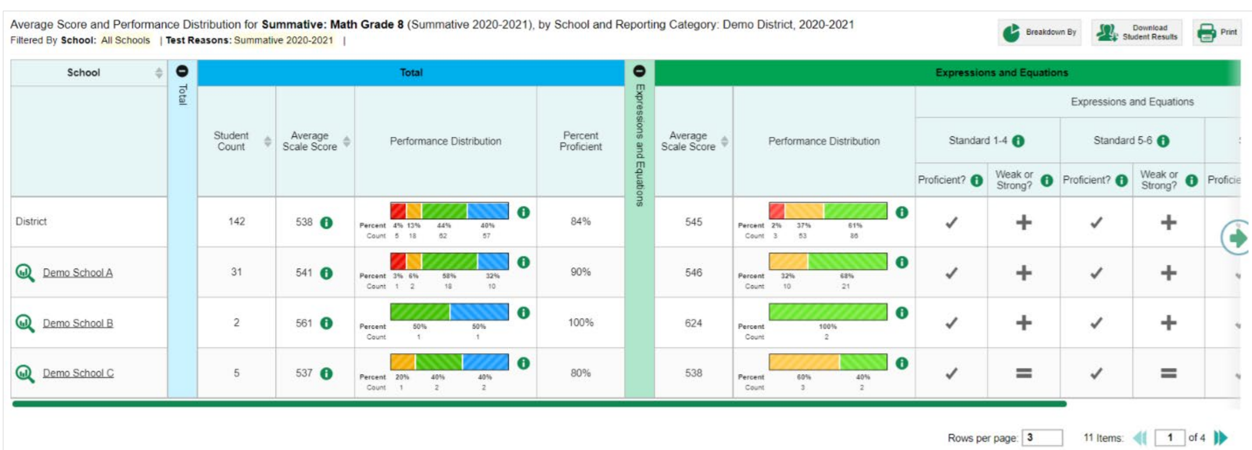
The Aggregate-Level Reporting Category Report provides the aggregate summaries on student performance in each reporting category for a particular grade and subject. The summaries on the Aggregate-Level Reporting Category Report include: (1) percentage of students in each achievement category for each reporting category, (2) performance relative to proficiency for each standard, and (3) performance on each standard relative to test as a whole.

For *Areas Where Performance Indicates Proficiency*, a performance indicator produces information on how a group of students in a roster, school, or district performed on the standard compared to the proficiency cuts. The performance indicator shows whether performance on this standard for this group was above, no different from, or below what is expected of students at the proficient level. *Areas of Strongest and Weakest Performance* works in a similar manner but reports on specific areas of performance (via standards) relative to the group's overall performance instead of proficiency. It shows whether performance on this standard was above, no different from, or below what is expected of students in this group given the students' overall test performance. These indicators show strengths and weaknesses for a group of students and are provided at an aggregate level only because they are unstable at the individual level.

Similar to the Aggregate-Level Subject Report, this report presents the summary results for the selected aggregate unit as well as the summary results for the aggregate units above the selected aggregate.

Figure 18 presents examples of the District Aggregate-Level Reporting Category and Standard Detail for mathematics.

Figure 18: Reporting Category and Standard Detail Page for Mathematics: District Level

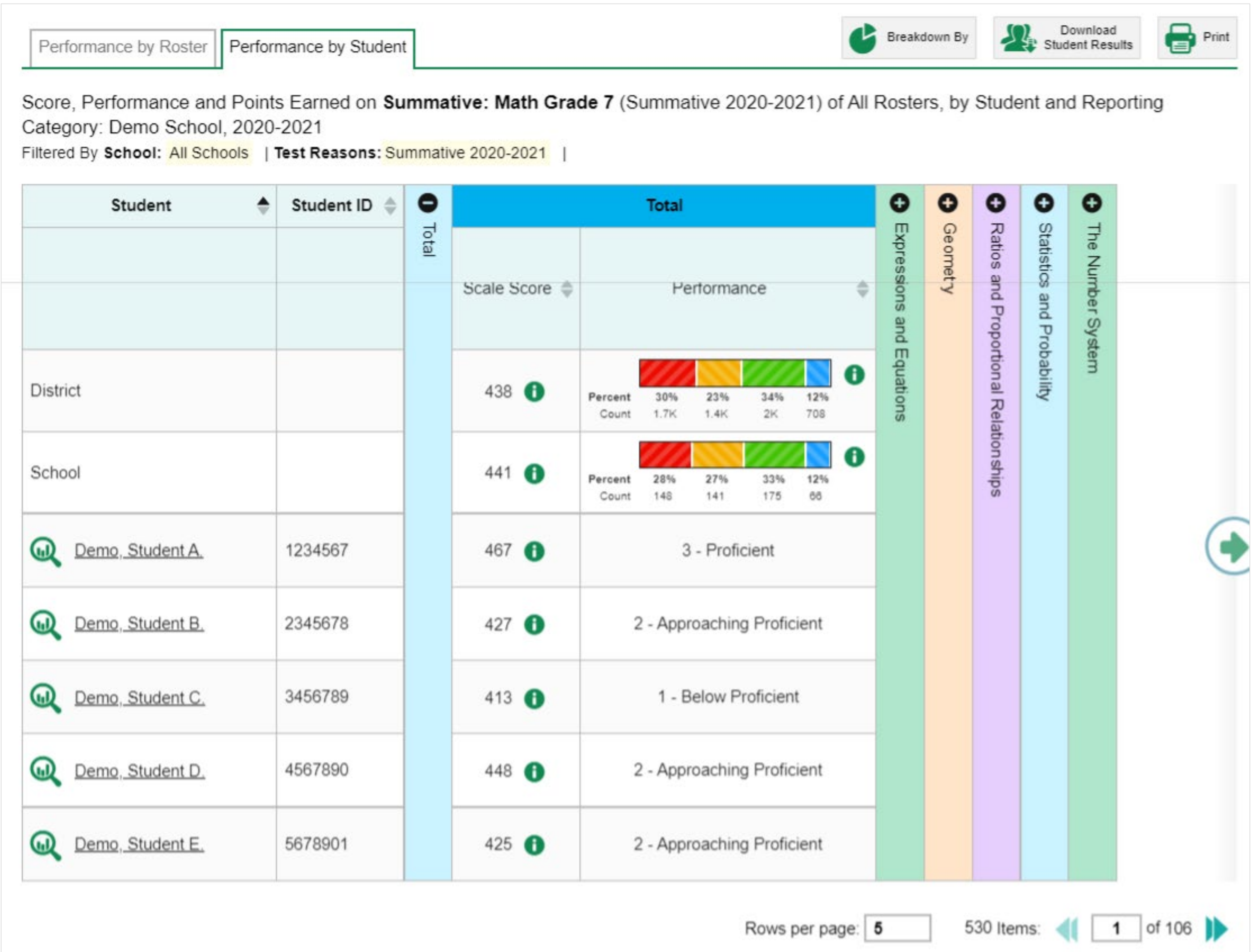


6.1.2.4 Student Roster Subject Report

The Student Roster Subject Report lists all students who belong to the selected aggregate level, such as a school, and reports the following measures for each student: (1) scale score, and (2) overall subject performance level.

Figure 19 demonstrate examples of the Student Roster Subject Report for mathematics.

Figure 19: Student Roster Subject Report Page for Mathematics



6.1.2.5 Student Roster Reporting Category Report

The Student Roster Reporting Category Report records the reporting category achievement category measures for each student. Figure 20 presents an example of the Student Roster Reporting Category Report for mathematics.

Figure 20: Student Roster Reporting Category Report Page for Mathematics

6.1.2.6 Student Report Page

When a student completes a test, an online score report appears in the student detail page in the Reporting System. The student detail page provides information about individual student performance on the test. It also provides (1) scale score and standard error of measurement (SEM), (2) performance level for the overall test, and (3) average scale scores for the student's district and school in each subject area.

Specifically, on the top of the page, the student's name, scale score, and performance level are presented. On the left bottom section, the student's performance is described in detail using a barrel chart. In the barrel chart, the student's scale score is presented. On the right section, average scale scores for the student's district and school are displayed so that the student achievement can be compared with the above aggregate levels. Student's performance on each reporting category are shown under the overall performance where the performance is shown graphically followed by a description of the performance. The following section of this technical report shows the longitudinal graph and table that shows historical performance over time for the subject. Figure 21 present examples of student detail pages for mathematics.

Figure 21: Student Detail Page for Mathematics

RISE | Reporting

Individual Student Report

Demo, Student

Student ID: 9999999 | Student DOB: 8/20/2008 | Enrolled Grade: 8

Date Taken: 5/7/2021

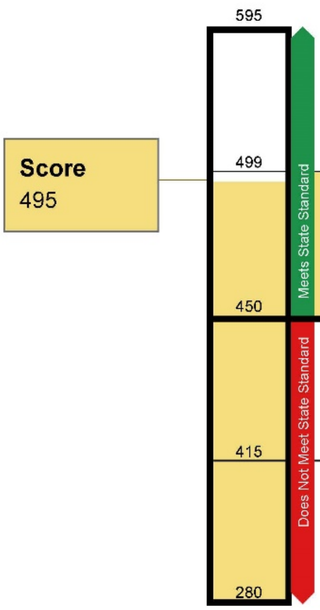
Summative: Math Grade 7 2020-2021

Demo District

Demo School

Scale Score: 495 **Performance:** 3 - Proficient

How Did Your Child Do on the Test?



4 - Highly Proficient Students use and explain proportions and shapes to solve real-world and mathematical problems with numbers that can be written as fractions and letters in place of numbers (e.g., create a scale drawing). They solve problems about angle measures, surface area, and volume (e.g., compare volumes of two shapes). They analyze and make decisions about data.

3 - Proficient Students use proportions to solve real-world and mathematical problems with numbers that can be written as fractions and letters (e.g., create a scale drawing). They solve problems about angle measures, surface area, and volume (e.g., find a missing angle measure in a triangle). They understand and make decisions about data.

2 - Approaching Proficient Students understand basic proportions (e.g., 1/2 = x/12). They solve simple real-world and mathematical problems involving numbers and letters (e.g., 2x = 15). They find angle measures, surface area, and volume when given information. They compare given data sets.

1 - Below Proficient Students solve simple real-world and mathematical proportion problems involving numbers and letters (e.g., 3x = 15). They find simple angle measures, surface areas, and volumes when given information (e.g., find the measure of a right angle). They compare small given data sets.

How Does Your Child's Score Compare?

Name	Average Scale Score
Demo District	438
Demo School	441

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RISE | Readiness Improvement Success Empowerment | Reporting

Individual Student Report

Demo, Student

Student ID: 9999999 | Student DOB: 8/20/2008 | Enrolled Grade: 8
Date Taken: 5/7/2021

Summative: Math Grade 7 2020-2021

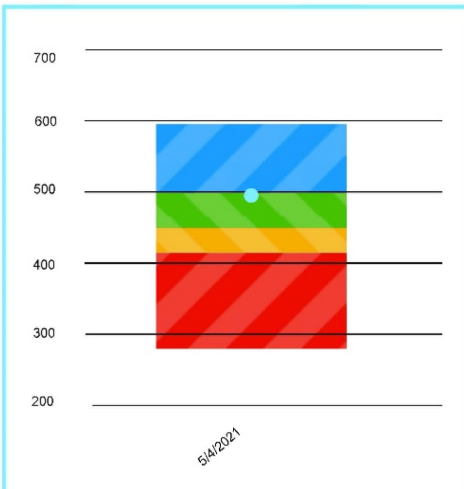
Demo District
Demo School

Scale Score: 495 **Performance:** 3 - Proficient

Your Child's Progress

Longitudinal Trend Chart Information

The chart below reports your child's performance over time. The shaded areas in multiple colors indicate the scale score range in each achievement level. Each mark on the graph represents your child's score and indicates whether he or she met the standards that year.



Legend

- 1 - Below Proficient
- 2 - Approaching Proficient
- 3 - Proficient
- 4 - Highly Proficient
- Student Score

Your Child's Progress

Date	Test Reason	Test Label	Scale Score	Performance Level
5/4/2021 12:00:00 AM	Summative 2020-2021	Summative: Math Grade 7	495	3 - Proficient

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RISE | Reporting

Individual Student Report

Demo, Student

Student ID: 9999999 | Student DOB: 8/20/2008 | Enrolled Grade: 8

Date Taken: 5/7/2021

Summative: Math Grade 7 2020-2021

Demo District

Demo School

Scale Score: 495 **Performance:** 3 - Proficient

How Did Your Child Perform on Different Areas of the Test?

Below Standard | At/Near Standard | Above Standard

Category	Performance Level	Performance level Description
Expressions and Equations	Above Standard	The student has met the achievement standard
Geometry	Above Standard	The student has met the achievement standard
Ratios and Proportional Relationships	At/Near Standard	The student has nearly met the achievement standard
Statistics and Probability	At/Near Standard	The student has nearly met the achievement standard
The Number System	Above Standard	The student has met the achievement standard

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6.2 INTERPRETATION OF REPORTED SCORES

6.2.1 SCALE SCORE

A scale score is used to describe how well a student performed on a test and can be interpreted as an estimate of the student's knowledge and skills measured. The scale score is the transformed score from a theta score, which is estimated based on mathematical models. Low scale scores can be interpreted to mean that the student does not possess sufficient knowledge and skills measured by the test. Conversely, high scale scores can be interpreted to mean that the student has proficient knowledge and skills measured by the test. Scale scores can be used to measure student growth across school years. Interpretation of scale scores is more meaningful when the scale scores are used along with performance levels.

6.2.2 PERFORMANCE LEVELS

Performance levels are proficiency categories on a test that students fall into based on their scale scores. For the RISE summative assessments, scale scores are mapped into four performance levels (i.e., Highly Proficient, Proficient, Approaching Proficient, and Below Proficient) using three performance standards (i.e., cut scores). Performance-Level Descriptors (PLDs) are a description of content area knowledge and skills that test takers at each performance level are expected to possess.

6.2.3 AGGREGATED SCORE

Students' scale scores are aggregated at the roster, school, and district levels to represent how a group of students performed on a test. When students' scale scores are aggregated, the aggregated scale scores can be interpreted as an estimate of the knowledge and skills that a group of students possesses. Given that student scale scores are estimates, the aggregated scale scores are also estimates and are subject to measures of uncertainty. In addition to the aggregated scale scores, the percentage of students in each performance level for the overall subject are reported at the aggregate level to represent how well a group of students performed overall.

6.2.4 RELATIVE STRENGTHS AND WEAKNESSES

For standard performance, relative strengths and weaknesses at each standard are reported for aggregate levels only (e.g., classroom, school, district). Because an individual student responds to too few items within a standard to generate reliable data, the standard performance is produced by aggregating all items within a standard across students at an aggregate level. Standard reports include data on both Performance Relative to the Test as a Whole and Performance Relative to Proficiency for each standard. The difference between these two data reports is similar to the difference between norm-referenced data and standards-based data.

The Performance Relative to the Test as a Whole data for a standard show how a group of students performed in each standard relative to their performance on the total test. This is a norm-referenced report, with group performance in each standard being compared to the same group's overall test performance. Unlike performance levels provided for the total test, these data are not an indication of students' achievement in the standard.

The Performance Relative to Proficiency data for a standard show how a group of students performed in each standard relative to the expected performance for proficiency. For summative tests, this is the expected level of performance necessary to achieve Level 3 or Proficient performance. This is a standards-based report with the group performance in each standard being compared to the performance standard for that standard. Similar to the performance levels provided for the total test, these data indicate students' achievement in the standard with respect to the standards.

The Performance Relative to the Test as a Whole data for each standard are computed within a group; therefore, it is not appropriate to compare these data between groups. However, because the Performance Relative to Proficiency data for each standard are comparable to the standards-based expectations, performance across groups can be compared.

6.3 APPROPRIATE USES FOR SCORES AND REPORTS

Assessment results can be used to provide information on individual students' achievement on the test. Overall, assessment results show what students know and are able to do in certain subject areas. Further, they give information on whether students are on track to demonstrate the knowledge and skills necessary for college and their careers.

Assessment results on student achievement on the test can be used to help teachers or schools make decisions on how to support students' learning. Aggregate score reports for teacher and school levels provide information regarding the strengths and weaknesses of their students and can be utilized to improve teaching and student learning. By narrowing the student performance result by subgroup, teachers and schools can determine what strategies may need to be implemented to improve teaching and student learning, particularly for students from disadvantaged subgroups. For example, teachers can review student assessment results by LEP Code and observe that students in the subgroup category "Beginner" are struggling with ELA. Teachers can then provide additional instructions for these students to enhance their achievement in a specific subject.

In addition, assessment results can be used to compare students' performance among different students and among different groups. Teachers can evaluate how their students perform compared with other students in schools and districts overall.

While assessment results provide valuable information to understand students' performance, these scores and reports should be used with caution. It is important to note that scale scores reported are estimates of true scores and hence do not represent the precise measure for student performance. A student's scale score is associated with measurement error, and thus users need to consider measurement error when using student scores to make decisions about student achievement. Moreover, although student scores may be used to help make important decisions about students' placement and retention, or teachers' instructional planning and implementation, the assessment results should not be used as the only source of information. Given that assessment results measured by a test provide limited information, other sources on student achievement such as classroom assessment and teacher evaluation should be considered when making decisions on student learning. Finally, when student performance is compared across groups, users need to take into account the group size. The smaller the group size, the larger the measurement error related to the aggregate data, thus requiring interpretation with more caution.

7. PERFORMANCE STANDARDS

In the summer of 2014, following the close of the first testing window, Cambium Assessment, Inc. (CAI), convened panels of Utah educators to recommend proficiency standards on each of Utah's Student Assessment of Growth and Excellence (SAGE) assessments. In the summer of 2018, following the close of the first testing window for Utah's science assessments in grades 6–8, CAI convened panels of Utah educators to recommend proficiency standards on each of the new SAGE science assessments. In the summer of 2021, following the close of the first testing window for Utah's science assessments in grades 4–5, CAI again convened panels of Utah educators to recommend proficiency standards on each of the new RISE science assessments.

This chapter briefly describes the procedures used by educators to recommend standards and resulting proficiency standards. Details of the panels, procedures, and outcomes are documented in the 2014 and 2018 SAGE standard-setting technical reports and the 2021 RISE standard-setting technical report, which are presented in Appendix 7-A, 2014 SAGE Standard-Setting Report, Appendix 7-B, 2018 SAGE Standard-Setting Report, and Appendix 7-C, 2021 RISE Standard-Setting Report, respectively.

7.1 STANDARD-SETTING PROCEDURES

Student achievement on RISE is classified into four performance levels: Below Proficient, Approaching Proficient, Proficient, and Highly Proficient. Interpretation of the RISE test scores rests fundamentally on how test scores relate to proficiency standards that define the extent to which students have achieved the expectations defined in the Utah Core Standards. The cut score establishing the Proficient level of performance is the most critical because it indicates that students are meeting grade-level expectations for achievement of the Utah Core Standards, that they are prepared to benefit from instruction at the next grade level, and that they are on track to pursue post-secondary education or enter the workforce. Procedures used to adopt proficiency standards for the RISE assessments are therefore central to the validity of test score interpretations.

7.1.1 ELA AND MATHEMATICS PROCEDURES IN 2014

Following the first operational administration of the SAGE assessments in spring 2014, a standard-setting workshop was conducted to recommend to the Utah State Board of Education (USBE) a set of proficiency standards for reporting student achievement of the Utah Core Standards. The workshop consisted of a series of standardized and rigorous procedures that the Utah educators serving as standard-setting panelists followed to recommend proficiency standards. The workshops employed the Bookmark procedure, a widely used method where standard-setting panelists used their expert knowledge of the Utah Core Standards and student achievement to map the PLDs adopted by the USBE to an ordered-item booklet (OIB) based on the first operational test form administered in spring 2014.

Panelists were also provided with contextual information to help inform their primarily content-driven cut-score recommendations. Panelists recommending proficiency standards for the high school assessments were provided with information about the approximate location of the relevant American College Testing (ACT) college-ready proficiency standard for the grade 11 English language arts (ELA) and the Secondary Mathematics I, II, and III. Panelists recommending proficiency standards for the grades 3–8 summative assessments were provided with the approximate location of relevant National Assessment of Educational Progress (NAEP) proficiency standards at grades 4 and 8. Panelists were asked to consider the location of these benchmark locations when making their content-based cut-score recommendations. When panelists can use benchmark information to locate proficiency standards that converge across assessment systems, the validity of test score interpretations is bolstered.

Panelists were also provided with feedback about the vertical articulation of their recommended proficiency standards so that they could view how the locations of their recommended cut scores for each grade-level assessment related to the cut-score recommendations at the other grade levels. This approach allowed panelists to view their cut-score recommendations as a coherent system of proficiency standards, and further reinforced the interpretation of test scores as indicating not only achievement of current grade-level standards, but also preparedness to benefit from instruction in the subsequent grade level.

7.1.1.1 ELA and Mathematics PLDs

PLDs define the content-area knowledge and skills that students at each performance level are expected to demonstrate. The standard-setting panelists based their judgments about the location of the performance standards on the PLDs, as well as the Utah Core Standards. The RISE PLDs describe four levels of achievement:

1. Below Proficient
2. Approaching Proficient
3. Proficient
4. Highly Proficient

Prior to convening the standard-setting workshops, USBE, in consultation with the Center for Assessment, drafted PLDs for each test that described the range of achievement encompassed by each performance level on the test. The PLDs were designed to be clear, concrete, and reflect Utah's expectations for proficiency based on the Utah Core Standards. Following a cycle of revisions to the draft PLDs with CAI, USBE invited Utah educators to review PLDs for each of the assessments. Based on feedback from educators, PLDs were further revised, and the resulting drafts were used by standard-setting panelists. USBE considered any need for clarification or revision that arose throughout the standard-setting process before publishing the final versions of the PLDs following the standard-setting workshop.

7.1.2 SCIENCE PROCEDURES

Following the first operational administration of new science grade 6–8 assessments in spring 2018 and new grade 4-5 assessments in spring 2021, standard-setting workshops were conducted to recommend to the USBE a set of proficiency standards for reporting student science achievement of the Utah Core Standards. The workshops consisted of a series of standardized and rigorous procedures that the Utah educators serving as standard-setting panelists followed to recommend proficiency standards based on the first operational test form administered in spring 2018.

A new method for standard setting is necessary for tests based on the Next Generation Science Standards (NGSS) due to the structure of the content standards and, subsequently, the structure of test items assessing the standard. The workshops employed the test-centered Assertion Mapping Procedure (AMP), an adaptation of the Item-Descriptor (ID) Matching method where standard-setting panelists used their expert knowledge of the Utah Core Standards and student achievement to map the PLDs adopted by the USBE to an ordered set of score assertions derived from student interactions within a representative set of item clusters. These scoring assertions are not test items but rather inferences that are (or are not) supported by students' responses in one or more interactions within an item cluster. Because item clusters represent multiple, interdependent interactions through which students engage in scientific phenomena, scoring assertions cannot be meaningfully evaluated independently of the cluster from which they are derived. Thus, panelists review ordered scoring assertions for each cluster separately rather than for the test overall.

Panelists were also provided with contextual information to help inform their primarily content-driven cut-score recommendations. Panelists were provided with information about the approximate percentage of students scoring in each performance level on the 2015 National Assessment of Educational Progress (NAEP) assessments, where grades 5–7 were interpolated from grades 4 and 8 NAEP. Panelists were asked to consider the location of these benchmark locations when making their content-based cut-score recommendations. When panelists can use benchmark information to locate proficiency standards that converge across assessment systems, validity of test score interpretations is bolstered.

7.1.2.1 Science PLDs

With the adoption of the new standards in science and the development of new statewide assessments to assess achievement of those standards, USBE adopted a similar system of proficiency standards to determine whether students had met the learning goals defined by the new standards in science.

Determining the nature of the categories in which students are classified is a prerequisite to standard setting. These categories, or performance levels, are associated with PLDs that define the content area knowledge, skills, and processes that students at each performance level can demonstrate. Utah uses four performance levels to describe student performance:

1. Below Proficient
2. Approaching Proficient
3. Proficient
4. Highly Proficient

PLDs were reviewed and revised in a separate workshop conducted before the standard-setting workshop. During the workshop, panelists drafted the Below Proficient descriptors and refined draft PLDs.

7.2 RECOMMENDED PROFICIENCY STANDARDS

7.2.1 ELA AND MATHEMATICS STANDARDS IN 2014

Panelists were tasked with recommending three proficiency standards (Approaching Proficient, Proficient, and Highly Proficient) that resulted in four performance levels (Below Proficient, Approaching Proficient, Proficient, and Highly Proficient). Table 58 presents the proficiency standard associated with panelist-recommended OIB page numbers in logit value (theta), as well as the percentage of students classified as meeting or exceeding each standard. Following the standard-setting workshop, panelist recommendations were submitted to the USBE; the Board formally adopted the standards in August 2014.

Table 58: Final Recommended Proficiency Standards for SAGE, Spring 2014

Grade	Approaching Proficient		Proficient		Highly Proficient	
	Theta	% At or Above	Theta	% At or Above	Theta	% At or Above
ELA						
3	-1.63708	65	-1.11378	43	-0.24922	12
4	-1.25018	68	-0.58915	42	0.18561	15
5	-0.79391	65	-0.20629	41	0.45695	17
6	-0.39316	62	0.08895	42	0.78768	17
7	-0.27058	63	0.27711	42	1.04748	16
8	-0.12778	63	0.52988	40	1.27316	16
9	0.03654	63	0.72177	40	1.58600	14
10	0.32403	57	0.84863	40	1.768437	14
11	0.36499	59	1.03758	38	1.96644	13
Mathematics						

Grade	Approaching Proficient		Proficient		Highly Proficient	
	Theta	% At or Above	Theta	% At or Above	Theta	% At or Above
3	-2.69799	67	-2.32470	45	-1.93084	22
4	-2.13643	68	-1.69928	47	-1.17759	22
5	-1.48389	64	-1.03412	44	-0.41431	19
6	-0.77236	60	-0.11029	35	0.50859	15
7	-0.42494	67	0.23751	44	1.17462	14
8	0.17443	66	1.18374	37	2.24052	11
SM I	0.77618	59	1.86411	32	2.93990	10
SM II	1.33094	62	2.81914	29	4.04293	10
SM III	2.15962	58	3.33245	33	4.65648	11

Table 59 shows the percentage of students classified at each performance level in the initial year of SAGE administration, based on final panelist-recommended standards for the student population overall across grade levels and courses for the ELA and mathematics assessments.

Table 59: Percentage of Students at Each Performance Level Based on Final Recommended Proficiency Standards, Spring 2014

Grade	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
		ELA		
3	34	22	31	12
4	33	26	27	15
5	35	24	24	17
6	38	20	25	17
7	37	21	26	16
8	37	23	24	16
9	38	23	26	14
10	43	17	26	14
11	41	21	25	13
		Mathematics		
3	33	22	23	22
4	32	21	25	22
5	36	20	25	19
6	39	25	20	15
7	34	23	30	14
8	33	29	26	11

Grade	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
SM I	41	27	22	10
SM II	38	33	19	10
SM III	41	25	22	11

Table 60 shows the percentage of students meeting the SAGE proficient standard for each assessment in the base year of 2014 (meaning they are categorized as Proficient or Highly Proficient), the approximate percentage of Utah students that would be expected to meet the ACT college-ready standard, and the percentage of Utah students meeting the NAEP proficient standards at grades 4 and 8 system-wide, based on the spring 2014 operational field test administration. As the table indicates, the proficiency standards recommended SAGE assessments are quite consistent with relevant ACT college-ready and the NAEP proficient benchmarks. Moreover, because the proficiency standards were vertically articulated in ELA and mathematics, the proficiency rates across grade levels are generally consistent.

Table 60: Percentage of Students Meeting SAGE and Benchmark Proficient Standards, Spring 2014

Grade	SAGE Proficient	Utah ACT College-Ready	Utah NAEP Proficient
	ELA		
3	43		
4	42		37
5	41		
6	42		
7	42		
8	40		39
9	40		
10	40		
11	38	41	
	Mathematics		
3	45		
4	47		44
5	44		
6	35		
7	44		
8	37		36
SM I	32	31	
SM II	29	31	
SM III	33	36	

7.2.2 SCIENCE PROFICIENCY STANDARDS

Panelists were tasked with recommending three proficiency standards (Approaching Proficient, Proficient, and Highly Proficient) that resulted in four performance levels (Below Proficient, Approaching Proficient, Proficient, and Highly Proficient). Table 61 presents the proficiency standard associated with the percentage of students classified as meeting or exceeding each standard. Following the standard-setting workshop, panelist recommendations were submitted to the USBE; the Board formally adopted the standards in September 2018 for grades 6–8 and in September 2021 for grades 4–5.

Table 61: Final Recommended Proficiency Standards for RISE Science

Grade	Approaching Proficient		Proficient		Highly Proficient	
	Scale Score	% At or Above	Scale Score	% At or Above	Scale Score	% At or Above
4	543	71	553	43	562	20
5	543	71	552	45	563	18
6	841	74	849	52	862	23
7	841	73	851	50	861	23
8	842	72	851	50	861	23

Table 62 shows the percentage of students classified at each performance level in 2021, the initial year of the new science administration in grades 4–5, based on final panelist-recommended standards for the student population overall across grade levels and courses for the science assessments. For grades 6–8, the numbers in parentheses indicate the percentage of students classified at each performance level in 2018, the initial year of the new science administration in grades 6–8.

Table 62: Percentage of Students at Each Performance Level Based on Final Recommended Proficiency Standards, Spring 2021 (2018)

Grade	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
4	29	28	23	20
5	29	26	27	18
6	27 (26)	20 (22)	35 (29)	18 (23)
7	29 (27)	27 (23)	26 (27)	18 (23)
8	26 (28)	26 (22)	28 (27)	20 (23)

Table 63 shows the percentage of students meeting the RISE proficient standard for each assessment based on the spring 2021 operational test administration, and the approximate percentage of Utah students meeting the NAEP science proficient standards at grades 4–8. For grades 6–8, the numbers in parentheses indicate percentage of students classified at each performance level in 2018, the initial year of the new science administration in grades 6–8. As the table indicates, the proficiency standards recommended are quite consistent with NAEP proficient benchmarks.

Table 63: Percentage of Students Meeting RISE and Benchmark Proficient Standards, Spring 2021 (2018)

Grade	RISE Proficient	Utah NAEP Proficient
4	43	45
5	45	46
6	53 (52)	48
7	44 (50)	49
8	48 (50)	50

Note. Benchmark data describes the percentage at or above each performance level using data from the 2015 grade 8 NAEP; grades 5–7 are interpolated from the grades 4 and 8 NAEP.

8. SCALING AND EQUATING

8.1 ITEM RESPONSE THEORY PROCEDURES

8.1.1 CALIBRATION OF RISE ITEM BANKS

The embedded field-test design, in conjunction with the adaptive administration of operational tests, produces item response data in a sparse data matrix. The items in the sparse data matrix were concurrently calibrated by grade and content area, with parameter estimates for operational items fixed to their bank values and field-test items calibrated under that constraint. All English language arts (ELA) and mathematics items in spring 2021 operational pools were calibrated using the AM software program, version 00.06.04. Starting from spring 2021, the field-test items are calibrated using the IRTPRO software, version 5.0. For science, the field-test items were calibrated with one multi-group calibration per grade band in 2021. In each calibration, the parameters of the operational items were fixed to their bank values, and the item parameters of the field-test items, as well as the mean and variance of each group, were estimated. Starting from 2021, CAIRT (Cambium Assessment IRT) was used for calibration, which was specifically developed by CAI to calibrate advanced IRT models on very large data sets. It relies on the same estimation methods as BNL (Rijmen, 2006). CAI has cross-validated parameter estimates from CAIRT with BNL and flexMIRT (Cai, 2017) under a variety of scenarios (Rijmen *et al.*, 2021).

8.1.2 ESTIMATING STUDENT ABILITY USING MAXIMUM LIKELIHOOD ESTIMATION

8.1.2.1 ELA and Mathematics — Maximum Likelihood Estimation

The RISE assessments are scored using maximum likelihood estimation (MLE). MLEs are useful since an estimate of a person's ability can be obtained after one item has been answered correctly, and one item has been answered incorrectly. With number-correct scoring, the test must be completed before an assessment of ability can be computed. This "early" estimate of ability is what allows tests to be adaptive.

However, when all the items administered at a specific point in the test have been answered correctly or incorrectly, the estimate of ability goes to positive or negative infinity, respectively, or the highest or lowest score. This has implications for determining what constitutes a completed test. Theoretically, with maximum likelihood scoring, the student could answer the first item correctly, quit the test, and receive the maximum score. To avoid this, the definition for a complete test needs to be based on something in addition to a minimum number of items attempted, as is often the case with number-correct scored tests.

The MLE scoring for the total scores will be estimated in the test scoring engine as follows:

Indexing items by *i*, the likelihood function based on the *j*th person's score pattern for k_i items is

$$L_j(\theta \mid \mathrm{z}_j, \mathbf{a}_j, \mathbf{b}'_{1,j}, \ldots \mathbf{b}'_{k_j,j}, \mathbf{c}_j) = \prod_{i=1}^{k_i} p_i(z_{ji} \mid \theta, a_{i,j}, b^j_{i,1}, \ldots, b^j_{i,m^j_i}, c_{i,j}),$$

where $\mathbf{b}'^j_i = (b^j_{i,1}, \ldots, b^j_{i,m^j_i})$ are the *i*th item's step parameters and m^j_i is the possible score of this item, $a_{i,j}$ is the discrimination parameter, $c_{i,j}$ is the guessing parameter for a multiple-choice (MC) item. Depending on the item type, the probability $p_i(z_{ji}\,|\,\theta, a_{i,j}, b_{i,1}^j, \ldots, b_{i,m_i^j}^j, c_{i,j})$ takes either the form of a 3PL model for MC items or the form based on the generalized partial credit model for the polytomous items.

In the case of MC items, we have:

$$p_i(z_{ji}\,|\,\theta, a_{i,j}, b_{i,1}^j, \ldots, b_{i,m_i^j}^j, c_{i,j}) = \begin{cases} c_{i,j} + \left(1 - c_{i,j}\right)\dfrac{\exp Da_{i,j}(\theta - b_i^j)}{1 + \exp Da_{i,j}(\theta - b_i^j)} = p_i & \text{if } z_{ji} = 1 \\ c_{i,j} + \left(1 - c_{i,j}\right)\dfrac{1}{1 + \exp Da_{i,j}(\theta - b_i^j)} = 1 - p_i & \text{if } z_{ji} = 0 \end{cases};$$

and in the case of constructed-response (CR) items,

$$p_i(z_{ji}\,|\,\theta, a_{i,j}, b_{i,1}^j, \ldots, b_{i,m_i^j}^j, c_{i,j}) = \begin{cases} \dfrac{\exp Da_{i,j}(\sum_{r=1}^{z_{ji}}(\theta - b_{i,r}^j))}{s_i(\theta, b_{i,1}^j, \ldots, b_{i,m_i^j}^j)} & if\ z_{ji} > 0 \\ \dfrac{1}{s_i(\theta, b_{i,1}^j, \ldots, b_{i,m_i^j}^j)} & if\ z_{ji} = 0 \end{cases},$$

where $s_i(\theta, a_{i,j}, b_{i,1}^j, \ldots, b_{i,m_i^j}^j) = 1 + \sum_{l=1}^{m_i^j} \exp(\sum_{r=1}^{l} Da_{i,j}(\theta - b_{i,r}^j))$, $D = 1.7$.

From this we have $SE\left(\hat{\theta}\right) = \sqrt{Var\left(\hat{\theta}\right)}$. If using a normal distribution with mean 0 and standard deviation of 1, then $f\left(\theta\right) = \phi\left(\theta\right)$, where $\phi\left(\theta\right)$ is the PDF of the standard normal distribution.

8.1.2.2 Science MLE

Student scores are obtained by marginalizing out the nuisance dimensions $\mathbf{u}_j$ from the likelihood of the observed response pattern $\mathbf{z}_j$ for student *j*,

$$\ell_i\left(\theta_j\right) = \log \int_{\mathbf{u}_j} P\left(\mathbf{z}_j \middle| \theta_j, \mathbf{u}_j\right) N\left(\mathbf{u}_j \middle| \mathbf{0}, \mathbf{\Sigma}\right) d\mathbf{u}_j,$$

and maximizing this marginalized likelihood function for θ_j. The Marginal Maximum Likelihood Estimation (MMLE) is a hybrid of the expected a posteriori (EAP) estimator (by marginalizing out the nuisance dimensions) and the MLE estimator (by maximizing the resulting marginal likelihood for θ). The marginal likelihood is maximized with respect to θ using the Newton Raphson method.

The proposed model reduces to the unidimensional Rasch model when the nuisance variances are zero for all *g*. Likewise, the proposed MMLE is equivalent to the MLE of the unidimensional Rasch model when all the nuisance variances are zero. This can be shown by using the variable transformation $\mathbf{v} = \mathbf{\Sigma}^{-\frac{1}{2}}\mathbf{u}$. Then we have

$$\int_{\mathbf{u}_j} P\left(\mathbf{z}_j \middle| \theta_j, \mathbf{u}_j\right) N\left(\mathbf{u}_j \middle| \mathbf{0}, \boldsymbol{\Sigma}\right) d\mathbf{u}_j = \int_{\mathbf{v}_j} P\left(\mathbf{z}_j \middle| \theta_j, \boldsymbol{\Sigma}^{\frac{1}{2}} \mathbf{v}_j\right) N\left(\mathbf{v}_j \middle| \mathbf{0}, \mathbf{I}\right) d\mathbf{v}_j .$$

If $\sigma_{u_g}^2 = 0$ for all g, then

$$\int_{\mathbf{u}_j} P\left(\mathbf{z}_j \middle| \theta_j, \mathbf{u}_j\right) N\left(\mathbf{u}_j \middle| \mathbf{0}, \boldsymbol{\Sigma}\right) d\mathbf{u}_j = P\left(\mathbf{z}_j \middle| \theta_j\right),$$

which is the likelihood under the unidimensional Rasch model.

Derivatives

The marginal log likelihood function based on the IRT model with one overall dimension and one nuisance dimension for each grouping of assertions can be written as

$$l(\theta) = \sum_{i \in \mathrm{SA}} \log\big(P(z_i|\theta)\big) + \sum_{g=1}^{G} \log\left\{\int \operatorname{Exp}\left[\sum_{i \in g} \log\left(P\left(z_{ig}|\theta, u_g\right)\right)\right] N\left(u_g \middle| 0, \sigma_{u_g}^2\right) du_g\right\}$$

The first derivative of the marginal log likelihood function with respect to θ is

$$\frac{dl(\theta)}{d\theta} = \sum_{i \in \mathrm{SA}} \frac{\frac{dP(z_i|\theta)}{d\theta}}{P(z_i|\theta)} + \sum_{g=1}^{G} \frac{\int\left\{\operatorname{Exp}\left[\sum_{i \in g} \log\left(P\left(z_{ig}|\theta, u_g\right)\right)\right]\left(\sum_{i \in g} \frac{\frac{dP\left(z_{ig}|\theta, u_g\right)}{d\theta}}{P\left(z_{ig}|\theta, u_g\right)}\right) N\left(u_g \middle| 0, \sigma_{u_g}^2\right)\right\} du_g}{\int\left\{\operatorname{Exp}\left[\sum_{i \in g} \log\left(P\left(z_{ig}|\theta, u_g\right)\right)\right] N\left(u_g \middle| 0, \sigma_{u_g}^2\right)\right\} du_g},$$

and the second derivative of the marginal log likelihood function with respect to θ is

$$\begin{aligned}
&\frac{d^2 l(\theta)}{d\theta^2} \\
&= \sum_{i \in \mathrm{SA}} \left[\frac{\frac{d^2 P(z_i|\theta)}{d\theta^2}}{P(z_i|\theta)} - \left(\frac{\frac{d\, P(z_i|\theta)}{d\theta}}{P(z_i|\theta)}\right)^2\right] \\
&+ \sum_{g=1}^{G} \frac{\int \operatorname{Exp}\left[\sum_{i \in g} \log\left(P\left(z_{ig}|\theta, u_g\right)\right)\right]\left(\sum_{i \in g} \frac{\frac{d\, P\left(z_{ig}|\theta, u_g\right)}{d\theta}}{P\left(z_{ig}|\theta, u_g\right)}\right)^2 N\left(u_g \middle| 0, \sigma_{u_g}^2\right) du_g}{\int\left\{\operatorname{Exp}\left[\sum_{i \in g} \log\left(P\left(z_{ig}|\theta, u_g\right)\right)\right] N\left(u_g \middle| 0, \sigma_{u_g}^2\right)\right\} du_g} \\
&+ \sum_{g=1}^{G} \frac{\int \operatorname{Exp}\left[\sum_{i \in g} \log\left(P\left(z_{ig}|\theta, u_g\right)\right)\right]\left(\sum_{i \in g}\left[\frac{\frac{d^2 P\left(z_{ig}|\theta, u_g\right)}{d\theta^2}}{P\left(z_{ig}|\theta, u_g\right)} - \left(\frac{\frac{d\, P\left(z_{ig}|\theta, u_g\right)}{d\theta}}{P\left(z_{ig}|\theta, u_g\right)}\right)^2\right]\right) N\left(u_g \middle| 0, \sigma_{u_g}^2\right) du_g}{\int\left\{\operatorname{Exp}\left[\sum_{i \in g} \log\left(P\left(z_{ig}|\theta, u_g\right)\right)\right] N\left(u_g \middle| 0, \sigma_{u_g}^2\right)\right\} du_g} \\
&- \sum_{g=1}^{G} \left\{\frac{\int \operatorname{Exp}\left[\sum_{i \in g} \log\left(P\left(z_{ig}|\theta, u_g\right)\right)\right]\left(\sum_{i \in g} \frac{\frac{d\, P\left(z_{ig}|\theta, u_g\right)}{d\theta}}{P\left(z_{ig}|\theta, u_g\right)}\right) N\left(u_g \middle| 0, \sigma_{u_g}^2\right) du_g}{\int\left\{\operatorname{Exp}\left[\sum_{i \in g} \log\left(P\left(z_{ig}|\theta, u_g\right)\right)\right] N\left(u_g \middle| 0, \sigma_{u_g}^2\right)\right\} du_g}\right\}^2
\end{aligned}$$

Based on the above equations, we need to define only the ratios of the first and second derivatives of the item response probabilities with respect to θ to the response probabilities. For the Rasch testlet model, these are obtained as

$$p_i = P(z_i = 1|\theta) = \frac{\text{Exp}(\theta - b_i)}{1 + \text{Exp}(\theta - b_i)}, q_i = P(z_i = 0|\theta) = 1 - p_i,$$

and

$$p_{ig} = P\left(z_{ig} = 1|\theta, u_g\right) = \frac{\text{Exp}(\theta + u_g - b_i)}{1 + \text{Exp}(\theta + u_g - b_i)}, q_{ig} = P\left(z_{ig} = 0|\theta, u_g\right) = 1 - p_{ig}.$$

Therefore, we have,

$$\frac{\frac{dp_i}{d\theta}}{p_i} = q_i \text{ , } \frac{\frac{dq_i}{d\theta}}{q_i} = -p_i,$$

$$\frac{\frac{dp_{ig}}{d\theta}}{p_{ig}} = q_{ig} \text{ , } \frac{\frac{dq_{ig}}{d\theta}}{q_{ig}} = -p_{ig},$$

$$\frac{\frac{d^2 p_i}{d\theta^2}}{p_i} - \left(\frac{\frac{d\, p_i}{d\theta}}{p_i}\right)^2 = -p_i q_i,$$

$$\frac{\frac{d^2 q_i}{d\theta^2}}{q_i} - \left(\frac{\frac{d\, q_i}{d\theta}}{q_i}\right)^2 = -p_i q_i,$$

$$\frac{\frac{d^2 p_{ig}}{d\theta^2}}{p_{ig}} - \left(\frac{\frac{d\, p_{ig}}{d\theta}}{p_{ig}}\right)^2 = -p_{ig} q_{ig}, \text{ and}$$

$$\frac{\frac{d^2 q_{ig}}{d\theta^2}}{q_{ig}} - \left(\frac{\frac{d\, q_{ig}}{d\theta}}{q_{ig}}\right)^2 = -p_{ig} q_{ig}.$$

Extreme Case Handling

Just like the MLE, the MMLE is not defined for zero and perfect scores. These cases are handled by assigning the lower and upper theta bounds respectively.

Standard Errors of Measurement

The SEM of the MMLE score estimate is:

$$SEM(\hat{\theta}_{MMLE}) = \frac{1}{\sqrt{I(\hat{\theta}_{MMLE})}}$$

where $I(\hat{\theta}_{MMLE})$ is the observed information evaluated at $\hat{\theta}_{MMLE}$. The observed information is calculated as $I(\theta^2) = -\frac{d^2 l(\theta)}{d\theta^2}$ where $\frac{d^2 l(\theta)}{d\theta^2}$ is defined in the previous section on derivatives. Note that the calculation of the standard error of estimate depends on the unique set of items that each student answers and their estimate of θ. Different students have different SEMs, even if they have the same raw score and/or theta estimate.

8.2 ESTABLISHING A VERTICAL SCALE IN ELA AND MATHEMATICS

This section documents the design and results of a vertical linking study that was implemented to develop a vertical scale for scoring and reporting student achievement results for reporting RISE ELA and mathematics results that allows for monitoring and evaluation of students' gains over time. Although the high school tests are no longer part of the RISE assessments, their results remain in this section along with the grades 3–8 results to preserve the original vertical linking design that linked from grade 3 through grade 11. Because of discontinuities in the science standards assessed across grade levels, RISE science scores are reported on a within-grade scale.

To emphasize the acquisition of new knowledge and skills in the development of the vertical scale, operational items from each grade-level assessment (g) were embedded in field test slots of the assessment in the grade below (g–1). While this approach risks administering to students one or two items measuring content that students may not yet have had the opportunity to learn, the resulting linkage represents student achievement of grade-level content for which they will receive instruction and thus can be interpreted as a pre-test score for measuring student acquisition of subsequent grade-level content.

The student's performance in each content area test is reported in an overall test score referred to as a *scaled score*. The scaled scores represent a linear transformation of the ability estimates (theta scores).

ELA and mathematics assessments are reported on a vertical scale. The item response theory (IRT) vertical scale is formed by linking across grades using common items in adjacent grades. The vertical scaled score is the linear transformation of the post-vertically scaled IRT ability estimate using the formula given as:

$$SS = a * \theta + b$$

where *a* is the slope scaling constant and *b* is the intercept scaling constant. Within ELA and mathematics, a single scale is created; therefore, the scaling constants are the same for each grade and content area in the vertical scale. The vertical scaling constants are presented in Table 64.

Table 64: Vertical Scaling Constants for ELA and Mathematics

Subject	Slope (*a*)	Intercept (*b*)
ELA	83.31	426.91
Mathematics	52.09	437.63

The transformation is derived by using the Proficient cut score in grade 7 to center the scale, the standard deviation across grades from the vertical scale, and the desired mean and standard deviation for the reporting scale. The formula to transform is given as:

$$SS_v = \left(\frac{\sigma_s}{\sigma_v}\right)\theta_v + \mu_s - \left(\frac{\sigma_s}{\sigma_\theta}\right)\mu_\theta$$

where μ_s is the grade 7 Proficient designated scaled score, μ_ϑ is the grade 7 Proficient cut score on the ability scare, σ_s is the standard deviation of the designated scale, and σ_ϑ is the standard deviation of the ability scale. The designated mean and standard deviation for the vertical scale score (SS_v) are 450 and 100, respectively. After calculating the vertical scale score, the vertical scale score value is rounded to the nearest integer.

Proficiency levels were determined in the 2014 SAGE Standard Setting Report presented as Appendix 7-A, 2014 SAGE (now RISE) Standard-Setting Report. The algorithm allows previously answered items to be changed; however, it does not allow items to be skipped. Item selection requires iteratively updating the estimate of the overall and strand ability estimates after each item is answered. When a previously answered item is changed, the proficiency estimate is adjusted to account for the changed responses when the next new item is selected. While the update of the ability estimates is performed at each iteration, the overall and strand scores are recalculated using all data at the end of the test for the final score.

8.2.1 SELECTING LINKING ITEMS

In order to adequately represent the content domain measured by each of the grade-level and subject-area assessments in the vertical linking design, approximately two forms (test administrations) of items were identified for the vertical linking set at each grade. The vertical linking items were selected to meet blueprint for test administrations both on grade-level assessments from which they were selected, as well as the lower-grade assessment in which they were embedded. Thus, a representative set of items from each grade-level assessment was identified for administration in the embedded field test (EFT) blocks in the grade level below. All linking items were fast-track items that had been run through rubric review but not data review. The performance of these vertical linking items was evaluated based on classical item analysis and calibration to ensure high quality linking sets.

8.2.2 LINKING ANALYSIS

A chain linking approach was used to link the grade-level assessments within each subject area. A chain linking approach offers an important advantage because IRT calibrations proceed by establishing the within-grade scale, the achievement construct intended by the blueprint and enacted in the operational test form is preserved. The chain linking approach was also more practical given the very large number of items included in the RISE adaptive item pools and the three-parameter logistic/generalized partial credit (3PL/GPC) parameter estimation.

8.2.3 FINAL LINKING SET

To facilitate the development of a vertical scale that would be sensitive to student growth over time, we evaluated the performance of vertical linking items and removed items if the biserial/polyserial were less than 0.10, if the proportion correct value was greater than .98 or less than .01, or if the items were deactivated during administration. In addition, items with poor fit due to underused categories were removed if they interfered with calibration. Table 65 and Table 66 show the number of items removed as well as the number of items remaining in the final vertical linking set. We note that the linking sets between grade 8 mathematics and SM I and the linking sets between SM I and SM II had relatively higher proportions of items excluded from the final linking set. We also note that linking sets between the grades 3 and 4 ELA and mathematics assessments had relatively higher proportions of items removed. Nevertheless, the number of items included in the final linking sets was large, and the content distribution approximated the blueprint distribution even after the removal of items from the original linking sets.

Table 65: Number of Items Dropped and Remaining in the Final Vertical Linking Set for ELA

Grade	Dropped Items	Final Vertical Linking Set
4 → 3	21	72
5 → 4	15	78
6 → 5	9	84
7 → 6	12	84
7 → 8	11	79
8 → 9	15	82
9 → 10	15	80
10 → 11	17	77

Table 66: Number of Items Dropped and Remaining in the Final Vertical Linking Set for Mathematics

Grade	Dropped Items	Final Vertical Linking Set
4 → 3	16	82
5 → 4	5	94
6 → 5	7	92
7 → 6	7	92
7 → 8	3	95
8 → SM I	19	77
SM I → SM II	35	65
SM II → SM III	10	87

8.2.4 CHAIN LINKING

The chain linking approach proceeds from the within-grade item parameters identified in the initial calibrations of the operational and embedded field-test items. Because operational test items at each grade were administered in the EFT slots in the grade below, each item in the vertical linking set has two sets of item parameters: on-grade (g) and below-grade (g–1). The chain linking proceeds by identifying the linking constants necessary to place the below-grade item parameters on the on-grade scale for the items in the final vertical linking set. The Stocking-Lord (1983) procedure was used to identify the linking constants to link each of the grade-level assessments. This procedure is among the most commonly used test characteristic curve methods used to equate tests calibrated using the 3PL and generalized partial credit IRT models. The procedure identifies the linking constants, A and B, that minimize the squared distance between two test characteristic curves. A is often referred to as the slope, and B is often referred to as the intercept.

For both RISE ELA and mathematics, grade 7 served as the base grade, grades 6 and 8 were linked directly to grade 7, and the remaining assessments chained through intervening grades to be placed on the grade 7 scales. No additional items were dropped in the linking step. In this way, the vertical linking constants necessary to place the within-grade scales onto the vertical reporting scale were identified. The final vertical linking constants are shown in Table 67 and Table 68.

Table 67: Final Linking Constants for ELA

Grade	Slope	Intercept
3	0.83	–1.29
4	0.89	–0.83
5	0.89	–0.45
6	0.90	–0.12
7	0.94	0.01
8	1.01	0.20

Grade	Slope	Intercept
9	1.07	0.36
10	1.13	0.48
11	1.17	0.58

Table 68: Final Linking Constants for Mathematics

Grade	Slope	Intercept
3	0.60	–2.45
4	0.74	–1.81
5	0.85	–1.23
6	0.99	–0.56
7	1.01	–0.01
8	1.24	0.68
SM I	1.46	1.01
SM II	1.62	1.72
SM III	1.69	2.33

To examine the properties of the vertical linking scale for ELA and mathematics, the mean ability (theta) and test characteristic curves (TCCs) for each of the grade-level assessments on the vertical scale were examined.

Table 69 shows descriptive statistics for ELA across grades on the vertical scale, with mean ability shown graphically in Figure 22. For ELA, achievement gains across grade levels are not as large as for mathematics, and results indicate deceleration of reading gains as one moves from lower to higher grades. TCCs for the reading item pools, shown in Figure 23, show less separation at the higher grade levels, indicating larger differences in item difficulty between elementary grade item pools than between upper grade item pools.

Table 69: Descriptive Statistics for ELA Achievement on the Vertical Scale

Grade	N	Mean	Std Dev	Minimum	Maximum
3	46,762	–1.29	0.90	–5.46	2.89
4	46,613	–0.84	0.96	–5.29	2.91
5	44,348	–0.45	0.98	–4.92	4.03
6	38,092	–0.13	0.98	–4.62	3.83
7	36,304	0.00	1.02	–4.71	4.73
8	37,532	0.20	1.08	–4.86	4.57
9	31,746	0.35	1.16	–4.97	5.69

Grade	N	Mean	Std Dev	Minimum	Maximum
10	31,601	0.48	1.23	–5.15	6.12
11	32,341	0.57	1.27	–5.25	6.41

Figure 22: Mean ELA Achievement on the Vertical Scale

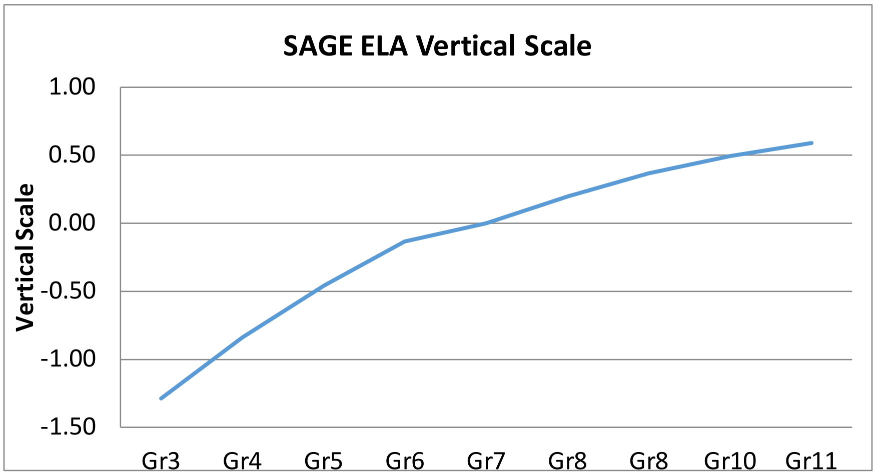


Figure 23: ELA Test Characteristic Curves

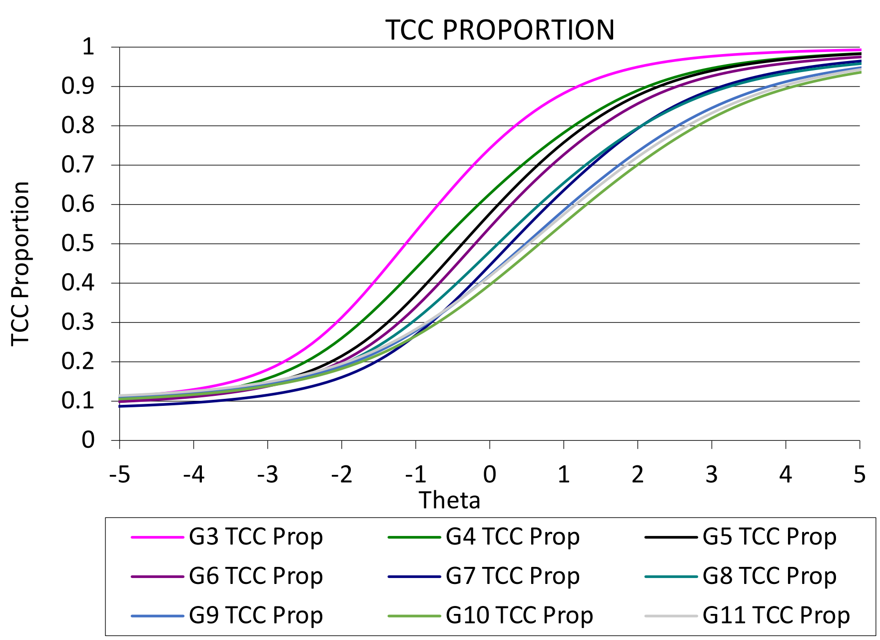


Table 70 shows descriptive statistics for mathematics across grades on the vertical scale, with mean ability shown graphically in Figure 24. For mathematics, the results indicate relatively uniform and large achievement gains across most grades with a somewhat smaller difference in means between grade 8 and SM I. Moreover, the mathematics TCCs shown in Figure 25 indicate uniform increases in the difficulty of the item pools across grades.

Table 70: Descriptive Statistics for Mathematics Achievement on the Vertical Scale

Grade	N	Mean	Std Dev	Minimum	Maximum
3	47,414	–2.46	0.66	–5.46	0.56
4	47,337	–1.83	0.84	–5.54	1.91
5	46,832	–1.26	1.00	–5.47	3.01
6	45,498	–0.58	1.12	–5.49	4.38
7	43,509	–0.05	1.15	–5.06	5.05
8	43,374	0.62	1.43	–5.51	6.88
SM I	44,527	0.87	1.85	–6.31	8.33
SM II	37,519	1.51	2.20	–6.40	8.57
SM III	17,046	1.95	2.61	–6.13	10.60

Figure 24: Mean Mathematics Achievement on the Vertical Scale

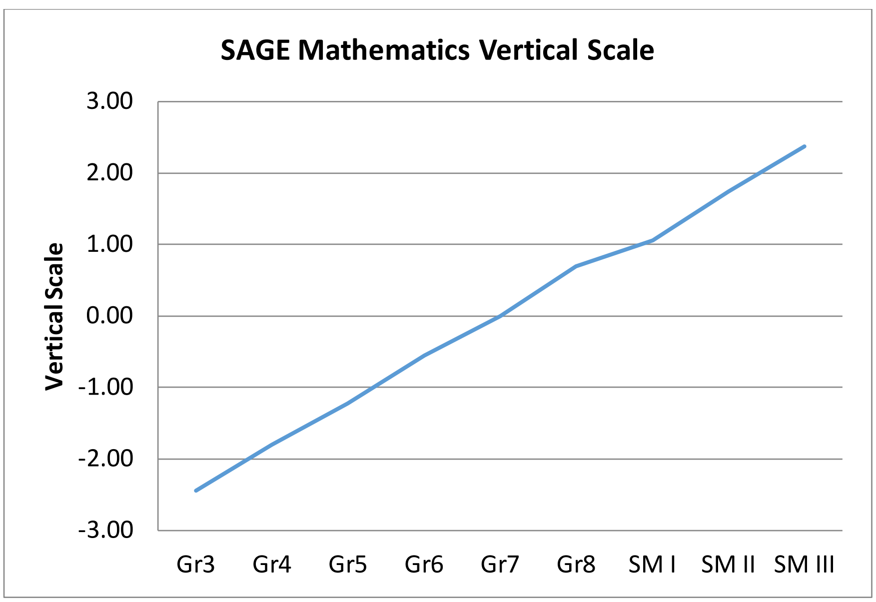
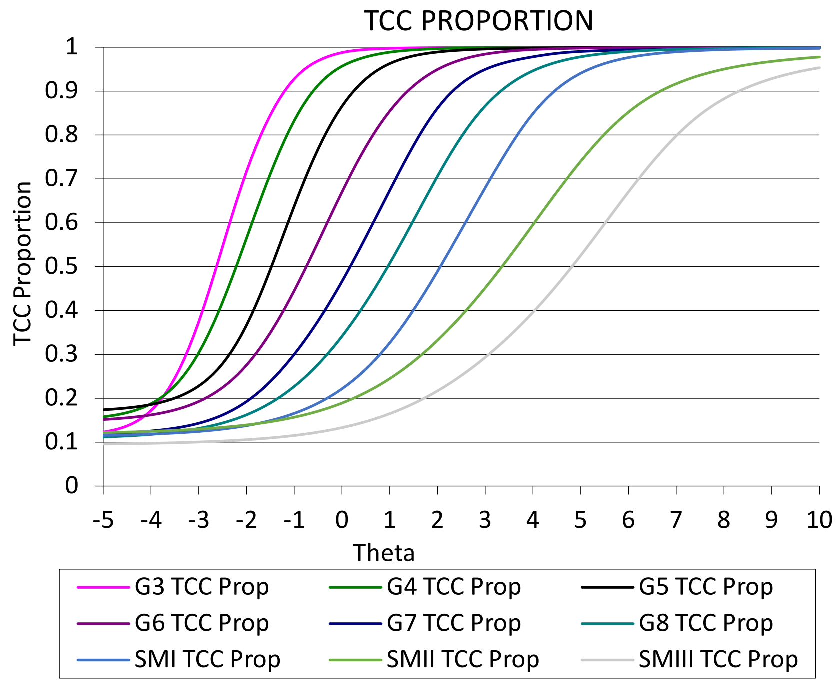


Figure 25: Mathematics Test Characteristic Curves



8.3 RISE REPORTING SCALE (SCALE SCORES)

8.3.1 REPORTING CATEGORY PERFORMANCE

In addition to a total scaled score, performance on each reporting category is reported. The ability estimates for the reporting categories are on the same scale as the total score; hence, the same cut score of the Proficiency standard is used to judge student performance on each reporting category.

8.3.2 RULES FOR ZERO AND PERFECT SCORES

In IRT maximum likelihood ability estimation methods, zero and perfect scores are assigned the ability of minus and plus infinity. For all the tests, the extreme scores will be truncated at the lowest obtainable scale score (LOSS) and highest obtainable scale score HOSS as presented in Table 71.

Table 71: Scaled Score Limits for Extreme Ability Estimates

Grade	ELA		Mathematics		Science	
	LOSS	HOSS	LOSS	HOSS	LOSS	HOSS
3	110	530	216	404	--	--
4	135	580	227	459	501	599
5	167	613	241	506	501	599
6	190	642	255	563	801	899
7	192	666	280	595	801	899

Grade	ELA		Mathematics		Science	
	LOSS	HOSS	LOSS	HOSS	LOSS	HOSS
8	191	697	279	667	801	899
SM I	--	--	261	719	--	--

8.3.3 RULES FOR SCORING AND REPORTING OF INCOMPLETE TEST ADMINISTRATIONS

Beginning in spring 2015, USBE provided limited scoring and reporting for incomplete test records. Reporting for each of the subject area test administrations (reading, writing, mathematics, and science) is based both on an attemptedness criterion and on whether the test administration is completed. The reporting rules for mathematics and reading are described first, followed by the special case of writing, then the rules for science are described.

All operational items are included in the evaluation of test records for attemptedness, or whether student attempted or completed a test. Field-test items are excluded.

Test records for mathematics, science, and the reading and writing components of the ELA test are classified as follows, depending on the number of items a student responds to:

Evaluation of attemptedness for mathematics and reading component of ELA tests:

- **Not Attempted (Attempt = N).** If a student responds to fewer than six (<6) items, the student did not attempt the test. Test scores for these records are not computed or reported.
- **Partial Attempt (Attempt = P).** If a student responds to at least six (≥6) items but is administered fewer than 85% of the total operational items, the test is considered to have been partially attempted. No scoring or reporting is provided for partially attempted test records.
- **Attempted (Attempt = Y).** If a student responds to at least 85% of operational test items, the test is considered attempted, whether or not the test record is complete. USBE provides full scoring and reporting for attempted tests regardless of whether the tests are completed.

Evaluation of attemptedness for writing component of ELA tests:

- **Not Attempted (Attempt = N).** If the student does not enter at least one non-blank character, the student did not attempt the writing test.
- **Attempted (Attempt = Y).**
    - For summative: If the student entered at least one non-blank character for the essay response, the student did attempt the writing test.

Evaluation of attemptedness for science tests:

- **Not Attempted (Attempt = N).** Student never logs in to the system.
- **Participant (Attempt = P).** If a student did not respond to any item, the student did not attempt the test but participated. Test scores for these records are not computed or reported. Some examples are
    - A student opens the test and views the first item but does not respond to anything.
    - A student opens the test, responds to a single interaction of the first item and subsequently deletes the response.

- **Attempted (Attempt = Y).** If a student responded to at least one (≥1) item cluster, the test is considered attempted. CAI provides scoring and reporting for attempted tests regardless of whether the tests are completed. Some examples of an attempted test are
  - A student responds to only one interaction on a cluster.
  - A student responds to only one part of one interaction (e.g., one drop-down, when the interaction has three drop-downs).
  - A student enters only a space for a single interaction.

Only subject-area scale scores and proficiency levels are reported for tests that are attempted but not completed in ELA and mathematics, with all subscale scores and classifications suppressed. Students must attempt and complete all test components within a subject area in order to receive both subject area and subscale scores classifications. For science, attemptedness is determined for the overall science test and for each strand. A student must have attempted the corresponding strand of the test in order to receive a strand score.

9. CONSTRUCTED-RESPONSE SCORING

The Utah's Readiness Improvement Success Empowerment (RISE) assessments in English language arts (ELA), mathematics, and science use a variety of item types to assess students' mastery of the Utah Core Standards. The Utah State Board of Education (USBE) leverages Cambium Assessment, Inc.'s (CAI), item-scoring technology to machine score student responses to most items, including traditional selected-response (multiple-choice) item types and machine-scored constructed-response (MSCR) items types. The MSCR item types are designed to capture and score a variety of response types, such as graphing, drawing, or arranging graphic regions, selecting or rearranging sentences or phrases within passages, or entering equations or words, allowing RISE items to assess a wide range of student knowledge and skills. In most cases, MSCR items developed for online administration are adapted for paper-pencil and responses are captured in a format that allows machine scoring.

In addition, some constructed-response items are scored by human raters; these items are referred to as "handscored." To support machine scoring of each essay response, in February 2015, a sample of essay responses was handscored through verification, and those responses and scores were used to develop the statistical scoring models used to score the remaining responses. The statistical scoring models rebuilt in September 2019 (originally developed in February 2015) will be used to score all essay responses in future test administrations. The reading components of the ELA assessments and the mathematics assessments administered online are machine scored in their entirety.

CAI partners with Data Recognition Corporation (DRC) to fulfill all handscoring requirements. CAI provides the automated electronic scoring, and DRC provides all handscoring for the RISE tests. This chapter describes the process for configuring and validating machine rubrics and the process for handscoring, including rules, descriptions of scorer training and systems used, and mechanisms for ensuring the reliability and validity of item scores.

9.1 MACHINE SCORING

9.1.1 EXPLICIT RUBRICS

As part of the item-development process for machine-scored item types, which are scored with explicit rubrics, a rubric validation process was enacted to verify that rubrics are implemented as intended, and responses are scored correctly. This procedure is typically conducted following the initial administration of items, usually when the item is field tested, and allows test developers to review the intent of the rubric versus the actual behavior. Actual student responses were reviewed by test development experts, along with resulting item scores, to ensure that the rubrics functioned as intended and awarded credit appropriately. Where necessary, test developers modified machine rubrics to address insufficiencies, automatically rescoring student responses for the item, and repeating the process to finalize and approve the machine-scored rubrics. Test developers reviewed a strategic sample of responses, including responses where high-achieving students scored poorly on the item, lower-achieving students scored well on the item. They also reviewed randomly selected responses from the population.

9.1.2 ESSAY AUTOSCORING

As part of the 2020–2021 administration of RISE, students in grades 5 and 8 were administered one of two writing tasks (one informational/explanatory, and the other, either opinion [grade 5] or argumentative [grades 8]) that had been calibrated during the February 2015 pilot administration. This section describes the processes performed to calibrate these and the rest of the available writing prompts completed during the February 2015 pilot administration. As part of the 2015 pilot administration of SAGE, students in each grade were administered one of two writing tasks (one informational/explanatory, and the other, either opinion [grades 3–5] or argumentative [grades 6–11]) in the writing component of each of the ELA online assessments.

For the grades 3–11 assessments, which had not been previously administered, DRC pulled a sample of essay responses from the February 2015 pilot testing window with which to conduct rangefinding activities. The development of training materials and rater training followed immediately to ensure that handscoring could begin at the end of the testing window.

At the end of the pilot window, CAI drew a random sample of 2,000 responses from each writing task administered for use in building the statistical scoring models. Those responses were routed to DRC for handscoring. Each response was double-scored, with any discrepancies routed for resolution scoring.

As handscoring activities were completed for each writing task and scores were uploaded to CAI, work began to develop statistical scoring models for each rubric element and to deploy those models to the TDS to score all remaining essay responses.

To develop the scoring models, the random sample of 2,000 responses was divided into a model-building sample of 1,500 responses and a cross-validation sample of 500 responses. Model performance was evaluated on the cross-validation sample to ensure that model fit indices were not based on the model-building sample, which may inflate fit indicators.

The statistical scoring models also yield an indicator of score confidence based on (1) responses with unusual features and (2) responses scoring near rubric thresholds. For each model, a confidence threshold defined as 1.5 standard deviations below the mean confidence value for the responses in the cross-validation sample was identified. Any scored response with a confidence value below the threshold was automatically routed to DRC for verification scoring.

The statistical rubrics used to develop the scoring models measured a broad set of features, some of which may have been item-specific and “learned” from a training set. During training, these features are related to human scores through a statistical model. The resulting estimates complete a prediction equation that predicts how a human would score a response with the measured features. Statistical rubrics are, effectively, proxy measures. Although they can directly measure some aspects of writing conventions (e.g., use of passive voice, misspellings, run-on sentences), they do not make direct measures of argument structure or content relevance. Hence, although statistical rubrics often prove useful for scoring essays and even for providing some diagnostic feedback in writing, they do not develop a sufficiently specific model of the correct semantic structure to score many propositional items. Further, they cannot provide the explanatory or diagnostic information available from an explicit rubric. For example, the frequency of incorrect spellings may predict whether a response to a factual item is correct—higher-performing students may also have better spelling skills. Spelling may prove useful in predicting the human score, but it is not the “reason” that the human scorer deducts points. Indeed, statistical rubrics are not about explanation or reason but rather about a prediction of how a human would score the response.

As noted, the engine employs a “training set,” a set of essay responses scored with maximally valid scores, which we obtain by having all responses double-scored by expert scorers and a thorough adjudication process for adjacent or discrepant scores. The quality of the human-assigned scores is critical to the identification of a valid model and the final performance of the scoring engine. Approximately 1,500 essay responses were selected at random from the set of scored essay responses to serve as the training set.

For each dimension in the rubric, the system estimates an appropriate statistical model relating the measures to the score assigned by humans. This model, along with its final parameter estimates, is used to generate a predicted or “proxy” score.

In addition to the training set, we draw an independent random sample of responses for cross-validation of the identified scoring rubric. As with the training set, student responses in the cross-validation study are handscored, and agreement between human- and machine-assigned scores is examined. The cross-validation process ensures that the rubric generalizes across all responses and that the statistical model identified during training does not capitalize on peculiarities in the training set.

Table 72 presents the agreement indicators for the two initial human raters, and between the resolved human and statistical rubric score, for the two writing prompts randomly assigned in each grade in the 2020–2021 administration. Indicators include percentage exact agreement, a quadratic weighted kappa (QWK) statistic, and the standardized mean difference between the scores. Although absolute values for evaluating statistics have been advanced (Wei & Higgins, 2013), the focus of these comparisons is the degradation of agreement when moving from human–human agreement to machine–human agreement. Agreement between human raters is an indicator of how reliably the responses can be scored by human raters. Because the statistical rubrics attempt to reproduce human–assigned scores, the evaluation of machine–human agreement is with respect to observed human–human agreement. Responses with poor human–human agreement will not be reliably scored by either humans or machines. For the training and validation sets of the prompts administered in 2020–2021, Table 73 presents the correlations among the dimension scores.

Table 72: Summary of Human and Machine Scores for 2020–2021 Writing Prompts

Grade	ITS ID	Dimensions	Score Point	Mean		SD		Human-Human Agreement			Human-Machine Agreement		
				Human	Engine	Human	Engine	% Exact	Weighted κ*	SMD*	% Exact	Weighted κ*	SMD*
5	17161	Conventions	2	1.67	1.74	0.53	0.46	76%	0.62	-0.12	84%	0.66	-0.13
		Evidence	4	1.84	1.76	0.68	0.65	57%	0.56	-0.15	71%	0.61	0.12
		Purpose	4	1.81	1.74	0.70	0.56	58%	0.55	-0.09	67%	0.59	0.10
5	17420	Conventions	2	1.75	1.81	0.46	0.42	76%	0.46	0.00	86%	0.63	-0.15
		Evidence	4	2.19	2.22	0.80	0.72	57%	0.55	0.00	59%	0.60	-0.03
		Purpose	4	2.26	2.35	0.73	0.68	61%	0.60	-0.03	63%	0.62	-0.14
5	17422	Conventions	2	1.75	1.81	0.48	0.43	82%	0.61	0.08	86%	0.66	-0.13
		Evidence	4	2.32	2.27	0.80	0.78	55%	0.55	0.05	62%	0.62	0.07
		Purpose	4	2.38	2.34	0.77	0.72	59%	0.64	0.08	65%	0.67	0.06
5	17443	Conventions	2	1.70	1.78	0.50	0.41	79%	0.53	0.05	84%	0.61	-0.16
		Evidence	4	2.15	2.08	0.75	0.72	60%	0.64	-0.05	68%	0.66	0.09
		Purpose	4	2.03	2.04	0.75	0.68	65%	0.65	0.04	66%	0.66	-0.02
8	17175	Conventions	2	1.64	1.67	0.59	0.57	79%	0.62	0.07	82%	0.71	-0.06
		Evidence	4	2.58	2.51	0.80	0.71	59%	0.66	-0.03	69%	0.72	0.10
		Purpose	4	2.64	2.67	0.82	0.76	59%	0.65	0.04	62%	0.69	-0.04
8	17191	Conventions	2	1.74	1.82	0.54	0.50	81%	0.51	-0.36	83%	0.63	-0.16
		Evidence	4	2.09	2.01	0.69	0.61	71%	0.66	0.04	74%	0.65	0.12
		Purpose	4	2.28	2.22	0.79	0.70	62%	0.66	0.14	66%	0.67	0.08
8	17401	Conventions	2	1.68	1.78	0.55	0.49	77%	0.54	-0.04	82%	0.64	-0.20
		Evidence	4	2.61	2.61	0.78	0.67	60%	0.65	-0.03	72%	0.73	0.00
		Purpose	4	2.63	2.58	0.81	0.74	62%	0.63	0.02	65%	0.71	0.07
8	17462	Conventions	2	1.71	1.74	0.53	0.47	73%	0.61	0.01	85%	0.68	-0.05

Grade	ITS ID	Dimensions	Score Point	Mean		SD		Human-Human Agreement			Human-Machine Agreement		
				Human	Engine	Human	Engine	% Exact	Weighted κ*	SMD*	% Exact	Weighted κ*	SMD*
		Evidence	4	1.95	1.85	0.74	0.69	66%	0.69	-0.02	71%	0.68	0.14
		Purpose	4	2.19	2.14	0.89	0.88	61%	0.64	0.06	64%	0.73	0.06

*Weighted K = Quadratic weighted kappa; SMD = Standardized Mean Difference

Table 73: Summary of Dimension Intercorrelations for 2020–2021 Writing Prompts

Grade	ITS ID	Dimensions	Score Point	Final Human Score			Final Machine Score		
				Conv	Evid	Purp	Conv	Evid	Purp
5	17161	Conventions	2	1			1		
		Evidence	4	0.33	1		0.35	1	
		Purpose	4	0.43	0.5	1	0.47	0.38	1
5	17420	Conventions	2	1			1		
		Evidence	4	0.43	1		0.48	1	
		Purpose	4	0.46	0.73	1	0.46	0.75	1
5	17422	Conventions	2	1			1		
		Evidence	4	0.49	1		0.47	1	
		Purpose	4	0.46	0.73	1	0.51	0.75	1
5	17443	Conventions	2	1			1		
		Evidence	4	0.41	1		0.41	1	
		Purpose	4	0.43	0.69	1	0.45	0.69	1
8	17175	Conventions	2	1			1		
		Evidence	4	0.53	1		0.6	1	
		Purpose	4	0.49	0.77	1	0.56	0.8	1
8	17191	Conventions	2	1			1		
		Evidence	4	0.42	1		0.45	1	
		Purpose	4	0.43	0.74	1	0.47	0.7	1
8	17401	Conventions	2	1			1		
		Evidence	4	0.51	1		0.53	1	
		Purpose	4	0.51	0.81	1	0.49	0.78	1
8	17462	Conventions	2	1			1		
		Evidence	4	0.5	1		0.56	1	

Grade	ITS ID	Dimensions	Score Point	Final Human Score			Final Machine Score		
				Conv	Evid	Purp	Conv	Evid	Purp
		Purpose	4	0.5	0.79	1	0.55	0.82	1

9.1.3 MACHINE-IDENTIFIED CONDITION CODES

The Autoscore models have been expanded to include limited identification of condition codes. It should be noted that machine-assigned condition codes are different from those previously assigned by human raters. The presence of a general, non-specific condition code category is estimated by a statistical model based on the responses from the training set that were assigned condition codes by human raters. In addition, a set of rule-based condition codes is also computed. The available condition codes include:

- **NO_RESPONSE:** No non-blank characters are detected in the response.
- **NOT_ENOUGH_DATA:** Student response is less than the minimum number of words configured in the rubric.
- **PROMPT_COPY_MATCH:** Student response is substantially copied from the passage or item prompt (flagged when more than 50% of response text matches the prompt or when the response includes more than 70% sequential match with prompt).
- **OUT_OF_VOCAB:** This feature identifies responses for which the engine did not have sufficient information to score using latent semantic analysis features and captures unusual responses that may be missed by the NONSPECIFIC filter (flagged if 50% of the words in the response do not appear in the training sample).
- **DUPLICATE_TEXT:** Student response is substantially comprised of repeated text copied over and over (flagged when ratio of duplicate text is more than 70% of total response).

Responses receiving the NO_RESPONSE condition code are considered not attempted and do not receive a score. All other condition codes imply an attempt and receive the lowest possible dimension score for purposes of ability estimation.

Table 74: Frequency of Machine-Assigned Condition Codes for 2020–2021 Writing Prompts

Grade	ITS ID	N	Percentage of Machine-Assigned Condition Code				
			NO_RESPONSE	NOT_ENOUGH_DATA	PROMPT_COPY_MATCH	OUT_OF_VOCAB	DUPLICATE_TEXT
5	17161	11,744	0%	1%	6%	0%	0%
	17420	11,676	0%	1%	4%	0%	0%
	17422	11,956	0%	1%	8%	0%	0%
	17443	11,667	0%	1%	8%	0%	0%
8	17175	11,570	0%	1%	2%	0%	0%
	17191	11,598	0%	1%	3%	0%	0%
	17401	11,784	0%	1%	2%	0%	0%
	17462	11,631	0%	1%	8%	0%	0%

9.2 MACHINE-SCORING VERIFICATION

There will be no scoring verification for benchmark modules or summative tests taken outside the main spring testing window. The score provided by the essay scoring engine will be the score of record.

For each dimension score assigned, a confidence index is produced. Following the development of statistical scoring models, the mean and standard deviation of the confidence index is computed for each dimension and the lowest value is selected for flagging responses with one or more low confidence scores. Any dimension score with a confidence index below this threshold will be flagged for verification by a human rater.

For spring summative score verification, it is not necessary to flag rule-based condition codes for verification. Because the model-based condition code is non-specific, we propose to flag all responses assigned the NONSPECIFIC or OUT_OF_VOCAB condition codes for human verification. In addition, any machine-assigned score with a confidence value less than 1.5 standard deviations from the mean confidence value for the response will also be flagged for verification scoring following the rules described above.

Each dimension is treated as a separate item in the computation of writing domain scores. As described in the attemptedness section, if a student response includes any non-blank character, the essay is considered attempted. For the summative test, if a student attempts the essay, writing domain scores are scored and reported.

For writing, completeness constitutes a non-blank character entered for the essay (i.e., if a student enters a single character [not a space or return] for one essay in summative tests and one essay in interim tests, and receives a score other than condition code B, the student is considered to have attempted the writing section and will receive a writing scale score and standard error).

The essay autoscore human verification process is managed by DRC's electronic scoring system, which implements many programmatic controls. CAI has observed DRC's training, scoring, qualifying, and monitoring processes to be among the best in the industry. The system enables team leaders to call up individual responses, monitor a variety of indicators, and designate items for rescoring. The scoring, validity and reliability are monitored throughout backreading and validity testing. When a rater does not provide sufficiently reliable or valid scores, DRC can remediate issues through individual coaching, retraining, and/or dismissal. Double scoring, in which two scorers independently rate each response, was employed for SAGE in 2015. Any discrepancies were resolved by a team leader. Appendix 9-A, DRC Handscoring Guidelines, presents the DRC handscoring guidelines and Appendix 9-B, DRC Writing Handscoring Results, presents results of interrater agreement for double-scored responses.

10. QUALITY ASSURANCE PROCEDURES

Quality assurance (QA) procedures are enforced throughout all stages of Utah's Readiness Improvement Success Empowerment (RISE) test development, administration, and scoring and reporting. This chapter describes QA procedures associated with the following:

- Test configuration
- Test production
- Data preparation
- Equating and scaling
- Scoring and reporting

Because QA procedures pervade all aspects of test development, we note that discussion of QA procedures is not limited to this chapter but is also included in chapters describing all phases of test development and implementation.

10.1 QUALITY ASSURANCE IN TEST CONFIGURATION

Chapter 4 details the item development and test configuration processes. Each test administration is generated by the adaptive algorithm to exactly match the detailed test blueprint while targeting test information to student ability. The blueprint describes the content to be covered, the Depth of Knowledge (DOK) with which it will be covered, the type of items that will measure the constructs, and every other content-relevant aspect of the test.

The adaptive test configuration process is managed through Cambium Assessment, Inc.'s (CAI) Test Simulator. Immediately upon completion of a test simulation, the Test Simulator generates a blueprint match report to ensure that all elements of the test blueprint have been satisfied. In addition, the Test Simulator produces a statistical summary of form characteristics to ensure consistency of test characteristics across simulated test forms.

Prior to its implementation in the operational test administration, the CAI scoring engine and the accuracy of data files are checked using a simulated student response data file. The simulated data are used to check whether the student responses entered in the Test Delivery System (TDS) were captured accurately, and the scoring specifications were applied accurately. The simulated data file is scored independently by two programmers, following the scoring rules.

In addition to checking the scoring accuracy, the test configuration file is checked thoroughly. For the operational administration, a test configuration file is the key file that contains all specifications for the item selection algorithm, and eventually for the scoring algorithm, such as the test blueprint specification, slopes and intercepts for theta-to-scale score transformation, cut scores, and the item information (cut scores, answer keys, item attributes, item parameters, passage information, etc.). The accuracy of the information in the configuration file is checked and confirmed numerous times independently by multiple staff members before the testing window opens.

10.2 QUALITY ASSURANCE IN COMPUTER-DELIVERED TEST PRODUCTION

10.2.1 PRODUCTION OF CONTENT

While the online workflow requires some additional steps, it removes a substantial amount of work from the time-critical path, reducing the likelihood of errors. Like a test book, an online system can deliver a sequence of items; however, the online system makes the layout of that sequence algorithmic. The appearance of the item screen can be known with certainty before the final test is configured.

The production of computer-based tests includes four key steps:

1. Final content is previewed and approved in a process called web approval. Web approval packages the item exactly as it will be displayed to the student.
2. The complete test configuration is approved, which gathers the content, form information, display information, and relevant scoring and psychometric information from the item bank and packages it for deployment.
3. Tests are initially deployed to a test site where they undergo platform review, a process during which we ensure that each item displays properly on a large number of platforms representative of those used in the field.
4. The final system is deployed to a staging environment accessible to the Utah State Board of Education (USBE) for user acceptance testing (UAT) and final review.

10.2.2 WEB APPROVAL OF CONTENT DURING DEVELOPMENT

The Item Tracking System (ITS) integrates directly with the TDS display module and displays each item exactly as it will appear to the student. This process is called Web Preview and is tied to specific item review levels. Upon approval at those levels, the system locks content as it will be displayed to the student, transforming the item representation to the exact representation that will be rendered to the student. No change to the display content can occur without a subsequent Web Preview. This process freezes the display code that will present the item to the student.

Web approval functions as an item-by-item blueline review. It is the final rendering of the item as the student will view it. Layout changes can be made after this process in two ways:

1. Content can be revised and re-approved for web display.
2. Online style sheets can change to revise the layout of all items on the test.

Both processes are subject to strict change-control protocols to ensure that accidental changes are not introduced. Below, we discuss automated quality control processes during content publication that raise warnings if item content has changed after the most recent web-approved content was generated. The web approval process offers the benefit of allowing final layout review much earlier in the process, reducing the work that must be performed during the very busy period just before tests go live.

10.2.3 PLATFORM REVIEW

Platform review is a process in which each item is checked to ensure that it is displayed appropriately on each tested platform. A platform is a combination of a hardware device and an operating system. In recent years, the number of platforms has proliferated, and platform review now takes place on approximately 15 significantly different platforms.

Platform review is conducted by a team. The team leader projects the item in its web-approved ITS format, and team members, each behind a different platform, look at the same item to gauge whether it renders as expected.

10.2.4 USER ACCEPTANCE TESTING AND FINAL REVIEW

Each release of every one of our systems goes through a complete testing cycle, including regression testing. With each release, and every time we publish a test, the system goes through user acceptance testing (UAT). During UAT, we provide our client with login information to an identical (though smaller scale) testing environment to which the system has been deployed. We provide recommended test scenarios and constant support during the UAT period. For Utah, we began UAT a full four weeks before the testing window opened. Issues identified within the first 10 calendar days of testing were resolved and the fixes returned to production by the 14th calendar day of testing for final system check.

Deployments to the production environment follow specific, approved deployment plans. Teams working together execute the deployment plan. Each step in the deployment plan is executed by one team member and verified by a second. Each deployment undergoes shakeout testing following the deployment. This careful adherence to deployment procedures ensures that the operational system is identical to the system evaluated on the testing and staging servers. Upon completion of each deployment project, management approves the deployment log.

During the year, some changes may be required to the production system. Outside of routine maintenance, no change is made to the production system without approval of the Production Control Board (PCB). The PCB includes the director of CAI's Assessment Program or the chief operating officer, the director of our Computer and Statistical Sciences Center, and the project director. Any request for a change to the production system requires the signature of the system's lead engineer. The PCB reviews risks, test plans, and test results. In addition, if any proposed change will affect client functionality or pose risk to operation of a client system, the PCB ensures that the client is informed and in agreement with the decision.

The PCB approves a maintenance plan that includes every scheduled change to the system.

Deviations from the maintenance plan must be approved by the PCB, including server or driver patches that differ from those approved in the maintenance plan.

Every bug fix, enhancement, data correction, or new feature must be presented with the results of a quality assurance plan and approved by the PCB.

An emergency procedure is in place that allows rapid response in the event of a time-critical change needed to avert compromise of the system. Under those circumstances, any member of the PCB can authorize the senior engineer to make a change, with the PCB reviewing the change retroactively.

Typically, deployments happen during a maintenance window, and deployments are scheduled at a time that can accommodate full regression testing on the production machines. Any changes to the database or procedures that in any way might affect performance are typically subject to a load test at this time.

Cutover and Parallel Processing

CAI maintains multiple environments to ensure smooth cutover and parallel processing. With a centralized hosting site in Washington, D.C., multiple development environments and a test environment can be maintained. At Rackspace, we maintain a staging environment and the production environment.

The production environment runs independently of the other environments and is changed only with the approval of the PCB. When developing enhancements, they are developed and tested initially on the development and test environments in Washington, D.C., before being deployed to the staging environment in Rackspace.

The staging environment is a scaled-down version of the production environment. It is in this environment that UAT takes place. Only when UAT is complete and the PCB signs off is the production environment updated. In this way, the system continues to function uninterrupted as testing takes place in parallel until a clean cutover takes place.

Prior to deployment, the testing system and content are deployed to a staging server, where they are subject to UAT. UAT of the TDS serves both a software evaluation and content approval role. The UAT period provides USBE with an opportunity to interact with the exact test with which the students will interact.

10.2.5 FUNCTIONALITY AND CONFIGURATION

The items, both individually and as configured onto the tests, form one type of online product. The delivery of that test can be thought of as an independent service. Here, we document quality assurance procedures for delivering the online assessments.

One area of quality unique to online delivery is the quality of the delivery system. Three activities provide for the predictable, reliable, quality performance of our system. They include:

1. Testing on the system itself to ensure function, performance, and capacity
2. Capacity planning
3. Continuous monitoring

CAI statisticians examine the delivery demands, including the number of tests to be delivered, the length of the testing window, and the historic state-specific behaviors to model the likely peak loads. Using data from the load tests, these calculations indicate the number of each type of server necessary to provide continuous, responsive service, and CAI contracts for service in excess of this amount. Once deployed, our servers are monitored at the hardware, operating system, and software platform levels with monitoring software that alerts our engineers at the first signs that trouble may be ahead. Applications log not only errors and exceptions, but latency (timing) information for critical database calls. This information enables us to know instantly whether the system is performing as designed, or if it is starting to slow down or experience a problem.

In addition, latency data is captured for each assessed student—data about how long it takes to load, view, or respond to an item. All this information is logged, as well, enabling us to automatically identify schools or districts experiencing unusual slowdowns, often before they even notice.

10.3 QUALITY ASSURANCE IN DATA PREPARATION

When a student responds to test questions online, his or her response to each item is immediately captured and stored in the Database of Record (DOR) at CAI, a repository for all data relevant to a student's testing experience. Our quality assurance procedures are built on two key principles: automation and replication. Certain procedures can be automated, which removes the potential for human error. Procedures that cannot be reasonably automated are replicated by two independent analysts at CAI.

When data are prepared for psychometric analyses, they undergo two phases: a data preparation phase and a psychometric phase. In the former phase, data are extracted from the DOR and provided to two independent SAS programmers. These two programmers are provided with the client-assigned business rules, and they independently prepare data files suitable for subsequent psychometric analysis. The data files prepared by the different programmers are formally compared for congruency. Any discrepancies identified are resolved through code review meetings with the lead programmer and the lead psychometrician.

When the two data files match exactly, they are then passed over to two independent psychometricians, who each perform classical and IRT analyses. Any discrepancies are identified and resolved.

When all results match from the independent analysts, the final results are uploaded to CAI's ITS.

CAI's TDS has a real-time quality-monitoring component built in. As students test, data flow through our Quality Monitor (QM) system. The QM conducts a series of data integrity checks, ensuring, for example, that the record for each test contains information for each item that was supposed to be on the test, and that the test record contains no data from items that have been invalidated. In addition, the QM scores the test, recalculates performance-level designations, calculates subscores, compares item parameters to the reference item parameters in the bank, and conducts a host of other checks.

The QM also aggregates data to detect problems that become apparent only in the aggregate. For example, the QM monitors item statistics and flags items that perform differently operationally than their item parameters predict. This functions as a sort of automated key or rubric check, flagging items where data suggest a potential problem. This automated process is similar to the sorts of checks performed for data review, but they are conducted (a) on operational data, and (b) in real time to allow our psychometricians to catch and correct any problems before they have an opportunity to do any harm.

Data pass directly from the QM to the DOR, which serves as the repository for all test information, and from which all test information for reporting is pulled. The data extract generator is the tool that is used to pull data from the DOR for delivery to USBE and their QA contractor. CAI psychometricians ensure that data in the extract files match the DOR before they are delivered to the USBE.

10.4 QUALITY ASSURANCE IN ITEM ANALYSES AND EQUATING

Prior to operational work, CAI produces simulated datasets for testing software and analysis procedures. The quality assurance procedures are built on two key principles: automation and replication. Certain procedures can be automated, which removes the potential for human error. Procedures that cannot be reasonably automated are independently replicated by two CAI psychometricians. Two psychometricians complete a dry run calibration and linking activities and compare results. The practice runs serve two functions:

1. To verify accuracy of program code and procedures
2. To evaluate the communication and work flow among participants. If necessary, the team will reconcile differences and correct production or verification programs.

Following the completion of these activities and the resolution of questions that arise, analysis specifications are finalized.

10.5 QUALITY ASSURANCE IN SCORING AND REPORTING

CAI implements a series of quality control steps to ensure error-free production of score reports in an online format. The quality of the information produced in the TDS is tested thoroughly before, during, and after the testing window.

10.5.1 QUALITY ASSURANCE IN TEST SCORING

CAI verifies the accuracy of the scoring engine using simulated test administrations. The simulator generates a sample of students with an ability distribution that matches that of the state. The ability of each simulated student is used to generate a sequence of item responses consistent with the underlying ability. Although the simulations were designed to provide a rigorous test of the adaptive algorithm for adaptively administered tests, they also provide a check of the full range of item responses and test scores in fixed-form tests, as well. Simulations are always generated using the production item selection and scoring engine to ensure that verification of the scoring engine is based on a very wide range of student response patterns.

To verify the accuracy of the Reporting System, we merge item response data with the demographic information taken either from previous year assessment data, or if current year enrollment data is available by the time simulated data files are created, we can verify online reporting using current year testing information. By populating the simulated data files with real school information, it is possible to verify that special school types and special districts are being handled properly in the Reporting System.

Specifications for generating simulated data files are included in the analysis specifications document submitted to USBE each year. Review of all simulated data is scheduled to be completed before the opening of the test administration window, so that the integrity of item administration, data capture, and item and test scoring and reporting can be verified before the system goes live.

To monitor the performance of the assessment system during the test administration window, a series of quality assurance reports can be generated at any time during the online assessment window. For example, item analysis reports allow psychometricians to ensure that items are performing as intended and serve as an empirical key check through the operational test window. In the context of adaptive test administrations, other reports such as blueprint match and item exposure reports allow psychometricians to verify that test administrations conform to specifications.

An additional set of cheating analysis reports flags unlikely patterns of behavior in testing administrations. The quality assurance reports are generated on a regular schedule. Item analysis and blueprint match reports are evaluated frequently at the opening of the testing window to ensure that test administrations conform to blueprint and items are performing as anticipated.

Each time the reports are generated, the lead psychometrician reviews the results. If any unexpected results are identified, the lead psychometrician alerts the project manager immediately to resolve any issues. Table 75 presents an overview of the quality assurance (QA) reports.

Table 75: Overview of Quality Assurance Reports

QA Reports	Purpose	Rationale
Item Statistics	To confirm whether items work as expected	Early detection of errors (key errors for selected-response items and scoring errors for constructed-response, performance, or technology items)
Item Exposure Rates	To monitor unlikely high exposure rates of items or passages or unusually low item pool usage (high unused items/passages)	Early detection of any oversight in the blueprint specification
Blueprint Match	To monitor match to test blueprint	Early detection of blueprint violation
Cheating Analysis	To monitor testing irregularities	Early detection of testing irregularities

Item Analysis Report

The item analysis report is used to monitor the performance of test items throughout the testing window and serves as a key check for the early detection of potential problems with item scoring, including the incorrect designation of a keyed response or other scoring errors, as well as potential breaches of test security that may be indicated by changes in the difficulty of test items. To examine test items for changes in performance, this report generates classical item analysis indicators of difficulty and discrimination, including proportion correct and biserial/polyserial correlation, as well as item response theory (IRT)–based item fit statistics. The report is configurable and can be produced so that only items with statistics falling outside a specified range are flagged for reporting or generating reports based on all items in the pool.

Item* p*-Value. For multiple-choice items, the proportion of students selecting each response option is computed; for constructed-response, performance, and technology items, the proportion of student responses classified at each score point is computed. For multiple-choice items, if the keyed response is not the modal response, the item is also flagged. Although the correct response is not always the modal response, keyed response options flagged for both low biserial correlations and non-modal response are indicative of miskeyed items.

Item Discrimination. Biserial correlations for the keyed response for selected-response items and polyserial correlations for polytomous constructed response, performance, and technology items are computed. CAI psychometric staff evaluates all items with biserial correlations below a target level, even if the obtained values are consistent with past item performance.

Item Fit. In addition to the item difficulty and item discrimination indices, an item fit index is produced for each item. For each student, a residual between the observed and expected scores given the student's ability is computed for each item. The residuals are averaged across all students, and the average residual is used to flag an item.

10.5.2 QUALITY ASSURANCE IN REPORTING

Scores for the RISE online assessments are assigned by automated systems in real time. For machine-scored portions of assessments, the machine rubrics are created and reviewed along with the items, then validated and finalized during rubric validation following field testing. The review process "locks down" the item and rubric when the item is approved for web display (Web Approval). During operational testing, actual item responses are compared to expected item responses (given the IRT parameters), which can detect miskeyed items, item drift, or other scoring problems. Potential issues are automatically flagged in reports available to psychometricians.

The handscoring processes for writing tasks include rigorous training, validity and reliability monitoring, and back-reading to ensure accurate scoring. Handscored items are married up with the machine-scored items by our Test Integration System (TIS). The integration is based on identifiers that are never separated from their data and are further checked by the Quality Monitor (QM) System where the integrated record is passed for scoring. Once the integrated scores are sent to the QM, the records are rescored in the test-scoring system that applies the RISE scoring rules and assigns scores from the calibrated items, including calculating performance level indicators, subscale scores and other features, which then pass automatically to the Reporting System and Database of Record (DOR). The scoring system is tested extensively prior to deployment, including hand checks of scored tests and large-scale simulations to ensure that point estimates and standard errors are correct.

After passing through the series of validation checks in the QM System, data are passed to the DOR, which serves as the centralized location for all student scores and responses, ensuring there is only one place where the "official" record is stored. Only after scores have passed the QM checks and are uploaded to the DOR are they passed to the Reporting System, which is responsible for presenting individual-level results and calculating and presenting aggregate results. Absolutely no score is reported in the Reporting System until it passes all QM validation checks.

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Appendix 1-A

CRESST Utah SAGE Alignment Study Executive Summary

Technical Assistance: Independent Evaluation of the Utah Student Assessment of Growth and Excellence (SAGE) Item Pool Alignment and Computer Adaptive Test Algorithm

EXECUTIVE SUMMARY ONLY

UTAH1/20163211/ - June 2016

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TECHNICAL ASSISTANCE: INDEPENDENT EVALUATION OF THE UTAH STUDENT ASSESSMENT OF GROWTH AND EXCELLENCE (SAGE) ITEM POOL ALIGNMENT AND COMPUTER ADAPTIVE TEST ALGORITHM

Executive Summary

The National Center for Research on Evaluation, Standards, and Student Testing (CRESST) at the University of California, Los Angeles (UCLA) was contracted to conduct an independent evaluation of the Utah Student Assessment of Growth and Excellence (SAGE) in the domains of Reading/Writing, Mathematics, and Science for the 2014-15 operational year. In response to the call for proposals, this evaluation was organized into two studies: (1) the adequacy of the item pool, or test questions, in relation to Utah standards and cognitive complexity, and (2) the adequacy of the computer adaptive test (CAT) algorithm developed and administered in 2014-15 by the state's test vendor, American Institutes for Research.

These two studies are important components of a larger evidence-based argument for validity which seeks to ensure that the inferences drawn from test scores are appropriate for their intended uses. Item pool analysis can provide evidence that the Utah standards and cognitive complexity assigned to each item by the item development team are defensible; that is, that these categorizations can be replicated or nearly replicated by an external team of experts in each domain and grade. A substantial match would provide evidence that inferences drawn from test scores could be representative of the content and cognitive demands that the item development team intended. CAT algorithm evaluation can provide evidence that the tests students were administered were adequate representations of the content as specified by Utah (fidelity of blueprint, or test specifications) and have adequate psychometric properties. A strong match would provide evidence that inferences drawn from tests scores could be representative of the intended blueprint, or test specifications, and thus sufficiently representative of Utah's intended standards and cognitive complexity for that grade and domain. Information about item difficulty, item exposure, and item information from investigations of the psychometric properties of each administered test form produced by the CAT algorithm is evidence which could be used to build an argument that the CAT algorithm is generating forms that are well-matched to students' overall achievement.

This Executive Summary provides an overview, findings, commendations and recommendations. The chapters which follow provide details of each study with full results. The conclusion provides a summary of recommendations and is followed by the appendix. These studies represent necessary steps in a larger, ongoing process which uses evidence to assemble an argument for validity; that is, evaluating to what extent the inferences drawn from Utah's SAGE test scores are appropriate for each Utah student for their intended uses.

The preliminary findings of this work were presented to the Utah State Office of Education on May 4, 2016. The judgments expressed in that meeting and equivalently in this report are those of the authors and thus fulfill the spirit and intention of this as an independent, external evaluation. Any errors remain our own.

Summary of Study 1: Item Pool

Overview

This study examined individual test items within the item pools of Reading/Writing, Mathematics and Science to evaluate the extent to which expert ratings were concurrent with how each item had been categorized by the item development team. Item data provided by the test vendor had the categorizations listed for each item as determined by Utah's item development team. Three categorizations were evaluated: Utah standard(s), the cognitive complexity on Norman Webb's Depth of Knowledge (DOK) scale, and (for science only) the Utah Intended Learning Outcomes (ILOs). To provide robust evaluation of all possible item types at elementary, middle and high school levels, entire item pools were evaluated for three grades in each domain as follows: Reading/Writing, grades 3, 7, and 11; Mathematics, grades 4, 6, and 9/Secondary Math I; and Science, grades 5, 8, and Biology. The expert review team included CRESST and Utah educators.

Findings

Alignment of the item pool was substantial in each domain for each area of evaluation. For Utah standards, 99% of items in Reading/Writing, 92% in Mathematics, 84% in Science and were a full or partial match to the intended standard. For cognitive complexity measured on the DOK scale, expert ratings for 83% of items in Reading/Writing, 75% in Mathematics, and 72% in Science were in perfect agreement with the intended DOK, and for nearly 100% of items in all three domains the expert ratings were in close agreement (within one level on the DOK scale) to the intended DOK. For the additional category of Utah's Intended Learning Outcomes for Science, 76% of items were a full or partial match with the ILOs that were intended.

Commendations

There was a substantial match to the Utah standards and Depth of Knowledge for all examined grades and domains. This suggests that item writing and review activities conducted for SAGE item development were robust.

The Utah State Office of Education has already initiated new item development activities to meet the known need for more items at DOK Level 3. In addition, provisions have been made for a new item pool for Science in all grades to match the newly adopted Utah Science Standards which will no longer necessitate the Utah ILOs. These actions will likely strengthen the item pools and create an even more substantial match of standards and cognitive complexity coverage within the individual test experiences of Utah students.

Recommendations

We recommend continuing to invest in item pool maintenance and item quality improvement. All domains could benefit from the development of more items which are cognitively complex, e.g., DOK Level 3.

Summary of Study 2: Computer Adaptive Test Algorithm

Overview

This study examined the adequacy of the CAT algorithm to create individual test forms to meet all the Utah blueprint specifications by grade and domain for students at all achievement levels. We investigated blueprint fulfillment, item exposure, difficulty, and reliability of the test forms created by the CAT algorithm. To provide robust evaluation of algorithm adequacy at elementary, middle and high school levels, we evaluated three grades for each domain: Reading/Writing, grades 3, 7, and 11; Mathematics, grades 4, 6, and 9/Secondary Math I; and Science, grades 5, 8, and Biology.

Findings

Blueprint Fulfillment: Overall, the adequacy of the CAT algorithm to produce individual test forms with the appropriate allocation of items according to the Utah blueprint specifications was strong for all domains at each grade investigated. The fulfillment for standards and DOK was robust across the grades: 99-100% of Reading/Writing, 84-100% of Mathematics test forms met the specifications. The fulfillment was more challenging for Science as it also included Utah ILOs, making the specifications more difficult to fulfill within the limits of total item counts. The fulfillment of Utah standards specifications alone was robust across the grades: 81-100% of Science test forms met standards specifications. The fulfillment of DOK and Utah ILOs was influenced by some minor challenges with the Utah blueprint specifications for DOK Level 3/4 and ILO-1 and ILO-3. This meant that nearly all students received one or more items above or below the item count specification in those categories. However, for the remainder of the DOK levels and ILOs, fulfillment was strong as 85-100% of Science test forms met the specifications.

Item Exposure: Overall, the adequacy of the CAT algorithm to produce individual test forms with the appropriate exposure of items was strong for all domains at each grade investigated. The majority of items in all domains were used on 1-40% of test forms. There were very few instances of overexposed items, or items appearing on 81-100% of test forms: Reading/Writing, 2-3%, Mathematics, 0%, and Science, 3-7%. There were no instances of unused items for Mathematics or Science. Between 12-29% of items in Reading/Writing were not used on any test form. Perhaps unsurprisingly, unused items had characteristics that are represented in abundance within the item pools. Specifically, these items tended to be in the mid-range cognitive level (DOK Level 2) and multiple choice (MC4).

Difficulty: Overall, the adequacy of the CAT algorithm to provide individual test forms at the level of difficulty appropriate for students at each ability level was substantial for all domains at each grade investigated. It is important to note that the match of test forms to ability level is not solely dependent on the CAT algorithm but also on the sufficiency of the item pool to span the full range of ability levels. Examination of test difficulty and test information functions indicate that the CAT algorithm was most effective in generating individual test forms for students of moderately low to average ability in Reading/Writing, Science, and Mathematics grades 4 and 6. In Secondary Math I, the CAT algorithm was most effective in generating individual test forms for students of above average ability.

Reliability: Overall, the adequacy of the CAT algorithm to produce individual test forms with acceptable levels of overall reliability was strong. Reliability was strong for Reading/Writing (.92-.93) and Science (.88-.91), and moderately strong for Mathematics (.78-.85). The reliability and precision of Utah standard subskill reporting categories across the domains and selected grades was moderate for Reading/Writing and Science. Subskill reporting categories in Mathematics had moderate to low reliability. Some categories yielding unexpected results (negative coefficients) which should be interpreted in light of current intended uses and reporting methods of subskill results. If subskill results are not used at the individual level, and/or not reported, then subskill category reliability coefficients are not a cause of undue concern in light of overall reliability results.

Commendations

The CAT algorithm was effective in producing individual test forms that met the Utah blueprint specifications for Utah standards, as well as most levels of cognitive complexity, and most of the science ILOs despite the known complexities of meeting the science blueprint with the item pool that was available. As mentioned in Study 1, the Utah State Office of Education has already initiated item development activities in Science that will address cognitive complexity and which will no longer necessitate the use of Utah ILOs. These actions, along with an updating of Utah's Science blueprint specifications, could lead to improvements in CAT algorithm performance.

Recommendations

We recommend continuing to invest in item pool maintenance and item quality improvement. This is an important activity for maintaining any computer-adaptive test as a larger, higher quality item pool would give the CAT algorithm the availability of items spread over the entire ability range. This would mean that students would be more likely to receive an individual test form that could gather the most information about their abilities.

As part of item pool maintenance, we recommend paying close attention to item exposure in terms of the unused items in Reading/Writing and the overexposed items in Science. When items are used too frequently, item difficulty can drift over time which can mean a shorter life cycle and higher expense in increased item development.

As part of item quality improvement, we recommend paying close attention to the amount of items available for each section of the Utah blueprint, e.g., DOK Level 3. Increasing the number of items with higher cognitive complexity will help increase the chance that the CAT algorithm can produce individual test forms for students at the mid-point and the highest levels of ability.

We also recommend continuing to monitor and improve the ability of the CAT algorithm to meet the Utah blueprint specifications in Science while the Utah ILOs are still in use, and to monitor the levels of subskill category reliability for Mathematics.

APPENDIX 1-B

SCIENCE CLUSTERS COGNITIVE LAB REPORT

Science Cluster Cognitive Interviews

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March 2018

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1. Introduction

American Institutes for Research (AIR) and a group of states are developing methods to measure student learning of Next Generation Science Standards (NGSS) and other standards derived from the K–12 science framework. Educators involved in the development of the framework and the standards encourage measuring learning using integrated tasks that require a student's sustained concentration on a realistic science or engineering task. This set of cognitive interviews was undertaken early in the development process to test and refine our approach to developing item clusters to measure NGSS and related performance expectations (PEs).

The approach taken for each cluster was to identify a *phenomenon* to be explained, modeled, described, or analyzed (as appropriate for the performance expectation) and have a sequence of interrelated, often interdependent items (some containing multiple interactions) that build to support the completion of a task.

This set of cognitive interviews was designed to provide data on newly developed item clusters aligned with the NGSS. We evaluated 12 clusters, four designed for elementary school, four designed for middle school, and four designed for high school. Each cluster contained one to five items, many with separately scored sub-items. Per the request of the item development team, the labs focused on the following questions:

- How long did students take to respond to each cluster?
- How well did students score on each item and on each cluster overall?
- What aspects of the items were confusing to students?
- What reasoning skills did students display as they worked their way through each item?

A limitation of the cognitive lab analysis was that many of the students had limited exposure to content covered in the clusters, particularly the clusters on German Pyramid Candle (elementary school), Morning Fog (middle school), Texas Weather (middle school), Saving the Tuna (high school), and Tomcods (high school). To partially offset this lack of formal instruction, students were provided with a one- or two-page hard-copy lesson on the relevant science content for each cluster. Some of the later cognitive interviews were conducted in schools in which the teachers had received substantial training in teaching the new standards.

The remainder of this report includes an overview of methods, a description of the study sample, a discussion of the findings for each of the 12 clusters, and a final section on the students' overall perceptions of the science clusters.

2. METHODS

2.1 STUDY DESIGN

Between January and May 2017, cognitive interviews were conducted with 18 elementary school students, 12 middle school students, and 15 high school students. The interviews lasted one and one-half hours, and each student was presented with all four clusters for their grade level. The order of the clusters was rotated so that the risk of student fatigue or missing responses was distributed across the clusters.

Students were encouraged to think out loud while they were responding to the items (concurrent think-aloud), and interviewers were instructed to use follow-up probes to clarify and expand on what each student said (or what each student was observed to do). To preclude the possibility that students' responses to later items would be influenced by probing on earlier items, probes were only administered after students had completed all the items in a cluster.

At the start of the interview, the interviewer trained the student on the concurrent think-aloud technique. The interviewer first modeled the technique and then had the student practice on one or, if necessary, two items. Lower grade multiple-choice mathematics items were used for the modeling and practice.

After the think-aloud training, students were provided with a hard-copy lesson on the relevant science content, as described previously. The item development team developed the lessons, and the interviewer collected the hard copy before the student stared the cluster.

At the end of the cognitive interview, each student was asked three general questions: (1) whether the student had studied any of the cluster topics in school, (2) whether the student had taken tests that look similar and/or used similar tools, and (3) how hard the student thought this test was.

2.2 TRAINING AND PILOT TESTING

Five interviewers (and one backup interviewer) were trained for the project. Since all the interviewers were experienced in the cognitive interview technique, the training primarily focused on reviewing the content of the clusters and familiarizing the interviewers with the test platform and the specifics of the interview protocols. Project leads provided a separate two-hour training for the protocol at each grade level.

Additionally, at each grade level, an experienced team member conducted a pilot interview to fine tune the protocol and, especially, to determine the number of clusters that could be covered in one interview and hence the number of students that would be required to adequately test the clusters. The pilot administrations confirmed that, at each grade level, all four clusters could be covered in a single one and one-half hour interview. Thus, for each cluster, we ultimately had data on 12 to 18 students.

2.3 STUDY SAMPLE

Students were primarily drawn from the San Francisco Bay area. Utah also contributed students for the elementary school sample, and Connecticut contributed students for the high school sample. The Utah students were particularly valuable to the study because they were in schools where teachers were receiving Next Generation Science Standards (NGSS) training from an NGSS author.

To recruit students in the San Francisco Bay area, the project manager and a designated scheduler at the American Institutes for Research (AIR) worked with a recruitment firm. This firm used a household-based approach to recruitment and employed an AIR-developed recruitment screener. Having recognized that exposure to inquiry-based science would be limited, we targeted higher achieving students with the expectation that they would be the most likely to have received this instruction and have benefited from it. We tried to recruit students whose parents reported the students' grades as being mostly As and/or Bs in science. We balanced the sample on gender and ethnicity (white/non-white).

In Utah and Connecticut, the AIR program manager worked directly with designated school districts to recruit students near Salt Lake City and Hartford, respectively. The cognitive interviews were conducted at the AIR offices in San Mateo, California, and on-site at the schools in Utah and Connecticut. The characteristics of the sample are summarized in Table 1 and shown by student in the Appendix.

Table 1. Characteristics of Sample, by Grade Level

Characteristic	Elementary School (*n* = 18)	Middle School (*n* = 12)	High School (*n* = 15)
Location			
California	12	12	12
Connecticut	N/A	N/A	3
Utah	6	N/A	N/A
Grade Level			
Grade 5	15	N/A	N/A
Grade 6	3[1]	N/A	N/A
Grade 8	N/A	7	N/A
Grade 9	N/A	5	N/A
Grade 10	N/A	N/A	1[2]
Grade 11	N/A	N/A	13
Grade 12	N/A	N/A	1[2]
Gender			
Male	13	6	5
Female	5	6	10

Characteristic	Elementary School (*n* = 18)	Middle School (*n* = 12)	High School (*n* = 15)
Parent or Teacher Reported Ethnicity			
African American	1	2	1
Asian	2	3	1
Hispanic	1	1	5
White	13	6	6
Other	1	0	1
Prefer not to answer	0	0	1
Parent-Reported Achievement in Science[3]			
Mostly As	7	11	7
Mostly Bs	5	1	5

[1] Utah students
[2] Connecticut students
[3] Data for California subjects only

3. FINDINGS

We begin this section with a summary of findings that includes key take-aways from the cognitive interviews and basic performance statistics for each of the 12 clusters.

The summary is followed by a detailed discussion of cognitive interview findings for each of the 12 clusters. Each cluster-level discussion starts with a summary of student performance, a list of task demands, and an image of the cluster stimulus. These are followed by an item-by-item discussion that, for each item, displays the item text, summarizes score patterns, and addresses students' comprehension and reasoning.

The discussion of findings ends with a summary of students' general perceptions of the science clusters, as expressed at the end of the cognitive interviews.

3.1 SUMMARY OF FINDINGS

3.1.1 Key Take-Aways

Feasibility of Cluster Approach

Results from the cognitive interviews suggest that it is feasible to incorporate item clusters into standardized science tests. On average, the clusters took 12 minutes to complete, and students reported being familiar with the format conventions and tools used in the clusters and appeared to easily navigate the clusters' interactive features and response formats.

- When questioned at the end of the cognitive interviews, nearly all students at each grade level reported that they had taken online tests that used similar page layouts, multimedia, and tools (e.g., page layouts with stimulus on the left and items on the right; embedded video; scroll bars; Back, Next, and Zoom in/Zoom out buttons; drop-down menus; and connect line and Add Arrow tools).
- Further, interviewers noted that students at all grade levels appeared comfortable navigating the clusters and, generally speaking, understood how to interact with the simulations and the response formats. When students experienced confusion, it was due to idiosyncratic problems with specific simulations or test items.

Relationship to Content Knowledge

Across grade levels, most students who participated in the cognitive interviews found the greatest challenge to be their lack of relevant content knowledge or experience applying science and engineering practices. This is not unexpected given that the clusters were built to measure NGSS constructs, and most of the students in the sample had not been exposed to NGSS-based instruction.

- Utah students, who were specifically included in the elementary school sample because they came from schools in which teachers were receiving NGSS training from an NGSS author, did better on all clusters. Details are given in the next subsection, where we summarize student performance by cluster.

Many students commented on their lack of relevant content knowledge during the think-alouds, and, when questioned at the end of the interview, students reported that they lacked prior instruction in most of the topics covered by the clusters. If they had studied those topics, they said that it was at less depth than required to be successful. For example, one high school student said, in reference to the Blood Sugar Regulation cluster, that she had reviewed molecule concentrations but never discussed how they are impacted by meals, "not that in-depth, more gone over these and what they do for the body."

- By contrast, one of the Utah students said he had studied all four elementary school topics. "At the beginning of the year we studied the heat one and how we can help make a motor turn something on, like a light bulb. I thought of that. Maybe it was just backwards, the light was helping the fan to spin. The light was turning or making it spin by the energy it was producing. I remember last year, in 4th grade, we studied the Grand Canyon and the animals, and we did a little bit this year, and the animals that were living in the walls like trilobite and some others like starfish. We saw this video of this hole that was in Arizona, and there were tons of fossils in it. I think we studied a little bit on the terrarium one . . . We studied a little bit about [the desert plants]. About how each plant could survive."

Measuring Intended Constructs

In general, students who received credit on a given item (and some who did not) displayed a reasoning process that aligned with the skills that the item was intended to measure.

- This held true even for standard multiple-choice or multi-select items. For example, thinking aloud as he responded to this question in the Redwall Limestone cluster,

Part A

Within the Grand Canyon, a rock layer contains fossils of octopi (plural of "octopus"), brachiopods, and corals. What can you conclude about the environment of the Grand Canyon region from the fossil evidence?

Ⓐ The Grand Canyon region was always desert.

Ⓑ The Grand Canyon region was once underwater.

Ⓒ The Grand Canyon region experienced a lot of rain.

Ⓓ The fossils do not provide any information about the environment.

one elementary school student first read option A, *[t]he Grand Canyon region was always desert*, out loud. Then he said he wanted to check the next option and read *[t]he Grand Canyon region was once underwater*. The student said that option B could be the answer, "but the first option [A] is not because it said in the question [the fossils] were sea animals." The student then read option C, *[t]he Grand Canyon region experienced a lot of rain*, and option D, *[t]he fossils do not provide any information about the environment*. He said that the answer couldn't be option D because "[the question] doesn't have anything to do with the animals that are living today." He said it probably wasn't option C because "even if it rained, [but] it wasn't an ocean, then the coral couldn't live there." The student concluded that the correct answer had to be B.

- In another example, an elementary school student explained her response to Part B of this two-part item from the Desert Plants cluster

The following question has two parts. First, answer part A. Then, answer part B.

Use the data from the experiment to compare the survival of the three types of plants in the desert.

Part A

Record the data from the experiment by adding numbers to the table.

	Mesquite Trees	Cactus Plants	Bird's Nest Ferns
Number of plants at start of experiment			
Number of plants at end of experiment			

Part B

Select the **two** statements that are supported by the data in the table you created.

☐ All types of plants can survive in all environments.

☐ No types of plants can survive in a dry desert environment.

☐ All types of plants can survive in the dry desert environment.

☐ Some types of plants cannot survive in the dry desert environment.

☐ Some types of plants survive better than others in the dry desert environment.

by saying that she chose the second-to-last option (*[s]ome types of plants cannot survive in the dry desert environment*) because "at the start of the experiment, there was a total of 5 bird's nest ferns, and then they all died, and also because one of the mesquite trees – they died – but I mean, most of them still remained." And she chose the last option (*[s]ome types of plants survive better than others in the dry desert environment*) because "out of all 3 of the plants, the cactus all lived instead of dying." She shared that she did not choose the first option (*[a]ll types of plants can survive in all environments*) because "As you can see, some of them died – like the bird's nest ferns and the mesquite trees." She shared that she did not choose the second option (*[n]o types of plants can survive in a dry desert environment*) "because the cactus – they still lived." She shared that she did not choose the third option (*[a]ll types of plants can survive in the dry desert environment*) "because the bird's nest ferns died."

There were exceptions where students gained or lost credit for non-construct relevant reasons, but these were related to specific item flaws that could be fixed before the items were used operationally.

General Recommendations for Improvements

While the validity of the general approach was supported by the cognitive lab findings, there were flaws in specific types of items that can and should be remediated before using the items operationally:

- Students needed more cueing on multi-select items such as the following:

  Part B

  From the list of additional experiments, select the evidence that would support your answer in part A.

  - ☐ Scientists grow a sample of wild-type *Mycobacterium tuberculosis* in the lab. Over time, some of the bacteria show resistance to rifampin.
  - ☐ Scientists plate a colony of wild-type *Mycobacterium tuberculosis* and a colony of *Escherichia coli* in one petri dish. Some of the new colonies show resistance to rifampin.
  - ☐ Scientists plate a colony of wild-type *Mycobacterium tuberculosis* and a colony of mutant *Mycobacterium tuberculosis* in one petri dish. Some of the new colonies show resistance to rifampin.
  - ☐ Scientists create additional *Mycobacterium tuberculosis* mutants by creating substitution mutations in the DNA that codes for amino acids 36-67. Many of the mutants are resistant to rifampin.

  Earning a score point for this item required correctly selecting both the first and the last options, but most students stopped after choosing one response. This type of error could be minimized by adding "mark all that apply" to the item stem.

- Students interactions with simulations should be checked to make sure that the simulations are functioning as intended. For example, a flaw in the simulation for the Texas Weather cluster allowed some students—who knew the proper tools for measuring each phenomenon (e.g., wind speed)—to lose credit for correctly matching tools with phenomena. This occurred because, when these students ran the simulation, they simply manipulated the tools and overlooked the drop-down menu for choosing the phenomenon they intended to measure. The simulation ran as intended under these conditions, so there was nothing to cue the students that they were inadvertently losing points.

- Scoring rubrics should be reviewed to make sure that they are constructed in a consistent manner and conform to the task demands they are intended to measure. In the cognitive interviews, some rubrics awarded a point for meeting a single, straightforward criterion, while others required that the student do several things correctly. For example, in item 1 in the Galilean Moons cluster, students got 1 score point for each of the moons for which they correctly measured the maximum distance from Jupiter. On the other hand, in item 1 of the Redwall Limestone cluster, students had to correctly identify six different animals as being found, or not found, in Arizona to earn any credit.

We recommend that the second type of rubric (requiring students to do several things correctly) be limited to cases in which integration across knowledge is the construct of interest.

3.1.2 Cluster Score Distributions and Average Time to Complete, by Grade Level

Elementary School Clusters

As shown in Table 2, average time to complete the elementary school clusters ranged from six minutes for the Redwall Limestone cluster to 12 minutes for the Desert Plants cluster.

Table 2. Maximum Score and Average Time to Complete: Elementary School Clusters

Cluster Name	Maximum Score	Average Time to Complete
Desert Plants	9	12
German Pyramid Candle	4	9
Redwall Limestone	4	6
Terrarium Matter Cycle	9	11

Table 3 and Table 4 show the score distributions for elementary school clusters with maximum scores of four and nine, respectively.

The Redwall Limestone cluster was easy for all students, with 12 students (71%) earning three or 4 score points. Utah students did even better, with half earning the maximum score of four points and two others earning 3 points.

The Desert Plants cluster was also relatively easy, with 15 students (83%) earning at least four of the nine points possible. All six Utah students earned scores in this range. Further, two Utah students were the only ones who earned the maximum score of eight, and four of the five students who earned at least seven points were from Utah.

The Terrarium Matter Cycle cluster was harder for all students, with only four students (22%) earning at least four of the nine points possible. Half of the Utah students earned scores in this range. No student earned the full nine points on this cluster, but the highest scoring student was a Utah student who earned seven points.

The German Pyramid Candle was the hardest cluster, with only one student (from Utah) earning the maximum score of four points (and none earning 3 points). Further, seven students (41%) earned no credit, but only one Utah student was included in this group.

Table 3. Number of Students Attaining Cluster Total Scores in Specified Range: Elementary School Clusters with Maximum Score = 4

Cluster Name	Score 4–3	Score 2–1	Score 0
German Pyramid Candle	1	9	7
Redwall Limestone	12	4	1

Note. For both clusters, n = 17.

Table 4. Number of Students Attaining Cluster Total Scores in Specified Range: Elementary School Clusters with Maximum Score = 9

Cluster Name	Score 9–7	Score 6–4	Score 3–1	Score 0
Desert Plants	5	10	2	1
Terrarium Matter Cycle	1	3	13	1

Note. For both clusters, $n = 18$.

Middle School Clusters

As shown in Table 5, the average time to complete the middle school clusters ranged from 10 minutes for the Galilean Moons cluster to 14 minutes for the Texas Weather cluster.

Table 5. Maximum Score and Average Time to Complete: Middle School Clusters

Cluster Name	Maximum Score	Average Time to Complete
Galilean Moons	9	10
Hippos	10	10
Morning Fog	9	12
Texas Weather	11	14

Table 6 through Table 8 show the score distributions for middle school clusters with maximum scores of nine, 10, or, 11, respectively.

Students performed best on the Galilean Moons cluster with five students (42%) earning at least seven points and an additional four students (33%) earning between six and four points.

The Hippos cluster was also fairly easy, with seven students (58%) earning four or more points.

The Morning Fog and Texas Weather clusters (maximum scores nine and 11, respectively) were both challenging for students. Only five students (43%) earned scores greater than three on Morning Fog, and only four students (33%) earned scores greater than three on the Texas Weather cluster.

Table 6. Number of Students Attaining Cluster Total Sores in Specified Range: Middle School Clusters with Maximum Score = 9

Cluster Name	Score 9–7	Score 6–4	Score 3–1	Score 0
Galilean Moons	5	4	3	0
Morning Fog	2	3	7	0

Note. For both clusters, $n = 12$.

Table 7. Number of Students Attaining Cluster Total Scores in Specified Range: Middle School Clusters with Maximum Score = 10

Cluster Name	Score 10–7	Score 6–4	Score 3–1	Score 0
Hippos	2	5	3	0

Note. n = 10.

Table 8. Number of Students Attaining Cluster Total Scores in The Specified Range: Middle School Clusters with Maximum Score = 11

Cluster Name	Score 11–7	Score 6–4	Score 3–1	Score 0
Texas Weather	0	4	8	0

Note. n = 12.

High School Clusters

As shown in Table 9, the average time to complete the high school clusters ranged from 10 minutes for the Tuberculosis cluster to 19 minutes for the Blood Sugar Regulation cluster.

Table 9. Maximum Score and Average Time to Complete: High School Clusters

Cluster Name	Maximum Score	Average Time to Complete
Blood Sugar Regulation	7	19
Saving the Tuna	7	14
Tomcods	8	17
Tuberculosis	5	10

Table 10 through Table 12 show the score distributions for high school clusters with maximum scores of five, seven, or eight, respectively.

Students found all the high school clusters challenging but performed the worst on the Tomcods cluster. Only one student (7%) earned a score greater than three on this eight-point cluster, and four students (31%) earned no credit. Similarly, there were four students in both the Tuberculosis and Saving the Tuna clusters who earned no credit. No one earned more than 5 points on the seven-point Blood Sugar Regulation cluster, but scores for most students (9 out of 12) were solidly in the mid-range of 5 to 3 points.

Table 10. Number of Students Attaining Cluster Total Scores in Specified Range: High School Clusters with Maximum Score = 5

Cluster Name	Score 5–4	Score 3–1	Score 0
Tuberculosis	1	9	4

Note. n = 14.

Table 11. Number of Students Attaining Cluster Total Scores in Specified Range: High School Clusters with Maximum Score = 7

Cluster Name	Score 7–6	Score 5–3	Score 2–1	Score 0
Blood Sugar Regulation	0	9	3	1
Saving the Tuna	1	2	5	4

Note. Blood Pressure Regulation *n* = 13; Saving the Tuna *n* = 12.

Table 12. Number of Students Attaining Cluster Total Scores in Specified Range: High School Clusters with Maximum Score = 8

Cluster Name	Score 8–6	Score 5–4	Score 3–1	Score 0
Tomcods	0	1	9	4

Note. n = 14.

3.2 Detailed Discussion by Cluster: Elementary School

3.2.1 Cluster 1: Desert Plants

Performance Summary

The median time to complete the Desert Plants cluster was 11.5 minutes. Table 13 and Table 14 indicate the number of students attaining cluster total scores and item scores within the specified ranges, respectively.

Table 13. Number of Students Attaining Cluster Scores in Specified Range: Desert Plants

Score 9–7	Score 6–4	Score 3–1	Score 0
5	10	2	1

Note. Maximum score = 9; *n* = 18.

Table 14. Number of Students Attaining Item Scores in Specified Range, by Item: Desert Plants

	Maximum Item Score	Score 1	Score 0
Item 1 (Part A)	1	12	6
Item 1 (Part B)	1	13	5
Item 2 (Part B)	1	3	15

	Maximum Item Score	Score 3	Score 2–1	Score 0
Item 2 (Part A)	3	2	13	3
Item 3	3	14	3	1

Note. n = 18.

Students did relatively well on this cluster, but Item 2 was much more challenging than Items 1 or 3.

Task Demands

The following are task demands of the Desert Plants cluster:

- Organize or summarize data to highlight trends and patterns and/or determine relationships between the traits of an organism and survival in its environment.
- Understand and generate simple bar graphs or tables that document patterns, trends, or relationships between traits of an organism and its survival in a particular environment.
- Identify patterns or evidence in the data that support inferences about characteristics of an organism and those of its environment.

- Based on the provided data, identify or describe a claim regarding the relationship between the characteristics of an organism and survival in a particular environment.
- Evaluate the evidence to sort relevant from irrelevant information regarding survival of an organism in a particular environment.

Stimulus

The stimulus for the Desert Plants cluster is shown in Figure 1.

Figure 2. Stimulus: Desert Plants

Plant Survival in the Desert

Mesquite trees and cactus plants are both common in the Sonora Desert of North America, even though this region receives less than 15 inches of rain a year. In comparison, bird's nest ferns are common to the rainforests of southeastern Asia, where rainfall is often more than 100 inches a year.

These three plants have differences in their roots, stems, and leaves. The Characteristics of Plants table summarizes the characteristics of each type of plant.

Characteristics of Plants

	Mesquite Tree	Cactus Plant	Bird's Nest Fern
Roots	Long deep roots	Wide shallow roots	Short shallow roots
Stems	Non-expandable trunk	Thick expandable trunk	Thin stems
Leaves	Small leaves	Leaves reduced to thin spikes	Large leaves

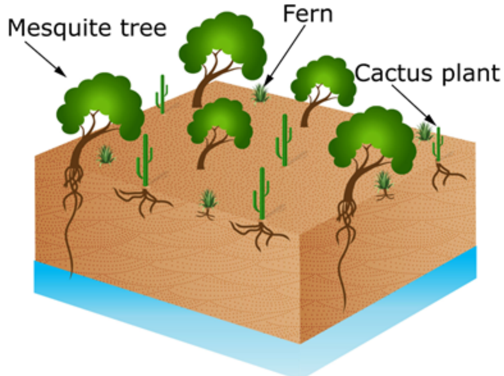
Plants use their roots, stems, and leaves to get and keep water. Differences in these structures affect the way in which different plants meet their needs for water.

Effect of Plant Structures on Ability to Get and Keep Water

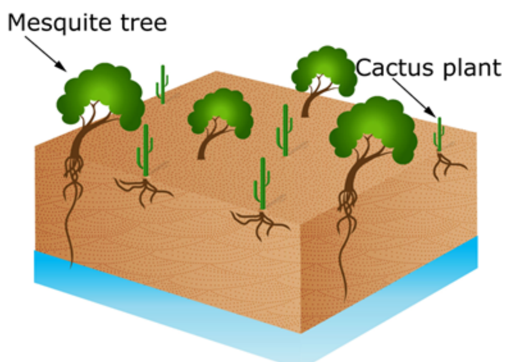
Plant Structure	Effect
Roots	Deep roots—allow plants to reach ground water below surface Wide shallow roots—allow plants to absorb a lot of water quickly when it rains
Leaves	Small waxy leaves—prevent loss of water in the hot sun
Stems	Thick expandable stems—allow plants to store water

To test how different characteristics affect a plant's ability to survive with less than 15 inches of rain a year, scientists planted Mesquite trees, cactus plants, and bird's nest ferns in a desert environment. A year later, they recorded how many of each type of plant survived.

Start of Experiment



End of Experiment



In the questions that follow you will construct an argument for why some plants survive better in the desert than others.

Details by Item

Item 1

Item 1 of the Desert Plants cluster is shown in Figure 3.

Figure 4. Item 1: Desert Plants

The following question has two parts. First, answer part A. Then, answer part B.

Use the data from the experiment to compare the survival of the three types of plants in the desert.

Part A

Record the data from the experiment by adding numbers to the table.

	Mesquite Trees	**Cactus Plants**	**Bird's Nest Ferns**
Number of plants at start of experiment			
Number of plants at end of experiment			

Part B

Select the **two** statements that are supported by the data in the table you created.

- ☐ All types of plants can survive in all environments.
- ☐ No types of plants can survive in a dry desert environment.
- ☐ All types of plants can survive in the dry desert environment.
- ☐ Some types of plants cannot survive in the dry desert environment.
- ☐ Some types of plants survive better than others in the dry desert environment.

Item 1 (Part A)

SCORES

Half of the California students (six) and all of the Utah students (six) earned credit (1 score point) on Part A.

COMPREHENSION

Those students who received credit for this item did not appear to be confused by any features of the item.

However, the students who did not receive credit seemed to have a general lack of comprehension of what was being asked. For example,

- one student wrote incoherent sentences instead of numbers;
- a second student decided to start at 27 “as a random number to start with”; and

- a third student said, "For mesquite trees, I got the start of experiment 1, do you see you start with 1, and at the end I saw how much they had altogether, and I got 3, so I was guessing that's how much it was." For the cactus plants, the student said, "I thought the same thing—they started off with 1 then ended with 3." For the bird's nest ferns, he said, "I was thinking the same thing because I was looking at the characteristics of plants—you start with 1 then you end with 3."

REASONING

The 12 students who earned credit all made sensible use of the experiment data.

> For example, one student said she counted the trees, plants, and ferns in the *Start of the Experiment* exhibit and began entering the numbers in the first row of the table. She explained, "I put 5 mesquite trees, because when I counted, there was 5 [at the beginning of the experiment]. When I counted the cactus, there was 5. And then the same for bird's nest ferns." She counted the trees, plants, and ferns in the *End of the Experiment* exhibit and began entering the numbers in the second row of the table. The student noted that there were four mesquite trees, explaining that this was "[b]ecause one of them had died during the experiment. And then for the cactus plants, the number stayed the same, at 5, because they normally live there, like, a lot, and they really don't need a lot of water to survive. And then the bird ferns all died during the experiment, so then that is a total of 0."

<u>Item 1 (Part B)</u>

SCORES

Thirteen students, including five of the six Utah students, earned credit (1 point) on Part B, which required them to identify two statements that are supported by the table in Part A. (One of these students did not receive credit for Part A but understood the general concept.)

COMPREHENSION

No features of this item appeared to confuse students.

REASONING

Most students used credible reasoning from evidence to reach a solution.

> For example, one student chose the second-to-last option (*[s]ome types of plants cannot survive in the dry desert environment*) because "at the start of the experiment, there was a total of five bird's nest ferns and then they all died, and also because one of the mesquite trees – they died – but I mean, most of them still remained." And she chose the last option (*[s]ome types of plants survive better than others in the dry desert environment*) because "out of all three of the plants, the cactus all lived instead of dying." She shared that she did not chose the first option (*[a]ll types of plants can survive in all environments*) because "As you can see, some of them died – like the bird's nest ferns and the mesquite trees." She shared that she did not choose the second option (*[n]o types of plants can*

survive in a dry desert environment) "because the cactus – they still lived." She shared that she did not choose the third option (*[a]ll types of plants can survive in the dry desert environment*) "because the bird's nest ferns died."

Item 2

Item 2 of the Desert Plants cluster is shown in Figure 5.

Figure 6. Item 2: Desert Plants

The following question has two parts. First, answer part A. Then, answer part B.

Determine which traits of the three types of plants affect their survival in the desert.

Part A

The three tables show traits of each type of plant from the experiment. Select the boxes to identify whether each trait helps or does not help each plant survive in the desert.

Mesquite Tree Traits

	Helps Survival	Does Not Help Survival
Long deep roots	☐	☐
Non-expandable trunk	☐	☐
Small leaves	☐	☐

Cactus Plant Traits

	Helps Survival	Does Not Help Survival
Wide shallow roots	☐	☐
Thick stem	☐	☐
Thin spikes as leaves	☐	☐

Bird's Nest Fern Traits

	Helps Survival	Does Not Help Survival
Short shallow roots	☐	☐
Thin stem	☐	☐
Large leaves	☐	☐

Part B

Type a number into each box to identify the number of traits that help or do not help the plants survive, based on the tables in part A.

	Helps Survival	Does Not Help Survival
Mesquite Trees		
Cactus Plants		
Bird's Nest Ferns		

Item 2 (Part A)

Scores

Points were awarded based on the number of plants for which the student correctly identified the traits that help the plant survive. Two students earned 3 score points (full credit) on Part A, six students earned 2 score points, and seven students earned 1 score point.

Comprehension

No features of this item appeared to confuse students.

Reasoning

Nine of the students used the *Characteristics of Plants* and *Effects of Plant Structures on Ability to Get and Keep Water* tables, and at least three of these students also referred to the exhibits showing plants that were alive at the beginning and end of the experiment. However, they did not necessarily interpret all the data correctly. For example, the following student referenced the information in the stimulus tables frequently and appropriately but misinterpreted some of the data. She did not appear to use the exhibits on the start and end of the experiment to check her understanding of which traits help or hinder survival.

- For the mesquite tree she said, "the mesquite tree has long deep roots and also has small leaves," and checked *Helps Survival* for roots and leaves. She continued, "The [mesquite] plant—I don't think that the non-expandable trunk will help. It says that thick expandable stems allow plants to store water, except the tree doesn't have one, so it can't store a lot of water, so I don't think that will help it survive." She checked *Does Not Help Survival* for the non-expandable trunk.
- For the cactus plant she said, "The cactus plant traits, it says it has wide shallow roots that allow the plant to absorb lots of water when it rains. So that would help it survive." She checked *Helps Survival* for roots. She continued, "The thick trunk also will, but thick stem would do that." She checked *Helps Survival* for trunk. She continued, "Then thin spikes as leaves—that probably wouldn't help them a lot." She checked *Does Not Help Survival* for leaves.
- For the bird's nest fern she said, "So for the bird's nest fern traits, it has shallow roots, and shallow roots allow it to absorb a lot of water when it rains, so that would probably help survive." She checked *Helps Survival* for roots. She continued, "A thin stem—that would probably not help it survive since the thin stem would not be able to hold a lot of water to help it survive." She checked *Does Not Help Survival* for the stem. She continued, "Then large leaves—that would probably be good. And small waxy leaves have lots of water in the hot sun. Yep." She checked *Helps Survival* for leaves.

Seven students made little or no use of the data in the stimulus and based their reasoning for Part A on prior knowledge or conjecture.

Item 2 (Part B)

SCORES

On Part B, most students quickly filled out the table on the number of traits that help or do not help each plant survive based on their responses in Part A.

However, only three students completed all six cells correctly, as required to earn credit (1 score point) on Part B.

COMPREHENSION

On Part B, three students wrote the types of traits in the response fields (e.g., long deep roots) rather than the number of traits as indicated in the instructions. One student also wrote some extraneous text. One other student wrote text that was mostly incoherent.

Item 3

Item 3 of the Desert Plants cluster is shown in Figure 7.

Figure 8. Item 3: Desert Plants

> Complete each statement to explain the survival of the three types of plants in the desert.
>
> Click on each blank box to select the words or phrases that **best** complete each statement.
>
> The Mesquite tree ____ in the desert because all or most of its characteristics ____ the tree meet the challenges of living in the desert.
>
> The Cactus plant ____ in the desert because all or most of its characteristics ____ the plant meet the challenges of living in the desert.
>
> The Bird's Nest Fern ____ in the desert because all or most of its characteristics ____ the fern meet the challenges of living in the desert.

SCORES

Students earned 1 point for each statement they completed correctly. Fourteen students completed all three statements correctly and earned full credit. This included all six of the Utah students.

Sixteen students earned a score point for the statement on the mesquite tree. Sixteen students earned a score point for the statement on the cactus plant, and 15 students earned a score point for the statement on the bird's nest fern.

COMPREHENSION

All students navigated through this item with ease.

Reasoning

Most students used their answers to previous questions in the cluster to select responses from the drop-down menus. At least five students used information from the stimulus, and three students used prior knowledge.

The following is an example of a student who reasoned appropriately from the evidence in the stimulus to respond to Item 3:

> The student selected *survived well* for mesquite tree, explaining that this was "because all or most of its characteristics helped the tree meet the challenges of living in the desert; because the characteristics, such as having the long deep roots and the small leaves can help it survive in the desert." She selected *survived best* for cactus plant, "because all or most of its characteristics helped it meet the challenges of living in the desert; because, of all of the plants, it stayed alive, and the characteristics such as having wide shallow roots and thick stems helped it live." The student selected *did not survive* for bird's nest fern, noting that "only one of its traits helped, and the rest—the two other ones—did not help it." Then she selected the answers for the second part of each item, choosing *helped* for mesquite tree, *helped* for cactus plant, and *did not help* for bird's nest fern.

3.2.2 Cluster 2: German Pyramid Candle

Performance Summary

The median time to complete the German Pyramid Candle cluster was nine minutes. Table 15 and Table 16 indicate the number of students attaining cluster total scores and item scores within the specified ranges, respectively.

Table 15. Number of Students Attaining Cluster Total Scores in Specified Range: German Pyramid Candle

Score 4–3	Score 2–1	Score 0
1	9	7

Note. Maximum score = 4. *n* = 17; one student ran out of time before attempting this cluster.

Table 16. Number of Students Attaining Item Scores in Specified Range, by Item: German Pyramid Candle

	Maximum Item Score	Score 2	Score 1	Score 0
Item 1	2	3	5	9

	Maximum Item Score	Score 1	Score 0
Item 2	1	2	15
Item 3	1	5	12

Note. n = 17; one student ran out of time before attempting this cluster.

This was the most difficult of the elementary school clusters; only one student (from Utah) earned full credit (4 points).

Task Demands

The following are task demands of the German Pyramid Candle cluster:

- Identify from a list, including distractors, the materials/tools needed for an investigation of how energy is transferred from place to place through heat, sound, light, or electric currents.
- Identify the outcome data that should be collected in an investigation of how energy is transferred from one place to another through heat, sound, light, or electric currents.
- Make and/or record observations about the transfer of energy from one place to another via heat, sound, light, or electric currents.

- Interpret and/or communicate the data from an investigation.
- Select, describe, or illustrate a prediction made by applying the findings from an investigation.

Stimulus

The stimulus for the German Pyramid Candle cluster is shown in Figure 9.

Figure 10. Stimulus: German Pyramid Candle

A German pyramid candle is a decoration whose parts only move when the candles are lit. The parts that move are driven by a fan that sits on the top of the pyramid. As the fan turns, other parts of the pyramid turn. The animation shows an example of a German pyramid candle. Click the small gray arrow to begin the animation.

Use the following questions to determine how energy is transferred from the candles to the fan blades.

Details by Item

Item 1

Item 1 of the German Pyramid Candle cluster is shown in Figure 11.

Figure 12. Item 1: German Pyramid Candle

In the following table, select the **two** pieces of data that explain how the candles affect the fan, and then use the animation to describe the relationship between these two variables.

Relationship of Outcome Data

Variables	Relationship

SCORES

Two (Utah) students earned full credit (2 score points) on this item, which required students to identify two variables that explain the influence of the candles on the fan and then describe the relationship between these variables.

Seven other students earned partial credit for selecting the two correct variables but not correctly specifying the relationships—five were Utah students.

Additional students selected at least one of the correct variables.

A total of 13 students correctly selected the temperature of the air between the blades and the candles as one of the variables, and eight students correctly selected the rotation speed of the blade.

COMPREHENSION

Students clearly did not understand how to describe the relationship between the two variables as only four students entered any responses to this part of the question. It is not clear how much of the confusion was because the students did not understand how energy was transferred and how much of the confusion was due to not understanding what the question was asking.

Five students were hesitant about the entire item, and two students tried to guess at the relationships between the two variables because they did not really understand what "the relationship" meant.

REASONING

Most students tried to reason their way to a solution but lacked the content knowledge to do so without error. The following shows the reasoning process for one student who exemplifies this:

> The student said, "The first variable is probably going to be *brightness* because if they're more brighter, it probably means that it's hotter. And for relationship, I'm going to do *increase* because I think it turns because something is taking in the heat energy and it's using the heat energy from the candles to rotate the fan, and that's why the brightness of the candles would probably increase the speed of the rotation of the fans. And so for variable two, I'm going to do the *temperature of the air between the blades and the candles* – I chose that because if the air is colder or cooler, it's probably not going to rotate that much because it takes in the heat energy that the candles create and it rotates them . . . And if it's like hot or warm, it's probably going to rotate faster . . . if I'm correct. And for the relationship, I'm going to do decrease because if it's slower or cooler, it's probably going to be less . . . or not as fast as if it was warmer."

Item 2

Item 2 of the German Pyramid Candle cluster is shown in Figure 13.

Figure 14. Item 2: German Pyramid Candle

Use the table below to correctly order the statements based on what you have observed. Use the numbers 1 through 4 to order your statements, 1 being the first step and 4 being the last step. Use the "-" sign to indicate that the statement is not a part of the process you observed.

Step	Statement
	Air moves upward past the fan blades
	Light from candles transfers energy to the air
	Air gets hotter
	Moving air transfers energy to the fan blades
	Air transfers heat energy to the fan blades
	Heat from candles transfers energy to the air
	Light energy carries the air upwards past the fan blade

Scores

All but one student observed the whole animation, but only two (Utah) students earned credit (1 score point) on this item by correctly ordering the steps based on what they observed in the animation.

Comprehension

One student did not seem to understand that he was to order the steps, and it was not clear how he selected the numbers for his responses.

Reasoning

Students had the same issues with lack of content knowledge as they did with Item 1.

> For example, one student correctly chose *[h]eat from candles transfers energy to the air* for step 1 (noting that "the energy carries the air upward past the fan"), but faltered after that. She chose *[a]ir transfers heat energy to the blades* for step 2, noting that it "was going to the fan blades." For step 3, the student initially chose *[a]ir moves upward past the fan blades* but changed it to *[l]ight energy carries the air upwards past the fan blade*. When prompted later to explain why she changed her answer, she explained, "Because it made more sense if hot air moved upward past the fan blades, but it was just air, so I was thinking light energy carries the air upward past the fan blades because first the energy goes to the fan blades and then the light energy from the candles goes past the fans." For step 4, she thought for a moment and said, "I think this (*air gets hotter*), and chose it," explaining "because it goes around more."

Item 3

Item 3 of the German Pyramid Candle cluster is shown in Figure 15.

Figure 16. Item 3: German Pyramid Candle

With your knowledge of the process that drives the German pyramid candle, select the boxes in the table to indicate whether or not the changes listed would affect the animation.

	Affect	Not Affect
Change the number of candles	☐	☐
Remove the air from between the candles and the blades	☐	☐
Change the amount of wax on the candles	☐	☐
Change the angle of the blades	☐	☐
Change the color of the fan blades	☐	☐

SCORES

Five students earned credit (1 score point) for this item.

Nine other students correctly classified four of the five changes, but earned no credit, based on the scoring rubric.

COMPREHENSION

No features of this item appeared to confuse students.

REASONING

As with the other items in this cluster, students needed prior content knowledge to reason their way to a correct solution. For example, one student, who had most of the requisite knowledge, said,

> "For the first one, the *change in number of candles*, I think that, with more heat and light, I think it will affect it a little bit more by making the blades spin faster. *Removing the air from between the candle and blades*, I think that will affect it because the GPC probably takes in the air from what's underneath it. For the third one, the *change in the amount of wax on the candles*, I think that will not affect it because the wax just increases the duration of the candle, which wouldn't affect it. *Change the angle of the blades*, I don't think that would affect it because if you just turn the blades over to at least an angle where it looks like it's even, I don't think that will affect it either. *Change the color of the fan blades*, I don't think changing the color of the fan blades would affect it because it's just color, and it's for decoration most of the time."

3.2.3 Cluster 3: Redwall Limestone

Performance Summary

The median time to complete the Redwall Limestone cluster was six minutes. Table 17 and Table 18 indicate the number of students attaining cluster total scores and item scores within the specified ranges, respectively.

Table 17. Number of Students Attaining Cluster Total Scores in Specified Range: Redwall Limestone

Score 4–3	Score 2–1	Score 0
12	4	1

Note. Maximum score = 4; *n* = 17; one student ran out of time before attempting this cluster.

Table 18. Number of Students Attaining Item Score in Specified Range, by Item: Redwall Limestone

	Score 1	Score 0
Item 1	13	4
Item 2	13	4
Item 3 (Part A)	14	3
Item 3 (Part B)	7	10

Note. Maximum score for each item = 1; *n* = 17; one student ran out of time before attempting this cluster.

Task Demands

The following are task demands of the Redwall Limestone cluster:

- Organize or summarize data to highlight trends, patterns, or correlations between plant and animal fossils and the environments in which they lived.
- Generate graphs or tables that document patterns, trends, or correlations in the fossil record.
- Identify evidence in the data that support inferences about plant and animal fossils and the environments in which they lived.

Stimulus

The stimulus for the Redwall Limestone cluster is shown in Figure 17.

Figure 18. Stimulus: Redwall Limestone

The Grand Canyon is a huge canyon located in Arizona. The canyon has been formed by the Colorado River. The river has cut down into the ground, exposing rock layers that were deposited millions of years ago. The picture shows part of the Grand Canyon.

Portion of Grand Canyon

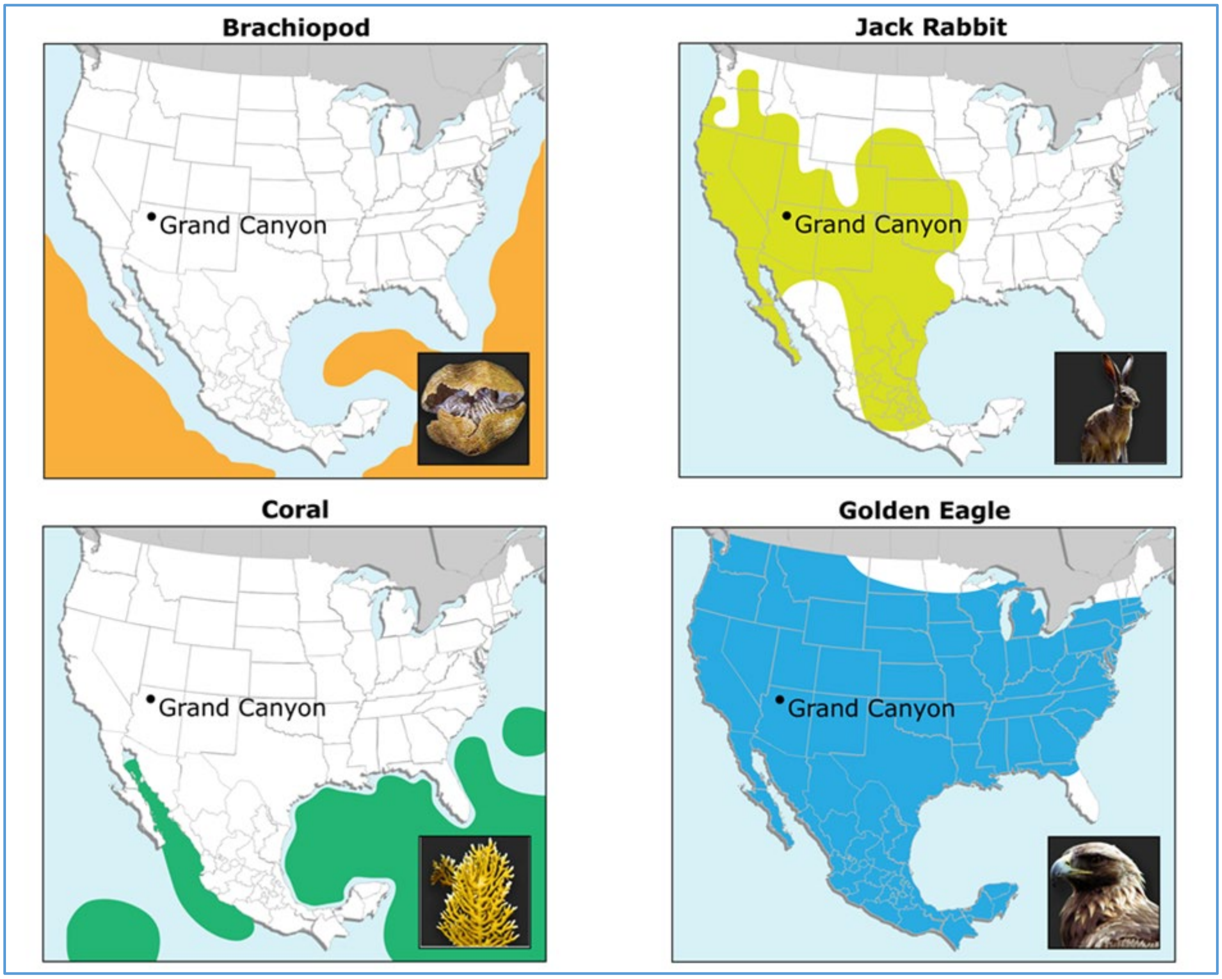
One of these rock layers is called the Redwall Limestone. The Redwall Limestone contains many different fossils, including corals, clams, octopi, and fish.

In the questions that follow, you will study six animals in order to lean about what Arizona was like when the Redwall Limetone was deposited millions of years ago.

The pictures show the animals and maps of where they are found. The colored regions show where the animals live.

Bighorn Sheep

Octopus



Despite some incorrect responses, nearly all the students seemed comfortable navigating through the maps to decide where the animals are found and filling out the tables in Items 1 and 2. One student did not make any use of the maps.

Details by Item

Item 1

Item 1 of the Redwall Limestone cluster is shown in Figure 19.

Figure 20. Item 1: Redwall Limestone

Using the given maps, complete the table by identifying whether each animal is found in Arizona.

	Found in Arizona	Not Found in Arizona
Bighorn Sheep	☐	☐
Octopus	☐	☐
Brachiopod	☐	☐
Jack Rabbit	☐	☐
Coral	☐	☐
Golden Eagle	☐	☐

Scores

Thirteen students earned credit (1 score point) on this item.

Comprehension

No features of this item appeared to confuse students.

Reasoning

Ten of the 13 students who earned credit showed evidence in the think-aloud of using the maps to reason their way to a solution, as intended.

For example, one student

- selected *Found in Arizona* for bighorn sheep "because the map that it gives you shows you that it's located in Arizona."
- selected *Not Found in Arizona* for octopus, explaining that "It's found in oceans – not really in the state."
- selected *Not Found in Arizona* for brachiopod, noting, with a laugh, "Because it's in the oceans, not the state – like the octopus . . . octopi."
- selected *Found in Arizona* for jack rabbit "because the map that it gives you shows it's located in Arizona."
- selected *Not Found in Arizona* for coral because "the map that it gives you has those green things that shows you that it's not located in Arizona."
- selected *Found in Arizona* for the golden eagle, noting that "the blue is all over the United States, so yeah, it's in Arizona."

Among the four students who did not earn credit for this item, each mis-located two of the six animals. The think-alouds showed that three of these students formed their answers based on background knowledge and some educated guessing rather than using the maps.

For example, one student

- selected *Not Found in Arizona* for bighorn sheep because “When I went to Arizona, I’ve never seen a bighorn sheep over there, so I really think it is not in there.”
- selected *Found in Arizona* for jack rabbit, explaining that “it’s in there because I’ve seen one when I went to Arizona.”
- selected *Not Found in Arizona* for coral. This choice appeared to be at random, marked after the student said, “I’ve never heard of that animal too because in school we don’t really learn about coral and so yeah I’ve never heard of it and I don’t know if they’re ever in Arizona, so . . .”
- selected *found in Arizona* for golden eagle because “I think it’s in Arizona because our school mascot is the golden eagle and they always say golden eagles are from Arizona.”

Item 2

Item 2 of the Redwall Limestone cluster is shown in Figure 21.

Figure 22. Item 2: Redwall Limestone

Using the given maps, complete the table by selecting whether each animal lives on land or in water.

Animal	Environment
Bighorn Sheep	
Octopus	
Brachiopod	
Jack Rabbit	
Coral	
Golden Eagle	

Scores

Thirteen students earned credit (1 score point) on this item.

Comprehension

No features of this item appeared to confuse students. All students worked through the item fairly quickly, and three of the students commented that it was easy.

Reasoning

Among the 13 students who earned credit, most did not appear to make much use of the maps in formulating their responses, apparently because they felt that they could easily respond based on background knowledge about the animals.

> For example, one student shared that she knows bighorn sheep live on land and that octopi are living in the water. But then she noted that she wasn't sure about coral, adding, "Sometimes you see coral on the beach or somewhere else, and so I don't know if it's land or water. But maybe it was washed up on the beach, so I was thinking water."

Students who did not earn credit for this item mis-located either the brachiopod or the coral; one student also mis-located the golden eagle. These students also relied on background knowledge for their responses. For example, one student explained his choices as follows:

- The bighorn sheep "is on land because I don't think he'll make it in the water."
- The octopus "has to live in the water to survive."
- The brachiopod "has to live in the water because it looks like a jellyfish and jellyfishes have to live in the water, so I thought maybe that does too, and I looked at the picture and thought it has to live in the water."
- "I looked at [the jack rabbit], and that's a land animal, and regular rabbits live on land, and that's why I picked that one."
- "[The coral] has to be on land because it kind of looks like a tree and trees have to be on land."
- "Birds and eagles are on land, so I picked that eagle to be on land, so I just knew it from my knowledge."

Item 3

Item 3 of the Redwall Limestone cluster is shown in Figure 23.

Figure 24. Item 3: Redwall Limestone

The following question has two parts. First, answer part A. Then, answer part B.

Part A

Within the Grand Canyon, a rock layer contains fossils of octopi (plural of "octopus"), brachiopods, and corals. What can you conclude about the environment of the Grand Canyon region from the fossil evidence?

Ⓐ The Grand Canyon region was always desert.

Ⓑ The Grand Canyon region was once underwater.

Ⓒ The Grand Canyon region experienced a lot of rain.

Ⓓ The fossils do not provide any information about the environment.

Part B

Which statement supports your conclusion?

Ⓐ The rock layer contains fossils of only animals that live in water.

Ⓑ The rock layer contains fossils of only animals that live on land.

Ⓒ The rock layer contains fossils of animals that live neither on land nor in water.

Ⓓ The rock layer contains fossils of animals that live on land and animals that live in water.

Item 3 (Part A)

Scores

Fourteen students earned credit (1 score point) on this sub-item.

There was no common theme to the wrong answers—there were three possible wrong answers, and each of the three students who failed to earn credit chose a different one.

Comprehension

Among the three students who did not earn full credit for the sub-item, one student appeared not to understand what the question was asking. She said she was confused on how to respond because "I thought it was going to ask me 'does it usually rain there?' and it doesn't usually rain there because it's in Arizona."

Reasoning

The 14 students who earned credit for this sub-item (1 score point) all appeared to evaluate the possible response option against credible criteria as they reasoned their way to a solution.

> For example, one student first read option A, *[t]he Grand Canyon region was always desert*, out loud. Then he said he wanted to check the next option and read *[t]he Grand*

> *Canyon region was once underwater*. The student said that option B could be the answer, "but the first option [A] is not because it said in the question [the fossils] were sea animals." The student then read option C, *[t]he Grand Canyon region experienced a lot of rain*, and option D, *[t]he fossils do not provide any information about the environment*. He said that it can't be option D because "[the question] doesn't have anything to do with the animals that are living today." He said it probably wasn't option C because "even if it rained, [but] it wasn't an ocean, then the coral couldn't live there." The student concluded that the correct answer had to be B.

Item 3 (Part B)

Scores

Seven students earned credit (1 score point) on this sub-item.

Comprehension

Among the 10 students who did not earn credit on this sub-item, most appeared to be confused as to what the question was asking. Rather than associating the question with Part A, these students appeared to be trying to answer a separate question about the types of animal fossils that might be found in the canyon walls. Further, they did not seem to know where to look for information that would help them answer the question; they tended to reference the list of *current-day* animals mentioned in the stimulus, and to do so irrespective of whether these animals were found in Arizona. Consequently, nine of these 10 students selected option D, *[t]he rock layer contains fossils of animals that live on land and animals that live in water*, using reasoning such as the following:

> One student said, "obviously C, *the rock layer contains fossils of animals that live neither on land nor in water*, is wrong, it's not only water because they have jack rabbits, the goat-ram thing, and the eagle so that's not true." For option B, *the rock layer contains fossils of only animals that live on land*," he said: "that's not true, there are octopus, coral and brachiopod." He read out loud response option C a second time, *the rock layer contains fossils of animals that live neither on land nor in water*, and said "the bird does live on land and it flies a lot, but it's still on land, so it has to be D, *the rock layer contains fossils of animals that live on land and animals that live in water*."

Some students also seemed to have problems with the structure of the answer choices (A, or B, or neither A nor B, or both A and B).

> For example, one student said, "What I found confusing was this one since I was looking at D and it said, 'live in water' at the end, just like A, so I was looking at it, and I figured out that it said lived on land AND on water. It kind of confused me just looking at the end that both of them said 'live in water.'"

Reasoning

The seven students who earned credit for this sub-item all appeared to use credible criteria in reasoning their way to a solution.

For example, one student read out loud the stem and option A, *[t]he rock layer contains fossils of only animals that live in water*. He said that it could be that one, but he wanted to read the other options. He read out loud option B, *[t]he rock layer contains fossils of only animals that live on land*. The student said, “no, it wouldn’t be that one because the answer [to Part A] doesn’t have anything to do with that.” He read option C, *[t]he rock layer contains fossils of animals that live neither on land nor in water*, and said it couldn’t be the right answer, because the question says that [the rock layer] has sea animals. He read option D*, [t]he rock layer contains fossils of animals that live on land and animals that live in water*. The student said that “the question never said anything about that part” and chose A.

3.2.4 Cluster 4: Terrarium Matter Cycle

Performance Summary

The median time to complete the Terrarium Matter Cycle cluster was 11 minutes. Table 19 and Table 20 indicate the number of students attaining cluster total scores and item scores within the specified ranges, respectively.

Table 19. Number of Students Attaining Cluster Total Scores in Specified Range: Terrarium Matter Cycle

Score 9–7	Score 6–4	Score 3–1	Score 0
1	3	13	1

Note. Maximum score = 9; *n* = 18.

Table 20. Number of Students Attaining Item Scores in Specified Range, by Item: Terrarium Matter Cycle

	Maximum Item Score	Score 1	Score 0
Item 1 (Part A)	1	3	15
Item 1 (Part B)	1	6	12
Item 2 (Part A)	1	8	7
Item 2 (Part C)	1	1	17
Item 2 (Part D)	1	1	17
Item 3	1	7	11

	Maximum Item Score	Score 3	Score 2–1	Score 0
Item 2 (Part B)	3	3	10	5

Note. n = 18

Earning credits on this cluster was challenging for the students. Two of the Utah students earned the most credit (seven and six credits respectively), likely reflecting their greater exposure to NGSS-based instruction.

Task Demands

The following are task demands of the Terrarium Matter Cycle cluster:

- Select or identify from a collection of potential model components, including distractors, the parts of a model needed to describe the movement of matter among plants, animals, decomposers, and the environment.

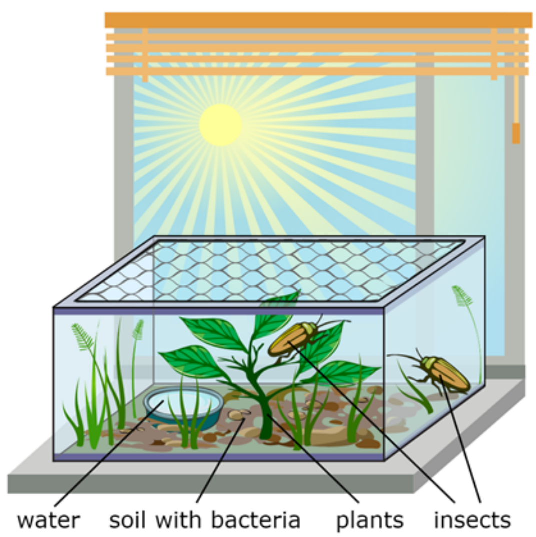
- Manipulate the components of a model to demonstrate properties, processes, and/or events that result in the movement of matter among plants, animals, decomposers, and the environment including the relationships of organisms and/or the cycle(s) of matter and/or energy.
- Articulate, describe, illustrate, select, or identify the relationships among components of a model that describe the movement of matter among plants, animals, decomposers, and the environment.
- Make predictions about the effects of changes in model components including the substitution, elimination, or addition of matter and/or an organism and the result.

Stimulus

The stimulus for the Terrarium Matter Cycle cluster is shown in Figure 25.

Figure 26. Stimulus: Terrarium Matter Cycle

A science class sets up four terrariums on a sunny windowsill. Each terrarium contains water and insects. Each one also contains a combination of gravel, soil with bacteria, and/or plants according to the Terrarium Setups table.



Terrarium Setups

	Terrarium 1	Terrarium 2	Terrarium 3	Terrarium 4
Soil			X	X
Gravel	X	X		
Plants		X		X

The students observe the terrariums every 5 days for 15 total days and record observations of the insects and plants. Their data are shown in the Terrarium Observations diagrams.

Terrarium 1 Observations

Day	Insects
1	Alive
5	Not alive
10	Not alive
15	Not alive

Terrarium 2 Observations

Day	Insects	Plants
1	Alive	Alive
5	Alive	Alive
10	Alive	Not alive
15	Not alive	Not alive

Terrarium 3 Observations

Day	Insects
1	Alive
5	Not alive
10	Not alive
15	Not alive

Terrarium 4 Observations

Day	Insects	Plants
1	Alive	Alive
5	Alive	Alive
10	Alive	Alive
15	Alive	Alive

In the following questions, you will develop a model to show why the insects only survive under certain environmental conditions.

Details by Item

Item 1

Item 1 of the Terrarium Matter Cycle cluster is shown in Figure 27.

Figure 28. Item 1: Terrarium Matter Cycle

The following question has two parts. First, answer part A. Then, answer part B.

Part A

Based on the observations of the terrariums, identify the parts that must be present for the insects to survive.

	Must be present
Gravel	☐
Soil with Bacteria	☐
Water	☐
Insects	☐
Plants	☐

Part B

Select the **three** statements that explain why these parts are necessary for the insects to survive.

☐ Insects need plants for food.

☐ Insects need soil to lay their eggs in.

☐ Plants need nutrients from the soil.

☐ Gravel is necessary for water drainage.

☐ Water is necessary for all living organisms.

☐ All living organisms take in matter from the environment.

☐ Different types of organisms are necessary for stable ecosystems.

Item 1 (Part A)

Scores

Three students earned credit (1 score point) on this sub-item, which required them to correctly identify all four of the elements that must be present for the insects to survive. Ten other students correctly identified three of the four parts.

Comprehension

Several students had trouble with the concept that the organism itself (i.e., insects) was one of the things that had to be present for that organism to survive. Six students gave a response that correctly identified soil with bacteria, water, and light as essential, but left out insects. Some others chose insects, but interpreted it as other insects, or were not sure.

> For example, when the interviewer asked after the think-aloud, “You weren’t sure whether to click insects or not here. Could you tell me a little about that?” One student said, “Yeah. Would it be the insects themselves? Or would it be different insects? Like you’d put two cockroaches in there with a ladybug. Or you’d put two ladybugs with a spider. I don’t know. If insects have to be there to survive, then yes, but if it is different insects and they’d be harmless, then I’d say no, they don’t need to be there. So maybe more description there.”

Reasoning

The three students who received credit for the sub-item displayed the type of reasoning from evidence that was expected, although their reasoning was not necessarily correct in every detail.

> For example, one student said, “I know a class sets up four terrariums by a sunny windowsill, so light can get in to help the plants. I know plants have a photosynthesis process, and they need the sun to make food. There are also insects so they can eat, and water so they can drink, and soil so they can have a stable root because I know that plants don’t need soil to grow. In terrarium 3 and 4 there is soil, and in terrarium 1 and 2 there is gravel, and in 2 and 4 there are plants. A student observes the terrarium every 5 days for 15 days and records observation. Three times he observes them to collect observation—like the two living things in there, like the insects and the plants, and the data is shown on the diagram. I can see that the day 1 the insects are alive because in terrarium 1 there is only gravel, but no plants, so they don’t have anything to eat, so they can only survive about a day. Day 1, the insects are alive because—they are alive for three checks because they have gravel and plants . . . . The plants dying would probably be because maybe gravel is not strong to hold their roots. If the plants die, so do the insects. In terrarium 3, the insects are alive, and they all die on the next days because they don’t have any plants to eat. And then terrarium 4 has plants and soil, so it has plenty for the insects to eat, and it is a good support for the plants, so if they both stay alive, they can feed off each other.”

Many students who did not receive credit made only limited use of the experimental data provided in the stimulus and relied entirely or primarily on background knowledge.

> For example, for *Gravel*, one student said, “I don’t think it should be present because, if you just need gravel, you would have nothing to do with the soil in there.” For *Soil with Bacteria* the student said, “It must be present because a lot of plants and flowers, they need soil—and they also have bacteria in it or something.” For *Water*, the student said, “It definitely needs to be present because with just sun and soil, it won’t let it grow

because every plant needs water, soil, and sun.” For *Insects*, the student said, “Yeah, because bees like going on sunflowers, so yeah it could be present.” For *Plants*, the student said, “Not so much cause if you’re going to grow one it’s already present . . . .” When asked if this was from the student’s prior knowledge, she agreed.

Item 1 (Part B)

Scores

Six students earned credit (1 score point) on this sub-item, which required students to correctly identify all three of the statements that explained why the elements in Part A are necessary for the insects to survive. Ten other students correctly identified two of the three statements.

Comprehension

No features of this item appeared to confuse students.

Reasoning

Students reasoned from background knowledge, but not necessarily content area knowledge gained in school.

> For example, one student selected option 1, and when asked how she knew, the student said, "if insects don't have food or water they'll die, and I know that just from background knowledge." The student selected option 3 because, "plants need nutrients from the soil, or they will die too… I just used my background knowledge." Student selected option 4 (*[g]ravel is necessary for water drainage*) and when asked how she knew, she said, "Just from learning it in school, I've just heard it before."

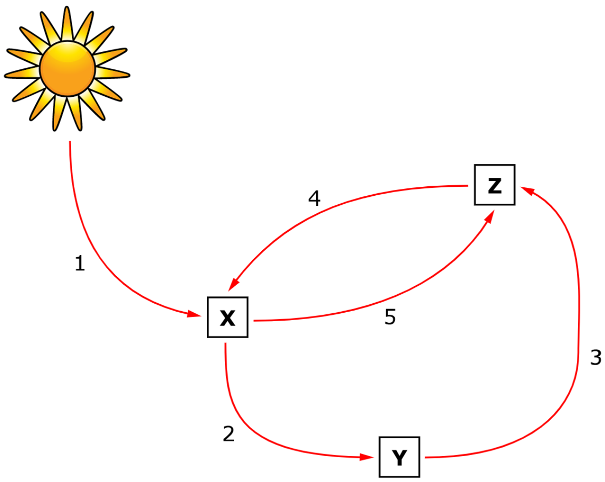
Item 2

Item 2 of the Terrarium Matter Cycle cluster is shown in Figure 29.

Figure 30. Item 2: Terrarium Matter Cycle

The Terrarium Cycle of Matter and Energy diagram shows an incomplete model of the terrarium environment.

Terrarium Cycle of Matter and Energy



The following question has four parts. First, answer part A. Next, answer part B. Then, answer part C. Finally, answer part D.

Part A

Select the boxes to identify X, Y, and Z.

	X	Y	Z
Gravel	☐	☐	☐
Soil with Bacteria	☐	☐	☐
Water	☐	☐	☐
Insects	☐	☐	☐
Plants	☐	☐	☐

Part B

Select the boxes to identify X, Y, and Z as a producer, consumer, or decomposer.

X: [▾]
Y: [▾]
Z: [▾]

Part C

Select the **two** numbers that represent arrows in the model to show when matter or energy is moved from the environment to organisms.

☐ 1

☐ 2

☐ 3

☐ 4

☐ 5

Part D

Carbon dioxide and water are missing from this model. If added, where would the arrow be pointing?

Ⓐ from X toward Y

Ⓑ from Y toward Z

Ⓒ from the environment toward X

Ⓓ from the environment toward Z

Students generally did not understand the *Terrarium Cycle of Matter and Energy* diagram in Item 2. One student did not answer any of the parts in Item 2.

Item 2 (Part A)

Scores

Only three students earned full credit (3 score points) on Part A, which required selecting correct labels for X, Y, and Z. Ten other students earned 1 score point. Two of the three students who earned full credit were from Utah.

Comprehension

Six students said Part A was confusing. They appeared not to understand the conventions of the diagram and possibly also did not understand the concept of matter and energy cycle.

> For example, one student said, "I don't get this question . . . I think it's missing something—the soil, the water, and insects that give it nutrients or something." The student attempted to click the diagram, thinking it might be interactive. She then moved on to Part A, read it aloud, and said, "I think for number 1 it's sun, then X is going to be *water*, and then this is going to be *insects*, and then this is going to be *plants*." After checking X for *Water*, the student also checked X for *Insects* and X for *Plants*. She then realized that she had overwritten her response to X twice and went back to check X for *Water*, Y for *Insects*, and Z for *Plants*.

Only one of the Utah students thought this sub-item was confusing; the remaining five Utah students did not express confusion or appear to guess at the interpretation of the diagram.

Item 2 (Part B)

Scores

Eight students earned credit (1 score point) in Part B by correctly identifying X, Y, and Z as a producer, consumer, or decomposer. Seven other students identified one of the components correctly.

Comprehension

Only one student expressed confusion on Part B, and this appeared to relate more to confusion over the producer, consumer, and decomposer roles than to the wording of the item. The student said:

> "What was confusing on this was B, because I forgot which one was that, so I was looking, and I thought about what was a producer, and I remembered that [it] was something that helps it grow. And X was the soil and bacteria, so X would have been the producer. The consumer got me confused because I didn't remember learning about the consumer. So, I was thinking it probably was the plants since I knew the decomposer was the one who would help the things decompose into the ground, and that was probably the insects. So, I knew that Y was the consumer."

REASONING

The reasoning of students who received credit for Part B indicated that they did know the facts of the natter and energy cycle, whether or not they understood the letters in the response choices as referencing the diagram.

> For example, one student said, "X is a *producer*, Y is a *consumer*, and Z has to be *decomposer* . . . X is producer because sunlight goes to the plants, and then the plants produce food for themselves and others, Y is consumer because the consumer eats the producer, and Z is decomposer, because after the consumer dies, the decomposer decomposes it and turns it into soil."

<u>Item 2 (Part C)</u>

SCORES

Only one (Utah) student earned credit (1 score point) on Part C, which required that students select both the arrows in the model that showed where matter or energy is moved from the environment to organisms. Nine other students correctly selected the arrow from the sun to X, but not the arrow from Z to X.

COMPREHENSION

The vocabulary used in this sub-item, particularly "environment," "organism," and "matter," was unfamiliar to several of the students.

> For example, one student did not understand the term "matter." The student said he was confused by "questions that had things to do with 'matter' because I know what matter is, but we started learning in science class, and I haven't fully gotten the sense of matter yet."

Confusion may also have arisen from the way in which the term "environment" is used, namely, to refer to the inanimate environment only.

REASONING

Most students tried to reason their way to a solution, but their content knowledge was too limited to allow them to identify both correct arrows. For example:

> One student said, "I'm going to say one of my answers is '1' because of light energy maybe is being moved from the environment, from the sun – I'm pretty sure that's part of the environment, and I'm pretty sure a plant is an organism. And for my second number I'm trying to think about what I can say . . . because the plant has matter, I'm pretty sure, or everything has matter. And a plant is an organism, and it says matter or energy, and the matter is being given or moved from the plant to the insect."

> Another student said, "I chose 2 and 3 since those are the necessary parts since the soil went in a circle to the soil. From the soil to the plants and from the plant to the insect. Since I thought that was the most important part. If it was 4 and 2, it would just be the

same thing, but I thought 2 and 3 would be better and make more sense since the insect would be going to the soil and then the soil would make the plants and that wouldn’t really make sense.” The interviewer asks the student, “What do you think the question is asking?” The student said, “It is showing that energy is moved from the environment to the organisms and I chose those since the matter in the sun is giving the soil energy to make the plants grow and that would keep going around. The plants would be decomposed or eaten by the bugs.”

Item 2 (Part D)

Scores

Only three students earned credit (1 score point) on Part D, which asked where the arrow would be pointed if carbon dioxide and water were added to the model. Interestingly, eight students incorrectly indicated that the arrow would point from X toward Y.

Comprehension

Several students simply lacked the content knowledge to answer this question.

> For example, one student said, "because I had to find from X toward Y – I had to know that the insects carried the carbon dioxide to the plants, but then also carry it to the soil."

Item 3

Item 3 of the Terrarium Matter Cycle cluster is shown in Figure 31.

Figure 32. Item 3: Terrarium Matter Cycle

Complete the table to identify your expected observations of the plants in a terrarium with only water, soil, and plants.

Day	Plants
1	
5	
10	
15	

Scores

Seven students earned credit (1 score point) on this item.

Comprehension

No issues with comprehension of the item were noted.

Reasoning

Some students applied the information provided in the experiment to help them answer this question, although not all students were able to interpret the information from the experiment correctly.

> An example of using the experimental information correctly was a student who said, "This question is asking me to see how the plants, what I would observe if the plants were in a terrarium with water, soil, and plants. Plants would be plants, and soil would be soil, and

water would be something to keep the plants alive. So, day 1 they would probably be alive. After 5 days, as long as plants are supplied by water and sun, they'd be alive. On day 10, they'd probably still be alive because of the ecosystem in the terrarium. On day 15, they could really be either, but I think that this question wants you to say, if they have everything they need, they'd be alive." After completing the cluster, when the interviewer asked the student if he used any information from the left side of the screen, the student said, "I used a lot of information from the left side of the screen because in terrarium 4 they stayed alive for 15 whole days, and just having soil, plants and water was not on that chart, but I bet they had it. I thought, since they stayed alive on that one, they'd stay alive in this one."

Another student used the data from the terrarium experiment but without seeming to comprehend how to interpret the data. He said, "What I found confusing was on [day] 5 that [the terraria] were tied, and that 2 of them were alive and 2 of them were not alive. So that made it really confusing since I didn't know which one to choose."

At least 10 students, however, including some of those who earned credit, used only their prior content knowledge and/or personal experience to respond.

For example, one student said, "Day 1: *alive*. I think I'll put *alive*. My plants have been alive for 2 weeks." She clicked *Alive* for days 1, 5, and 10. "*Alive*. I don't know if they're going to be alive so I'm going to try *Not Alive* (clicked *Not Alive* for day 15), I don't know. I've had tomatoes that lasted like months and months."

3.3 DETAILED DISCUSSION BY CLUSTER: MIDDLE SCHOOL

3.3.1 Cluster 1: Galilean Moons

Performance Summary

The median time to complete the Galilean Moons cluster was 10 minutes. Table 21 and Table 22 indicate the number of students attaining cluster total scores and item scores within the specified ranges, respectively.

Table 21. Number of Students Attaining Cluster Total Scores in Specified Range: Galilean Moons

Score 9–7	Score 6–4	Score 3–1	Score 0
5	4	3	0

Note. Maximum score = 9; *n* = 12.

Table 22. Number of Students Attaining Item Scores in Specified Range, by Item: Galilean Moons

	Maximum Item Score	Score 4–3	Score 2–1	Score 0
Item 1	4	7	1	4
Item 2	4	7	4	1

	Maximum Item Score	Score 1	Score 0
Item 3	1	3	9

Note. n = 12.

Task Demands

The following are task demands of the Galilean Moons cluster:

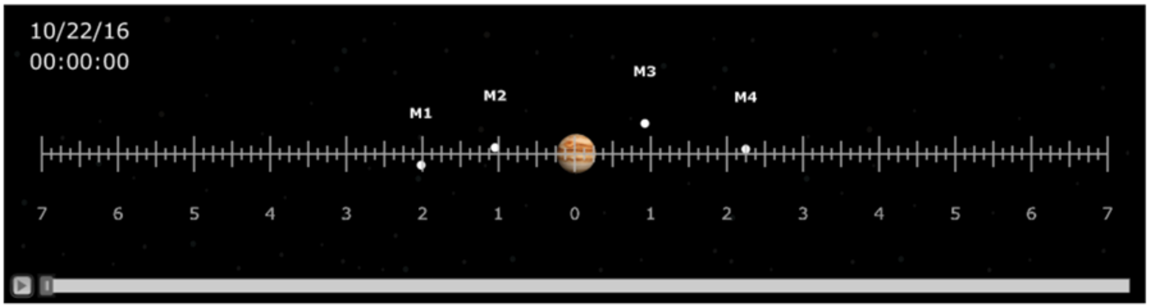
- Make simple calculations using given data to estimate the properties (e.g., mass, surface temperature, diameter) and locations of different solar system objects relative to a given reference point/object (Item 1).
- Calculate or estimate or identify properties of objects or relationships among objects in the solar system, based on data from one or more sources (Item 2).
- Given a partial model of objects in the solar system, identify objects or relationships that can be represented in the model or the reasons why they cannot be represented in the model (Item 3).

Stimulus

The stimulus for the Galilean Moons cluster is shown in Figure 33.

Figure 34. Stimulus: Galilean Moons

Four of Jupiter's closest moons can be seen orbiting the planet by using a low-powered telescope. A ruler on the lens of the telescope is used to take measurements. The animation shows the movements of the moons and Jupiter over the course of several days. Click on the small gray arrow at the bottom left of the picture to begin the animation.



The table shows data on each of the moons.

Data on Galilean Moons

	Diameter (km)	Mean Distance from Jupiter (km)	Orbital Period (days)
Callisto	4,800	2,000,000	16.7
Europa	3,318	700,000	3.5
Ganymede	5,262	1,000,000	7.2
Io	3,630	400,000	1.8

Details by Item

Item 1

Item 1 of the Galilean Moons cluster is shown in Figure 35.

Figure 36. Item 1: Galilean Moons

Use the measuring tool on the animation to determine each moon's maximum distance from Jupiter.

Complete the table by entering the measurements to the closest 0.25 mark.

	Maximum Distance from Jupiter in Animation
M1	
M2	
M3	
M4	

Scores

This item was relatively easy for students; six students earned 4 score points (full credit), and one other student earned 3 score points. However, four students earned no credit (including one student who skipped over the item without attempting to answer it).

Eight of the 12 students seemed comfortable manipulating the simulation and re-watched, with appropriate pauses, to figure out each moon's distances from Jupiter. Some also re-watched the simulation while responding to Item 2.

One student neglected to watch the simulation at all.

Comprehension

Although, the introduction to the stimulus states that "A ruler on the lens of the telescope is used to take measurements," five students did not understand the measuring tool, or the units used on the tool.

> One of these students used the mean distance from Jupiter in kilometers from the *Data on Galilean Moons* table for her responses to the item. The student said that the instructions suggested using a measuring tool, but she did not see a measuring tool.
>
> Another student said, "I thought the numbers [going across the lens on the animation] were extremely confusing. I think that if they're trying to take it to orbital days, then they have to make the length longer, but if it takes 16.7 days—well that's orbit. I don't know, it's just super confusing. They should say that the numbers represent the length of time or the number of days."

At least two students were confused by the instructions "to the closest 0.25 mark."

Reasoning

The seven students who earned three or 4 score points all showed evidence in the think-aloud of using the animation in the manner intended to formulate their response.

> For example, one student said that she was going to follow one moon at a time "because I can't follow all of them at the same time." As she watched the animation a second time, she noted where each of the moons was, narrating aloud, "M2 is around the 1.5 mark. M4 is around the 2.5 mark." She then paused the video, studied the text of Item 1, and began entering the data. When she reached the response field for M3, she said, "I'll just leave it at 7, because it went a little past 7 but not too far."

Item 2

Item 2 of the Galilean Moons cluster is shown in Figure 37.

Figure 38. Item 2: Galilean Moons

Select the boxes to identify each moon by name.

	Callisto	Eurpoa	Ganymede	Io
M1	☐	☐	☐	☐
M2	☐	☐	☐	☐
M3	☐	☐	☐	☐
M4	☐	☐	☐	☐

SCORES

This item was also relatively easy for students; seven students received full credit (4 score points), and only one student received no credit.

COMPREHENSION

No features of this item appeared to confuse students.

REASONING

Nearly all the students reasoned their way to a solution using the stimulus materials as intended.

> For example, one student stated she was going to look for the mean distance from Jupiter [on the *Data on Galilean Moons* table] and use what she got from the previous question—the maximum distance for each moon. The student selected M3 for Callisto "because it is the farthest away and has the largest mean distance." She noted that Europa has the third "biggest" mean and, looking for the third largest maximum distance, deduced that M4 must be Europa. Seeing that Ganymede has the second largest mean distance, the student selected M1. The last moon left (Io) was identified by default as M2.

Item 3

Item 3 of the Galilean Moons cluster is shown in Figure 39.

Figure 40. Item 3: Galilean Moons

Compare the measurements you took to the distances in the Data on Galilean Moons table. Then, select the statement that is true.

Ⓐ The measurements you took are proportional to the data in the table.

Ⓑ The measurements you took are not proportional to the data in the table because the table is wrong.

Ⓒ There is not enough information to tell whether the measurements you took are proportional to the data in the table.

Ⓓ The data you measured is not proportional to the data in the table because your measurement instrument is imprecise at that distance.

SCORES

This item was much more challenging than the other items in the cluster, and only three students selected the correct response that the data the student measured are not proportional to the data in the table due to the differences in measurement accuracy.

The nine students who did not earn credit for this item were fairly evenly distributed across the distractors (four students chose C, three chose A, and two chose B), suggesting that they really were at a loss to understand how to explain the differences between their measurements and the data in the table.

COMPREHENSION

Two students said that they did not know the meaning of “proportional,” and, based on the item responses, it’s likely that a number of others did not fully understand the concept of proportional.

Although not mentioned, students may also not have understood what it meant that “your measurement instrument is imprecise.”

REASONING

Even students who selected the right answer, may not have done so with full comprehension.

> For example, one student read through all the answers, then started eliminating answers. First, she eliminated A and B, then decided the answer was D because the ruler measured the distance in the animation, but the table gave the distances in kilometers.

3.3.2 Cluster 3: Hippos

Performance Summary

The median time to complete the Hippos cluster was 10 minutes. Table 23 and Table 24 indicate the number of students attaining cluster total scores and item scores within the specified ranges, respectively.

Table 23. Number of Students Attaining Cluster Total Scores in Specified Range: Hippos

Score 10–7	Score 6–4	Score 3–1	Score 0
2	5	3	0

Note. Maximum score = 10; *n* = 10; two students ran out of time before completing this cluster.

Table 24. Number of Students Attaining Item Scores in the Specified Range, by Item: Hippos

	Maximum Item Score	Score 4–3	Score 2–1	Score 0
Item 1	4	1	9	0
Item 5	3	1	4	5

	Maximum Item Score	Score 1	Score 0
Item 2	1	5	5
Item 3	1	7	3
Item 4	1	3	7

Note. n = 10; two students ran out of time before completing this cluster.

Task Demands

The following are task demands of the Hippos cluster:

- Articulate, describe, illustrate, or select the relationships or interactions to be explained. This may entail sorting relevant from irrelevant information or features (Item 1).
- Express or complete a causal chain common or distinct across organisms or environments. This may include indicating directions of causality in an incomplete model such as a flow chart or diagram or completing cause and effect chains (Item 2).
- Express or complete a causal chain common or distinct across organisms or environments. This may include indicating directions of causality in an incomplete model such as a flow chart or diagram or completing cause and effect chains (Item 3).
- Articulate, describe, illustrate, or select the relationships or interactions to be explained. This may entail sorting relevant from irrelevant information or features (Item 4).

- Use an explanation to predict interactions among different organisms or in different environments (Item 5).

Stimulus

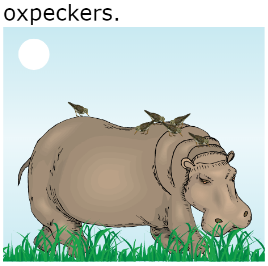
The stimulus for the Hippos cluster is shown in Figure 41.

Figure 42. Stimulus: Hippos

In Africa, a variety of organisms coexist with others in distinct ecosystems. For example, hippopotamuses spend time in both aquatic and savannah ecosystems.

When found in aquatic environments, hippopotamuses are often surrounded by carp.

When found in a savannah environment, hippopotamuses are often surrounded by birds called oxpeckers.

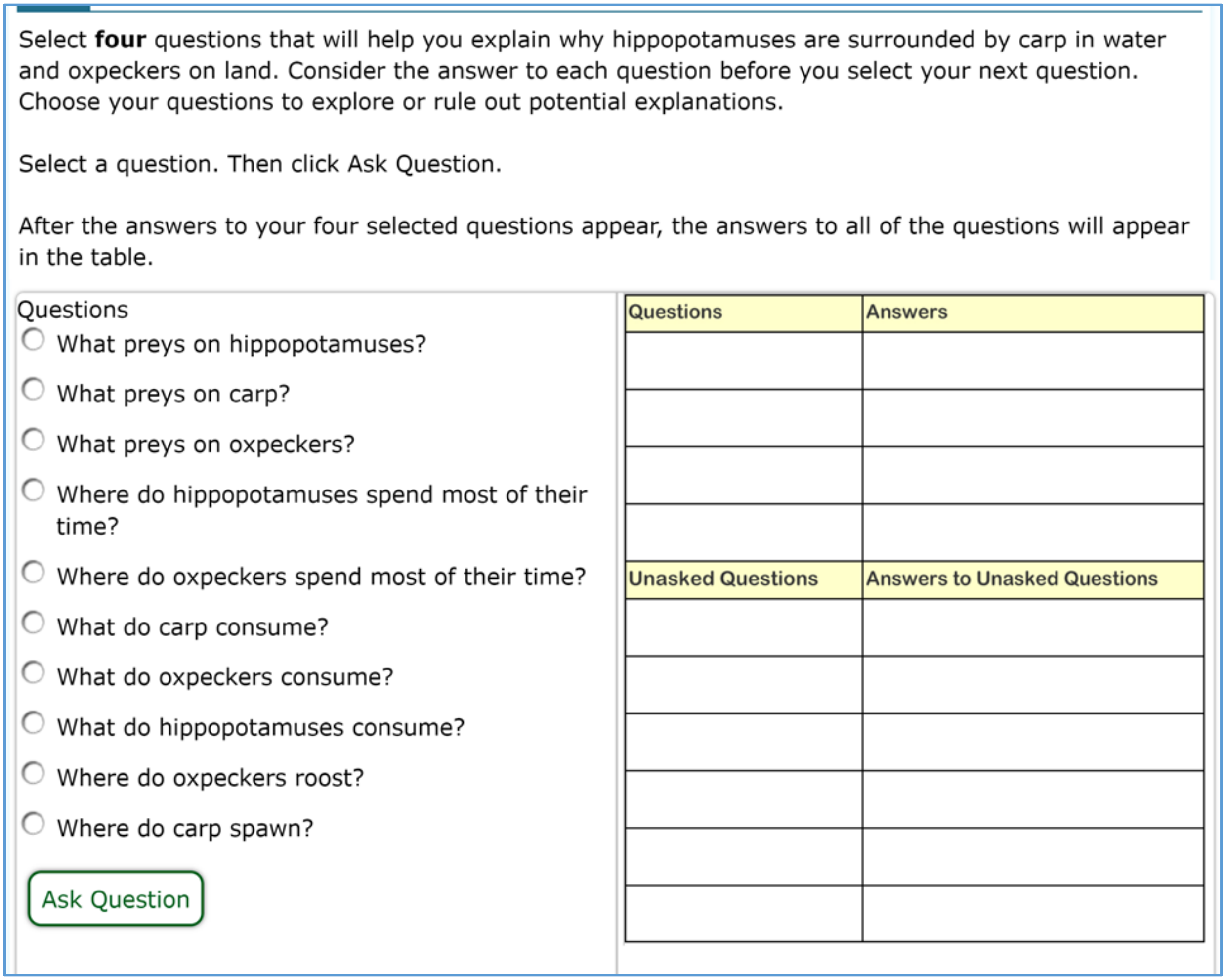


Details by Item

Item 1

Item 1 of the Hippos cluster is shown in Figure 43.

Figure 44. Item 1: Hippos



Scores

Every student earned some credit on this item:

- One student earned 4 points (full credit).
- Three students earned 3 points.
- Six students earned 2 points.
- One student earned 1 point.

COMPREHENSION

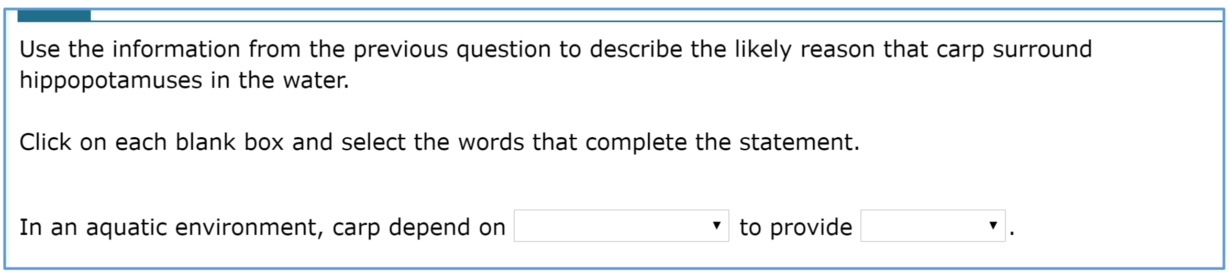
As evidenced from their reasoning in the think-alouds, students understood that they were to choose questions they thought would be helpful to explain the relationships between hippos and oxpeckers or carp, although, as can be seen from the score distribution, they did not necessarily know what those questions would be. Two students, however, commented on the fact that being asked to choose questions seemed like a waste of time in light of the fact that answers eventually were populated for all the questions.

Three students did not initially understand that they had to click “Ask Question” and could only ask one question at a time; one student initially thought that she had to type the text of the question rather than select from the list.

Item 2

Item 2 of the Hippos cluster is shown in Figure 45.

Figure 46. Item 2: Hippos


Use the information from the previous question to describe the likely reason that carp surround hippopotamuses in the water.

Click on each blank box and select the words that complete the statement.

In an aquatic environment, carp depend on ______ to provide ______.

SCORES

Half of the students (five) received credit for this item.

COMPREHENSION

Students found this item easy to comprehend, and they had sufficient knowledge of transactional relationships among animals to understand the concept behind the item.

Score variance on this item (and the next) came from the “to provide” response; students found it obvious that the response for the first drop-down box should be Hippopotamuses.

REASONING

Most students reasoned appropriately from the information in Item 1 to determine their response.

> For example, one student said, “In an aquatic environment, carp depend on . . . so why would a carp depend on the hippopotamus? [Referring back to question 1:] So what preys on hippos? I don’t need that. Where do they spend their time? I don’t need that. Where do oxpeckers spend most of their time? On the bodies of host mammals. What do hippos consume? Grass and plants. Where do oxpeckers roost? On the bodies of host mammals.

> Oh, so I believe that in the aquatic environment, carp depend on hippos to provide . . . food . . . Because they eat fleas, dead skin, parasites, and mucous."

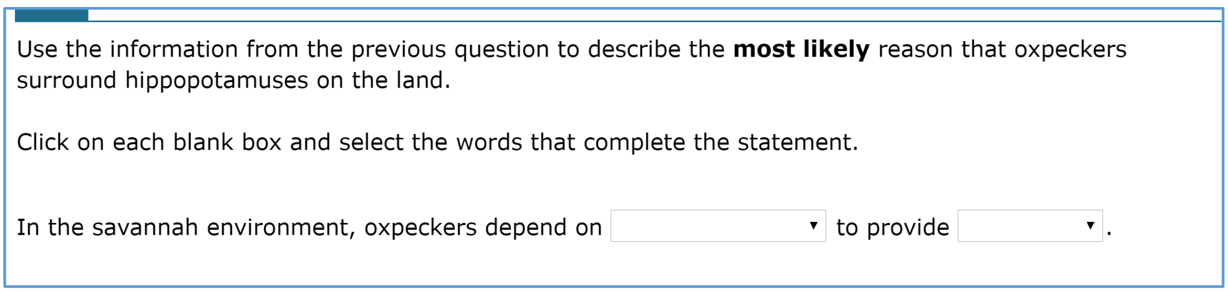
Those who did not respond correctly simply made wrong inferences from the data—some of which were wrong but plausible.

> For example, one student explained why he selected protection by saying, "hippopotamuses are a much bigger animal than the fish and could provide protection from the crocodile." The student noted that, in Item 1, one of the answers indicated that crocodiles, snakes and larger fish prey on carp.

Item 3

Item 3 of the Hippos cluster is shown in Figure 47.

Figure 48. Item 3: Hippos


Use the information from the previous question to describe the **most likely** reason that oxpeckers surround hippopotamuses on the land.

Click on each blank box and select the words that complete the statement.

In the savannah environment, oxpeckers depend on ▾ to provide ▾ .

Scores

Seven students received credit for this item.

Comprehension

This item is very similar to Item 2, and the same observations about comprehension apply.

Reasoning

This item is very similar to Item 2, and the same observations about reasoning apply.

Item 4

Item 4 of the Hippos cluster is shown in Figure 49.

Figure 50. Item 4: Hippos

Select the boxes to identify which organisms are paired with the hippopotamus in the described relationships.

	Oxpecker	Carp	Neither
Predatory relationship	☐	☐	☐
Competitive relationship	☐	☐	☐
Mutually beneficial relationship	☐	☐	☐

Scores

Three students earned credit on this item, which required that all three answers about organisms in relationships with hippos be correct. The fewest students (two) correctly identified the answer for *Competitive relationship*.

Comprehension

Although students generally understood the concept of transactional relationship among animals, some lacked prior knowledge of the terms used in the item.

> For example, one student said that "mutually beneficial" was the only relationship mentioned in the sample lesson. He did not know if the predatory and competitive relationships were "interchangeable or how it worked."

Item 5

Item 5 of the Hippos cluster is shown in Figure 51.

Figure 52. Item 5: Hippos

Given this information, what is a reasonable hypothesis about why carp and oxpeckers cluster around hippopotamuses, why the hippopotamus allows this behavior, and why these patterns of behavior are similar.

Type your answer in the space provided.

Scores

One student earned full credit (3 score points) by providing correct hypotheses for each of the three questions posed in the item stem.

Four other students provided a correct hypothesis for at least one of the questions.

Comprehension

There were no comprehension issues with this item.

Reasoning

Some students failed to address the task of formulating hypotheses altogether. Others made appropriate use of the information gathered from the previous items in formulating their responses, but, given that their understanding of the previous items was not necessarily correct, these misunderstandings could carry over into this item.

3.3.3 Cluster 3: Morning Fog

Performance Summary

The median time to complete the Morning Fog cluster was 12 minutes. Table 25 and Table 26 indicate the number of students attaining cluster total scores and item scores within the specified ranges, respectively.

Table 25. Number of Students Attaining Cluster Total Scores in Specified Range: Morning Fog

Score 9–7	Score 6–4	Score 3–1	Score 0
2	3	7	0

Note. Maximum score = 9; *n* = 12.

Table 26. Number of Students Attaining Item Scores in Specified Range, by Item: Morning Fog

	Maximum Item Score	Score 7–6	Score 5–3	Score 2–1	Score 0
Item 1 (Parts A–C)	7	0	10	2	0

	Maximum Item Score	Score 2	Score 1	Score 0
Item 1 (Part D)	2	3	0	9

Note. n = 12.

Task Demands

The following are task demands of the Morning Fog cluster:

- Select or identify from a collection of potential model components including distractors, the components needed to model the model of evaporation, condensation, transpiration, precipitation, or other behaviors of water molecules during the water cycle.
- Assemble or complete, from a collection of potential model components, an illustration or flow chart that represents the phenomenon. This does not include labeling an existing diagram.
- Given models or diagrams of the phenomenon, identify the parts of the model and how they change in each scenario OR identify the properties of the model that cause the change.

Stimulus

The stimulus for the Morning Fog cluster is shown in Figure 53.

Figure 54. Stimulus: Morning Fog

Morning Fog in a Valley

Fog appears and disappears over the course of the morning in the Willamette Valley in Oregon. The animation shows the appearance and disappearance of fog in the valley during a 24-hour day. The sun rises at 6 AM and later sets at 6 PM.

Details by Item

Item 1

Item 1 of the Morning Fog cluster is shown in Figure 55.

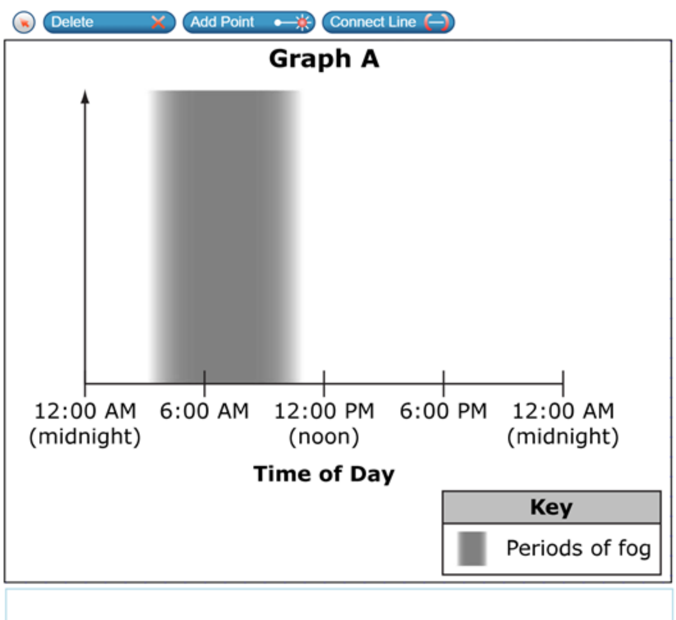
Figure 56. Item 1: Morning Fog

In the three blank graphs below, draw three line graphs illustrating three different factors that change over the course of the day to cause the fog to appear and disappear. The horizontal axis on each graph represents the 24-hour day shown in the animation.

For each graph, select the explanatory factor that you would like to graph on the vertical axis. Then, use the Connect Line tool to draw a line graph showing the pattern of change over time for the selected factor. Your line segments must be connected and form a continuous graph to receive credit.

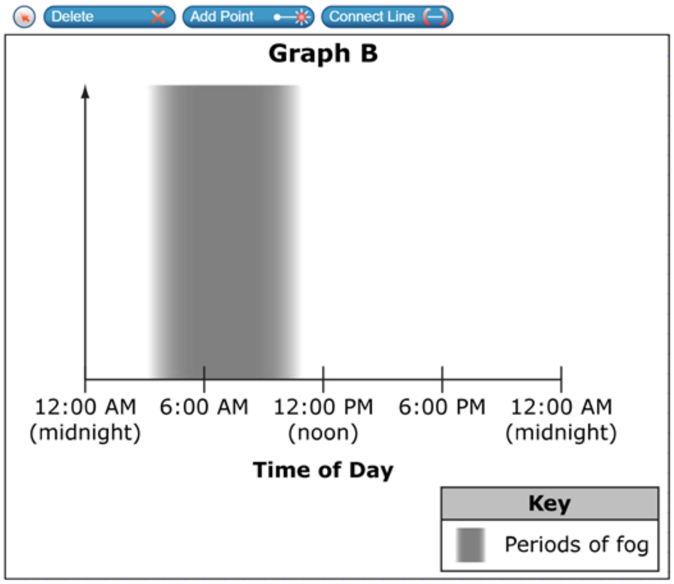
Part A

Graph A Vertical Axis Explanatory Factor:



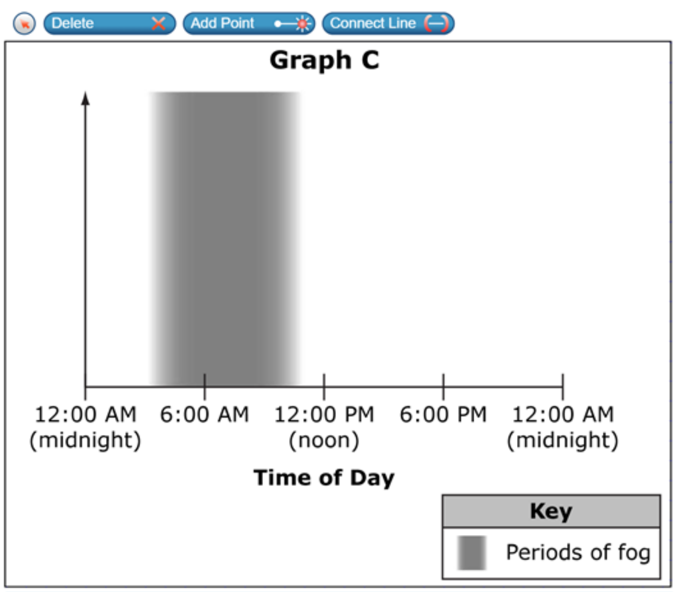
Part B

Graph B Vertical Axis Explanatory Factor: [▾]



Part C

Graph C Vertical Axis Explanatory Factor: [▾]



Part D

The process described in [▾] causes the process described in [▾], which causes the process described in [▾].

Item 1 (Parts A–C)

SCORES

Parts A–C were scored as a unit.

Students could earn up to 6 points for correctly drawing three-line graphs showing how weather factors affecting fog formation changed over the course of the day; they could earn up to 3 points for correctly identifying the explanatory factor associated with each of the processes they chose to graph.

Half of the students (six) earned some credit for their graphs, but none earned full credit.

- Six earned points for graphing a decrease in the evening in one or more of the following: sunlight intensity, temperature, and/or proportion of water in the air
- Six earned points for graphing sunlight intensity, showing both an increase in the morning and a decrease in the evening.

No one earned points for graphing either the proportion of water in the air declining as the fog forms and increasing as the fog dissipates, or the temperature decreasing when the fog begins to form and rising when the fog dissipates.

Four students did not earn any credits for their graphs, and their graphs did not resemble the correct answers: they included horizontal lines, a single line that ascended, and dots with no connecting line.

All but two of the students earned at least two out of the three possible score points for the explanatory factors. The numbers of students earning points for correctly identifying each explanatory factor were as follows:

- Sunlight intensity (nine students)
- Air temperature (eight students)
- Proportion of water in the air in gas form (nine students)

COMPREHENSION

Eight students were confused about how to draw the line graphs, including four who did not understand that they had to define the value of the y-axis. The following are examples of think-alouds from students who were confused by the graphs:

- "I have no idea. I don't understand this graph. It's confusing. Since there's nothing on the left, the vertical. (referring to the y-axis). The three factors that can change, I have no idea what they mean by that. I feel like they're not giving enough information for me to understand. I'm so confused. The three different factors are what—the nighttime? What's the difference between the graphs? Wouldn't they all be the same? Oh, three different factors." (The student apparently didn't see the explanatory factor drop-down menu until this point.)

- The student re-read the part of the question that discusses "showing the pattern of change over time for the selected factor" and commented, "yeah, that really doesn't make sense, how they want me to connect the line. If I saw this on a test, I would just freak out because I wouldn't know how I was supposed to draw a line graph to represent this."
- "How do you represent how much fog? I'm guessing"—the student clicked to create some points—"I'm guessing it'd be something like that." The student clicked around some more and then connected the points. "I guess that's what I'm gonna say, because this really doesn't make sense how they want you to draw a graph. If anything, they should have increments and a chart of how high the fog rises or how much of whatever is in the air."

Six students were initially unclear about how to use the pull-down menu of explanatory factors, but mostly figured out how to use them.

Two students had a somewhat better understanding of Parts A–C after they read Part D and went back and changed some of their answers in Parts A–C.

> For example, after reading Part D, one student realized that each graph was meant to represent a different factor. When asked, the student said that he misunderstood the question and picked the same factor for all three graphs at first because he didn't know what was meant by the term "explanatory factor," and thought the question was just asking about the fog.

REASONING

Half of the students (six) re-watched the animation while drawing the line graphs.

An example of correct reasoning from the animation comes from the student who earned the most score points on parts A–C (7 points). She indicated that she chose Proportion of Water in the Air for her first graph because it was "the one that related to the fog the most." When asked to explain more about her graph, the student said she looked at the animation "to see the intensity of the fog and when it decreased" and that's why she made the graph increasing then decreasing. "First increasing from 3 to 6 [A.M.], then decreasing from 6 to 8."

Item 1 (Part D)

SCORES

Only three students earned the two possible core points by correctly responding that variations in sunlight intensity affect air temperature, which, in turn, affects the proportion of water in the air in gas form (water cycle).

COMPREHENSION

Since most students were confused by Parts A–C, they also had trouble understanding what they were being asking to do in Part D.

3.3.4 Cluster 4: Texas Weather

Performance Summary

The median time to complete the Texas Weather cluster was 14 minutes. Table 27 and Table 28 indicate the number of students attaining cluster total scores and items scores within the specified ranges, respectively.

Table 27. Number of Students Attaining Cluster Total Scores in Specified Range: Texas Weather

Score 11–7	Score 6–4	Score 3–1	Score 0
0	4	8	0

Note. Maximum score = 11; *n* = 12.

Table 28. Number of Students Attaining Item Scores in Specified Range, by Item: Texas Weather

	Maximum Item Score	Score 8–7	Score 6–4	Score 3–1	Score 0
Item 1 (Part A)	8	0	2	8	2

	Maximum Item Score	Score 1	Score 0
Item 1 (Part B)	1	1	11
Item 2	1	4	6
Item 3	1	6	3

Note. n= 12 for Item 1, Parts A and B; 11 for Item 2, and 10 for Item 3. One student did not scroll down to Items 2 and 3, and one student gave up and refused to attempt Item 3.

Task Demands

The following are task demands of the Texas Weather cluster:

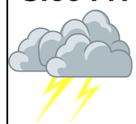
- Describe, illustrate, or select tools, locations, and/or methods to use in investigations of phenomena related to interactions of air masses. This should show how or where measurements will be taken (Item 1).
- Identify, select, or describe the relevance of particular data or sources relevant to the process of weather forecasting (Item 1).
- Predict the effects of given changes in the air masses' interactions on subsequent weather (Item 2).
- Predict the effects of given changes in the air masses' interactions on subsequent weather (Item 3).

Stimulus

The stimulus for the Texas Weather cluster is shown in Figure 57.

Figure 58. Stimulus: Texas Weather

The weather in Austin turned cold and wet around 3:00 p.m. yesterday. Following is the hour-by-hour weather report for Austin.

	Noon 	**1:00 PM**	**2:00 PM**	**3:00 PM** 	**4:00 PM** 	**5:00 PM** 
Temperature	80° F	75° F	70° F	68° F	66° F	65° F
Chance of rain	0%	30%	50%	95%	100%	100%
Humidity	80%	85%	88%	92%	95%	96%
Wind	SE 9 MPH	SE 10 MPH	SE 9 MPH	NW 12 MPH	NW 13 MPH	NW 12 MPH
Pressure	32.0 inHG	30.3 inHG	29.9 inHG	29.0 inHG	28.7 inHG	28.5 inHG

As you work through the following questions, you will gather the information needed to explain the cause of this weather pattern.

Details by Item

Item 1

Item 1 of the Texas Weather cluster is shown in Figure 30.

Figure 59. Item 1: Texas Weather

Part A

The following question has two parts. First, answer part A. Then, answer part B.

Use the simulator to take measurements that will help you determine what caused Austin's afternoon weather.

You will be scored on your selections, so be sure to:
- specify what you are looking for,
- use the appropriate tools to look for them,
- keep taking measurements until you know what caused the weather, and
- stop taking measurements when you have all the information you need.

You may take a maximum of 8 measurements.

Checking for a(n) Air Mass

Location 1

Time of day 3pm

Tool 1 Thermometer

Tool 2 Barometer

Take Measurement

Measurement Number	Location	Checking For	Time of Day	Temperature	Wind Speed	Wind Direction	Pressure

Part B

From the measurements that you have taken, indicate up to two measurements (by "Measurement Number" from the result table in the simulation) that provide sufficient evidence for the claim in the first column. Be sure to select "None" if the measurements do not provide sufficient evidence of a claim.

	1	2	3	4	5	6	7	8	None
A low pressure air mass moved west towards Austin.	☐	☐	☐	☐	☐	☐	☐	☐	☐
A high pressure front moved south towards Austin.	☐	☐	☐	☐	☐	☐	☐	☐	☐
A cold front moved north towards Austin.	☐	☐	☐	☐	☐	☐	☐	☐	☐
Precipitation moved into Austin from the east.	☐	☐	☐	☐	☐	☐	☐	☐	☐

Item 1 (Part A)

SCORES

Part A was extremely difficult for students, and the randomness of earned points across students suggests that none of the students really understood what they were supposed to do with the simulator, either because they didn't have the requisite content knowledge or they were confused by the manner in which the simulator was presented.

Four of the points in the scoring rubric for Part A involve the parameters that the student chooses for trials on the simulator or matching the right tools with the right parameters, but many students failed to change the parameter on successive trials and simply focused on manipulating the tools. Four students used air mass (the default) for all of their measurements, and two students used primarily air mass. Consequently, score points based on choice of parameter or match between parameter and tools may not be meaningful. That said,

- nine students earned 1 score point for selecting air mass as the parameter on at least one trial;
- no students earned a score point for matching the correct tools with air mass;
- no students earned a score point for selecting movement as the parameter; and
- two students earned a score point for matching the correct tools with movement on at least one trial.

The four remaining points for Part A were awarded for measuring the correct factor at the proper locations and/or time and for doing so using the correct tools.

- Three students earned a point for at least one trial checking for movement measured at locations 3, 4, or 5.
- A different student earned a point for at least one trial checking for air mass measured at 1 p.m. at locations 3, 4, or 5.

The criterion statements in this section of the rubric were inconsistent. The criterion on which three students earned a point was the most permissive in that it specified a location, but not a time.

COMPREHENSION

Seven students did not initially understand what actions they were supposed to take to run trials on the simulator. Seven other students were unfamiliar with some of the measuring tools and did not know what they measured. Another student took only one measurement because he did not understand how to take more measurements.

The instructions to "determine what caused Austin's afternoon weather" were too open ended for these students.

- At least three students noted that the answer choices in Part B would have given them an idea of how to tackle the problem if they had read Part B before working with the simulator.
- Two students earned the most credits on Part A (4 score points) by (1) checking for air mass and movement, (2) choosing wind vane and anemometer when checking for movement, and (3) conducting one trial for air mass measured at 1 p.m. at locations 3, 4, and 5. One of these students said she was confused and overwhelmed when probed about this item.
    - "There was no way I could read this and understand it, I'll just look back and forth between [the chart and the table]." The student explained, "I've never been good with weather – it doesn't make sense to me how everything works . . . I didn't understand the table – like how it correlated with what I was putting in [Part A]. I was overwhelmed with eight measurements because it said, 'Do Part A and then Part B,' so I was thinking okay, I should do Part A and then Part B. But then after I did Part B, I realized that I should have looked at Part B first so I would know what eight measurements to take! I didn't know the difference in what would show up on the table if I chose air mass, or movement, or precipitation. I just didn't understand what difference it would make in each choice I had."

Reasoning

The other student who earned 4 score points on the item had a somewhat better understanding of how to use the simulator to find out what caused Austin's afternoon weather.

> In her think-aloud, the student said that she was going to take measurements first at Location 3 because it's most central. She chose 3 p.m. because that's when the weather turned cold and wet in Austin. She then changed the measurement to Location 4 because "it's closest to Austin and what the chart pertains to." Said she would leave the time as 3 p.m. as that's when it was cold and wet. She said she would use the anemometer and the thermometer. She clicked *Take Measurement*. She said she would check for precipitation but didn't see any tools that pertained. She then chose movement at Location 3, using a wind vane and an anemometer, to see if the wind was going in that direction.

Item 1 (Part B)

Scores

Only one student got credit for Part B, and this may have been by chance, given that the student only earned one of the eight possible points on Part A.

Comprehension

At least three students did not realize that the numbers 1 through 8 on Part B were the eight measurements they were allowed to take in Part A, and that they were to pick measurements that showed evidence for the claim in column 1.

Reasoning

Given their performance on Part A, students had little to work with in Part B, even if they understood what they were supposed to do.

> For example, one student said that she had to make her best guess in Part B because "none of my measurements in Part A told me anything because I took all the wrong measurements in Part A. Part B was truly kind of stressful for me."

Item 2

Item 2 of the Texas Weather cluster is shown in Figure 31.

Figure 60. Item 2: Texas Weather

Suppose that it was hot and humid in San Antonio at 3:00 p.m. What does the pattern of weather suggest for precipitation in San Antonio in the evening?

- Ⓐ The pattern is not likely to affect precipitation in San Antonio in the evening.
- Ⓑ The pattern suggests that the chance of rain in San Antonio will stay about the same as it was at 3:00 p.m.
- Ⓒ The pattern suggests that the chance of rain will increase.
- Ⓓ The pattern suggests that the chance of rain will decrease.

Scores

Four of the 10 students who attempted this item earned credit.

Comprehension

Given performance on Item 1, it is unlikely that these students' scores actually reflected mastery of the content being assessed by the item.

Some students understood "pattern of weather" as referring to the hour-by-hour weather report shown in the stimulus, and it's not clear that any of the students realized that the question pertained to a different location than the weather report (or Item 1).

> For example, one student referred to the weather report table and said that the table indicates that the chance of rain will likely increase so he couldn't select decrease (pointing at both option A and option D). The student noted that option B suggests no change, but the table shows a very clear change in the chance of rain, therefore B could not be the answer. The student referred to the table again and said that the chance of rain was increasing, so C was the only possible answer that works.

Item 3

Item 3 of the Texas Weather cluster is shown in Figure 32.

Figure 61. Item 3: Texas Weather

Suppose that it was hot and humid in San Antonio at 3:00 p.m. What does the pattern of weather suggest for the temperature in San Antonio in the evening?

Ⓐ The pattern is not likely to affect temperature in San Antonio in the evening.

Ⓑ The pattern suggests that temperature in San Antonio will stay about the same as it was at 3:00 p.m.

Ⓒ The pattern suggests that the temperature will increase.

Ⓓ The pattern suggests that the temperature will decrease.

Scores

Six of the nine students who attempted this item earned credit.

Comprehension

As with the other items in this cluster, students had, at best, a faulty understanding of this item. Consequently, as with Item 2, a correct response did not indicate mastery of the content being assessed.

> For example, one student said that, as soon as she read "temperature," she went to the weather report table, looked at the temperature at 3 p.m., and saw that the temperature was decreasing over time. The student then went back to the question and read through the options and noted that answer A was about no effect, that B was about staying the same, and C was about the temperature increasing. Since the temperature is decreasing, the student decided that answer D was the only one that matched the data.

3.4 DETAILED DISCUSSION BY CLUSTER: HIGH SCHOOL

3.4.1 Cluster 1: Blood Sugar Regulation

Performance Summary

The median time to complete the Blood Sugar Regulation cluster was 19 minutes. Table 29 and Table 30 indicate the number of students attaining cluster total scores and item scores within the specified ranges, respectively.

Table 29. Number of Students Attaining Cluster Total Scores in Specified Range: Blood Sugar Regulation

Score 7–6	Score 5–3	Score 2–1	Score 0
0	9	3	1

Note. Maximum score = 7; *n* = 13; two students ran out of time before completing this cluster.

Table 30. Number of Students Attaining Item Scores in Specified Range, by Item: Blood Sugar Regulation

	Maximum Item Score	Score 3	Score 2–1	Score 0
Item 1	3	8	4	1
Item 2	3	0	3	11

	Maximum Item Score	Score 2	Score 1	Score 0
Item 3	2	3	7	3

Note. n = 13; two students ran out of time before completing this cluster.

Task Demands

The following are task demands of the Blood Sugar Regulation cluster:

- Identify the outcome data that should be collected in an investigation to provide evidence that feedback mechanisms maintain homeostasis. This could include measurements and/or identifications of changes in the external environment, the response of the living system, stabilization/destabilization of the system's internal conditions, and/or the amount of systems for which data is collected.
- Make and/or record observations about the external factors affecting systems interacting to maintain homeostasis, responses of living systems to external conditions, and/or stabilization/destabilization of the system's internal conditions.

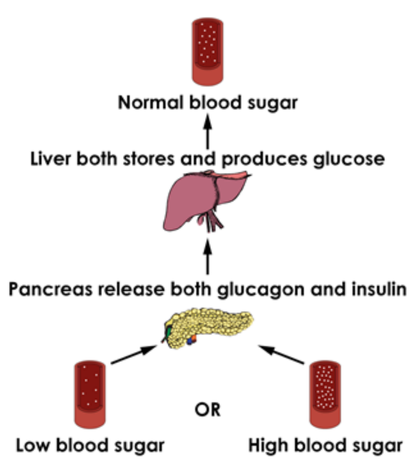
- Identify or describe the relationships, interactions, and/or processes that contribute to and/or participate in the feedback mechanisms maintaining homeostasis that lead to the observed data.
- Using the collected data, express or complete a causal chain explaining how the components of (a) mechanism(s) interact in response to a disturbance in equilibrium in order to maintain homeostasis. This may include indicating directions of causality in an incomplete model such as a flow chart or diagram or completing cause and effect chains.
- Evaluate the sufficiency and limitations of data collected to explain the cause and effect mechanism(s) maintaining homeostasis.

Stimulus

The stimulus for the Blood Sugar Regulation *cluster is shown in Figure 62. Figure 63. Stimulus: Blood Sugar Regulation*

A hungry person eats a meal. Soon after the meal is completed, the person's blood sugar is elevated. After a while, the blood sugar levels return to their pre-meal levels.

Hunger is one of the body's symptoms of abnormal blood glucose levels, or blood sugar. Hunger alerts the body to eat, which almost immediately increases blood sugar. Both the pancreas and liver work together to maintain blood sugar concentrations in the range of 80-120 miligrams per deciliter (mg/dL). The pancreas helps regulate blood sugar by producing two types of hormones: glucagon and insulin. The normal range for blood glucagon levels is 60-200 picograms per mililiter (pg/mL) and the normal range for blood insulin levels is 65-200 picomole per liter (pmol/L). The liver both converts glucagon into glucose and stores glucose. The flowchart shows how the pancreas and liver participate in feedback mechanisms to help regulate blood sugar.



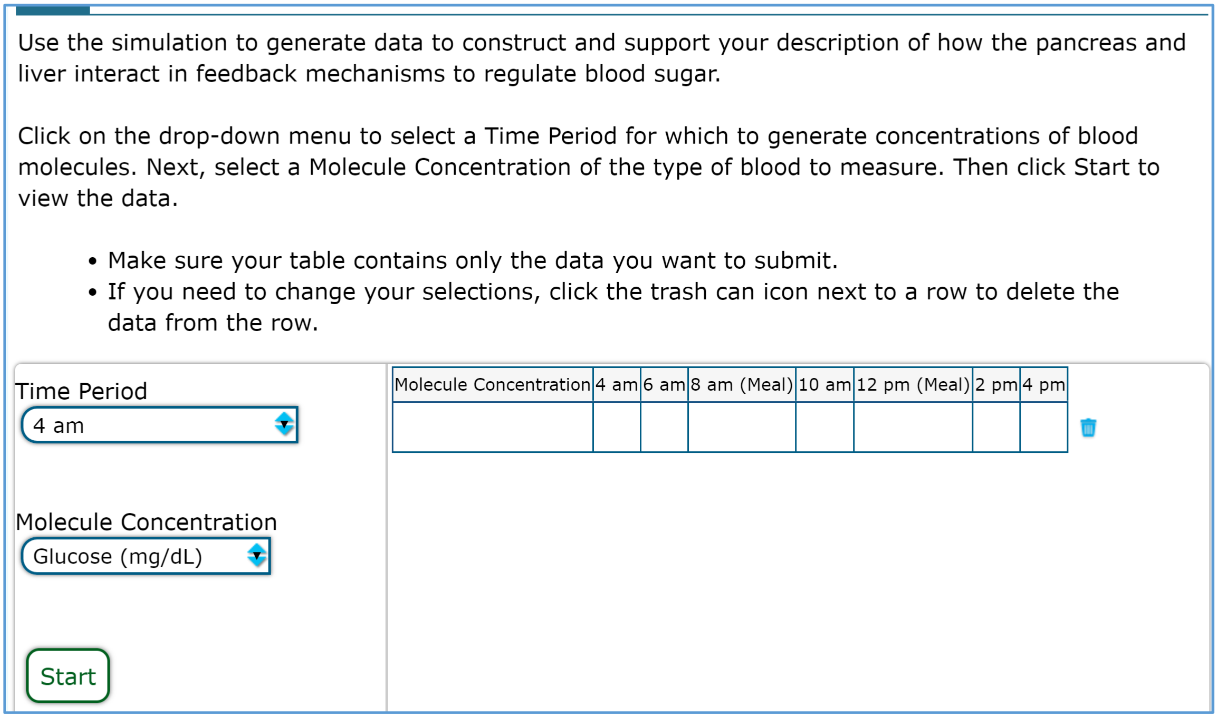
In the questions that follow, investigate and describe how the molecules produced and stored by the pancreas and liver interact in feedback mechanisms to regulate blood sugar.

Details by Item

Item 1

Item 1 of the Blood Sugar Regulation cluster is shown in Figure 64.

Figure 65. Item 1: Blood Sugar Regulation



Scores

Student scores on this item are as follows:

- Eight students earned 3 score points (full credit).
- Three students earned 2 score points.
- Two students earned 1 score point.

Comprehension

Seven students expressed some confusion in figuring out how to generate data in the simulation. For example, one student was confused by the layout of the item and by the term "simulation" because she was not sure whether she should test all the options or provide her own answer. At this point she skipped ahead to look at the next items to see if they would provide any clues as to how she should proceed on Item 1 but did not find that helpful. She was very unsure what to do next and seemed overwhelmed by the options. After some flipping back and forth, she decided to measure all three values for each of the times offered.

At least three students went back to Item 1 and re-generated the data in the simulation once they knew that they had to create three graphs in Item 2.

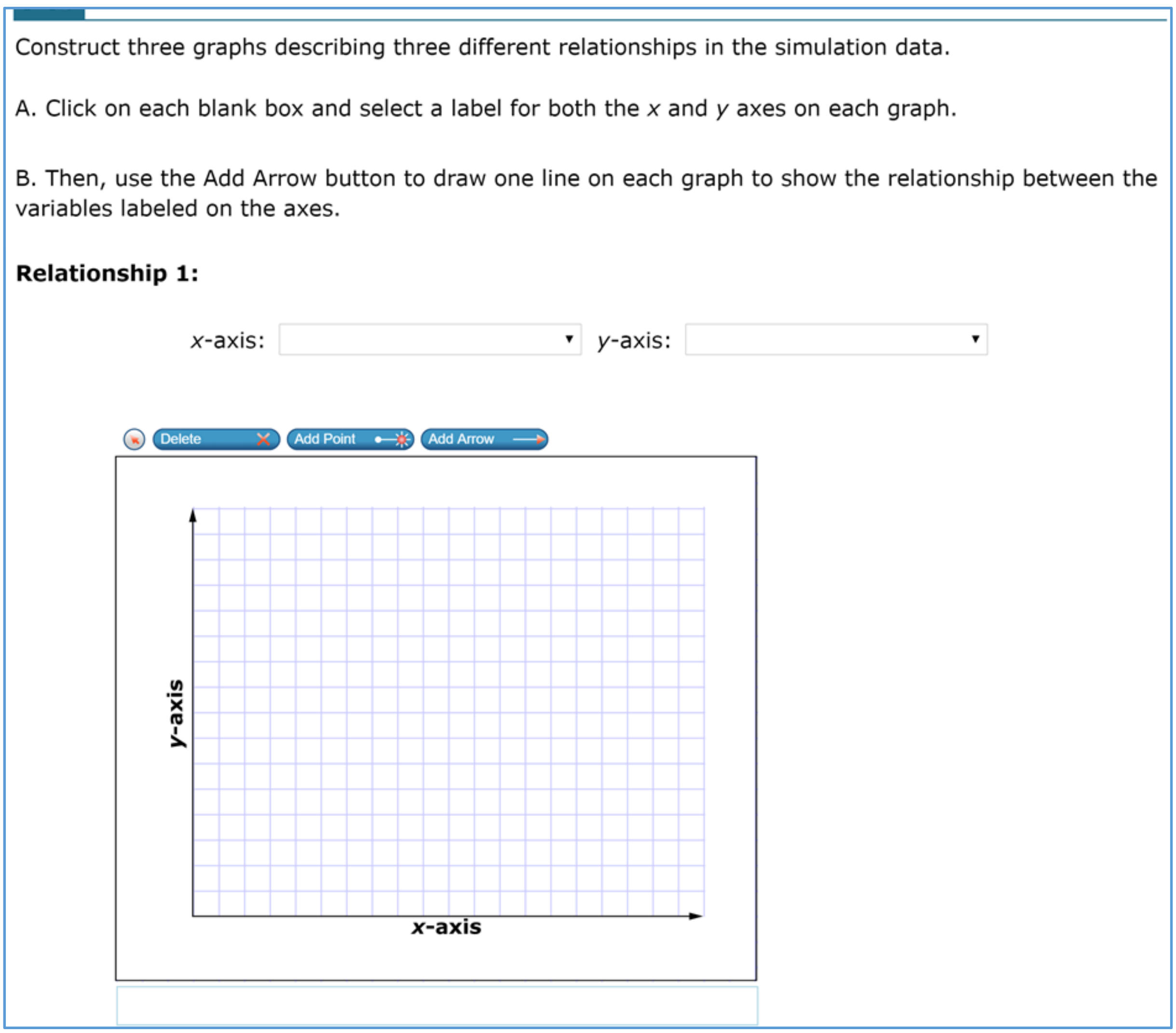
Reasoning

Students used the simulations as a learning experience. For example, when asked how he decided how many simulations to do, one student said, “Well, I knew that there was three different substances (glucose, glucagon, and insulin). I wasn’t really sure how it worked, and then once I did it, I was like ‘OK well that’s when you have a meal,’ so I knew from the reading that’s when your blood sugar spikes.”

Item 2

Item 2 of the Blood Sugar Regulation cluster is shown in Figure 66.

Figure 67. Item 2: Blood Sugar Regulation


Construct three graphs describing three different relationships in the simulation data.

A. Click on each blank box and select a label for both the *x* and *y* axes on each graph.

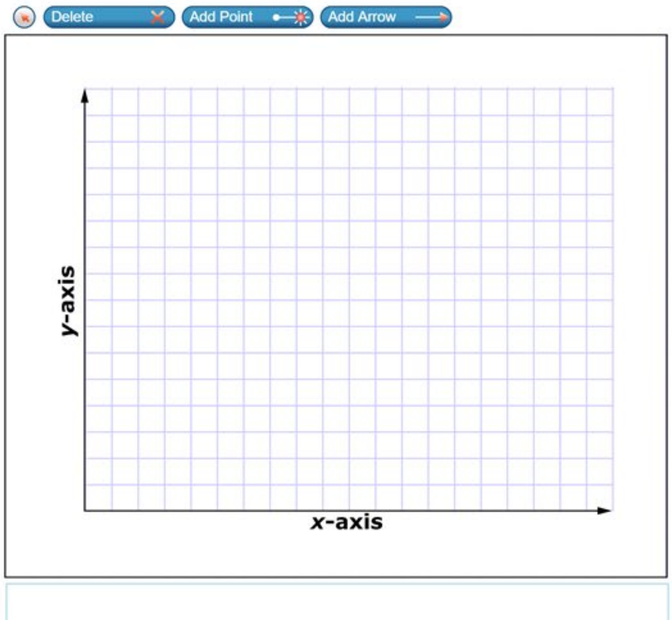
B. Then, use the Add Arrow button to draw one line on each graph to show the relationship between the variables labeled on the axes.

Relationship 1:

x-axis: *y*-axis:

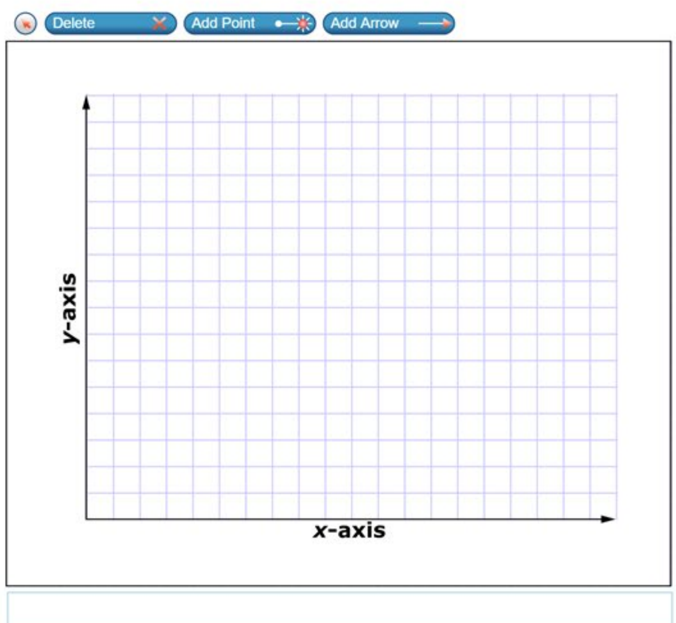
Relationship 2:

x-axis: ▾ *y*-axis: ▾



Relationship 3:

x-axis ▾ *y*-axis ▾



SCORES

Student scores on this item are as follows:

- No students earned 3 score points (full credit).
- Two students earned 2 score points.
- One student earned 1 score point.

COMPREHENSION

Eight students expressed some confusion as to how to construct the graphs of the simulation data. For example, one student was "kind of confused" about where to draw the second and third graphs. Initially she did not see the answer grids for the second and third graphs, but even after she noticed the additional answer grids, some confusion lingered.

At least five students were not sure how to represent the units or values on the graphs, and two students did not draw any graphs for that reason. For example, for the first relationship, one student chose glucose versus time for the first relationship, but he was not sure which value to put on which axis: "I've never looked at the concentration of molecules and tried to graph it, and I feel like there are a lot of things I'm missing to help me figure out what to do. I think I may be overcomplicating it to myself."

REASONING

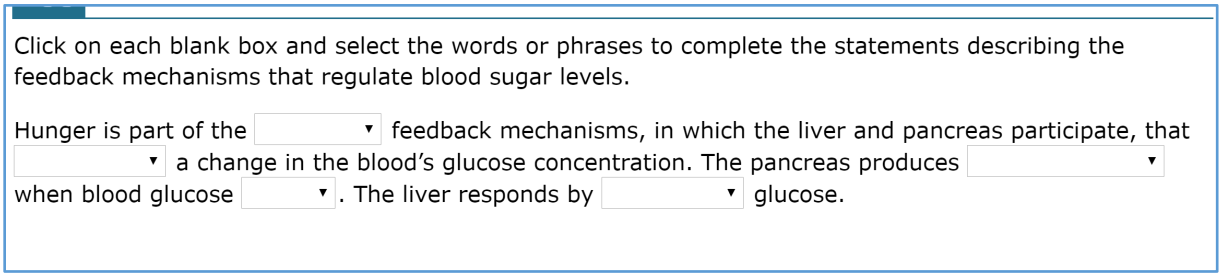
The following is an example of how one student reasoned through the construction of one of the graphs.

> The student said that he was going to place concentration on the x-axis and time on the y-axis because "in sciences you usually do time on the y-axis and concentration and stuff on the x-axis. I don't know why, it's what I've always known." He selected *Glucose Concentration* for the x-axis and *Time Passed after Eating* for the y-axis. He used the numbers for the glucose concentrations from the simulation in Item 1 to plot points on the graph. He said, "I feel like it spikes up like 5 times so I'll put it a decent amount, 6, 8 and then 10, and it kind of stays pretty high but not as high, so like right there, and then it drops a little bit again, and then it spikes up in a big lunge, and then it drops back down again to here, but it kind of stayed, and then it spiked the highest peak at dinner." He then started to connect the points, and said, "I don't know what the point of the arrows are, I'm just going to connect them all to show their relationship. That's my best guess to show what happened each hour."

Item 3

Item 3 of the Blood Sugar Regulation cluster is shown in Figure 68.

Figure 69. Item 3: Blood Sugar Regulation



Click on each blank box and select the words or phrases to complete the statements describing the feedback mechanisms that regulate blood sugar levels.

Hunger is part of the [▾] feedback mechanisms, in which the liver and pancreas participate, that [▾] a change in the blood's glucose concentration. The pancreas produces [▾] when blood glucose [▾]. The liver responds by [▾] glucose.

SCORES

Student scores on this item are as follows:

- Three students earned 2 score points (full credit).
- Seven students earned 1 score point.
- Among these 10 students,
    - four earned a point for correctly filling the blanks in the statement about hunger; and
    - seven earned a point for correctly filling the blanks in the statement about the roles of the pancreas and the liver.

COMPREHENSION

No students expressed confusion about this item.

REASONING

In responding to Item 3, five students referred to the stimulus, and two students referred to the simulation results in Item 1.

3.4.2 Cluster 2: Saving the Tuna

Performance Summary

The median time to complete the Saving the Tuna cluster was 14 minutes. Table 31 and Table 32 indicate the number of students attaining cluster total scores and items scores within the specified ranges, respectively.

Table 31. Number of Students Attaining Cluster Total Scores in Specified Range: Saving The Tuna

Score 7–6	Score 5–3	Score 2–1	Score 0
1	2	5	4

Note. Maximum score = 7; *n* = 12; three students ran out of time before completing this cluster.

Table 32. Number of Students Attaining Item Scores in Specified Range, by Item: Saving the Tuna

	Maximum Item Score	Score 3	Score 2–1	Score 0
Item 1 (Part A)	3	0	6	6

	Maximum Item Score	Score 1	Score 0
Item 1 (Part B)	1	6	6
Item 1 (Part C)	1	1	11

	Maximum Item Score	Score 2	Score 1	Score 0
Item 2 (Part A and B)	2	3	0	9

Note. n = 12; three students ran out of time before completing this cluster.

Task Demands

The following are task demands of the Saving the Tuna cluster:

- Articulate, describe, illustrate, or select the relationships, interactions, and/or processes to be explained. This may entail sorting relevant from irrelevant information or features.
- Express or complete a causal chain explaining how human activity impacts the environment. This may include indicating directions of causality in an incomplete model such as a flow chart or diagram or completing cause and effect chains.
- Identify evidence supporting the inference of causation that is expressed in a causal chain.

- Use an explanation to predict the environmental outcome given a change in the design of human technology.
- Describe, identify, and/or select information needed to support an explanation.

Stimulus

The stimulus for the Saving the Tuna cluster is shown in Figure 70.

Figure 71. Stimulus: Saving the Tuna

Saving the Tuna

North Atlantic bluefin tuna are one of the most prized fish in danger of overfishing. One 342 kilogram (kg) tuna sold for close to $400,000 dollars at a fish market in Tokyo.

Bluefin tuna are the apex predators in their ecosystem. They hunt, travel, and live within schools, or large groups, of other bluefin tuna individuals. Bluefins start out as extremely tiny larvae, no more than a few millimeters long, and weigh only a few hundredths of a gram. Within three to five years, sexually mature adults can reach lengths of three feet (about one meter) and can weigh over 600 kg. As adults, they can dive as deep as 914 meters and can swim very long distances in the open ocean during migration season. Their migration season spans from approximately May to June, during which they spawn near the Gulf of Mexico.

Because bluefin are prized fish that vary greatly in size and can be found in schools, or groups, within a wide range of water depths, netting fishing methods are commonly used to target and catch these individuals. However, fishing nets often catch bycatch individuals, or non-tuna individuals. The table summarizes several netting fishing methods and the relative amounts of targeted tuna and bycatch individuals caught at one time by each method.

Summary of Netting Fishing Methods

Method	Description	Type of Targetted Catch	Total Number of Individuals Caught at a Time	Percent of Total Catch that is Bycatch (%)	Types of Bycatch Caught
Purse Seining	Large wall of netting that herds fish together and then envelops them when the net is pulled by a drawstring	Schooling or spawning fish	Hundreds to thousands	35 - 70	Sea turtles, dolphins, and other fish
Cast Netting	Small-meshed netting cast from shore or canoes that expands a relatively small area	Groups of small fish	Up to a hundred	10 - 30	Other small fish
Gilnetting	Large curtains of netting suspended by a system of floats and weights that can either be anchored to the seafloor or allowed to float at the surface	All types of fish	Hundreds to thousands	40 - 75	Sea birds, sea turtles, octopi, shark, dolphins, other fish, and crustacea
Midwater Trawling	Gigantic nets that span the size of five football fields pulled by large industrial ships through the open ocean, catching entire schools of fish	All types of open-ocean fish	Thousands to tens of thousands	30 - 75	Sea turtles, shark, dolphins, and other fish
Seine Netting	Small-meshed netting suspended vertically by floats and weights from the surface of intertidal water to enclose and concentrate fish	Crustacea and shell fish	Less than a hundred	10 - 30	Sea birds and other small fish

Your task is to design, evaluate, and refine solutions for reducing the impacts of human fishing on the population of tuna and other native species in the Northern Atlantic Ocean.

Details by Item

Item 1

Item 1 of the Saving the Tuna cluster is shown in Figure 72.

Figure 73. Item 1: Saving the Tuna

The following question has three parts. First, answer part A. Next, answer part B. Then, answer part C.

Part A

Select the boxes to evaluate the tradeoff considerations of each fishing method.

- You may select more than one method per column.

	Likely to Catch the Greatest Number of Tuna Individuals	Likely to Catch the Least Number of Tuna Individuals	Likely to be the Best at Targeting Tuna Individuals	Likely to be the Worst at Targeting Tuna Individuals	Likely to be the Best at Protecting Biodiversity of Ecosystem	Likely to be the Worst at Protecting Biodiversity of Ecosystem
Purse seining	☐	☐	☐	☐	☐	☐
Cast netting	☐	☐	☐	☐	☐	☐
Gilnetting	☐	☐	☐	☐	☐	☐
Midwater trawling	☐	☐	☐	☐	☐	☐
Seine netting	☐	☐	☐	☐	☐	☐

Part B

Based on the evaluation of tradeoff considerations in part A, which fishing method best limits the negative effects of human fishing on non-tuna populations in the Northern Atlantic?

Ⓐ purse seining

Ⓑ cast netting

Ⓒ gilnetting

Ⓓ midwater trawling

Ⓔ seine netting

Part C

Click on each blank box and select a word or phrase to complete a statement describing a change that can be made to decrease the amount of bycatch for the method identified as the worst in targeting tuna individuals in part A.

[▾] the [▾] will improve the targeting of bluefin tuna.

Item 1 (Part A)

Scores

Student scores on this item are as follows:

- No students earned 3 score points (full credit).
- Two students earned 2 score points.
- Four students earned 1 score point.
- Six students earned no score points.

Comprehension

Several students expressed confusion with different aspects of this sub-question including

- completely missing two of the columns in the *Summary of Netting Fishing Methods* table, which was a critical reference for this sub-question; and
- confusion with the response-entry table, including overlooking the instructions stating that it was permissible to select more than one method for each column.

Reasoning

All students methodically navigated through the response-entry table and used the *Summary of Netting Fishing Methods* chart in the stimulus to figure out their responses. For example:

- One student first lined up the *Summary of Netting Fishing Methods* chart next to the response-entry table so that he could read the descriptions easily and fill out the table. For the first column (*Likely to Catch the Greatest Number of Tuna Individuals*), the student said, "The first one I will cancel out will be *cast netting* because it says up to 100, and also *seine netting* because that's less than 100. I would say *gillnetting* and *purse* [are] the two top because it says they catch up to 100s to 1,000s for both of those. Wait; sorry, I was reading that wrong. Okay, *midwater trawling* was 1,000s to 10,000s because that's what I was thinking instead of 100s to 2,000s, so *midwater trawling* will be my answer." The student continued in the same manner for each of the six columns.
- Not all the student's conclusions from the *Summary of Netting Fishing Methods* chart were correct, however, probably because of deficiencies in the student's knowledge about ecology. For example, for column 5 (*Likely to be the Best at Protecting Biodiversity of Ecosystem*), the student said, "I would say both *gillnetting* and *midwater trawling* because they both take all types of fish, they are not going after specific fish, which means that they're not taking one species of fish out of the water; they're taking multiple, so there's less chance of one fish being taken out of the ecosystem."

Item 1 (Part B)

Scores

Six students earned credit on this sub-item.

COMPREHENSION

One student was confused, saying that she did not understand the question and she did not know about each type of net.

REASONING

In responding to this sub-item, four students referred to their responses in Part A, and four students referred to the *Summary of Netting Fishing Methods* chart.

Item 1 (Part C)

SCORES

One student earned credit on this sub-item.

COMPREHENSION

Several students clearly did not understand the sub-item and guessed on questionable grounds.

> For example, one student read out loud all of the options under the second drop-down menu and said that he did not really understand the question: "I'm confused because in re-reading the question, it makes it seems like it was asking which net would decrease the chance of getting a tuna, but re-reading the answer choices, it's not asking that as much as I thought it would be. So, I'm going to go with *decreasing* instead of *increasing* because it says decrease in the sentence, and then something about negatives."

Another student indicated that she initially thought the sub-item was looking for a change in any of the methods that would decrease the amount of tuna by catch. Later she realized that the sub-item was referencing something specific in Part A. She went through all the drop-down options and hesitated a lot over her answer, changing it several times.

REASONING

In responding to this sub-item, five students referred to their responses in Part A, and six students referred to the *Summary of Netting Fishing Methods* chart.

Item 2

Item 2 of the Saving the Tuna cluster is shown in Figure 74.

Figure 75. Item 2: Saving the Tuna

The following question has two parts. First answer part A. Then, answer part B.

Three solutions proposed by scientific and environmental organizations to protect and restore the Northern Atlantic bluefin tuna population are shown in the table.

Solutions to Protect and Restore the Bluefin Tuna Populations

Solution	Description
1	Completely restricting the catching of juvenile bluefin
2	Limiting the total number of adult bluefin that can be caught
3	Removing juvenile bluefin from the Northern Atlantic to raise in captivity

Part A

Which Bluefin characteristic serves as the criteria on which all three solutions are based?

Ⓐ body mass

Ⓑ body length

Ⓒ ability to reproduce

Ⓓ ability to dive for prey

Part B

Select the **two** netting characteristics that are most important to consider when designing fishing nets for use in implementing the three solutions.

☐ mesh size of the net

☐ overall size of the net

☐ ability of the net to move

☐ depth of the net's location within the water column

SCORES

Student scores on this item are as follows:

- Three students earned 2 score points (full credit).
- No students earned 1 score point.
- Nine students earned no score points.

- Part A contributed one-third of the weight to the total item score, and 11 students selected the correct response for Part A.
- Part B contributed two-thirds of the weight to the total item score. Students only received credit for Part B if they correctly identified two netting characteristics that are important to consider when designing fishing nets for use in implementing the three solutions. While only three students correctly selected both characteristics, seven other students correctly selected one of the characteristics (four selected the *depth of the net's location in the water* column, and three selected the *mesh size of the net* column).

COMPREHENSION

One student did not understand the term "mesh size." She understood mesh as a verb, e.g., "meshing things together."

REASONING

When responding to Part B, only one student referred to the *Solutions to Protect and Restore the Bluefin Tuna Populations* table included with the item; four students referred to the *Summary of Netting Fishing Methods* chart in the cluster stimulus, and two students referred to the text in the cluster stimulus.

The following is an example of how one student used the reference materials to draw two conclusions about how to design the net to protect and restore the tuna population. Rather than considering any of the solution strategies proposed in the cluster stimulus, the student seemed to focus on supporting a method that would selectively catch adult tuna rather than juveniles, but one of the net characteristics he identified (*depth of the net's location within the water colum*n) counted as correct.

> The student looked at the fishing method characteristics and said, "They're going to want to increase the depth of the net's location within the water column because the adults can dive as deep as 914 meters and can swim very long distances, so they're going to want to increase the depth and the overall size of the net to catch them." When asked where the student got the information to answer the question, the student said, "I looked at the top of the article where it says that they dive as deep as 914 meters and can swim very long distances in the open ocean. So, I said increase the overall size to make the catch wider so they can't swim outside of the range of the net and also increase the depth since they can go pretty low."

3.4.3 Cluster 3: Tomcods

Performance Summary

The median time to complete the Tomcods cluster was 17 minutes. Table 33 and Table 34 indicate the number of students attaining cluster total scores and item scores within the specified ranges, respectively.

Table 33. Number of Students Attaining Cluster Total Scores in Specified Range: Tomcods

Score 8–6	Score 5–4	Score 3–1	Score 0
0	1	9	4

Note. Maximum score = 8; *n* = 14; one student ran out of time before completing this cluster.

Table 34. Number of Students Achieving Item Scores in Specified Range, by Item: Tomcods

	Maximum Item Score	Score 5–4	Score 3–1	Score 0
Item 1 (Parts A–C)	5	0	2	12

	Maximum Item Score	Score 1	Score 0
Item 2 (Part A)	1	6	8
Item 2 (Part B)	1	0	14
Item 3	1	10	4

Note. n = 14; one student ran out of time before completing this cluster.

Task Demands

The following are task demands of the Tomcods cluster:

- Based on the provided data, identify, describe, or construct a claim regarding the effect of changes to the environment on (1) the increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.
- Sort inferences about the effect of changes to the environment on (1) the increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species into those that are supported by the data, contradicted by the data, outliers in the data, or neither, or some similar classification.
- Identify patterns of information/evidence in the data that support correlative/causative inferences about the effect of changes to the environment on (1) the increases in the

number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.

- Construct an argument using scientific reasoning drawing on credible evidence to explain the effect of changes to the environment on (1) the increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.
- Identify additional evidence that would help clarify, support, or contradict a claim or causal argument regarding the effect of changes to the environment on (1) the increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.
- Identify, summarize, or organize given data or other information to support or refute a claim regarding the effect of changes to the environment on (1) the increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.

Stimulus

The stimulus for the Tomcods cluster is shown in Figure 76.

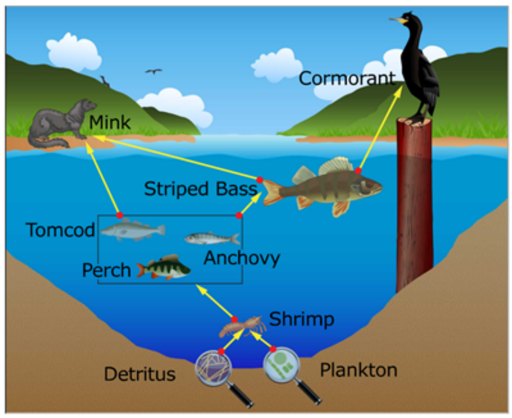
Figure 77. Stimulus: Tomcods

Atlantic Tomcod Thrive in Contaminated Hudson River

Polychlorinated biphenyls (PCBs) are chemicals that were produced from 1929 to 1979 for industrial and commercial uses. One electric company released 1.3 million pounds of PCBs into the Hudson River from 1947 to 1976. In 1979, PCBs were banned. However, the Hudson River still has high levels of PCBs today because they settle into sediments on the bottom and do not break down. When most fish embryos are exposed to PCBs, the immune system of the embryo is disrupted, causing the fish to develop smaller hearts that do not function properly, resulting in death. Many fish populations declined or disappeared from the Hudson River because of PCB exposure. However, one fish population, the Atlantic Tomcod, does not have this reaction to PCBs and thrives.

The picture shows a food web for the Hudson River. The liver of several aquatic species were tested for the presence of PCBs. The levels of PCBs in the livers of the tomcod were among the highest reported. Both striped bass and mink populations have also been found to have high levels of PCBs.

Food Web of the Hudson River



Tomcod were captured from the Hudson River and from rivers not contaminated by PCBs. The tomcod were tested for the AHR2 protein, which is responsible for regulating the toxic effects of PCB. The percentage of tomcod that contained the AHR2 protein mutation is shown in the table.

Percentage of Tomcod with AHR2 Protein Mutation

River	Percentage of Tomcod with Mutation
Hudson River, New York	99
Hackensack River, New Jersey	92
Niantic River, Connecticut	6
Shinnecock Bay, New York	5

Following are two hypotheses about the success of the tomcod in the contaminated Hudson River.

Hypothesis 1: The tomcod population did not decrease in response to PCB exposure because tomcod do not take in as many PCBs as other fish species through their food consumption or absorption from the water.

Hypothesis 2: The tomcod population did not decrease in response to PCB exposure because they have evolved resistance to the effects of PCBs through natural selection.

As you work through the questions, evaluate the evidence to determine which hypothesis of how the tomcods are able to overcome exposure to deadly PCBs is **best** supported.

Reference: Isaac Wirgin, et al. "....Atlantic Tomcod from the Hudson River." *Science* 331 (2011):1322–1325.

Details by Item

Item 1

Item 1 of the Tomcods cluster is shown in Figure 78.

Figure 79. Item 1: Tomcods

The following question has three parts. First, answer Part A. Next, answer part B. Then, answer part C.

Part A

Select the boxes to indicate whether each statement supports or refutes Hypothesis 1 or Hypothesis 2. You can select more than one box for each statement.

	Supports Hypothesis 1	Refutes Hypothesis 1	Supports Hypothesis 2	Refutes Hypothesis 2
There is a higher percentage of AHR2 protein mutations in the Hudson River than in rivers not contaminated by PCBs.	☐	☐	☐	☐
PCBs accumulate in striped bass and mink as a result of food consumption.	☐	☐	☐	☐
There is a high level of PCBs in the liver of tomcod in the Hudson River.	☐	☐	☐	☐
The tomcod population thrives in the PCB-contaminated Hudson River.	☐	☐	☐	☐
Tomcod feed on small PCB-contaminated bottom feeders but do not show any effects of PCB-exposure.	☐	☐	☐	☐

Part B

Click on each box to select the word or phrase that **best** completes the statement.

[▾] is most probable because [▾] the evidence supports this hypothesis and [▾] the evidence refutes this hypothesis.

Part C

Select additional evidence to support the hypothesis selected in part B.

☐ The Hudson River shrimp and plankton do not take in as much PCB as the fish species.

☐ DNA evidence shows changes to the gene for AHR2 in the tomcod of the Hudson River.

☐ Changes to the AHR2 protein are acquired in response to environmental cues and are not genetic.

☐ The Hackensack River shares an estuary with the Hudson River, allowing fish to pass genes back and forth.

Scores

Student scores on this item are as follows:

- No students earned 5 score points (full credit) on this item.
- The highest score earned was 2 points, and this was achieved by two students, who each earned 1 point for Part A and 1 point for Part B. No one achieved any points for Part C.
- The remaining 12 students earned no credit.

Comprehension

It is hard to extract any detailed information on students' comprehension or reasoning because students floundered so badly on this question.

Reasoning

In Part A, most students did conscientiously work their way through the list of evidence and try to determine which supported or refuted each hypothesis, but their reasoning was substantially flawed, perhaps because they did not understand the applicable content knowledge.

> For example, one student read out loud Hypothesis 1 and 2 in the introduction. She said, "So there's a higher percentage in the Hudson River than in rivers not contaminated," and selected Supports Hypothesis 1 for line 1 "because it's talking about how this one is saying that it's from the water and not from the fish." She read out loud part of line 2, looked quickly at the table in the introduction, and said that it's "actually going against it [refutes Hypothesis] because this one is talking about how it's because of the water not because of the fish, because of the food they are consuming, and they are not talking about the actual fish," then clicked Refutes Hypothesis 1. She read out loud line 3. She said she was going to select Refutes Hypothesis 1 because "it's the same as the first one, because it's saying how the species through the food, not the fish itself." She read out loud line 4 and immediately said that it supports Hypothesis 2 because "it's talking about how it is contained in the actual river, not the fish's fault, but the river's fault." She read out loud line 5 and said immediately that line 5 also supports Hypothesis 2 because, "of the natural selection."

Students who did not have good comprehension of Part A had even less chance of reasoning their way through Parts B or C, both of which built on conclusions from Part A.

Item 2

Item 2 of the Tomcods cluster is shown in Figure 42.

Figure 80. Item 2: Tomcods

The following question has two parts. First, answer part A. Then, answer part B.

Part A

Why were the tomcod able to survive in the presence of PCBs when other species were not?

Ⓐ The Hudson River tomcod did not absorb PCBs from the water.

Ⓑ All populations of tomcod species are resistant to the effects of PCB.

Ⓒ The Hudson River tomcod did not feed on species that were contaminated with PCBs.

Ⓓ The AHR2 mutation already existed in the Hudson River tomcod population at a low frequency.

Part B

Select the evidence that supports your answer.

☐ All tomcod tested in all rivers were resistant to PCB exposure.

☐ None of the Hudson River tomcod were found to contain PCBs.

☐ The AHR2 protein mutation is found at low frequency in tomcod from rivers not contaminated with PCBs.

☐ Less than 50 years after first exposure to PCBs, almost all of the Hudson River tomcod could survive in the presence of PCBs.

Scores

Student scores on this item are as follows:

- Six students earned credit on Part A by choosing the correct explanation for why Tomcods can survive in the presence of PCBs.
- Three of those students also selected one of the pieces of evidence that supported their explanation, but they received no credit for Part B because they did not select both the applicable pieces of evidence.
- Three other students also selected one piece of "correct" evidence, but they had not chosen the right explanation in Part A, so it was unclear exactly what they were supporting.

Comprehension

Although it was hardly the only reason why students had difficulty with this item, students were clearly challenged by having to pick more than one right answer in Part B, perhaps because they are not familiar with multi-select items and just stopped looking after they had made one selection. It might have helped to cue the students if the stem had specified that they had to select ALL the evidence that supported their explanation.

Reasoning

The following is an example of the reasoning of one of the students who correctly identified option D as the reason why Tomcod survived in Part A,

> The student read option A out loud and said, “That’s a lie! Because it says up there tomcod have a bunch of it, so that’s definitely a lie.” The student read option B out loud, saying, “I’m going to say No, because, in the [student looked back to the table on the left] Niantic River and the Shinnecock Bay, they did not have that mutation. So, I’m going to say B is wrong.” The student read option C out loud, saying, “OK wrong, because they eat the plankton and the shrimp, and they said earlier that they eat bottom feeders that have it.” Student read option D out loud and said, “Yes, because then they would have made it and had a bunch with that mutation.”

Item 3

Item 3 of the Tomcods cluster is shown in Figure 81.

Figure 82. Item 3: Tomcods

Why were other fish species in the Hudson River wiped out by PCB exposure, while the tomcod thrived?

Ⓐ Other species do not contain a protein that regulates the toxic effects of PCBs, so they could not adapt quickly.

Ⓑ Other species consumed more contaminated food than the tomcod, so they had more severe effects from PCB exposure.

Ⓒ Other species absorbed the PCBs from the water more quickly than the tomcod, so they had higher concentrations in their bodies.

Ⓓ Other species could not adapt quickly because they did not already contain a beneficial mutation in the gene pool to protect them from the effects of PCBs.

Scores

Students did the best on this item; 10 students earned credit.

Comprehension

No features of this item appeared to confuse students.

Reasoning

Students who chose the right answer demonstrated plausible reasoning that supported the inference that the students had mastered the concept being tested.

> For example, one student read out loud response option A and said, “That’s a good one, that might be the one.” He read out loud response option B and said, “That one does not

make any sense because all fish, I'm assuming. [are] about the same size will eat about the same, and I know that goldfish don't fill their stomach. I believe they go for all fish, they are all eating like crazy, so I would not click that one." He read out loud response option C twice and said, "Again, that's the same explanation for C as B, I would not click it." He read out loud response option D and said, "That's the one I'm going to click, because that one is exactly referring to natural selection and . . . it's like a gene, something in their mutation that they could protect themselves from the effects of it, but it's in the gene pool and it's referring to natural selection and the crossing of two species to get your genes and I would go with D, and A would be a close choice."

3.4.4 Cluster 4: Tuberculosis

Performance Summary

The median time to complete the Tuberculosis cluster was 10 minutes. Table 35 and Table 36 indicate the number of students attaining cluster total scores and items scores within the specified ranges, respectively.

Table 35. Number of Students Attaining Cluster Total Scores in Specified Range: Tuberculosis

Score 5–4	Score 3–1	Score 0
1	9	4

Note. Maximum score = 5; *n* = 14; one student ran out of time before completing this cluster.

Table 36. Number of Students Attaining Item Scores in Specified Range, by Item: Tuberculosis

	Maximum Item Score	Score 3	Score 2–1	Score 0
Item 1	3	1	5	8

	Maximum Item Score	Score 1	Score 0
Item 2 (Part A)	1	6	8
Item 2 (Part B)	1	1	13

Note. n = 14; one student ran out of time before completing this cluster.

Task Demands

The following are task demands of the Tuberculosis cluster:

- Based on the provided data, make or construct a claim regarding inheritable genetic variations that may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors. This does not include selecting a claim from a list.
- Sort inferences about inheritable genetic variation into those that are supported by the data, contradicted by the data, outliers in the data, or neither, or some similar classification.
- Identify patterns of information/evidence in the data that support correlative/causative inferences about inheritable genetic variation.
- Construct an argument using scientific reasoning drawing on credible evidence to explain inheritable genetic variations may result from: (1) new genetic combinations through

meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors (handscored constructed response).

- Identify additional evidence that would help clarify, support, or contradict a claim or causal argument.
- Identify, describe, and/or construct alternate explanations or claims and cite the data needed to distinguish among them.
- Predict outcomes of genetic variations, given the cause and effect relationships of inheritance.

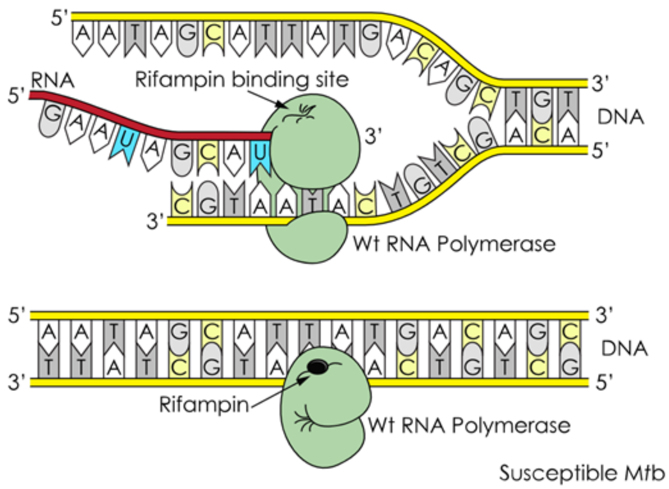
Stimulus

The stimulus for the Tuberculosis cluster is shown in Figure 83.

Figure 84. Stimulus: Tuberculosis

Antibiotic Resistant Tuberculosis

Antibiotic-resistant bacteria present a growing health care problem. The bacteria *Mycobacterium tuberculosis (Mtb)* causes the disease tuberculosis. One antibiotic used to treat tuberculosis is rifampin. Rifampin works by binding to amino acids 36-67 of the RNA polymerase protein of *Mycobacterium tuberculosis.* This binding makes the RNA polymerase protein inactive and the cell dies. This is illustrated below:



However, when treated with the antibiotic rifampin, some *Mycobacterium tuberculosis* bacteria are killed, but others survive. The bacteria that are killed are called "susceptible" to the antibiotic.

Scientists grow 3 mutant strains of *Mycobacterium tuberculosis* bacteria in a lab and sequence their DNA to compare to the wild-type strain that is not resistant to rifampin. Review the information provided.

Comparison of Mutant *Mycobacterium Tuberculosis* Bacteria to Wild-Type

Strain	DNA Sequence Change	Amino Acid Position	Amino Acid Change
Mutant 1	G to A substitution mutation	30	Alanine to Threonine
Mutant 2	C to A substitution mutation	51	No change
Mutant 3	G to T substitution mutation	46	Aspartic Acid to Tyrosine

As you work through the questions, evaluate the evidence to identify the source of genetic variation for antibiotic resistance in *Mycobacterium tuberculosis*.

Details by Item

Item 1

Item 1 in the Tuberculosis cluster is shown in Figure 85.

Figure 86. Item 1: Tuberculosis

If the rifampin cannot bind to the RNA polymerase protein in *Mycobacterium tuberculosis*, this leads to antibiotic resistance. Mutations in the rifampin binding site can block binding of the antibiotic. Based on the information provided, determine which mutants are likely to be resistant to rifampin by this mechanism.

Click on each blank box to select the correct words or phrases.

Resistance of Mutant *Mycobacterium Tuberculosis* Strains

Strain	Resistance	Explanation		
Mutant 1				of rifampin
Mutant 2				of rifampin
Mutant 3				of rifampin

Scores

One student earned 3 score points (full credit), and she was the only one to earn a point for correctly determining and explaining the resistance status of Mutant 3.

Five other students each earned 1 score point. Three of these students earned their point for correctly determining and explaining the resistance status of Mutant 2, and two earned their point for Mutant 1.

Comprehension

Four students reported that they found this item confusing and did not understand how to derive the necessary information from the stimulus.

> For example, one student said that Item 1 was confusing and that it was not really addressed [in the stimulus]. He said he was doing a lot of "assuming" because "it's talking about 'resistant,' and he only saw the word once." He also said that "it seemed weird that all three of them would be not resistant," although it is not clear on what basis he concluded that all three mutant strains were not resistant.

Four students reported using things they learned in science classes at school to help them respond to this item. For example,

- one student said that she knew about the amino acid from Biology in freshman year, and
- another student said that he learned about the topic in a biotech class two weeks prior to the interview.

Reasoning

All but two of the students referred to the comparison table in the stimulus when responding to this item; four students referred to the diagram.

Although only one student had the correct responses for all three of the mutant strains, several used the stimulus materials in the intended manner to reason through the problem.

> For example, one student looked at the comparison table in the stimulus and said, "It says that the Rifampin works by binding to amino acids 36-67 of the RNA. And then it says down here that, because of the G to A substitution mutation, the amino acid positions at number 30, and then . . . it is resistant because it changed it from 36 to 30, so then the Rifampin can't bind to it…So I would say it's resistant, but there's no change of rifampin—oh yeah, change to the—outside of the binding site." "Mutant 2 changed it C to A. Mutant 2 changes the amino acid to 51, so there's no change, so I'm going to mark *Not Resistant* because it's still within 36-67, so I'm going to say no change inside the binding site." "And Mutant 3 is a G to T substitution to 46. And 46 is still within 36-67, so I'm going to say *Not Resistant*, because there is a change from aspartic acid to tyrosine, Inside the binding site."

Item 2

Item 2 of the Tuberculosis cluster is shown in Figure 87.

Figure 88. Item 2: Tuberculosis

The following question has two parts. First, answer part A. Then, answer part B.

Part A

What is the **likely** source of the genetic variation in antibiotic resistance of *Mycobacterium tuberculosis*?

Ⓐ new genetic combinations through meiosis

Ⓑ new genetic combinations through mitosis

Ⓒ viable errors occurring during DNA replication

Ⓓ sexual reproduction resulting in new combinations of traits

Part B

From the list of additional experiments, select the evidence that would support your answer in part A.

- [ ] Scientists grow a sample of wild-type *Mycobacterium tuberculosis* in the lab. Over time, some of the bacteria show resistance to rifampin.
- [ ] Scientists plate a colony of wild-type *Mycobacterium tuberculosis* and a colony of *Escherichia coli* in one petri dish. Some of the new colonies show resistance to rifampin.
- [ ] Scientists plate a colony of wild-type *Mycobacterium tuberculosis* and a colony of mutant *Mycobacterium tuberculosis* in one petri dish. Some of the new colonies show resistance to rifampin.
- [ ] Scientists create additional *Mycobacterium tuberculosis* mutants by creating substitution mutations in the DNA that codes for amino acids 36-67. Many of the mutants are resistant to rifampin.

Item 2 (Part A)

Scores

Half of the students (seven students) earned credit on this sub-item.

Comprehension

No features of this item appeared to confuse students.

Reasoning

Three students looked back to one or more parts of the stimulus while working on this sub-item.

Four students said they used, or tried to use, material learned in school to help them respond to this sub-item. For example,

- one student said, "I am trying to go back to my knowledge of mitosis and meiosis and DNA replications," and
- another student said, "Usually errors that occur during DNA replication can be bad, and I remember back from when I was a freshman that it's not hereditary."

Some students used test-wise strategies to make plausible guesses, so a correct answer did not necessarily represent full mastery.

> For example, one student (who correctly selected C, *viable errors occurring during DNA replication*) said in his think aloud, “All this right now has to do with DNA . . .I don’t see anything about meiosis and mitosis on the chart.” When asked how he came up with his answer, he said, “I didn’t think it was A or B cause it’s talking about meiosis and mitosis, which was not discussed in the article, and then same with D. I did the viable errors because it’s talking about DNA strands, so that’s why I chose C.”

Item 2 (Part B)

SCORES

Only one student earned credit for this sub-item. In part, the difficulty resulted from an incorrect interpretation of the sub-item, as explained further in the Comprehension section below.

Of the two correct options, five students selected *Scientists grow a sample of wild-type Mycobacterium tuberculosis in the lab* . . . and seven students selected *Scientists create additional Mycobacterium tuberculosis mutants by creating substitution mutations in the DNA* . . .

COMPREHENSION

To earn credit for this item, students had to select both the experiments that could provide evidence to support the conclusion they selected in Part A. However, this is not clearly stated in the instructions, so most students stopped after they thought they had found one relevant experiment. Only three students marked two options, and two students said that they thought that they were only allowed to choose one option.

One student expressed confusion with the second response option. He did not know what *Escherichia coli* was and the relationship might be between it and *Mycobacterium tuberculosis*.

REASONING

At least four students referred to the text, diagram, and/or comparison table when responding to this sub-item.

3.5 STUDENTS' OVERALL PERCEPTIONS OF THE TEST

3.5.1 Topics Studied

Elementary School (n=18)

- Eleven students reported that they had studied topics related to the Desert Plants cluster, such as the life cycle of a plant and how plants survive in a desert habitat.
- Ten students had studied topics related to the Grand Canyon cluster, although not all of them learned about fossils or contemporary animals that can be found in the canyon. One student learned about fossils and rock formations as part of the history of Utah.
- Nine students had studied topics related to the Terrarium Matter Cycle cluster, such as "plants have carbon dioxide, but a whole plant needs water, soil, and sun," and some had conducted an experiment in which one group of students tried to grow plants in a dark environment and another group tried to grow plants in the sunlight.
- Although no students were familiar with topics related to the German Pyramid Candle cluster, five students had studied heat transfer.

Generally, each of the Utah students had studied more of these topics than the California students, and their lessons were more closely aligned with the topics of the science clusters. One of the Utah students said he had studied all four of the topics:

> "At the beginning of the year we studied the heat one and how we can help make a motor turn something on, like a light bulb. I thought of that. Maybe it was just backwards, the light was helping the fan to spin. The light was turning or making it spin by the energy it was producing. I remember last year in 4th grade we studied the Grand Canyon and the animals, and we did a little bit this year, and the animals that were living in the walls like trilobite and some others like starfish. We saw this video of this hole that was in Arizona, and there were tons of fossils in it. I think we studied a little bit on the terrarium one . . . We studied a little bit about [the desert plants]. About how each plant could survive."

Middle School (n = 12)

- Nine of the 11 students who responded to the Galilean Moons cluster question reported that they had studied related topics, such as moons, the solar system, space, and the planets, although their studies were not as in-depth as the animation and the data table.
- Only three students had studied the water cycle or how it applied to fog.
- Four students had studied some aspects of weather, including warm and cold fronts, but not as in-depth as the Texas Weather cluster.
- Eight students had studied animals and the types of relationships between animals, although not necessarily about hippos.

High School (n = 15)

- Thirteen students reported that they had studied topics related to the Tuberculosis cluster, such as DNA, mutations, mitosis, meiosis, and amino acids.
- Seven students had studied topics related to the Blood Sugar Regulation cluster, although not as in-depth as these questions. In referring to the Blood Sugar Regulation cluster, one student said that they had reviewed molecule concentrations but never discussed meals or “not that in-depth, more gone over these and what they do for the body.” Another student said she had studied feedback loops and homeostasis.
- Five students had studied topics related to the Tomcods cluster, such as the food web, ecology, and PCBs.
- Only two students said that they had studied topics related to the Saving the Tuna cluster, but they did not provide any information about which specific topics.

3.5.2 Use of Similar Online Tests and Tools

Elementary School (n=18)

All but one student had previously taken online tests; the subjects of the tests varied and included science, mathematics, reading, and/or "grammar." The online tests they had used included Galileo, SALT, ATI, and, for the Utah students, SAGE.

All but one of the students said that they had used similar online tools, including being able to expand the screen from left to right and vice versa; videos; dictionaries; navigation buttons such as arrows, a scroll bar, Back, Next, and Zoom in/Zoom out buttons; and drop-down menus. One student said that her previous experience with online tests involved individual questions rather than clusters, and another student said that there were "more pictures to move around" on the other online test.

Middle School (n = 12)

All 11 students who responded to this question had previously taken online tests; the subjects varied and included science, mathematics, and/or English language arts.

All but two of the students said that they had used similar online tools (including the Connect Line tool and Graphing tool for plotting points), animations, videos, and navigation buttons such as the Next, Back, Pause, and Zoom in/Zoom out buttons. One student said that he previously had to draw lines, but only straight lines, nothing like the graphs she had to draw in the Morning Fog cluster. Another student mentioned that layout of the items was familiar, including having the stimulus on the left side of the screen and the questions on the right side.

High School (n = 15)

All but two students had previously taken online tests; the test subjects varied and included science, mathematics, and English.

All but one of the students said that they had used similar online tools including at least one of the following: graphs, diagrams, the Connect Line tool, checkboxes, and a layout that presented a stimulus on one side of the screen and the associated questions on the other side. One student said that a standardized test he took the previous day was exactly the same, "the interface is the same," although he was not able to expand the screen on the standardized test. One student mentioned two other functionalities that he had used on other tests: the Highlighting tool and the ability to add a note to a paragraph and view it later.

3.6 OVERALL THOUGHTS ABOUT TEST DIFFICULTY

Elementary School (n=18)

Nine students felt that the test had both easy and hard parts and described the overall difficulty as “in between.” Examples include the following:

- One student said, “I think the test was in between those because some of it I got confused on and some other pieces like this [referring to Item 1 of the Redwall Limestone cluster] was easy since it gave us these maps about where it lived and the rest was kind of simple. For this one [referring to Item 2 of the Redwall Limestone cluster], it was simple.”
- One student said, “Some of them were hard, some of them were confusing, some of them were easy – that’s how I feel about this test. The hardest part was [the Terrarium Matter Cycle cluster], question two, Part A [of the Terrarium Matter Cycle cluster] because “I didn’t understand what they meant about X, Y, and Z – I had to think about what they mean.”
- Another student thought the test was “right in the middle, good. It wasn’t too easy or too difficult.” The student did not find any of it particularly confusing.
- Five students described only one of the items as being difficult, and four of the five students said the hard item was Item 2 Part A in the Terrarium Matter Cycle cluster. Examples include the following:
    - One student said, “There was one I skipped. I didn’t really like that. Because there was too much going on,” referring to Item 2 in the Terrarium Matter Cycle cluster.
    - One student felt that the hardest question was on “the terrarium with the diagram and the X, Y, and Z stuff. The others you just had to think about, and you could solve them.”
    - Another student said, “Overall, I think it’s really good. I found the terrarium a little confusing. It is a good test to have about things you need to know.” When asked if the questions were hard or easy, the student said they were easy except for the terrarium question. He said he got confused on the circle of energy.

By contrast, four students expressed that the test was easy. Examples include the following:

- One student did not feel like any of it was confusing, and he was not nervous. He thought the questions were very specific. It was easy for him to navigate through the tools and figure out how to answer the questions.
- One student said, “It took some time for me to think of the answers, but I thought it was pretty easy.”

Middle School (n = 12)

All 12 students responded to the end-of-test question on what they thought of the test. Seven of the students felt that the test was not too hard. For example:

- One student thought that the questions were reasonably easy but were hard for someone who hadn't learned a lot of this material. She said that, in general, she is well educated in science, but a lot of these topics are "very random." The student felt like she could have told the interviewer about the water cycle, but not how it works in this specific scenario.
- One student said that the test "was good, yeah. It wasn't hard." The student said that Item 3 of the Galilean Moon cluster was hard.
- Another student thought the questions got harder as she went along, and the hardest problem was the Texas Weather cluster. She had to reread some of the questions, but overall, she thought they were clear.

By contrast, five students expressed that the test was difficult or challenging. For example:

- One student thought that the test was good, but kind of difficult. She mentioned that students like her brother, who is dyslexic, would find it helpful to have the questions read out loud to them. She also said some of the questions were harder because she hadn't gone over the content yet and didn't know what some of the moons were.
- Another student thought the test was "pretty difficult." It was confusing for the student because she had to go back and reread items to understand the process and how to figure it out.
- A student said it was definitely "more challenging" than tests he had taken.
- A student said, "I thought it was kind of confusing. We've studied the moon one a bit, the hippos for sure, and then the water cycle and the temperature we haven't, so for doing all of those for my first time, I couldn't quite make it out. I was totally lost on the Morning Fog in the Valley."

High School (n = 15)

All 15 students responded to the end of the test question on what they thought of the test, although three students did not comment on whether the test was easy or difficult. (One of these latter students described it as "pretty interesting" and "different." Another said he liked the multiple-choice items, the diagrams, tables, and having multiple parts to a question.)

Ten students felt that the test was in the "middle range" of difficulty, with some questions being clearer than others. Four students felt that the Tomcods cluster was confusing, and three students felt that the Blood Sugar Regulation cluster was confusing.

Two students described the test as being difficult. One of these students said the test did not relate to his past studies, but he thought it would be a good test for students who were studying these topics. He also said the types of questions were different than he was used to: – “it’s not like normal standardized testing kinds of questions.” The student noted that he had not studied these topics even though he was an Advanced Placement (AP) Biology student. Consequently, he was unsure who the target audience of the test might be. The other student mentioned that she found the questions “kinda hard” because there were so many parts to each question. The reading parts were clear, but the structure of the questions could be confusing, according to the student.

APPENDIX 1: CHARACTERISTICS OF SAMPLE, BY CLUSTER GRADE LEVEL AND STUDENT

Table 1-A. Elementary School Sample

Student	Location	Grade	Gender	Lunch Program	Ethnicity	Language at Home	IEP (Disability)	Science Grades
1	California	5	Male	No	Asian	English	No (N/A)	Mostly A’s
2	California	5	Male	No	Caucasian	English	No (N/A)	Mostly A’s
3	California	5	Male	No	Asian	English	No (N/A)	Mostly A’s
4	California	5	Male	No	Caucasian	English	No (N/A)	Mostly A’s
5	California	5	Male	No	African American	English	No (N/A)	Mostly B’s
6	California	5	Male	No	Caucasian	English	No (N/A)	Mostly A’s
7	California	5	Female	Yes	Other	English	No (N/A)	Mostly B’s
8	California	5	Male	Yes	Caucasian	English	No (N/A)	Mostly A’s
9	California	5	Male	Yes	Hispanic	English	No (N/A)	Mostly A’s
10	California	5	Male	No	Caucasian	English	No (N/A)	Mostly B’s
11	California	5	Female	No	Caucasian	English	No (N/A)	Mostly B’s
12	California	5	Female	No	Caucasian	English	No (N/A)	Mostly B’s
13	Utah	6	Male	–	Caucasian	–	–	–
14	Utah	6	Male	–	Caucasian	–	–	–
15	Utah	5	Male	–	Caucasian	–	–	–
16	Utah	6	Female	–	Caucasian	–	–	–
17	Utah	5	Male	–	Caucasian	–	–	–
18	Utah	5	Female	–	Caucasian	–	–	–

Note. –: Missing data

Table 1-B. Middle School Sample

Student	Location	Grade	Gender	Lunch Program	Ethnicity	Language at Home	IEP (Disability)	Honors/ Advanced Classes	Science Grades
1	California	9	Female	No	Other	English	No (N/A)	Math	Mostly A’s
2	California	9	Male	No	African American	English	No (N/A)	None	Mostly B’s
3	California	9	Female	No	Caucasian	English	No (N/A)	None	Mostly A’s
4	California	8	Female	No	Caucasian	N/A	No (N/A)	None	Mostly A’s
5	California	9	Female	No	Asian	English	No (N/A)	Math, Science, Reading	Mostly A’s
6	California	8	Female	No	Caucasian	English	No (N/A)	Math	Mostly A’s
7	California	9	Male	Yes	Caucasian	English	Yes (Specific Learning Disability)	None	Mostly A’s
8	California	8	Male	Yes	Hispanic	English	No (N/A)	None	Mostly A’s
9	California	8	Male	Yes	Caucasian	English	No (N/A)	None	Mostly A’s
10	California	8	Male	No	African American	English	No (N/A)	None	Mostly A’s
11	California	8	Male	No	Asian	English	No (N/A)	Math, Science, Reading	Mostly A’s
12	California	8	Female	No	Asian	English	No (N/A)	None	Mostly A’s

Table 1-C. High School Sample

Student	Location	Grade	Gender	Lunch Program	Ethnicity	Language at Home	IEP (Disability)	Honors/ Advanced Classes	Science Grades/ Achievement*
1	California	11	Female	No	Caucasian	English	No (N/A)	None	Mostly A’s
2	California	11	Female	No	Hispanic	English	No (N/A)	None	Mostly A’s
3	California	11	Female	No	Other	English	No (N/A)	None	Mostly A’s
4	California	11	Female	No	Caucasian	English	No (N/A)	AP Chemistry	Mostly A’s
5	California	11	Female	Yes	Hispanic	English	No (N/A)	IB Honors Science	Mostly A’s
6	California	11	Female	No	Hispanic	English	No (N/A)	None	Mostly B’s
7	California	11	Female	No	Caucasian	English	Yes (ADHD)	None	Mostly A’s
8	California	11	Male	No	Asian	English	No (N/A)	IB Biology, Chemistry	Mostly A’s
9	California	11	Male	Yes	Hispanic	English	No (N/A)	None	Mostly B’s
10	California	11	Female	No	Caucasian	English	No (N/A)	Chemistry	Mostly B’s
11	California	11	Male	Yes	Prefer not to answer	English	No (N/A)	None	Mostly B’s
12	California	11	Male	No	Caucasian	English	No (N/A)	None	Mostly B’s
13	Connecticut	10	Female	–	African American	–	–	–	High Achieving
14	Connecticut	11	Male	–	Caucasian	–	–	–	High Achieving
15	Connecticut	12	Female	–	Hispanic	–	–	–	High Achieving

Note. *Parent report of science grades or teacher estimate of achievement level.
–: Missing data

APPENDIX 1-C

BRAILLE COGNITIVE LAB REPORT

Cognitive Lab Study: Accessibility of Science Clusters for Braille Readers

Fran Stancavage

Susan Cole

April 2019

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1. INTRODUCTION

This set of cognitive labs was designed to determine if students using braille can understand the task demands of selected interactive Next Generation Science Standards (NGSS)-aligned science clusters and navigate the interactive features of these clusters in a manner that allows them to fully display their knowledge and skills relative to the constructs of interest. The clusters for the study were sampled from those that had already been selected for braille translation. The cognitive labs were designed to address the following three research questions:

1. Can students using braille provide responses to the selected interactive NGSS-aligned science clusters that are consistent with their knowledge and skills relative to the constructs of interest?
2. Within the selected clusters, can students successfully navigate all the included interaction types, or are further modifications needed to make the clusters fully accessible?
3. How much time do students using braille require to work their way through the selected clusters, and what strategies can be recommended to enable students using braille to complete clusters within a single testing session (to improve continuity)?

Although the American Institutes for Research (AIR) team was able to collect relevant data for this cognitive lab study, there were some limitations to the analysis. Most importantly, there were far fewer eligible visually-impaired students willing to participate in the study than anticipated, and some of them, although technically readers of braille, did not use braille while responding to the science questions in the cognitive labs. In addition, in several of the cognitive lab sessions, students' interactions with the clusters was hampered by technical issues with the Job Access With Speech (JAWS) screen-reading software and/or the Refreshable Braille Display (RDB) supplied locally, as well as by text-to-speech (TTS) tagging or braille embossing problems that arose in the beta-version materials. The latter were used in the cognitive labs due to the timing of the study.

2. METHODS

2.1 STUDY DESIGN

Two science clusters were sampled for each grade band (i.e., elementary, middle, and high school), and tailored protocols were developed for each cluster. The original design called for a minimum of six cognitive labs at each grade level, but due to recruitment challenges (discussed further in this section), labs were only conducted with ten students in total. The cognitive labs were held in Oregon and West Virginia between October 2018 and January 2019. The interviews lasted two hours, and each student was presented with one or both clusters for their grade band, depending on how much time the student took to complete the first cluster.

As part of the cognitive lab introductory activities, students were trained in the concurrent think-aloud technique. Using an elementary-level science cluster, which was not one of the clusters evaluated in the study, the interviewer first modeled the technique in Part A (first scored question) and then had the student practice in Part B (second scored question).

Students then moved on to their first assigned cluster. They were encouraged to think out loud as they worked through the cluster, and interviewers were instructed to use follow-up probes to clarify and expand on what the student said (or what the student was observed doing). Probes, which were tailored to the specifics of the cluster, focused on whether the student was able to find all the information needed to respond to the questions, what the student thought about the ways in which they had to enter answers to questions (for questions with innovative response formats), and if they would change anything about the way the information was presented to make it easier to work on the questions. A final probe allowed the student to report on anything else they found notable about the questions or introductory material in the cluster.

Students who were able to complete the first cluster by the 1.5-hour mark (out of the scheduled 2-hour lab) were moved on to the second cluster for their grade band. Probes were only administered after the student had completed all the questions in a given cluster in order to ensure that probing on the earlier questions would not influence the student's interactions with the later questions.[1]

Interviewers brought embossed braille forms to the cognitive labs. The site was responsible for providing other resources, such as JAWS and an RBD. AIR requested that a teacher of the visually impaired (TVI) or a teacher assistant be present in the room during the cognitive lab and assist the student as they would during an actual test. In most cases, prior to the interview, the interviewer briefly discussed with the TVI/teacher assistant what resources the student used to navigate online tests and how frequently/in what ways the TVI/teacher assistant typically assisted the student during testing. This information helped the interviewer to further tailor their probes and observations.

2.2 Interviewer Training

The project leads provided a 4-hour training for the interviewers who would be conducting the cognitive labs. Because all the interviewers were experienced in the cognitive interview technique, the training primarily focused on reviewing the content of the clusters and familiarizing the interviewers with the test platform and the specifics of the cognitive lab protocols. An assessment program manager was present at the training to provide an overview of the test platform and to respond to any technical questions.

2.3 Study Sample

Permission to recruit students for the study was secured from four states. In each state, the project manager and project director worked with relevant school and district personnel to

[1]To stay within the agreed-upon 2-hour time limit, the interviewer sometimes stopped the student before they finished the second cluster in order to leave sufficient time for probing.

recruit eligible students and coordinate logistics. Ultimately, only two states, Oregon and West Virginia, were able to provide students for the study.

The recruitment materials specified a need for students in grades 6, 7, 9, 10, or 12 who use braille, and all the recruited students were in fact able to use braille to some degree; however, an unanticipated complication was that some of the students who were partially sighted chose to use other resources (e.g., the Zoom tool) to navigate the clusters. Given that there were so few students available, the AIR team took whomever was recruited. The characteristics of the sample, by student, are shown in Table 1 below.

Students in grades 6 and 7 were administered the elementary-school-level clusters, students in grades 9 and 10 were administered the middle-school-level clusters, and students in grade 12 were administered the high-school-level clusters.

Table 1. Characteristics of Sample, by Student

Student	Grade	Gender	Resources Used in the Cognitive Lab
1	6	Male	JAWS, RBD, braille*
2	6	Female	Zoom, larger cursor
3	9	Male	Zoom, larger cursor, JAWS, braille
4	9	Male	Zoom
5	9	Male	JAWS, RBD
6	10	Male	JAWS, RBD, braille
7	10	Female	Braille, ChromeVox**
8	10	Female	Zoom
9	12	Female	Zoom, JAWS, braille
10	12	Male	Inverse colors, zoom

Note. * *Braille* refers to the embossed braille forms
**ChromeVox is an alternative TTS reader.

3. Findings and Recommendations

3.1 Resources Used

The students used the available resources in a variety of ways during the cognitive labs. It was common for the students to switch between resources (e.g., moving between embossed braille, JAWS [sometimes coupled with an RBD], the Zoom tool [where relevant]). Some of the partially-sighted students chose to use only zoom, citing reasons such as having only "beginner" level braille skills or feeling that navigation using braille took longer; others switched between the Zoom tool and other resources. One TVI reported that the partially-sighted student they were assisting switched based on "eye fatigue and lighting conditions." At least two students used the embossed braille forms almost exclusively to read the questions and reference the introductory materials, but switched to JAWS to enter their answers. One of these students reported that they used the embossed braille forms because it was easier than scrolling up and down the page using JAWS. Another partially-sighted student used the embossed braille forms and a screen reader similar to JAWS, but they also looked very closely at the screen to see where to place the cursor when responding to the questions.

Two students, one assigned to a middle school cluster and the other assigned to a high school cluster, reported that they would normally be offered a Perkins Brailler (also called Perkins Braille Writer) to take notes during testing. The AIR team did not anticipate or provide this resource, which is the equivalent to scratch paper for a braille user and is a standard accommodation for visually-impaired students in testing situations. It can also be used by the student to type the answers in braille, after which the TVI/teacher assistant can transcribe the answers and enter them into the test system.

3.1.1 Hardware and Software Resources

As mentioned previously, there were technical issues with some of the locally-supplied resources used in the cognitive labs. In both states, JAWS often did not work smoothly, and there were instances in which the RBD did not operate at all. As a result, some of the students struggled more with navigation than they usually would. In a couple of cases, these students reported depending more on the TVI/teacher assistant and embossed braille forms than they normally would have.

One TVI noted that every difficulty that their student encountered had come up in a real testing situation—problems with the RBD crashing, unpredictable behavior with JAWS, and “bad” embossed braille forms. The TVI said that, even when everything is tested in advance (as the RBD is), resources still do not necessarily work inside AIR’s test delivery system (TDS).

3.1.2 Embossed Braille Forms

Students were generally taken aback when they first realized the number of pages in the embossed braille forms, and, with no prior exposure to the science clusters, they had not anticipated or prepared for the need to keep track of information across multiple pages. Most of the other challenges that students experienced with this resource arose from inadvertent errors in the beta-version forms. Some of these errors were fixed after the first cognitive lab, but others persisted. In a normal cognitive lab study with a larger subject pool, all protocols would be pilot tested, which would have offered an opportunity to fix problems like this before the materials were used in the actual study.

However, some students also reported encountering graphical elements that—as rendered—were difficult to discriminate on the embossed forms. For example, one student reported that it was hard to differentiate between the two graph lines that, in the print version, were distinguished by different tones of grey. Another student indicated that it was difficult to discern the overall layout of a map of the United States, in which some states were highlighted for sharing a common characteristic, because the state lines, the line marking the boundary of the United States, and the lines outlining the Great Lakes were all too similar.

Regardless of these various issues, most students felt that the braille forms were easier to work with than using JAWS.

3.1.3 JAWS and Other Online Navigation Issues

There were significant problems with JAWS that prolonged the time it took students to work through the clusters. Some of these problems were caused by TTS-formatting configuration errors that were not caught in advance, but others had to do with the way in which JAWS was set up by the TVI/teacher assistant. An example of the latter was an instance in which JAWS was accidentally set to read all the navigation marks and not just the substance of the text. Proper settings are covered in the *Braille Requirements and Testing Manual*, but were not discussed with the TVIs/teacher assistants who were preparing for the cognitive labs.

Other challenges were caused by conventions with which the students were not familiar. In particular, students often appeared confused when JAWS skipped over a table or figure that had been judged as too complex to be read successfully by JAWS. It might have been helpful if the TTS tagging had included embedded text that instructed students to switch to the screen image or the embossed braille forms in order to see the contents of the table or figure.

For tables that were read by JAWS, at least one student noted that it would be helpful for JAWS to indicate when the table was entered and exited, rather than just reading “table of checkboxes” multiple times as it progressed through the table; however, it was not clear whether the student had JAWS set up correctly.

Several students had difficulties using the Tab key effectively, repeatedly finding themselves in some other location than they expected when they tabbed forward or back. There seemed to be some interaction between problems with tabbing and the students’ confusion about JAWS not reading the tables and figures (however, it should be noted that one student, who did not have any problems navigating with JAWS, said that it would have been very helpful to be able to easily tab between the question stem and the response fields so that students could quickly review the question—potentially multiple times—as they considered their response).

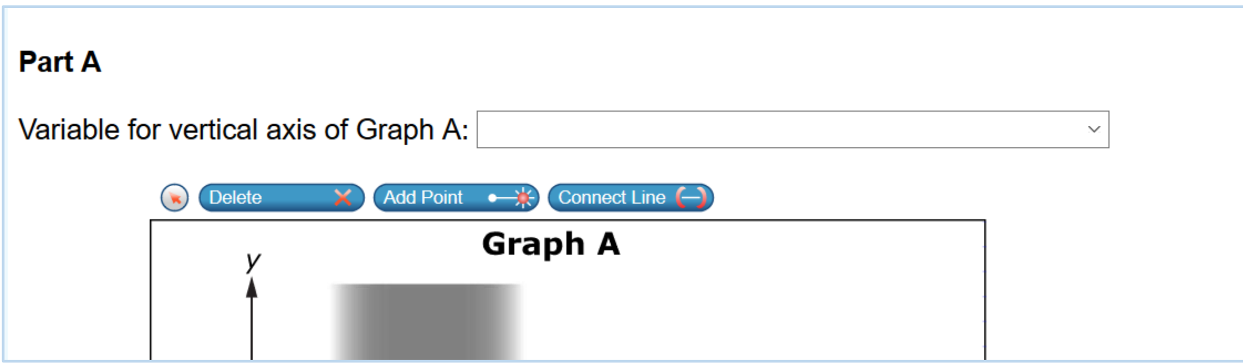
Finally, there were issues associated with the way in which drop-down boxes were handled by JAWS. Some students were not familiar with the term “combo boxes,” which was used to describe these boxes, and many students were confused by the ways in which JAWS handled the response options for these boxes. In some cases, it appeared that JAWS did not read these choices at all (which was consistent with the current TXX business rules), while in other cases JAWS read the options, but only after a response was selected. Finally, the tagging may have been inadequate, as at least one student didn’t understand what JAWS was reading until the TVI showed them where the various parts of the question were, especially the text in the drop-down boxes.

3.1.4 Zoom Tool

Students who used the Zoom tool did not encounter many problems applying this tool to the science clusters, although one student failed to discern at least one drop down box as they moved through the text. These students did, however, suggest several modifications that they felt would improve their experience, including the following:

- Enable the user to change the size of tables or images on all sides rather than just two sides to avoid having to scroll sideways.
- Add additional spacing in the text; at x3 or greater zoom, the spacing is too tight.
- Make the sizing of the answer buttons consistent when zoomed in—currently the answer buttons on the multiple-choice questions stayed small, whereas other answer buttons got larger when zoomed in.
- To help with viewing the drop-down boxes (see example in Figure 1), format the boxes with high contrast or a thicker line.

Figure 1. Example Drop-Down Box



3.1.5 Assistance from the TVI/Teacher Assistant

The level of TVI/teacher assistance varied in relation to the student's fluency with the other resources. An added factor in the level of assistance provided to students in the cognitive labs was the failure of the RBDs in some sessions. Without the RBD, students who could not see the computer screen required assistance to enter their responses.

The most facile student in our sample, who was very comfortable using both the embossed braille forms and JAWS, still asked for some assistance from the TVI, particularly with online navigation. At the other end of the scale, the following vignette illustrates how one TVI worked with a student who needed considerable support.

Example of a TVI assisting a student who was not very facile with the other resources available.

One student began by letting JAWS read through the entire introduction and most of the questions before asking if they could pause it. The TVI gave the student the instructions to do so. The student said that they were being hit with too much information at once, so they asked for the embossed braille form. The TVI found the first page and directed the student through most of the content, reading a lot of it out loud. The TVI noted that this was an official accommodation that the student was allowed to use during tests. The student had difficulty reading the braille out loud–stumbling over words and parts of words and asked the TVI for a lot of help with the figures. When the student had trouble reading Table 1 (included in the introduction) on the braille form, they decided to go back to JAWS. JAWS jumped ahead to Table 2 (part of the first scorable question), and it took some effort for the student to go back to Table 1. The TVI helped the student find Table 1, and the student followed along on the braille form as JAWS read the text preceding Table 1 out loud; however, JAWS did not read Table 1, instead skipping to the next paragraph of text. The student wanted to try typing on the keyboard to see if it would help bring up the table, but the TVI explained that there was no text box to type anything into. The TVI suggested that the student tab forward. The TVI said that in a real test situation, she would offer to read the table at this point. The student said this would be helpful, and the interviewer indicated that this was acceptable, so the TVI read the table out loud while the student followed along on the braille form.

3.2 General Accessibility Issues

An accessibility issue that, although it primarily affects the embossed braille forms, also has implications for screen layout, has to do with the inconsistent locations in which cluster components (e.g., questions, tables and figures, other text) appear on the page. Without the ability to quickly discern the overall layout of each page or screen, it was much harder for students in the study to process the information being conveyed. One student mentioned that it would be helpful if question stems consistently appeared on the top of the page, as in some cases the display that follows the item identifier (e.g., Part A) starts with a table or other graphic, with the text of the item stem following. Given the student feedback, it would be better to position the table/graphic below the item stem. Another student was observed to completely overlook a short paragraph of text that appeared between two large graphics in the introduction. Moreover, there were no sufficient cues to alert the student to the fact that they had missed an element. When blocks are being prepared for braille readers and other visually impaired students, it would be helpful to take these considerations into account and modify the page and screen layouts accordingly.

Similarly, one student's thoughts about how they would use the various resources to efficiently work through the science clusters (see graphic below), suggest another modification that would help maximize accessibility.

Thoughts from a student on how to best use resources to work through the science clusters.

Both the student and their TVI noted that working with the embossed braille forms for the science clusters was a departure from their usual testing experience because most traditional test questions can be rendered on a single page. Upon reflection, the student said that the strategy that would work best for them would be to

- first read through the whole cluster using the embossed braille form; and then
- navigate the questions with JAWS and an RBD, referring back to text passages as needed using these tools; however, where there was a need to refer back to a figure or chart, use the embossed braille.

The student indicated that to successfully carry out this strategy, they would need a better system for keeping all the braille pages organized so as to be able to quickly access the necessary graphics. Providing an index, or some form of page headers, might help with this problem.

3.3 Timing and Continuity

One of the goals at the beginning of the study was to determine whether students could complete an entire cluster during a single testing session; the results suggest that timing will not be a major issue, so long as schools are able to provide uninterrupted 1-hour testing sessions, if necessary. Despite the technical issues with JAWS, the RBD, and the braille forms, all but two of the students were able to complete at least one of the clusters during the cognitive labs, and one of the students who failed to complete the cluster was not focused or motivated to respond to the questions. The labs were approximately 1.5 hours long, not including the introduction and think-aloud modeling and practice. Given that they involved thinking aloud and probing, as well as working the questions, 1-hour testing sessions should be sufficient for actual administrations.

4. Conclusions

In general, both the students who relied entirely on braille and/or JAWS and those who had some vision and were able to read the screen with the Zoom tool were able to find the information they needed to respond to the questions, navigate the various response formats, and finish within a reasonable amount of time. To varying degrees, assistance from the TVI/teacher assistant was necessary, but this was most likely not qualitatively different from the assistance that would be provided on a more traditional test.

However, the clusters were clearly different from (and more complex than) other tests with which the students were familiar, and students should be given adequate time to practice with at least one sample cluster before taking the state test. It would also be helpful for students to work with their TVIs/teacher assistants in advance to develop a strategy for organizing and using the information required to answer the test questions. For example, students might want to take notes on a Perkins Brailler as they work. Given that the challenges of the science clusters are not unlike the challenges that students are likely to encounter under curricula based on NGSS or Common Core State Standards (CCSS) or their equivalent, students could be expected to become more fluent in the requisite skills as such curricula become more widespread.

Because of the large numbers of substantively important figures and tables in the clusters, we judge the embossed braille forms to be essential for any student who cannot see the material on the screen with magnification. Embossing is already set to “automatic” on all AIR science tests; however, in the case of the science clusters, test administrators (TAs) should be instructed to have the forms available before the student begins work on a given cluster, as the embossing would otherwise be very disruptive.

A major challenge that we observed in the cognitive labs—which would apply to more conventional tests, as well—was the temperamental functioning of JAWS and the RBDs. There were multiple instances of these resources failing during the cognitive labs, even when they had been tested in advance. This might be avoided with more rigorous user acceptance testing (UAT) of items using JAWS, but it also might require changes at the local level, such as better training for TVIs/teacher assistants or better maintenance of the devices.

Among the innovative response formats encountered in the science clusters that were used in the cognitive labs, the drop-down boxes proved to be the most problematic (specifically for students who were trying to navigate the science clusters using JAWS), since the drop-down options were not tagged to be read by JAWS. AIR should consider changes to the business rules in order to allow the drop-down options to be read.

The following recaps the tool-specific recommendations offered in the report.

For braille forms,

- make sure that graphic elements, such as graph or map lines, are bold enough or sufficiently contrasted to be easily discriminated;
- consider reformatting so that page layout is more predictable (e.g., always keeping text together rather than interspersing it with large graphics); and/or
- consider adding an index or page headers to make it easier for students to keep track of information across multiple sheets of embossed braille.

For JAWS,

- provide more cues when a student needs to switch to the braille form or the screen image to view a table or figure that JAWS will skip over;
- add navigation markers to indicate when the reader is entering or exiting a table if tables are tagged to be read by JAWS; and/or
- provide a way for the student to readily tab between the question stem and the response field(s).

For the Zoom tool,

- enable the user to change the size of tables or images on all sides rather than just two sides to avoid having to scroll sideways;
- add additional spacing in the text; at x3 or greater zoom, the spacing is too tight;
- make the sizing of the answer button consistent when zoomed in—as currently configured, the answer buttons on the multiple-choice questions stay small, whereas other buttons get larger when zoomed in; and/or
- format the boxes with high contrast to help with viewing the drop-down boxes.

APPENDIX 1-D

INVARIANCE ACROSS SUBGROUPS

Table 1-D-1a. Global Model Fit Indices of Measurement Invariance Tests for Grade 3 ELA

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	2975.927	834				
Metric	3121.595	865	Configural	145.668 (31)	< 0.001	0.001
Scalar	3859.130	896	Metric	737.535 (31)	< 0.001	0.001
Invariance Across Students' Ethnicity (White vs. Asian vs. all other ethnic groups)						
Configural	3412.473	1251				
Metric	3782.073	1313	Configural	369.600 (62)	< 0.001	0.001
Scalar	4109.002	1375	Metric	326.929 (62)	< 0.001	0
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural	2928.265	834				
Metric	3212.826	865	Configural	284.561 (31)	< 0.001	0.001
Scalar	3704.977	896	Metric	492.151 (31)	< 0.001	0.001
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural	2931.957	834				
Metric	3186.160	865	Configural	254.204 (31)	< 0.001	0.001
Scalar	3411.482	896	Metric	225.321 (31)	< 0.001	0
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	2889.290	834				
Metric	3298.414	865	Configural	409.124 (31)	< 0.001	0.001
Scalar	3471.571	896	Metric	173.157 (31)	< 0.001	0

Table 1-D-1b. Global Model Fit Indices of Scalar Invariance Model for Grade 3 ELA

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	3859.130	896	< 0.001	0.914	0.012
Ethnicity	4109.002	1375	< 0.001	0.914	0.011
SPED	3704.977	896	< 0.001	0.909	0.012
LEP	3411.482	896	< 0.001	0.922	0.011
Low Income	3471.571	896	< 0.001	0.916	0.011

Table 1-D-2a. Global Model Fit Indices of Measurement Invariance Tests for Grade 4 ELA

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	2635.502	844				
Metric	2691.422	874	Configural	55.920 (30)	< 0.001	0
Scalar	2998.992	904	Metric	307.569 (30)	< 0.001	0.001
Invariance Across Students' Ethnicity(White vs. all the other except Asian)						
Configural	2549.923	844				
Metric	2829.302	874	Configural	279.378 (30)	< 0.001	0.001
Scalar	3033.850	904	Metric	204.549 (30)	< 0.001	0
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural	2616.747	844				
Metric	2816.418	874	Configural	199.671 (30)	< 0.001	0.001
Scalar	3079.992	904	Metric	263.574 (30)	< 0.001	0
Invariance Across Students' LEP Status(Limited English Proficiency vs. Non)						
Configural	2630.127	844				
Metric	2838.01	874	Configural	207.883 (30)	< 0.001	0.001
Scalar	3025.428	904	Metric	187.418 (30)	< 0.001	0
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	2552.039	844				
Metric	2757.991	874	Configural	205.953 (30)	< 0.001	0.001
Scalar	2847.827	904	Metric	89.836 (30)	< 0.001	0

Table 1-D-2b. Global Model Fit Indices of Scalar Invariance Model for Grade 4 ELA

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	2998.992	904	< 0.001	0.929	0.010
Ethnicity	3033.850	904	< 0.001	0.921	0.010
SPED	3079.992	904	< 0.001	0.916	0.010
LEP	3025.428	904	< 0.001	0.925	0.010
Low Income	2847.827	904	< 0.001	0.928	0.01

Table 1-D-3a. Global Model Fit Indices of Measurement Invariance Tests for Grade 5 ELA

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	2360.645	828				
Metric	2457.772	858	Configural	97.127 (30)	< 0.001	0
Scalar	3652.131	888	Metric	1194.359 (30)	< 0.001	0.002
Invariance Across Students' Ethnicity (White vs. Asian vs. all other groups)						
Configural	2937.89	1240				
Metric	3199.83	1300	Configural	261.941 (60)	< 0.001	0.001
Scalar	3498.856	1360	Metric	299.025 (60)	< 0.001	0
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural	2429.977	828				
Metric	2772.075	858	Configural	342.099 (30)	< 0.001	0.001
Scalar	3327.427	888	Metric	555.352 (30)	< 0.001	0.001
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural	2496.689	828				
Metric	2732.653	858	Configural	235.964 (30)	< 0.001	0.001
Scalar	2985.057	888	Metric	252.404 (30)	< 0.001	0
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	2425.024	828				
Metric	2790.826	858	Configural	365.802 (30)	< 0.001	0.001
Scalar	2911.011	888	Metric	120.185 (30)	< 0.001	0

Table 1-D-3b. Global Model Fit Indices of Scalar Invariance Model for Grade 5 ELA

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	3652.131	888	< 0.001	0.907	0.012
Ethnicity	3498.856	1360	< 0.001	0.922	0.010
SPED	3327.427	888	< 0.001	0.902	0.011
LEP	2985.057	888	< 0.001	0.925	0.010
Low Income	2911.011	888	< 0.001	0.923	0.010

Table 1-D-4a. Global Model Fit Indices of Measurement Invariance Tests for Grade 6 ELA

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	2360.645	828				
Metric	2457.772	858	Configural	97.127 (30)	< 0.001	0
Scalar	3652.131	888	Metric	1194.359 (30)	< 0.001	0.002
Invariance Across Students' Ethnicity (White vs. Asian vs. all other groups)						
Configural	2937.89	1240				
Metric	3199.83	1300	Configural	261.941 (60)	< 0.001	0.001
Scalar	3498.856	1360	Metric	299.025 (60)	< 0.001	0
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural	2429.977	828				
Metric	2772.075	858	Configural	342.099 (30)	< 0.001	0.001
Scalar	3327.427	888	Metric	555.352 (30)	< 0.001	0.001
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural	2496.689	828				
Metric	2732.653	858	Configural	235.964 (30)	< 0.001	0.001
Scalar	2985.057	888	Metric	252.404 (30)	< 0.001	0
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	2425.024	828				
Metric	2790.826	858	Configural	365.802 (30)	< 0.001	0.001
Scalar	2911.011	888	Metric	120.185 (30)	< 0.001	0

Table 1-D-4b. Global Model Fit Indices of Scalar Invariance Model for Grade 6 ELA

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	2916.979	1000	< 0.001	0.922	0.009
Ethnicity	2164.589	1000	< 0.001	0.948	0.007
SPED	2381.434	1000	< 0.001	0.932	0.008
LEP	2169.365	1000	< 0.001	0.925	0.007
Low Income	2218.996	1000	< 0.001	0.945	0.007

Table 1-D-5a. Global Model Fit Indices of Measurement Invariance Tests for Grade 7 ELA

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	2682.898	894				
Metric	2783.777	926	Configural	100.880 (32)	< 0.001	0.001
Scalar	3583.262	958	Metric	799.485 (32)	< 0.001	0.001
Invariance Across Students' Ethnicity (White vs. all other except Asian)						
Configural	2625.881	894				
Metric	2859.292	926	Configural	233.411 (32)	< 0.001	0.001
Scalar	3139.396	958	Metric	280.105 (32)	< 0.001	0
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural	2642.277	894				
Metric	2966.486	926	Configural	324.210 (32)	< 0.001	0.001
Scalar	3324.217	958	Metric	357.730 (32)	< 0.001	0.001
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural	2666.058	894				
Metric	2875.858	926	Configural	209.800 (32)	< 0.001	0.001
Scalar	3128.519	958	Metric	252.661 (32)	< 0.001	0
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	2616.053	894				
Metric	2875.029	926	Configural	258.976 (32)	< 0.001	0.001
Scalar	2992.216	958	Metric	117.187 (32)	< 0.001	0

Table 1-D-5b. Global Model Fit Indices of Scalar Invariance Model for Grade 7 ELA

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	3583.262	958	< 0.001	0.907	0.011
Ethnicity	3139.396	958	< 0.001	0.914	0.010
SPED	3324.217	958	< 0.001	0.899	0.011
LEP	3128.519	958	< 0.001	0.918	0.010
Low Income	2992.216	958	< 0.001	0.92	0.010

Table 1-D-6a. Global Model Fit Indices of Measurement Invariance Tests for Grade 8 ELA

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	6309.292	960				
Metric	6640.233	992	Configural	330.941 (32)	< 0.001	0.001
Scalar	8050.28	1024	Metric	1410.047 (32)	< 0.001	0.002
Invariance Across Students' Ethnicity (White vs. Asian vs. all other)						
Configural	6849.677	1440				
Metric	7715.38	1504	Configural	865.703 (64)	< 0.001	0.001
Scalar	8190.274	1568	Metric	474.894 (64)	< 0.001	0
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural	6297.225	960				
Metric	7078.154	992	Configural	780.928 (32)	< 0.001	0.001
Scalar	7853.752	1024	Metric	775.598 (32)	< 0.001	0
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural	6375.156	960				
Metric	7002.247	992	Configural	627.091 (32)	< 0.001	0.001
Scalar	7434.12	1024	Metric	431.874 (32)	< 0.001	0
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	6302.889	960				
Metric	7260.164	992	Configural	957.275 (32)	< 0.001	0.001
Scalar	7446.704	1024	Metric	186.540 (32)	< 0.001	0

Table 1-D-6b. Global Model Fit Indices of Scalar Invariance Model for Grade 8 ELA

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	8050.280	1024	< 0.001	0.906	0.018
Ethnicity	8190.274	1568	< 0.001	0.904	0.017
SPED	7853.752	1024	< 0.001	0.893	0.017
LEP	7434.120	1024	< 0.001	0.909	0.017
Low Income	7446.704	1024	< 0.001	0.906	0.017

Table 1-D-7a. Global Model Fit Indices of Measurement Invariance Tests for Grade 9 ELA

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	2166.478	824				
Metric	2303.116	854	Configural	136.637 (30)	< 0.001	0
Scalar	2966.018	884	Metric	662.903 (30)	< 0.001	0.002
Invariance Across Students' Ethnicity (White vs. all other except Asian)						
Configural	2122.053	824				
Metric	2404.276	854	Configural	282.223 (30)	< 0.001	0
Scalar	2668.684	884	Metric	282.223 (30)	< 0.001	0.001
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural						
Metric			Configural	780.928 (32)	< 0.001	0.001
Scalar			Metric	775.598 (32)	< 0.001	0
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural						
Metric			Configural	627.091 (32)	< 0.001	0.001
Scalar			Metric	431.874 (32)	< 0.001	0
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	2152.139	824				
Metric	2546.66	854	Configural	394.521 (30)	< 0.001	0.001
Scalar	2669.661	884	Metric	123.001 (30)	< 0.001	0

Table 1-D-7b. Global Model Fit Indices of Scalar Invariance Model for Grade 9 ELA

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	2966.018	884	< 0.001	0.939	0.011
Ethnicity	2668.684	884	< 0.001	0.942	0.010
SPED	N/A				
LEP	N/A				
Low Income	2669.661	884	< 0.001	0.942	0.010

Table 1-D-8a. Global Model Fit Indices of Measurement Invariance Tests for Grade 10 ELA

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	2301.795	778				
Metric	2430.181	808	Configural	128.386 (30)	< 0.001	0
Scalar	3290.294	838	Metric	860.113 (30)	< 0.001	0.002
Invariance Across Students' Ethnicity (White vs. all other except Asian)						
Configural	2244.562	778				
Metric	2562.873	808	Configural	318.310 (30)	< 0.001	0
Scalar	2740.136	838	Metric	177.263 (30)	< 0.001	0.001
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural	2302.514	778				
Metric	2509.663	808	Configural	207.149 (30)	< 0.001	0
Scalar	2898.355	838	Metric	388.692 (30)	< 0.001	0.001
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural	2295.572	778				
Metric	2541.127	808	Configural	245.556 (30)	< 0.001	0
Scalar	2769.045	838	Metric	227.918 (30)	< 0.001	0.001
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	2255.267	778				
Metric	2583.943	808	Configural	328.675 (30)	< 0.001	0
Scalar	2636.850	838	Metric	52.908 (30)	< 0.001	0

Table 1-D-8b. Global Model Fit Indices of Scalar Invariance Model for Grade 10 ELA

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	3290.294	838	< 0.001	0.918	0.012
Ethnicity	2740.136	838	< 0.001	0.927	0.011
SPED	2898.355	838	< 0.001	0.893	0.011
LEP	2769.045	838	< 0.001	0.929	0.011
Low Income	2636.85	838	< 0.001	0.933	0.010

Table 1-D-9a. Global Model Fit Indices of Measurement Invariance Tests for Grade 11 ELA

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	1221.602	766				
Metric	1366.347	795	Configural	144.745 (29)	< 0.001	0
Scalar	2408.148	824	Metric	1041.801 (29)	< 0.001	0.004
Invariance Across Students' Ethnicity (White vs. Asian vs. all other)						
Configural	1575.806	1134				
Metric	1737.344	1192	Configural	161.537 (58)	< 0.001	0
Scalar	1929.125	1250	Metric	191.782 (58)	< 0.001	0.001
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural	1179.284	766				
Metric	1332.852	795	Configural	153.568 (29)	< 0.001	0.001
Scalar	1495.257	824	Metric	162.405 (29)	< 0.001	0.001
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural	1222.597	766				
Metric	1298.258	795	Configural	75.661 (29)	< 0.001	0
Scalar	1410.293	824	Metric	112.035 (29)	< 0.001	0
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	1160.513	766				
Metric	1309.400	795	Configural	148.887 (29)	< 0.001	0.001
Scalar	1385.861	824	Metric	76.460 (29)	< 0.001	0

Table 1-D-9b. Global Model Fit Indices of Scalar Invariance Model for Grade 11 ELA

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	2408.148	824	< 0.001	0.932	0.010
Ethnicity	1929.125	1250	< 0.001	0.967	0.007
SPED	1495.257	824	< 0.001	0.966	0.007
LEP	1410.293	824	< 0.001	0.972	0.006
Low Income	1385.861	824	< 0.001	0.973	0.006

Table 1-D-10a. Global Model Fit Indices of Measurement Invariance Tests for Grade 3 Math

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	4305.422	1052				
Metric	4527.346	1085	Configural	221.923 (33)	< 0.001	0.001
Scalar	5217.070	1118	Metric	689.725 (33)	< 0.001	0
Invariance Across Students' Ethnicity (White vs. Asian vs. all other ethnic groups)						
Configural	4976.723	1578				
Metric	5775.048	1644	Configural	798.325 (66)	< 0.001	0.001
Scalar	6079.905	1710	Metric	304.857 (66)	< 0.001	0
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural	4305.335	1052				
Metric	4788.728	1085	Configural	483.392 (33)	< 0.001	0.001
Scalar	5673.816	1118	Metric	885.088 (33)	< 0.001	0.001
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural	4375.114	1052				
Metric	5011.072	1085	Configural	635.958 (33)	< 0.001	0
Scalar	5313.971	1118	Metric	302.899 (33)	< 0.001	0.001
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	4106.215	1052				
Metric	4971.131	1085	Configural	864.915 (33)	< 0.001	0
Scalar	5164.253	1118	Metric	193.122 (33)	< 0.001	0.001

Table 1-D-10b. Global Model Fit Indices of Scalar Invariance Model for Grade 3 Math

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	5217.07	1118	< 0.001	0.943	0.012
Ethnicity	6079.905	1710	< 0.001	0.934	0.013
SPED	5673.816	1118	< 0.001	0.939	0.013
LEP	5313.971	1118	< 0.001	0.939	0.013
Low Income	5164.253	1118	< 0.001	0.938	0.012

Table 1-D-11a. Global Model Fit Indices of Measurement Invariance Tests for Grade 4 Math

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	2665.235	1048				
Metric	2782.494	1081	Configural	117.259 (33)	< 0.001	0
Scalar	3374.526	1114	Metric	592.032 (33)	< 0.001	0.001
Invariance Across Students' Ethnicity (White vs. Asian vs. all other ethnic groups)						
Configural	3361.162	1571				
Metric	3872.88	1637	Configural	511.717 (66)	< 0.001	0
Scalar	4173.689	1703	Metric	300.809 (66)	< 0.001	0.001
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural	2659.376	1048				
Metric	3021.097	1081	Configural	361.720 (33)	< 0.001	0.001
Scalar	3848.392	1114	Metric	827.295 (33)	< 0.001	0.001
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural	2806.464	1048				
Metric	3206.058	1081	Configural	399.594 (33)	< 0.001	0.001
Scalar	3435.186	1114	Metric	229.127 (33)	< 0.001	0
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	2623.89	1048				
Metric	3183.124	1081	Configural	559.235 (33)	< 0.001	0.001
Scalar	3358.09	1114	Metric	174.966 (33)	< 0.001	0

Table 1-D-11b. Global Model Fit Indices of Scalar Invariance Model for Grade 4 Math

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	3374.526	1114	< 0.001	0.953	0.009
Ethnicity	4173.689	1703	< 0.001	0.944	0.010
SPED	3848.392	1114	< 0.001	0.939	0.010
LEP	3435.186	1114	< 0.001	0.949	0.009
Low Income	3358.09	1114	< 0.001	0.948	0.009

Table 1-D-12a. Global Model Fit Indices of Measurement Invariance Tests for Grade 5 Math

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	3776.623	1050				
Metric	3983.448	1083	Configural	206.825 (33)	< 0.001	0
Scalar	4869.199	1116	Metric	885.75 (33)	< 0.001	0.001
Invariance Across Students' Ethnicity (White vs. Asian vs. all other ethnic groups)						
Configural	4318.142	1572				
Metric	4901.105	1638	Configural	582.963 (66)	< 0.001	0
Scalar	5314.361	1704	Metric	413.256 (66)	< 0.001	0.001
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural	3631.505	1050				
Metric	4177.261	1083	Configural	545.756 (33)	< 0.001	0.001
Scalar	5440.222	1116	Metric	1262.961 (33)	< 0.001	0.002
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural	3718.319	1050				
Metric	4024.657	1083	Configural	306.339 (33)	< 0.001	0.001
Scalar	4366.714	1116	Metric	342.056 (33)	< 0.001	0
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	3681.025	1050				
Metric	4328.113	1083	Configural	647.088 (33)	< 0.001	0.001
Scalar	4494.460	1116	Metric	166.346 (33)	< 0.001	0

Table 1-D-12b. Global Model Fit Indices of Scalar Invariance Model for Grade 5 Math

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	4869.199	1116	< 0.001	0.949	0.009
Ethnicity	5314.361	1704	< 0.001	0.946	0.012
SPED	5440.222	1116	< 0.001	0.935	0.013
LEP	4366.714	1116	< 0.001	0.953	0.011
Low Income	4494.46	1116	< 0.001	0.949	0.011

Table 1-D-13a. Global Model Fit Indices of Measurement Invariance Tests for Grade 6 Math

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	3583.064	1054				
Metric	3763.235	1087	Configural	180.170 (33)	< 0.001	0
Scalar	4814.001	1120	Metric	1050.766 (33)	< 0.001	0.004
Invariance Across Students' Ethnicity (White vs. Asian vs. all other ethnic groups)						
Configural	4030.445	1580				
Metric	4788.224	1646	Configural	757.779 (66)	< 0.001	0.001
Scalar	5312.886	1712	Metric	524.662 (66)	< 0.001	0.001
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural	3499.830	1054				
Metric	4042.262	1087	Configural	542.432 (33)	< 0.001	0.001
Scalar	4697.620	1120	Metric	655.358 (33)	< 0.001	0.001
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural	3500.112	1054				
Metric	3955.937	1087	Configural	455.825 (33)	< 0.001	0.001
Scalar	4377.793	1120	Metric	421.856 (33)	< 0.001	0
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	3463.302	1054				
Metric	4110.968	1087	Configural	647.666 (33)	< 0.001	0.001
Scalar	4307.868	1120	Metric	196.899 (33)	< 0.001	0

Table 1-D-13b. Global Model Fit Indices of Scalar Invariance Model for Grade 6 Math

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	4814.001	1120	< 0.001	0.937	0.012
Ethnicity	5312.886	1712	< 0.001	0.933	0.012
SPED	4697.62	1120	< 0.001	0.925	0.012
LEP	4377.793	1120	< 0.001	0.941	0.011
Low Income	4307.868	1120	< 0.001	0.939	0.011

Table 1-D-14a. Global Model Fit Indices of Measurement Invariance Tests for Grade 7 Math

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	5201.291	1054				
Metric	5445.212	1087	Configural	243.921 (33)	< 0.001	0.001
Scalar	6644.554	1120	Metric	1199.342 (33)	< 0.001	0.001
Invariance Across Students' Ethnicity (White vs. Asian vs. all other ethnic groups)						
Configural	5584.708	1580				
Metric	6547.587	1646	Configural	962.879 (66)	< 0.001	0.001
Scalar	7338.595	1712	Metric	791.007 (66)	< 0.001	0.001
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural	N/A	1054				
Metric	N/A	1087	Configural	1007.992 (33)	< 0.001	0
Scalar	N/A	1120	Metric	1909.618 (33)	< 0.001	0
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural	5105.622	1054				
Metric	5716.858	1087	Configural	611.236 (33)	< 0.001	0.001
Scalar	6534.441	1120	Metric	817.583 (33)	< 0.001	0.001
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	4731.590	1054				
Metric	5987.647	1087	Configural	1256.057 (33)	< 0.001	0.001
Scalar	6374.084	1120	Metric	386.438 (33)	< 0.001	0.001

Table 1-D-14b. Global Model Fit Indices of Scalar Invariance Model for Grade 7 Math

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	6644.554	1120	< 0.001	0.946	0.015
Ethnicity	7338.595	1712	< 0.001	0.957	0.013
SPED	N/A	N/A	N/A	N/A	N/A
LEP	6534.441	1120	< 0.001	0.944	0.015
Low Income	6374.084	1120	< 0.001	0.943	0.015

Table 1-D-15a. Global Model Fit Indices of Measurement Invariance Tests for Grade 8 Math

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	7056.242	1052				
Metric	7403.117	1085	Configural	346.875 (33)	< 0.001	0
Scalar	8367.777	1118	Metric	964.660 (33)	< 0.001	0.001
Invariance Across Students' Ethnicity (White vs. Asian vs. all other ethnic groups)						
Configural	7658.547	1578				
Metric	8628.644	1644	Configural	970.098 (66)	< 0.001	0
Scalar	9408.58	1710	Metric	779.936 (66)	< 0.001	0.001
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural	7022.043	1052				
Metric	7725.84	1085	Configural	703.797 (33)	< 0.001	0.001
Scalar	10118.11	1118	Metric	2392.264 (33)	< 0.001	0.002
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural	7335.952	1052				
Metric	7945.297	1085	Configural	609.345 (33)	< 0.001	0
Scalar	8785.192	1118	Metric	839.895 (33)	< 0.001	0.001
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	6740.419	1052				
Metric	7946.962	1085	Configural	1206.543 (33)	< 0.001	0.001
Scalar	8530.191	1118	Metric	583.229 (33)	< 0.001	0

Table 1-D-15b. Global Model Fit Indices of Scalar Invariance Model for Grade 8 Math

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	8367.777	1118	< 0.001	0.910	0.017
Ethnicity	9408.58	1710	< 0.001	0.896	0.018
SPED	10118.11	1118	< 0.001	0.877	0.019
LEP	8785.192	1118	< 0.001	0.9	0.018
Low Income	8530.191	1118	< 0.001	0.899	0.017

Table 1-D-16a. Global Model Fit Indices of Measurement Invariance Tests for Grade SMI

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	4932.504	990				
Metric	5130.55	1022	Configural	198.047 (32)	< 0.001	0
Scalar	5995.994	1054	Metric	865.444 (32)	< 0.001	0.001
Invariance Across Students' Ethnicity (White vs. all other ethnic groups except Asian)						
Configural	4836.491	990				
Metric	5503.188	1022	Configural	666.696 (32)	< 0.001	0.001
Scalar	5917.706	1054	Metric	414.518 (32)	< 0.001	0.001
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural	6687.085	990				
Metric	7089.468	1022	Configural	402.383 (32)	< 0.001	0
Scalar	8977.315	1054	Metric	1887.847 (32)	< 0.001	0.002
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural	5506.623	990				
Metric	5787.201	1022	Configural	280.578 (32)	< 0.001	0
Scalar	6335.702	1054	Metric	548.502 (32)	< 0.001	0.001
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	5073.322	990				
Metric	5638.496	1022	Configural	565.173 (32)	< 0.001	0.001
Scalar	5973.942	1054	Metric	335.446 (32)	< 0.001	0

Table 1-D-16b. Global Model Fit Indices of Scalar Invariance Model for Grade SMI

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	5995.994	1054	< 0.001	0.907	0.014
Ethnicity	5917.706	1054	< 0.001	0.916	0.013
SPED	8977.315	1054	< 0.001	0.837	0.018
LEP	6335.702	1054	< 0.001	0.893	0.015
Low Income	5973.942	1054	< 0.001	0.898	0.014

Table 1-D-17a. Global Model Fit Indices of Measurement Invariance Tests for SMII

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	2320.918	1054				
Metric	2578.531	1087	Configural	257.613 (33)	< 0.001	0.001
Scalar	3012.818	1120	Metric	434.287 (33)	< 0.001	0
Invariance Across Students' Ethnicity (White vs. all other ethnic groups except Asian)						
Configural	2374.143	1054				
Metric	2563.747	1087	Configural	189.604 (33)	< 0.001	0.001
Scalar	2993.439	1120	Metric	429.692 (33)	< 0.001	0.001
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural						
Metric	N/A	N/A	Configural	N/A	N/A	N/A
Scalar	N/A	N/A	Metric	N/A	N/A	N/A
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural						
Metric	N/A	N/A	Configural	N/A	N/A	N/A
Scalar	N/A	N/A	Metric	N/A	N/A	N/A
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	2362.664	1054				
Metric	2584.292	1087	Configural	221.628 (33)	< 0.001	0.001
Scalar	2841.305	1120	Metric	257.013 (33)	< 0.001	0

Table 1-D-17b. Global Model Fit Indices of Scalar Invariance Model for SMII

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	3012.818	1120	< 0.001	0.924	0.009
Ethnicity	2993.439	1120	< 0.001	0.916	0.010
SPED	N/A				
LEP	N/A				
Low Income	2841.305	1120	< 0.001	0.925	0.009

Table 1-D-18a. Global Model Fit Indices of Measurement Invariance Tests for SMIII

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	3192.689	928				
Metric	3293.157	959	Configural	100.468 (31)	< 0.001	0
Scalar	3523.136	990	Metric	229.979 (31)	< 0.001	0
Invariance Across Students' Ethnicity (White vs. all other ethnic groups except Asian)						
Configural	3159.300	928				
Metric	3309.614	959	Configural	150.314 (31)	< 0.001	0
Scalar	3412.090	990	Metric	102.476 (310	< 0.001	0
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural	4129.055	928				
Metric	4321.372	959	Configural	192.316 (31)	< 0.001	0
Scalar	4465.490	990	Metric	144.118 (31)	< 0.001	0
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural		928				
Metric	3468.873	959	Configural			
Scalar	3599.846	990	Metric	130.973 (31)	< 0.001	0
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	3307.497	928				
Metric	3415.806	959	Configural	108.309 (33)	< 0.001	0
Scalar	3479.506	990	Metric	63.700 (33)	0.0005	0

Table 1-D-18b. Global Model Fit Indices of Scalar Invariance Model for SMIII

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	3523.136	990	< 0.001	0.806	0.017
Ethnicity	3412.090	990	< 0.001	0.791	0.017
SPED	4465.490	990	< 0.001	0.750	0.020
LEP	3599.846	990	< 0.001	0.789	0.018
Low Income	3479.506	990	< 0.001	0.8	0.017

Table 1-D-19a. Global Model Fit Indices of Measurement Invariance Tests for Grade 4 Science

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	2211.078	810				
Metric	2321.110	839	Configural	110.032 (29)	< 0.001	0
Scalar	3178.548	868	Metric	847.438 (29)	< 0.001	0.002
Invariance Across Students' Ethnicity (White vs. Asian vs. all other ethnic groups)						
Configural	2576.619	1215				
Metric	3416.127	1273	Configural	839.508 (58)	< 0.001	0.002
Scalar	3755.449	1331	Metric	339.322 (58)	< 0.001	0.001
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural	2055.545	810				
Metric	2713.292	839	Configural	657.747 (29)	< 0.001	0.002
Scalar	3103.614	868	Metric	391.322 (29)	< 0.001	0
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural	2021.804	810				
Metric	2664.406	839	Configural	642.602 (29)	< 0.001	0.002
Scalar	2964.357	868	Metric	299.951 (29)	< 0.001	0.001
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	2048.876	810				
Metric	2793.041	839	Configural	744.165 (29)	< 0.001	0.002
Scalar	2987.835	868	Metric	194.794 (29)	< 0.001	0

Table 1-D-19b. Global Model Fit Indices of Scalar Invariance Model for Grade 4 Science

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	3178.548	868	< 0.001	0.949	0.011
Ethnicity	3755.449	1331	< 0.001	0.938	0.011
SPED	3104.614	868	< 0.001	0.943	0.010
LEP	2964.357	868	< 0.001	0.946	0.011
Low Income	2987.835	868	< 0.001	0.946	0.010

Table 1-D-20a. Global Model Fit Indices of Measurement Invariance Tests for Grade 5 Science

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	2381.652	868				
Metric	2566.013	898	Configural	184.362 (30)	< 0.001	0
Scalar	3304.326	928	Metric	738.312 (30)	< 0.001	0.001
Invariance Across Students' Ethnicity (White vs. Asian vs. all other ethnic groups)						
Configural	2892.681	1302				
Metric	3421.248	1362	Configural	528.566 (60)	< 0.001	0
Scalar	3726.689	1422	Metric	305.442 (60)	< 0.001	0.001
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural	2354.785	868				
Metric	2738.751	898	Configural	383.966 (30)	< 0.001	0
Scalar	3169.819	928	Metric	431.069 (30)	< 0.001	0.001
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural	2412.405	868				
Metric	2729.983	898	Configural	317.578 (30)	< 0.001	0
Scalar	3050.277	928	Metric	320.294 (30)	< 0.001	0.001
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	2404.513	868				
Metric	2820.312	898	Configural	415.799 (30)	< 0.001	0.001
Scalar	3019.940	928	Metric	199.628 (30)	< 0.001	0

Table 1-D-20b. Global Model Fit Indices of Scalar Invariance Model for Grade 5 Science

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	3304.326	928	< 0.001	0.943	0.010
Ethnicity	3726.689	1422	< 0.001	0.937	0.010
SPED	3169.819	928	< 0.001	0.938	0.010
LEP	3050.277	928	< 0.001	0.944	0.010
Low Income	3019.94	928	< 0.001	0.943	0.010

Table 1-D-21a. Global Model Fit Indices of Measurement Invariance Tests for Grade 6 Science

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	18644.056	1188				
Metric	19169.365	1223	Configural	525.309 (35)	< 0.001	0
Scalar	21230.282	1258	Metric	2060.917 (35)	< 0.001	0.001
Invariance Across Students' Ethnicity (White vs. Asian vs. all other ethnic groups)						
Configural	19370.371	1782				
Metric	20227.908	1852	Configural	857.537 (70)	< 0.001	0
Scalar	20810.081	1922	Metric	582.173 (70)	< 0.001	0
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural	18100.574	1188				
Metric	19054.116	1223	Configural	943.542 (35)	< 0.001	0
Scalar	21029.513	1258	Metric	1975.397 (35)	< 0.001	0.001
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural	18638.33	1188				
Metric	19292.319	1223	Configural	653.989 (35)	< 0.001	0.001
Scalar	19928.681	1258	Metric	636.362 (35)	< 0.001	0
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	18534.875	1188				
Metric	19604.369	1223	Configural	1069.495 (35)	< 0.001	0.001
Scalar	20058.965	1258	Metric	454.596 (35)	< 0.001	0

Table 1-D-21b. Global Model Fit Indices of Scalar Invariance Model for Grade 6 Science

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	21320.282	1258	< 0.001	0.876	0.026
Ethnicity	20810.081	1922	< 0.001	0.88	0.026
SPED	21029.513	1258	< 0.001	0.860	0.026
LEP	19928.681	1258	< 0.001	0.875	0.026
Low Income	20058.965	1258	< 0.001	0.871	0.026

Table 1-D-22a. Global Model Fit Indices of Measurement Invariance Tests for Grade 7 Science

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	4387.217	814				
Metric	4620.319	844	Configural	233.102 (30)	< 0.001	0
Scalar	5976.640	874	Metric	1356.321 (30)	< 0.001	0.002
Invariance Across Students' Ethnicity (White vs. Asian vs. all other ethnic groups)						
Configural	4783.971	1221				
Metric	5706.954	1281	Configural	922.983 (60)	< 0.001	0.001
Scalar	6176.069	1341	Metric	469.115 (60)	< 0.001	0
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural	4252.731	814				
Metric	4905.217	844	Configural	652.486 (30)	< 0.001	0.001
Scalar	5447.773	874	Metric	542.556 (30)	< 0.001	0.001
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural	4282.066	814				
Metric	4910.332	844	Configural	628.266 (30)	< 0.001	0.001
Scalar	5300.688	874	Metric	390.356 (30)	< 0.001	0.001
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	4302.793	814				
Metric	5091.648	844	Configural	788.855 (30)	< 0.001	0.002
Scalar	5226.911	874	Metric	135.263 (30)	< 0.001	0

Table 1-D-22b. Global Model Fit Indices of Scalar Invariance Model for Grade 7 Science

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	5976.640	874	< 0.001	0.936	0.017
Ethnicity	6176.069	1341	< 0.001	0.931	0.016
SPED	5447.773	874	< 0.001	0.933	0.016
LEP	5300.688	874	< 0.001	0.939	0.016
Low Income	5226.911	874	< 0.001	0.939	0.016

Table 1-D-23a. Global Model Fit Indices of Measurement Invariance Tests for Grade 8 Science

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	3320.988	868				
Metric	3628.664	898	Configural	346.875 (30)	< 0.001	0.001
Scalar	5596.917	928	Metric	964.660 (30)	< 0.001	0.003
Invariance Across Students' Ethnicity (White vs. Asian vs. all other ethnic groups)						
Configural	3827.547	1302				
Metric	4569.022	1362	Configural	741.475 (60)	< 0.001	0.001
Scalar	4885.286	1422	Metric	316.265 (60)	< 0.001	0
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural	3261.892	868				
Metric	3683.883	898	Configural	421.990 (30)	< 0.001	0.001
Scalar	4516.315	928	Metric	832.433 (30)	< 0.001	0.001
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural	3344.271	868				
Metric	3720.722	898	Configural	376.450 (30)	< 0.001	0.001
Scalar	4152.514	928	Metric	431.793 (30)	< 0.001	0.001
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	3222.881	868				
Metric	4037.800	898	Configural	814.919 (30)	< 0.001	0.002
Scalar	4215.418	928	Metric	177.618 (30)	< 0.001	0

Table 1-D-23b. Global Model Fit Indices of Scalar Invariance Model for Grade 8 Science

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	5596.917	928	< 0.001	0.907	0.015
Ethnicity	4885.286	1422	< 0.001	0.921	0.013
SPED	4516.315	928	< 0.001	0.917	0.013
LEP	4152.514	928	< 0.001	0.928	0.013
Low Income	4215.418	928	< 0.001	0.925	0.013

Table 1-D-24a. Global Model Fit Indices of Measurement Invariance Tests for Biology

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	2731.658	868				
Metric	2999.819	898	Configural	268.161 (30)	< 0.001	0
Scalar	3863.661	928	Metric	863.842 (30)	< 0.001	0.002
Invariance Across Students' Ethnicity (White vs. Asian vs. all other ethnic groups)						
Configural	2976.418	1302				
Metric	4059.929	1362	Configural	1083.511 (60)	< 0.001	0.003
Scalar	4674.299	1422	Metric	614.370 (60)	< 0.001	0
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural	2632.874	868				
Metric	3036.977	898	Configural	404.104 (30)	< 0.001	0
Scalar	3599.360	928	Metric	562.383 (30)	< 0.001	0.001
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural	2523.695	868				
Metric	3132.455	898	Configural	608.760 (30)	< 0.001	0.002
Scalar	3667.747	928	Metric	535.292 (30)	< 0.001	0
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	2609.219	868				
Metric	3332.270	898	Configural	723.051 (30)	< 0.001	0.002
Scalar	3494.009	928	Metric	161.739 (30)	< 0.001	0

Table 1-D-24b. Global Model Fit Indices of Scalar Invariance Model for Biology

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	3863.661	928	< 0.001	0.952	0.012
Ethnicity	4674.299	1422	< 0.001	0.94	0.012
SPED	3599.360	928	< 0.001	0.951	0.011
LEP	3667.747	928	< 0.001	0.951	0.011
Low Income	3494.009	928	< 0.001	0.954	0.011

Table 1-D-25a. Global Model Fit Indices of Measurement Invariance Tests for Chemistry

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	4731.580	1258				
Metric	5078.838	1294	Configural	343.258 (36)	< 0.001	0.001
Scalar	6629.154	1330	Metric	1554.316 (36)	< 0.001	0.002
Invariance Across Students' Ethnicity (White vs. Asian vs. all other ethnic groups)						
Configural	5350.907	1887				
Metric	5990.453	1959	Configural	639.547 (72)	< 0.001	0.001
Scalar	6307.829	2031	Metric	639.547 (72)	< 0.001	0
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural	4699.809	1258				
Metric	4789.713	1294	Configural	89.904 (36)	< 0.001	0
Scalar	4900.433	1330	Metric	110.720 (36)	< 0.001	0
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural	4639.539	1258				
Metric	4950.472	1294	Configural	310.933 (36)	< 0.001	0
Scalar	5195.120	1330	Metric	244.648 (36)	< 0.001	0.001
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	4652.453	1258				
Metric	5035.683	1294	Configural	383.231 (36)	< 0.001	0.001
Scalar	5122.520	1330	Metric	86.837 (36)	< 0.001	0

Table 1-D-25b. Global Model Fit Indices of Scalar Invariance Model for Chemistry

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	6629.154	1330	< 0.001	0.938	0.018
Ethnicity	6307.829	2031	< 0.001	0.944	0.016
SPED	4900.433	1330	< 0.001	0.957	0.015
LEP	5195.120	1330	< 0.001	0.951	0.016
Low Income	5122.520	1330	< 0.001	0.952	0.016

Table 1-D-26a. Global Model Fit Indices of Measurement Invariance Tests for ESS

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	1764.321	868				
Metric	1938.454	898	Configural	174.133 (30)	< 0.001	0
Scalar	3299.119	928	Metric	1360.665 (30)	< 0.001	0.005
Invariance Across Students' Ethnicity (White vs. Asian vs. all other ethnic groups)						
Configural	2379.355	1302				
Metric	2839.916	1362	Configural	460.560 (60)	< 0.001	0.001
Scalar	2994.025	1422	Metric	154.110 (60)	< 0.001	0
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural	1705.634	868				
Metric	1869.187	898	Configural	163.552 (30)	< 0.001	0
Scalar	2118.733	928	Metric	249.546 (30)	< 0.001	0.001
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural	1763.306	868				
Metric	2117.473	898	Configural	354.168 (30)	< 0.001	0.001
Scalar	2242.392	928	Metric	124.919 (30)	< 0.001	0
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	1806.834	868				
Metric	2053.052	898	Configural	246.218 (30)	< 0.001	0.001
Scalar	2139.231	928	Metric	86.179 (30)	< 0.001	0

Table 1-D-26b. Global Model Fit Indices of Scalar Invariance Model for ESS

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	3299.119	928	< 0.001	0.886	0.014
Ethnicity	2994.025	1422	< 0.001	0.916	0.011
SPED	2118.733	928	< 0.001	0.934	0.010
LEP	2242.392	928	< 0.001	0.929	0.010
Low Income	2139.231	928	< 0.001	0.937	0.01

Table 1-D-27a. Global Model Fit Indices of Measurement Invariance Tests for Physics

Invariance Model	χ^2	*df*	χ^2 Difference Test			Change in RMSEA
			Comparison	$\chi^2(df)$	*p* value	
Invariance Across Students' Gender (Female vs. Male)						
Configural	2300.422	978				
Metric	2506.264	1010	Configural	205.842 (32)	< 0.001	0
Scalar	3202.433	1042	Metric	696.169 (32)	< 0.001	0.003
Invariance Across Students' Ethnicity (White vs. Asian vs. all other ethnic groups)						
Configural	2774.327	1467				
Metric	3108.864	1531	Configural	334.537 (64)	< 0.001	0
Scalar	3386.239	1595	Metric	277.375 (64)	< 0.001	0.001
Invariance Across Students' SPED Status (Special education vs. Non)						
Configural	2370.283	978				
Metric	2461.587	1010	Configural	91.304 (32)	< 0.001	0
Scalar	2604.825	1042	Metric	143.238 (32)	< 0.001	0
Invariance Across Students' LEP Status (Limited English Proficiency vs. Non)						
Configural	2191.285	978				
Metric	2373.892	1010	Configural	182.607 (32)	< 0.001	0.001
Scalar	2695.9	1042	Metric	322.008 (32)	< 0.001	0.001
Invariance Across Students' Low Income Status (Low Income vs. Non)						
Configural	2225.542	978				
Metric	2521.042	1010	Configural	295.500 (32)	< 0.001	0.001
Scalar	2699.348	1042	Metric	148.306 (32)	< 0.001	0.001

Table 1-D-27b. Global Model Fit Indices of Scalar Invariance Model for Physics

Subgroups	Chi-Square Test			CFI	RMSEA
	Value	*df*	P-Value		
Gender	3202.433	1042	< 0.001	0.911	0.016
Ethnicity	3386.239	1595	< 0.001	0.923	0.014
SPED	2604.825	1042	< 0.001	0.937	0.013
LEP	2695.900	1042	< 0.001	0.929	0.014
Low Income	2669.348	1042	< 0.001	0.932	0.014

Appendix 1-E

Examining Pandemic Impacts on Student Achievement in Matched Samples of Student Cohorts

Appendix 1-E
Examining Pandemic Impacts on Student Achievement in Matched Samples of Student Cohorts

Following the approach described by Ho (2021), we began by identifying matched samples of students testing pre- and post-pandemic. To identify matched samples of students we applied the following steps.

Step 1. First, we built a regression model by regressing student achievement in 2019 onto student achievement and demographic characteristics of those same students in 2017. The demographic variables include gender, ethnicity, English learner (LEP) status, special education (SPED) status and low income status. All variables were entered into the regression equation simultaneously:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n$$

where Y is the 2019 score, $X_1$is the 2017 score, and $X_2 \sim X_n$ refer to the demographic variables. The bidirectional stepwise selection algorithm was used to identify the final predictors. The adjusted R^{22}values ranged from 0.60 to 063 for the regression models predicting ELA achievement, and R^2 values ranged from 0.62 to 0.68 for regression models predicting mathematics achievement. The adjusted R^2 values and the estimated regression weights for each model are provided in Appendix A.

Step 2. The student testing population has changed between pre- and post-pandemic. To enable an appropriate comparison between the performance of students in 2021 and the performance of their academic peers in 2019, we first identified students who had test scores available in both 2019 and 2021 and labeled those students as Sample 1 (**S1)**. Those students who had 2019 scores, but not 2021 scores, were labeled as Sample 2 (**S2)**. Table 1 shows the number of students and their average 2019 scores in S1 and S2. We found that the students who didn't participate in 2021 tests tended to be lower achieving students in spring 2019, except for those students for whom the 2021 grade 7 and grade 8 mathematics test scores were missing. A more detailed analysis on these grade 7 and 8 students is presented later in this document.

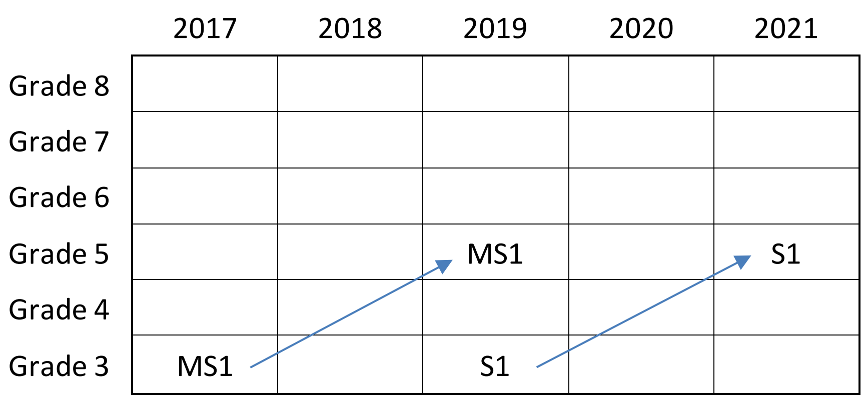
Table 1. Comparison between Students with Both 2019 and 2021 Scores and Students with Only 2019 Scores

Test (2019-2021)	Students with 2019 & 2021 Scores (S1)		Students with Only 2019 Scores (S2)	
	N Count	Average 2019 Score	N Count	Average 2019 Score
G3E-G5E	42842	330	5425	320
G4E-G6E	43374	371	5653	357
G5E-G7E	42744	401	7386	382
G6E-G8E	41942	431	8113	403
G3M-G5M	42497	315	5739	308
G4M-G6M	43051	348	6089	337
G5M-G7M	40111	378	9954	379

Test (2019-2021)	Students with 2019 & 2021 Scores (S1)		Students with Only 2019 Scores (S2)	
	N Count	Average 2019 Score	N Count	Average 2019 Score
G6M-G8M	38279	409	11622	415

<u>*Step 3.*</u> In the third step we sought to identify matched samples of students in S1 from the cohort of students participating in the spring 2017 and spring 2019 test administrations. In this approach, we began by identifying students with the same scale base year scale scores between cohorts. For example, for a student who was administered a grade 3 ELA test in 2019, we drew a student with same grade 3 ELA score from among the 2017 grade 3 ELA test takers. The matching was conducted based on the grade ***g-2*** scale score using the 1:1 nearest neighbor sampling method. This matched sample is labeled as **MS1**. Figure 1 illustrates the longitudinal and cross-sectional mapping of S1 and MS1 from 2017 to 2021. The balance in the demographic variables between the matched samples was checked following application of the matching procedure. The tables in Appendix B provide a comparison of the achievement and demographic characteristics between S1 and MS1. The tables present the sample size, the mean, standard deviation, minimum, maximum, skewness and kurtosis of the score distribution and the proportion of students classified in each demographic category. The comparison indicates that the score distribution and demographic composition of the matched samples is quite similar, and that the matching procedure was effective.

Figure 1. The Longitudinal and Cross-Sectional Mapping of S1 and MS1 from 2017-2021



<u>*Step 4.*</u> The regression coefficients obtained from Step 1 were then applied to the 2017 grade ***g-2*** scores in MS1 to predict their 2019 grade ***g*** outcomes.

<u>*Step 5.*</u> Now the fair comparison can be made between the observed grade ***g*** scores in 2021 scores and the estimated grade ***g*** scores of their matching peers in 2019.

Matched Sample Cohort Comparisons

Table 2 presents the mean and standard deviation of the grade ***g*** scores in both cohorts, the decline in scale score points, the effect size of the decline and the percent of students met proficiency in both samples. Cohen's ***d*** is used as the effect size to measure the difference between the two means.

$$Cohen's\ d = \frac{\bar{x}_1 - \bar{x}_2}{s} \text{ and } s = \sqrt{\frac{(n_1-1)s_1^2 + (n_2-1)s_2^2}{n_1+n_2-2}}$$

Where $\overline{x}_1$ and $\overline{x}_2$ are the means of the two samples; and s_1 and s_2 are the standard deviations of the two samples.

Table 2. The Comparison between the Observed 2021 Performance and the Estimated 2019 Performance

	2019			2021			Difference (2019-2021)		
	Mean	SD	% Met Proficiency	Mean	SD	% Met Proficiency	Scale Score	Effect Size of Scale Score Difference	% Met Proficiency
G5E	403	56	46	387	86	44	16	0.22	2
G6E	438	66	54	414	87	44	24	0.31	10
G7E	434	64	44	426	84	41	8	0.11	3
G8E	455	70	45	446	91	43	9	0.11	2
G5M	379	44	48	368	53	42	11	0.23	6
G6M	412	50	37	400	60	32	12	0.22	5
G7M	440	51	47	427	64	40	13	0.22	7
G8M	476	60	40	465	75	35	11	0.16	5

In general, we see significant level of learning loss in all grades and subjects when comparing pre- and post-pandemic cohorts. With respect to the ELA assessments, the decline in scale scores, and associated effect sizes, indicate that the pandemic impact was more pronounced for students in grade 5 and grade 6 in 2021 than for students in grade 7 and grade 8. The pandemic impact on mathematics achievement was generally consistent with respect to drops in scale scores and percent proficient, although the effect size for students in grade 8 was somewhat smaller. I We note that the pandemic related impact on proficiency rates may be underestimated due to the shrinkage in the variance of the predicted values from the regression model. In this case, the difference between the average scale scores is a better estimate of the pandemic impact.

Matched Sample Comparisons Across Demographic Subgroups

We also compared the student performance between the pre- and post- pandemic in each demographic subgroup. Tables 3-10 show the average predicted 2019 score, average observed 2021 score, the decline from 2019 to 2021 and the effect size of the decline for each subgroup. We see learning loss in all subgroups except females in grade 7 and grade 8 ELA. The t-test was performed for the mean difference in each subgroup. The result supports that the decline in the scale score is statistically significant. The boys are affected more in ELA than in mathematics. The girls are affected more in grade 5 and 6 mathematics. White students showed the smallest decline compared to other ethnicity groups in most of the tests. By looking at the effect size, the English learner (LEP) and special education group are affected the most compared to other groups. The performance dropped significantly for these two groups across all ELA and mathematics assessments.

Table 3. The Subgroup Comparison between the Observed 2021 Performance and the Estimated 2019 Performance - Grade 5 ELA

	Predicted 2019		Observed 2021		Decline (2019-2021)	Effect Size (Cohen's d)
	Mean	SD	Mean	SD		
Female	402	56	394	83	8	0.11
Male	405	55	380	88	25	0.34
African American	365	54	339	89	26	0.35
Asian	417	56	398	88	19	0.26
Hispanic/Latino	368	50	343	83	25	0.36
American Indian	356	51	331	81	25	0.37
Pacific Islander	374	46	345	79	29	0.45
Multi Racial	407	51	389	83	18	0.26
White	414	52	400	82	14	0.20
LEP	360	49	312	73	48	0.77
Low Income	377	52	351	86	26	0.37
Special Education	360	57	304	85	56	0.77

Table 4. The Subgroup Comparison between the Observed 2021 Performance and the Estimated 2019 Performance - Grade 6 ELA

	Predicted 2019		Observed 2021		Decline	Effect Size
	Mean	SD	Mean	SD	(2019-2021)	(Cohen's d)
Female	432	66	421	84	11	0.15
Male	433	64	408	89	25	0.35
African American	390	65	359	85	31	0.41
Asian	451	69	420	87	31	0.39
Hispanic/Latino	396	60	368	84	28	0.38
American Indian	379	57	357	83	22	0.31
Pacific Islander	399	58	378	76	21	0.31
Multi Racial	445	65	421	84	24	0.32
White	450	62	429	83	21	0.29
LEP	387	59	328	72	59	0.90
Low Income	406	63	379	87	27	0.36
Special Education	380	67	319	82	61	0.81

Table 5. The Subgroup Comparison between the Observed 2021 Performance and the Estimated 2019 Performance - Grade 7 ELA

	Predicted 2019		Observed 2021		Decline	Effect Size
	Mean	SD	Mean	SD	(2019-2021)	(Cohen's d)
Female	428	65	435	81	-7	-0.10
Male	440	61	417	85	23	0.31
African American	385	64	377	82	8	0.11
Asian	452	62	441	87	11	0.15
Hispanic/Latino	390	60	384	80	6	0.08
American Indian	377	61	371	77	6	0.09
Pacific Islander	398	58	385	73	13	0.20
Multi Racial	440	60	432	83	8	0.11
White	447	58	439	81	8	0.11
LEP	378	59	342	63	36	0.59
Low Income	403	63	393	83	10	0.14
Special Education	373	65	339	73	34	0.49

Table 6. The Subgroup Comparison between the Observed 2021 Performance and the Estimated 2019 Performance - Grade 8 ELA

	Predicted 2019		Observed 2021		Decline (2019-2021)	Effect Size (Cohen's d)
	Mean	SD	Mean	SD		
Female	446	70	458	88	-12	-0.15
Male	464	66	435	94	29	0.36
African American	404	69	392	94	12	0.15
Asian	476	70	463	95	13	0.16
Hispanic/Latino	407	66	398	91	9	0.11
American Indian	401	64	388	88	13	0.17
Pacific Islander	404	64	398	86	6	0.08
Multi Racial	460	66	449	90	11	0.14
White	468	63	460	87	8	0.11
LEP	390	62	344	74	46	0.67
Low Income	421	69	410	93	11	0.13
Special Education	382	66	343	79	39	0.54

Table 7. The Subgroup Comparison between the Observed 2021 Performance and the Estimated 2019 Performance - Grade 5 Mathematics

	Predicted 2019		Observed 2021		Decline (2019-2021)	Effect Size (Cohen's d)
	Mean	SD	Mean	SD		
Female	379	46	365	50	14	0.29
Male	378	42	371	55	7	0.14
African American	343	45	331	51	12	0.25
Asian	392	42	381	53	11	0.23
Hispanic/Latino	352	42	338	50	14	0.30
American Indian	345	42	327	52	18	0.38
Pacific Islander	358	40	339	47	19	0.44
Multi Racial	379	40	367	52	12	0.26
White	386	42	377	50	9	0.19
LEP	350	42	323	46	27	0.61
Low Income	359	44	345	53	14	0.29
Special Education	346	50	318	56	28	0.53

Table 8. The Subgroup Comparison between the Observed 2021 Performance and the Estimated 2019 Performance - Grade 6 Mathematics

	Predicted 2019		Observed 2021		Decline	Effect Size
	Mean	SD	Mean	SD	(2019-2021)	(Cohen's d)
Female	413	51	398	58	15	0.27
Male	412	48	402	62	10	0.18
African American	374	52	352	61	22	0.39
Asian	426	51	410	63	16	0.28
Hispanic/Latino	380	46	365	58	15	0.29
American Indian	374	42	355	59	19	0.37
Pacific Islander	390	45	375	56	15	0.30
Multi Racial	414	48	402	59	12	0.22
White	421	46	411	57	10	0.19
LEP	377	47	341	53	36	0.72
Low Income	389	49	373	61	16	0.29
Special Education	370	54	333	59	37	0.65

Table 9. The Subgroup Comparison between the Observed 2021 Performance and the Estimated 2019 Performance - Grade 7 Mathematics

	Predicted 2019		Observed 2021		Decline (2019-2021)	Effect Size (Cohen's d)
	Mean	SD	Mean	SD		
Female	439	54	426	60	13	0.23
Male	440	49	427	66	13	0.22
African American	397	51	379	62	18	0.32
Asian	453	52	440	65	13	0.22
Hispanic/Latino	405	49	392	62	13	0.23
American Indian	390	52	382	62	8	0.14
Pacific Islander	406	47	391	60	15	0.28
Multi Racial	438	49	429	63	9	0.16
White	450	47	438	60	12	0.22
LEP	397	49	362	53	35	0.69
Low Income	415	52	400	65	15	0.25
Special Education	393	56	360	60	33	0.57

Table 10. The Subgroup Comparison between the Observed 2021 Performance and the Estimated 2019 Performance - Grade 8 Mathematics

	Predicted 2019		Observed 2021		Decline (2019-2021)	Effect Size (Cohen's d)
	Mean	SD	Mean	SD		
Female	474	62	466	70	8	0.12
Male	478	57	464	78	14	0.20
African American	425	63	409	74	16	0.23
Asian	493	60	480	74	13	0.19
Hispanic/Latino	435	59	422	71	13	0.20
American Indian	437	60	421	67	16	0.25
Pacific Islander	441	58	428	68	13	0.21
Multi Racial	473	56	463	74	10	0.15
White	488	54	478	70	10	0.16
LEP	424	60	387	61	37	0.61
Low Income	448	61	435	75	13	0.19
Special Education	416	63	386	67	30	0.46

Matched Sample Comparison of 2021 Non-Participating Students

The matched sample method also allows the estimation of the performance of the students who didn't participate in the spring 2021 assessments. To estimate ability of students who did not participate in the spring 2021, we drew a matched sample (MS2) from the 2017 test records to match S2. Tables in Appendix C compare the scores and demographic characteristics between the matched samples S2 and MS2. Then we applied the regression coefficients from Step 1 to MS2 to predict their 2019 performance. Table 11 shows the predicted 2019 score of MS2, which represents expected pre-pandemic performance of those non-participating students and the comparison to the performance of the participating students. The expected average score for the non-participating students is much lower compared to the participating students in all tests except for grade 7 and 8 mathematics. A closer look at the missing students in both subjects, we found that there were more students that opted out of the mathematics tests than the ELA tests in grade 7 and 8. Those who took ELA but missed mathematics tend to have much better performance in the previous year mathematics tests. We assume this group of students selected to take more advanced mathematics assessments, such as Aspire 9/10.

Table 11. The Expected Performance of the Participating and Non-Participating Students in the 2021 Assessments

Test	participating			non-participating		
	Mean	SD	%proficient	Mean	SD	%proficient
G5E	403	56	46	395	60	40
G6E	438	66	54	425	70	45
G7E	434	64	44	416	68	34
G8E	455	70	45	431	72	31
G5M	379	44	48	369	47	42
G6M	412	50	37	399	70	28
G7M	440	51	47	440	60	47
G8M	476	60	40	482	74	46

References

Ho, A. (2021, February 26). *Three test-score metrics that all states should report in the COVID-19-affected spring of 2021.* Harvard Graduate School of Education. https://scholar.harvard.edu/files/andrewho/files/

Appendices

Appendix A: Regression Models Used to Predict the Spring 2019 Scores Using Spring 2017 Scores and Demographic Variables

Test	Predictor	Regression Coefficients	Std. Error	t value	Pr(>|t|)
G3E-G5E (R^2 =0.62)	(Intercept)	165.834	1.176	141.011	0
	score	0.746	0.003	231.329	0
	GNDR	-4.34	0.449	-9.665	0
	LEP	-2.343	0.901	-2.6	0.009
	SPED	-12.8	0.726	-17.626	0
	LowIncome	-7.619	0.515	-14.794	0
	Asian	10.187	1.894	5.378	0
	AA	-11.64	1.948	-5.974	0
	Pacific	-5.784	1.83	-3.16	0.002
	Hispanic	-7.661	0.81	-9.457	0
	AmIndian	-13.824	2.266	-6.1	0
	Multi	-0.072	1.374	-0.053	0.958

Test	Predictor	Regression Coefficients	Std. Error	t value	Pr(>|t|)
G4E-G6E (R^2 =0.63)	(Intercept)	146.227	1.391	105.149	0
	score	0.796	0.003	231.187	0
	GNDR	6.078	0.492	12.364	0
	LEP	-0.577	0.996	-0.58	0.562
	SPED	-13.947	0.8	-17.428	0
	LowIncome	-9.332	0.564	-16.538	0
	Asian	9.873	2.079	4.749	0
	AA	-10.183	2.231	-4.564	0
	Pacific	-8.584	2.016	-4.258	0
	Hispanic	-6.465	0.893	-7.242	0
	AmIndian	-15.95	2.508	-6.361	0
	Multi	0.14	1.544	0.091	0.928

	Predictor	Regression Coefficients	Std. Error	t value	Pr(>|t|)
G5E-G7E (R^2 =0.62)	(Intercept)	131.542	1.546	85.101	0
	score	0.764	0.004	215.98	0
	GNDR	6.03	0.513	11.744	0
	LEP	-1.783	1.049	-1.699	0.089
	SPED	-9.235	0.858	-10.759	0
	LowIncome	-9.421	0.593	-15.881	0
	Asian	9.626	2.098	4.588	0

Test	Predictor	Regression Coefficients	Std. Error	t value	Pr(>|t|)
	AA	-13.44	2.403	-5.593	0
	Pacific	-10.488	2.118	-4.951	0
	Hispanic	-10.545	0.926	-11.394	0
	AmIndian	-11.803	2.599	-4.542	0
	Multi	-2.208	1.609	-1.372	0.17

G6E-G8E (R^2 =0.60)	Predictor	Regression Coefficients	Std. Error	t value	Pr(>|t|)
	(Intercept)	132.722	1.727	76.845	0
	score	0.753	0.004	202.581	0
	GNDR	7.144	0.553	12.931	0
	LEP	-6.199	1.145	-5.414	0
	SPED	-8.15	0.97	-8.404	0
	LowIncome	-7.619	0.642	-11.861	0
	Asian	12.291	2.232	5.507	0
	AA	-9.227	2.527	-3.652	0
	Pacific	-16.017	2.243	-7.14	0
	Hispanic	-8.28	0.945	-8.761	0
	AmIndian	-7.446	2.824	-2.636	0.008
	Multi	-1.582	1.757	-0.901	0.368

G3M-G5M (R^2 =0.65)	Predictor	Regression Coefficients	Std. Error	t value	Pr(>|t|)
	(Intercept)	9.678	1.564	6.19	0
	score	1.182	0.005	252.082	0
	GNDR	-0.288	0.296	-0.973	0.331
	LEP	0.968	0.591	1.637	0.102
	SPED	-6.047	0.479	-12.634	0
	LowIncome	-5.793	0.338	-17.12	0
	Asian	6.821	1.25	5.457	0
	AA	-8.152	1.28	-6.37	0
	Pacific	-1.81	1.211	-1.495	0.135
	Hispanic	-4.352	0.534	-8.143	0
	AmIndian	-3.238	1.501	-2.158	0.031
	Multi	0.48	0.907	0.529	0.597

G4M-G6M (R^2 =0.68)	Predictor	Regression Coefficients	Std. Error	t value	Pr(>|t|)
	(Intercept)	40.212	1.548	25.977	0
	score	1.078	0.004	258.841	0
	GNDR	3.019	0.316	9.564	0

Test	Predictor	Regression Coefficients	Std. Error	t value	Pr(>|t|)
	LEP	-0.693	0.633	-1.095	0.274
	SPED	-7.537	0.516	-14.598	0
	LowIncome	-6.598	0.36	-18.349	0
	Asian	4.948	1.324	3.738	0
	AA	-3.26	1.416	-2.303	0.021
	Pacific	-4.088	1.288	-3.174	0.002
	Hispanic	-4.724	0.572	-8.262	0
	AmIndian	-9.837	1.607	-6.12	0
	Multi	-0.486	0.988	-0.492	0.623

	Predictor	Regression Coefficients	Std. Error	t value	Pr(>|t|)
G5M-G7M (R^2 =0.68)	(Intercept)	93.383	1.558	59.947	0
	score	0.93	0.004	239.766	0
	GNDR	1.563	0.33	4.739	0
	LEP	-4.241	0.666	-6.368	0
	SPED	-5.335	0.547	-9.755	0
	LowIncome	-6.849	0.377	-18.188	0
	Asian	5.107	1.45	3.522	0
	AA	-8.344	1.505	-5.544	0
	Pacific	-12.723	1.342	-9.478	0
	Hispanic	-7.563	0.591	-12.798	0
	AmIndian	-9.631	1.649	-5.841	0
	Multi	-3.654	1.04	-3.515	0

	Predictor	Regression Coefficients	Std. Error	t value	Pr(>|t|)
G6M-G8M (R^2 =0.62)	(Intercept)	64.003	2.169	29.51	0
	score	1.016	0.005	204.805	0
	GNDR	2.752	0.469	5.868	0
	LEP	-1.774	0.954	-1.859	0.063
	SPED	-1.83	0.821	-2.228	0.026
	LowIncome	-6.555	0.54	-12.146	0
	Asian	8.532	2.029	4.206	0
	AA	-10.652	2.077	-5.128	0
	Pacific	-13.183	1.883	-7	0
	Hispanic	-9.95	0.797	-12.486	0
	AmIndian	-3.037	2.347	-1.294	0.196
	Multi	-4.671	1.516	-3.081	0.002

Appendix B: Comparison of the Matched Samples—Students Who Participated Both Spring 2019 and Spring 2021 Administrations vs. Matching Peers in Spring 2017 Administration

Test	Variables	2019 Sample	Matched 2017 Sample
G3E	sample_size	42842	42842
	score_mean	330.06	328.43
	score_sd	68.99	69.92
	score_min	110	110.26
	score_max	530	529.62
	score_skewness	-0.06	-0.07
	score_kurtosis	3.03	2.94
	Male	0.49	0.49
	Asian	0.02	0.02
	African_American	0.01	0.01
	Pacific	0.02	0.02
	Hispanic	0.18	0.17
	American_Indian	0.01	0.01
	MultiRacial	0.03	0.03
	ELL	0.12	0.13
	Special_Education	0.15	0.13
	LowIncome	0.37	0.38

Test	Variables	2019 Sample	Matched 2017 Sample
G4E	sample_size	43374	43374
	score_mean	371.09	369.6
	score_sd	76.79	75.19
	score_min	135	135.27
	score_max	580	580.34
	score_skewness	-0.06	-0.14
	score_kurtosis	2.84	2.8
	Male	0.49	0.49
	Asian	0.02	0.02
	African_American	0.01	0.01
	Pacific	0.01	0.01
	Hispanic	0.19	0.17
	American_Indian	0.01	0.01
	MultiRacial	0.03	0.03
	ELL	0.13	0.12
	Special_Education	0.14	0.13
	LowIncome	0.37	0.37

Test	Variables	2019 Sample	Matched 2017 Sample

Test	Variables	2019 Sample	Matched 2017 Sample
G5E	sample_size	42744	42744
	score_mean	401.47	400.84
	score_sd	77.08	77.31
	score_min	167	166.54
	score_max	613	612.98
	score_skewness	-0.25	-0.26
	score_kurtosis	2.99	2.98
	Male	0.48	0.49
	Asian	0.02	0.02
	African_American	0.01	0.01
	Pacific	0.01	0.02
	Hispanic	0.18	0.17
	American_Indian	0.01	0.01
	MultiRacial	0.03	0.03
	ELL	0.12	0.12
	Special_Education	0.13	0.11
	LowIncome	0.35	0.37

Test	Variables	2019 Sample	Matched 2017 Sample
G6E	sample_size	41942	41942
	score_mean	430.9	429.67
	score_sd	85.46	84.69
	score_min	190	190.24
	score_max	640	642.46
	score_skewness	-0.26	-0.31
	score_kurtosis	2.79	2.88
	Male	0.48	0.49
	Asian	0.02	0.02
	African_American	0.01	0.01
	Pacific	0.01	0.02
	Hispanic	0.18	0.17
	American_Indian	0.01	0.01
	MultiRacial	0.03	0.03
	ELL	0.11	0.11
	Special_Education	0.12	0.11
	LowIncome	0.34	0.36

Test	Variables	2019 Sample	Matched 2017 Sample
G3M	sample_size	42497	42497
	score_mean	315.29	314.94
	score_sd	35.59	35.5

Test	Variables	2019 Sample	Matched 2017 Sample
	score_min	216	216.05
	score_max	404	404.24
	score_skewness	-0.36	-0.38
	score_kurtosis	3.03	3.05
	Male	0.49	0.49
	Asian	0.02	0.02
	African_American	0.01	0.01
	Pacific	0.01	0.02
	Hispanic	0.18	0.17
	American_Indian	0.01	0.01
	MultiRacial	0.03	0.03
	ELL	0.12	0.13
	Special_Education	0.15	0.13
	LowIncome	0.37	0.38

Test	Variables	2019 Sample	Matched 2017 Sample
G4M	sample_size	43051	43051
	score_mean	348.2	347.31
	score_sd	43.57	42.48
	score_min	227	226.85
	score_max	459	459.33
	score_skewness	-0.2	-0.34
	score_kurtosis	3.04	2.95
	Male	0.49	0.48
	Asian	0.02	0.02
	African_American	0.01	0.01
	Pacific	0.01	0.02
	Hispanic	0.18	0.18
	American_Indian	0.01	0.01
	MultiRacial	0.03	0.03
	ELL	0.13	0.14
	Special_Education	0.14	0.12
	LowIncome	0.37	0.39

Test	Variables	2019 Sample	Matched 2017 Sample
G5M	sample_size	40111	40111
	score_mean	377.6	377.12
	score_sd	51.87	51.88
	score_min	241	241
	score_max	506	506.34
	score_skewness	-0.37	-0.44

	score_kurtosis	2.99	3.06
	Male	0.49	0.48
	Asian	0.01	0.02
	African_American	0.01	0.01
	Pacific	0.01	0.02
	Hispanic	0.18	0.17
	American_Indian	0.01	0.01
	MultiRacial	0.03	0.03
	ELL	0.13	0.13
	Special_Education	0.14	0.12
	LowIncome	0.36	0.38

Test	Variables	2019 Sample	Matched 2017 Sample
G6M	sample_size	38279	38279
	score_mean	408.99	409.3
	score_sd	55.87	55.78
	score_min	255	254.51
	score_max	563	562.78
	score_skewness	-0.53	-0.53
	score_kurtosis	3.06	3.1
	Male	0.48	0.49
	Asian	0.01	0.02
	African_American	0.01	0.01
	Pacific	0.01	0.02
	Hispanic	0.19	0.18
	American_Indian	0.01	0.01
	MultiRacial	0.03	0.03
	ELL	0.12	0.11
	Special_Education	0.13	0.11
	LowIncome	0.36	0.38

Appendix C: Comparison of the Matched Samples—Students Who Didn't Participate Spring 2021 Administration vs. Matching Peers in Spring 2017 Administration

Test	Variables	2019 Sample	Matched 2017 Sample
G3E	sample_size	5425	5425
	score_mean	320.33	320.33
	score_sd	74.08	74.07
	score_min	110	110.26
	score_max	524	524.03
	score_skewness	0.02	0.02
	score_kurtosis	2.95	2.95
	Male	0.48	0.48
	Asian	0.02	0.02
	African_American	0.02	0.01
	Pacific	0.02	0.02
	Hispanic	0.16	0.18
	American_Indian	0.03	0.01
	MultiRacial	0.04	0.03
	ELL	0.11	0.13
	Special_Education	0.19	0.16
	LowIncome	0.44	0.42

Test	Variables	2019 Sample	Matched 2017 Sample
G4E	sample_size	5653	5653
	score_mean	357.01	357.01
	score_sd	80.46	80.46
	score_min	135	135.27
	score_max	575	575.41
	score_skewness	-0.01	-0.01
	score_kurtosis	2.71	2.71
	Male	0.49	0.49
	Asian	0.02	0.02
	African_American	0.02	0.01
	Pacific	0.02	0.01
	Hispanic	0.19	0.17
	American_Indian	0.03	0.01
	MultiRacial	0.04	0.02
	ELL	0.13	0.13
	Special_Education	0.18	0.16
	LowIncome	0.47	0.44

Test	Variables	2019 Sample	Matched 2017 Sample

G5E	sample_size	7386	7386
	score_mean	381.7	381.71
	score_sd	81.99	81.98
	score_min	167	166.73
	score_max	613	612.98
	score_skewness	-0.16	-0.16
	score_kurtosis	2.8	2.8
	Male	0.5	0.47
	Asian	0.02	0.02
	African_American	0.02	0.01
	Pacific	0.03	0.02
	Hispanic	0.2	0.19
	American_Indian	0.03	0.01
	MultiRacial	0.04	0.03
	ELL	0.14	0.14
	Special_Education	0.19	0.16
	LowIncome	0.49	0.47

Test	Variables	2019 Sample	Matched 2017 Sample
G6E	sample_size	8113	8113
	score_mean	403.11	403.12
	score_sd	90.91	90.89
	score_min	190	190.24
	score_max	639	639.26
	score_skewness	-0.07	-0.07
	score_kurtosis	2.54	2.54
	Male	0.5	0.47
	Asian	0.02	0.02
	African_American	0.02	0.02
	Pacific	0.02	0.02
	Hispanic	0.21	0.2
	American_Indian	0.02	0.01
	MultiRacial	0.04	0.03
	ELL	0.14	0.13
	Special_Education	0.17	0.15
	LowIncome	0.49	0.46

Test	Variables	2019 Sample	Matched 2017 Sample
G3M	sample_size	5739	5739
	score_mean	308.06	308.08
	score_sd	38.98	38.93
	score_min	216	216.05

	score_max	404	404.24
	score_skewness	-0.28	-0.28
	score_kurtosis	2.73	2.72
	Male	0.48	0.48
	Asian	0.02	0.01
	African_American	0.02	0.02
	Pacific	0.02	0.02
	Hispanic	0.16	0.19
	American_Indian	0.03	0.01
	MultiRacial	0.04	0.03
	ELL	0.11	0.13
	Special_Education	0.19	0.17
	LowIncome	0.44	0.42

Test	Variables	2019 Sample	Matched 2017 Sample
G4M	sample_size	6089	6089
	score_mean	336.76	336.77
	score_sd	47.18	47.19
	score_min	227	226.95
	score_max	459	459.33
	score_skewness	-0.12	-0.12
	score_kurtosis	2.77	2.78
	Male	NA	0.48
	Asian	0.02	0.01
	African_American	0.02	0.02
	Pacific	0.02	0.02
	Hispanic	0.19	0.21
	American_Indian	0.03	0.01
	MultiRacial	0.04	0.03
	ELL	0.13	0.16
	Special_Education	0.18	0.17
	LowIncome	0.47	0.46

Test	Variables	2019 Sample	Matched 2017 Sample
G5M	sample_size	9954	9954
	score_mean	378.63	378.47
	score_sd	61.59	61.81
	score_min	241	241
	score_max	506	506.34

	score_skewness	-0.25	-0.27
	score_kurtosis	2.45	2.48
	Male	0.48	0.47
	Asian	0.02	0.02
	African_American	0.02	0.01
	Pacific	0.02	0.02
	Hispanic	0.18	0.18
	American_Indian	0.02	0.01
	MultiRacial	0.04	0.03
	ELL	0.12	0.13
	Special_Education	0.16	0.14
	LowIncome	0.43	0.41

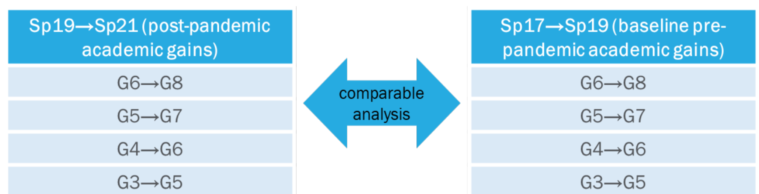
Test	Variables	2019 Sample	Matched 2017 Sample
G6M	sample_size	11622	11622
	score_mean	414.52	414.31
	score_sd	70.82	71.11
	score_min	255	254.51
	score_max	563	562.78
	score_skewness	-0.34	-0.37
	score_kurtosis	2.42	2.46
	Male	0.48	0.47
	Asian	0.02	0.02
	African_American	0.02	0.02
	Pacific	0.02	0.02
	Hispanic	0.17	0.18
	American_Indian	0.02	0.01
	MultiRacial	0.04	0.03
	ELL	0.11	0.11
	Special_Education	0.14	0.14
	LowIncome	0.4	0.39

Appendix 1-F

Examining Pandemic Impacts on Student Achievement Using Cohort Regression Models

Appendix 1-F
Examining Panedmic Impact on Student Achievement
Using Cohort Regression Models

Longitudinal analyses were conducted to examine the differential gains in student academic achievement across years. The spring 2021 summative subject area test scores were regressed onto prior student area achievement and demographic variables. Since the 2020 test data are not available, the spring 2021 scores were regressed to spring 19 scores, which represents a two-year growth. A baseline of two-year growth was created to detect if there is any difference between the pre-pandemic and the post-pandemic growth. The spring 2017 to spring 2019 score gain, which represents the pre-pandemic growth, was used as the baseline for the two-year growth comparison. The graph below shows the design of the cohort comparison.



To examine if there are any differential cohort effects in the prediction of student academic growth, we combined the testing data from the two cohorts (2017-2019 and 2019-2021) into one dataset. For example, in the grade 3 to grade 5 growth model, the 2021 grade 5 and 2019 grade 5 scores were combined as the dependent variable, and the 2019 grade 3 and 2017 grade 3 scores were combined as an independent variable. A dummy variable was created to represent cohort: 1 for the records in 2019-2021 cohort; 0 for the records in 2017-2019 cohort. The grade *g* score is the dependent variable in the regression model. The grade *g-2* score is included as an independent variable and centered around the mean in the analyses so that the unstandardized intercept coefficient represents the adjusted mean of the grade *g* scores for a reference group. To compare ethnic subgroup performance, we created six dummy variables contrasting white students with each of the other ethnic groups (e.g., Hispanic vs. White, African American vs White, Hawaiian/Pacific Islander vs. White, American Indian vs. White, Multiple Race vs. White, Asian vs. White). Gender was coded 1 for female. Student with Limited English Proficiency status (LEP), students with special education status (SPED), and students with Low-Income status (Low Income) were coded as 1 to contrast with students who were not identified with those needs and were coded as 0.

In addition, the dummy coded cohort variable and the interaction between the cohort variable and each of the predictors were also included in the regression model as predictors. This cohort regression model allows us to examine whether there is any differential growth between the two cohorts and which demographic groups might have been differentially impacted. The multiple regressions to test main effect and interaction effect of students' growth between pre-pandemic and post-pandemic is presented below.

$$Y = \beta_{00} + \beta_{10} \times \text{Previous score} + \beta_{01} \times \text{Female} + \beta_{02} \times \text{LEP} + \beta_{03} \times \text{SPED} + \beta_{04} \times \text{Low Income} + \beta_{05} \times \text{Hispanic} + \beta_{06} \times \text{African American} + \beta_{07} \times \text{Pacific Islander} + \beta_{08} \times \text{American Indian} + \beta_{09} \times \text{Multiple Ethnics} + \beta_{010} \times \text{Asian} +$$

$$\beta_{20} \times \text{Cohort} + \beta_{21} \times (\text{Previous score} \times \text{Cohort}) + \beta_{22} \times (\text{Cohort} \times \text{Female}) + \beta_{23} \times (\text{Cohort} \times \text{LEP}) + \beta_{24} \times (\text{Cohort} \times \text{SPED}) + \beta_{25} \times (\text{Cohort} \times \text{Low Income}) + \beta_{26} \times (\text{Cohort} \times \text{Hispanic}) + \beta_{27} \times (\text{Cohort} \times \text{African American}) + \beta_{28} \times (\text{Cohort} \times \text{Pacific Islander}) + \beta_{29} \times (\text{Cohort} \times \text{American Indian}) + \beta_{210} \times (\text{Cohort} \times \text{Multiple Ethnics}) + \beta_{211} \times (\text{Cohort} \times \text{Asian}) + e$$

The outcome, Y is the predicted test scores at grade $\boldsymbol{g}$. The random error term, e is assumed to be normally distributed.

Table 12 through Table 19 show the regression coefficients estimated for each model, including standardized and unstandardized coefficients, the standard error of the unstandardized coefficient, p value, and partial R^2 regardless of significance level. Although many individual effects attained conventional levels of statistical significance due to large sample sizes, we focus here only on highly significant effects ($p < 0.0001$) and non-zero partial R^2 that are associated with more practically significant effect sizes and that may point to trends across grade-level and/or subject-area assessments.

The previous year variable is the most important variable in these predictive models. Its partial R^2 is the largest among all predictors, and accounts for the greatest amount of explained variation. The positive effect of previous score (β_{10}) indicates that the students with higher average levels of test scores in previous year have higher average levels of test scores in current year. The two-year growth across demographic subgroups are shown under the “Intercept” section. By looking at the standardized coefficient estimates and partial R^2 across growth models, results indicate that females (β_{01}) generally performed better than males for ELA across grades. Limited English proficient (LEP) students (β_{02}), special education status (SPED) students (β_{03}), and low-income status students (β_{04}) all performed less well than the general education population across grades in both ELA and mathematics. With respect to ethnicity, Hispanic students (β_{05}) generally performed less well than white students across grades in mathematics and in higher grades in ELA.

Differential growth between the pre-pandemic cohort and the post-pandemic cohort is presented under the “Cohort” section. The cohort variable is significant in all predicting models except in ELA grade 5-7 and ELA grade 6-8 models. The negative coefficient estimate (β_{20}) indicates that the post-pandemic two-year growth is smaller than the pre-pandemic two-year growth. As the grade goes up, the standardized estimate of (β_{20}) changes from -0.08 to -0.03 in ELA and from -0.04 to -0.08 in mathematics. This suggests that, when moving to higher grades, the loss in student growth in the post-pandemic cohort becomes smaller in ELA but greater in mathematics. The cohort models also include the interaction terms between cohort and demographic subgroups. No significant differential growth between two cohorts for any of demographic subgroups (β_{22} through β_{211}) is observed. To conclude, the cohort regression analyses show that the student learning growth is negatively impacted by the pandemic. The post-pandemic gain is significantly smaller compared to the pre-pandemic gain. The negative impact is more pronounced in lower grades ELA and higher grades mathematics. But no evidence supports that any specific subgroup has been differentially impacted.

Table 12. Regression Coefficients for Differential Gain Across Subgroups: ELA Grade 3 to 5

Effects	Unstandardized Coefficient	SE	p value	Standardized Coefficient	R^2
Intercept (β_{00})	409.62	0.41	<.0001	0.00	.
Previous score (β_{10})	0.74	0.00	<.0001	0.66	0.38
Female *vs.* Male (β_{01})	-4.41	0.48	<.0001	-0.03	0.00
LEP *vs*. Non-LEP (β_{02})	-9.13	1.07	<.0001	-0.04	0.07
Special Education Status *vs*. Non-SPED (β_{03})	-17.28	0.83	<.0001	-0.07	0.11
Low income *vs.* Non-Low Income (β_{04})	-6.57	0.55	<.0001	-0.04	0.03
Hispanic *vs.* White (β_{05})	-6.53	0.84	<.0001	-0.03	0.00
African American *vs.* White (β_{06})	-12.70	2.22	<.0001	-0.02	0.00
Pacific Islander *vs.* White (β_{07})	-6.74	2.11	0.0014	-0.01	0.00
American Indian *vs.* White (β_{08})	-12.84	2.78	<.0001	-0.01	0.00
Multiple *vs.* White (β_{09})	-1.61	1.41	0.2520	0.00	0.00
Asian *vs.* White (β_{010})	11.27	2.02	<.0001	0.02	0.00
Cohort (β_{20})	-13.42	0.58	<.0001	-0.08	0.01
Cohort × Previous score (β_{21})	0.11	0.01	<.0001	0.07	0.00
Cohort × Female (β_{22})	8.09	0.68	<.0001	0.04	0.00
Cohort × LEP (β_{23})	-7.83	1.41	<.0001	-0.02	0.00
Cohort × SPED (β_{24})	-9.97	1.09	<.0001	-0.03	0.00
Cohort × Low Income (β_{25})	-4.02	0.80	<.0001	-0.02	0.00
Cohort × Hispanic (β_{26})	-1.35	1.15	0.2374	0.00	0.00
Cohort × African American (β_{27})	-0.46	2.99	0.8769	0.00	0.00
Cohort × Pacific Islander (β_{28})	-7.41	2.85	0.0092	-0.01	0.00
Cohort × American Indian (β_{29})	-0.97	3.74	0.7947	0.00	0.00
Cohort × Multiple (β_{210})	-0.84	1.99	0.6743	0.00	0.00
Cohort × Asian (β_{211})	0.44	2.83	0.8775	0.00	0.00

Note: SE=Standard Error of Unstandardized Coefficient. R^2=Partial R squared. For the effect of special groups, the coefficient represents the difference compared to their contrast group; SPED = Special Education Status *vs*. Non-SPED. LEP=Limited English Proficiency *vs*. Non-LEP, Low Income = Low Income *vs.* Non-Low Income. For the effect of ethnic groups, the coefficient represents differential growth rate compared to White students.

Table 13. Regression Coefficients for Differential Gain Across Subgroups: ELA Grade 4 to 6

Effects	Unstandardized Coefficient	SE	*p* value	Standardized Coefficient	R^2
Intercept (β_{00})	432.84	0.42	<.0001	0.00	.
Previous score *(β_{10})*	0.79	0.00	<.0001	0.72	0.38
Female *vs.* Male (β_{01})	6.03	0.49	<.0001	0.04	0.01
LEP *vs*. Non-LEP (β_{02})	-7.67	1.15	<.0001	-0.03	0.08
Special Education Status *vs*. Non-SPED (β_{03})	-19.46	0.94	<.0001	-0.07	0.12
Low income *vs.* Non-Low Income (β_{04})	-8.73	0.57	<.0001	-0.05	0.03
Hispanic *vs.* White (β_{05})	-5.75	0.86	<.0001	-0.03	0.00
African American *vs.* White (β_{06})	-9.38	2.47	0.0001	-0.01	0.00
Pacific Islander *vs.* White (β_{07})	-11.02	2.17	<.0001	-0.02	0.00
American Indian *vs.* White (β_{08})	-17.59	2.99	<.0001	-0.02	0.00
Multiple *vs.* White (β_{09})	-0.88	1.47	0.5495	0.00	0.00
Asian *vs.* White (β_{010})	11.06	2.06	<.0001	0.02	0.00
Cohort (β_{20})	-10.76	0.59	<.0001	-0.06	0.01
Cohort × Previous score (β_{21})	0.00	0.01	0.5829	0.00	0.00
Cohort × Female (β_{22})	0.91	0.70	0.1936	0.00	0.00
Cohort × LEP (β_{23})	-11.68	1.47	<.0001	-0.03	0.00
Cohort × SPED (β_{24})	-11.49	1.17	<.0001	-0.03	0.00
Cohort × Low Income (β_{25})	-1.05	0.82	0.1987	0.00	0.00
Cohort × Hispanic (β_{26})	-1.05	1.15	0.3615	0.00	0.00
Cohort × African American (β_{27})	-5.19	3.19	0.1040	0.00	0.00
Cohort × Pacific Islander (β_{28})	3.66	2.94	0.2134	0.00	0.00
Cohort × American Indian (β_{29})	2.64	3.80	0.4881	0.00	0.00
Cohort × Multiple (β_{210})	-2.08	2.07	0.3152	0.00	0.00
Cohort × Asian (β_{211})	-4.94	2.88	0.0865	-0.01	0.00

Note: SE=Standard Error of Unstandardized Coefficient. R^2=Partial R squared. For the effect of special groups, the coefficient represents the difference compared to their contrast group; SPED = Special Education Status *vs*. Non-SPED. LEP=Limited English Proficiency *vs.* Non-LEP, Low Income = Low Income *vs.* Non-Low Income. For the effect of ethnic groups, the coefficient represents differential growth rate compared to White students.

Table 14. Regression Coefficients for Differential Gain Across Subgroups: ELA Grade 5 to 7

Effects	Unstandardized Coefficient	SE	*p* value	Standardized Coefficient	R^2
Intercept (β_{00})	434.75	0.42	<.0001	0.00	.
Previous score *(β_{10})*	0.78	0.00	<.0001	0.74	0.39
Female *vs.* Male (β_{01})	5.97	0.50	<.0001	0.04	0.01
LEP *vs*. Non-LEP (β_{02})	-15.67	1.26	<.0001	-0.05	0.08
Special Education Status *vs*. Non-SPED (β_{03})	-21.95	1.08	<.0001	-0.08	0.11
Low income *vs.* Non-Low Income (β_{04})	-9.06	0.59	<.0001	-0.05	0.03
Hispanic *vs.* White (β_{05})	-10.26	0.83	<.0001	-0.05	0.00
African American *vs.* White (β_{06})	-10.92	2.50	<.0001	-0.01	0.00
Pacific Islander *vs.* White (β_{07})	-11.86	2.20	<.0001	-0.02	0.00
American Indian *vs.* White (β_{08})	-14.20	2.86	<.0001	-0.02	0.00
Multiple *vs.* White (β_{09})	-2.02	1.51	0.1791	0.00	0.00
Asian *vs.* White (β_{010})	10.84	2.02	<.0001	0.02	0.00
Cohort (β_{20})	-7.24	0.59	<.0001	-0.04	0.00
Cohort × Previous score (β_{21})	0.03	0.01	<.0001	0.02	0.00
Cohort × Female (β_{22})	4.54	0.71	<.0001	0.02	0.00
Cohort × LEP (β_{23})	-7.17	1.54	<.0001	-0.02	0.00
Cohort × SPED (β_{24})	-1.58	1.24	0.2052	0.00	0.00
Cohort × Low Income (β_{25})	2.57	0.84	0.0022	0.01	0.00
Cohort × Hispanic (β_{26})	6.20	1.14	<.0001	0.02	0.00
Cohort × African American (β_{27})	1.82	3.20	0.5687	0.00	0.00
Cohort × Pacific Islander (β_{28})	-1.85	2.97	0.5342	0.00	0.00
Cohort × American Indian (β_{29})	2.86	3.80	0.4519	0.00	0.00
Cohort × Multiple (β_{210})	1.32	2.08	0.5274	0.00	0.00
Cohort × Asian (β_{211})	-2.13	2.87	0.4590	0.00	0.00

Note: SE=Standard Error of Unstandardized Coefficient. R^2=Partial R squared. For the effect of special groups, the coefficient represents the difference compared to their contrast group; SPED = Special Education Status *vs*. Non-SPED. LEP=Limited English Proficiency *vs.* Non-LEP, Low Income = Low Income *vs.* Non-Low Income. For the effect of ethnic groups, the coefficient represents differential growth rate compared to White students.

Table 15. Regression Coefficients for Differential Gain Across Subgroups: ELA Grade 6 to 8

Effects	Unstandardized Coefficient	SE	*p* value	Standardized Coefficient	R^2
Intercept (β_{00})	454.21	0.45	<.0001	0.00	.
Previous score *(β_{10})*	0.77	0.00	<.0001	0.73	0.38
Female *vs.* Male (β_{01})	7.10	0.55	<.0001	0.04	0.02
LEP *vs*. Non-LEP (β_{02})	-15.91	1.73	<.0001	-0.04	0.07
Special Education Status *vs*. Non-SPED (β_{03})	-17.40	1.26	<.0001	-0.06	0.10
Low income *vs.* Non-Low Income (β_{04})	-7.00	0.64	<.0001	-0.04	0.03
Hispanic *vs.* White (β_{05})	-11.19	0.84	<.0001	-0.05	0.01
African American *vs.* White (β_{06})	-10.39	2.70	0.0001	-0.01	0.00
Pacific Islander *vs.* White (β_{07})	-18.01	2.36	<.0001	-0.02	0.00
American Indian *vs.* White (β_{08})	-12.60	3.23	<.0001	-0.01	0.00
Multiple *vs.* White (β_{09})	-2.51	1.69	0.1361	0.00	0.00
Asian *vs.* White (β_{010})	10.81	2.18	<.0001	0.02	0.00
Cohort (β_{20})	-5.33	0.63	<.0001	-0.03	0.00
Cohort × Previous score (β_{21})	0.02	0.01	<.0001	0.02	0.00
Cohort × Female (β_{22})	3.20	0.77	<.0001	0.02	0.00
Cohort × LEP (β_{23})	-8.84	1.86	<.0001	-0.02	0.00
Cohort × SPED (β_{24})	-11.25	1.41	<.0001	-0.03	0.00
Cohort × Low Income (β_{25})	0.51	0.92	0.5780	0.00	0.00
Cohort × Hispanic (β_{26})	4.89	1.18	<.0001	0.02	0.00
Cohort × African American (β_{27})	-0.94	3.57	0.7932	0.00	0.00
Cohort × Pacific Islander (β_{28})	4.21	3.25	0.1953	0.00	0.00
Cohort × American Indian (β_{29})	-1.07	4.26	0.8022	0.00	0.00
Cohort × Multiple (β_{210})	0.63	2.34	0.7879	0.00	0.00
Cohort × Asian (β_{211})	-1.99	3.08	0.5174	0.00	0.00

Note: SE=Standard Error of Unstandardized Coefficient. R^2=Partial R squared. For the effect of special groups, the coefficient represents the difference compared to their contrast group; SPED = Special Education Status *vs*. Non-SPED. LEP=Limited English Proficiency *vs*. Non-LEP, Low Income = Low Income *vs.* Non-Low Income. For the effect of ethnic groups, the coefficient represents differential growth rate compared to White students.

Table 16. Regression Coefficients for Differential Gain Across Subgroups: Mathematics Grade 3 to 5

Effects	Unstandardized Coefficient	SE	*p* value	Standardized Coefficient	R^2
Intercept (β_{00})	382.86	0.26	<.0001	0.00	.
Previous score (β_{10})	1.19	0.01	<.0001	0.79	0.41
Female *vs.* Male (β_{01})	-0.47	0.30	0.1124	0.00	0.00
LEP *vs*. Non-LEP (β_{02})	-1.96	0.65	0.0025	-0.01	0.06
Special Education Status *vs*. Non-SPED (β_{03})	-8.30	0.50	<.0001	-0.05	0.11
Low income *vs.* Non-Low Income (β_{04})	-4.78	0.35	<.0001	-0.04	0.03
Hispanic *vs.* White (β_{05})	-4.45	0.53	<.0001	-0.03	0.01
African American *vs.* White (β_{06})	-10.11	1.42	<.0001	-0.02	0.00
Pacific Islander *vs.* White (β_{07})	-3.20	1.29	0.0134	-0.01	0.00
American Indian *vs.* White (β_{08})	-3.99	1.76	0.0235	-0.01	0.00
Multiple *vs.* White (β_{09})	-0.05	0.87	0.9560	0.00	0.00
Asian *vs.* White (β_{010})	6.60	1.26	<.0001	0.02	0.00
Cohort (β_{20})	-4.67	0.37	<.0001	-0.04	0.01
Cohort × Previous score (β_{21})	-0.13	0.01	<.0001	-0.06	0.00
Cohort × Female (β_{22})	-4.66	0.43	<.0001	-0.04	0.00
Cohort × LEP (β_{23})	-8.81	0.87	<.0001	-0.04	0.00
Cohort × SPED (β_{24})	-4.54	0.68	<.0001	-0.02	0.00
Cohort × Low Income (β_{25})	-3.38	0.50	<.0001	-0.02	0.00
Cohort × Hispanic (β_{26})	-3.62	0.71	<.0001	-0.02	0.00
Cohort × African American (β_{27})	-2.61	1.87	0.1615	0.00	0.00
Cohort × Pacific Islander (β_{28})	-9.12	1.78	<.0001	-0.01	0.00
Cohort × American Indian (β_{29})	-8.55	2.35	0.0003	-0.01	0.00
Cohort × Multiple (β_{210})	-2.94	1.24	0.0178	-0.01	0.00
Cohort × Asian (β_{211})	0.75	1.76	0.6710	0.00	0.00

Note: SE=Standard Error of Unstandardized Coefficient. R^2=Partial R squared. For the effect of special groups, the coefficient represents the difference compared to their contrast group; SPED = Special Education Status *vs*. Non-SPED. LEP=Limited English Proficiency *vs*. Non-LEP, Low Income = Low Income *vs.* Non-Low Income. For the effect of ethnic groups, the coefficient represents differential growth rate compared to White students.

Table 17. Regression Coefficients for Differential Gain Across Subgroups: Mathematics Grade 4 to 6

Effects	Unstandardized Coefficient	SE	*p* value	Standardized Coefficient	R^2
Intercept (β_{00})	414.97	0.27	<.0001	0.00	.
Previous score (β_{10})	1.07	0.01	<.0001	0.78	0.41
Female *vs.* Male (β_{01})	2.85	0.32	<.0001	0.02	0.00
LEP *vs*. Non-LEP (β_{02})	-2.15	0.71	0.0023	-0.01	0.08
Special Education Status *vs*. Non-SPED (β_{03})	-11.17	0.60	<.0001	-0.06	0.13
Low income *vs.* Non-Low Income (β_{04})	-6.08	0.37	<.0001	-0.05	0.03
Hispanic *vs.* White (β_{05})	-5.36	0.55	<.0001	-0.03	0.01
African American *vs.* White (β_{06})	-4.21	1.63	0.0097	-0.01	0.00
Pacific Islander *vs.* White (β_{07})	-4.79	1.36	0.0004	-0.01	0.00
American Indian *vs.* White (β_{08})	-10.80	1.85	<.0001	-0.02	0.00
Multiple *vs.* White (β_{09})	-1.60	0.95	0.0911	0.00	0.00
Asian *vs.* White (β_{010})	5.20	1.33	<.0001	0.01	0.00
Cohort (β_{20})	-6.84	0.39	<.0001	-0.06	0.01
Cohort × Previous score (β_{21})	-0.07	0.01	<.0001	-0.03	0.00
Cohort × Female (β_{22})	-2.72	0.45	<.0001	-0.02	0.00
Cohort × LEP (β_{23})	-9.60	0.94	<.0001	-0.03	0.00
Cohort × SPED (β_{24})	-6.53	0.77	<.0001	-0.02	0.00
Cohort × Low Income (β_{25})	-2.31	0.53	<.0001	-0.01	0.00
Cohort × Hispanic (β_{26})	-2.14	0.74	0.0040	-0.01	0.00
Cohort × African American (β_{27})	-10.62	2.06	<.0001	-0.01	0.00
Cohort × Pacific Islander (β_{28})	-2.83	1.90	0.1360	0.00	0.00
Cohort × American Indian (β_{29})	-6.53	2.48	0.0084	-0.01	0.00
Cohort × Multiple (β_{210})	-0.22	1.34	0.8691	0.00	0.00
Cohort × Asian (β_{211})	-1.81	1.85	0.3295	0.00	0.00

Note: SE=Standard Error of Unstandardized Coefficient. R^2=Partial R squared. For the effect of special groups, the coefficient represents the difference compared to their contrast group; SPED = Special Education Status *vs*. Non-SPED. LEP=Limited English Proficiency *vs*. Non-LEP, Low Income = Low Income *vs.* Non-Low Income. For the effect of ethnic groups, the coefficient represents differential growth rate compared to White students.

Table 18. Regression Coefficients for Differential Gain Across Subgroups: Mathematics Grade 5 to 7

Effects	Unstandardized Coefficient	SE	*p* value	Standardized Coefficient	R^2
Intercept (β_{00})	442.96	0.30	<.0001	0.00	.
Previous score (β_{10})	0.94	0.01	<.0001	0.77	0.40
Female *vs.* Male (β_{01})	1.48	0.35	<.0001	0.01	0.00
LEP *vs*. Non-LEP (β_{02})	-10.56	0.82	<.0001	-0.05	0.09
Special Education Status *vs*. Non-SPED (β_{03})	-12.60	0.71	<.0001	-0.06	0.11
Low income *vs.* Non-Low Income (β_{04})	-6.92	0.41	<.0001	-0.05	0.03
Hispanic *vs.* White (β_{05})	-7.25	0.58	<.0001	-0.05	0.01
African American *vs.* White (β_{06})	-8.87	1.76	<.0001	-0.02	0.00
Pacific Islander *vs.* White (β_{07})	-12.67	1.49	<.0001	-0.03	0.00
American Indian *vs.* White (β_{08})	-10.25	1.91	<.0001	-0.02	0.00
Multiple *vs.* White (β_{09})	-3.22	1.05	0.0022	-0.01	0.00
Asian *vs.* White (β_{010})	5.23	1.51	0.0005	0.01	0.00
Cohort (β_{20})	-7.96	0.42	<.0001	-0.07	0.01
Cohort × Previous score (β_{21})	-0.05	0.01	<.0001	-0.03	0.00
Cohort × Female (β_{22})	-2.56	0.49	<.0001	-0.02	0.00
Cohort × LEP (β_{23})	-7.97	1.05	<.0001	-0.03	0.00
Cohort × SPED (β_{24})	-5.72	0.87	<.0001	-0.02	0.00
Cohort × Low Income (β_{25})	0.27	0.58	0.6389	0.00	0.00
Cohort × Hispanic (β_{26})	-1.25	0.79	0.1154	-0.01	0.00
Cohort × African American (β_{27})	-6.46	2.21	0.0035	-0.01	0.00
Cohort × Pacific Islander (β_{28})	-2.72	2.06	0.1875	0.00	0.00
Cohort × American Indian (β_{29})	0.11	2.62	0.9663	0.00	0.00
Cohort × Multiple (β_{210})	1.50	1.47	0.3077	0.00	0.00
Cohort × Asian (β_{211})	-3.36	2.12	0.1130	0.00	0.00

Note: SE=Standard Error of Unstandardized Coefficient. R^2=Partial R squared. For the effect of special groups, the coefficient represents the difference compared to their contrast group; SPED = Special Education Status *vs*. Non-SPED. LEP=Limited English Proficiency *vs.* Non-LEP, Low Income = Low Income *vs.* Non-Low Income. For the effect of ethnic groups, the coefficient represents differential growth rate compared to White students.

Table 19. Regression Coefficients for Differential Gain Across Subgroups: Mathematics Grade 6 to 8

Effects	Unstandardized Coefficient	SE	*p* value	Standardized Coefficient	R^2
Intercept (β_{00})	480.42	0.40	<.0001	0.00	.
Previous score (β_{10})	1.08	0.01	<.0001	0.81	0.38
Female *vs.* Male (β_{01})	2.65	0.47	<.0001	0.02	0.00
LEP *vs.* Non-LEP (β_{02})	-10.68	1.35	<.0001	-0.04	0.07
Special Education Status *vs.* Non-SPED (β_{03})	-11.68	1.04	<.0001	-0.05	0.10
Low income *vs.* Non-Low Income (β_{04})	-6.35	0.55	<.0001	-0.04	0.03
Hispanic *vs.* White (β_{05})	-11.51	0.72	<.0001	-0.06	0.01
African American *vs.* White (β_{06})	-16.42	2.31	<.0001	-0.03	0.00
Pacific Islander *vs.* White (β_{07})	-14.15	1.97	<.0001	-0.02	0.00
American Indian *vs.* White (β_{08})	-7.00	2.63	0.0079	-0.01	0.00
Multiple *vs.* White (β_{09})	-4.98	1.47	0.0007	-0.01	0.00
Asian *vs.* White (β_{010})	10.01	2.01	<.0001	0.02	0.00
Cohort (β_{20})	-12.37	0.56	<.0001	-0.08	0.01
Cohort × Previous score (β_{21})	-0.09	0.01	<.0001	-0.05	0.00
Cohort × Female (β_{22})	-0.49	0.67	0.4640	0.00	0.00
Cohort × LEP (β_{23})	-4.95	1.55	0.0014	-0.01	0.00
Cohort × SPED (β_{24})	-4.44	1.21	0.0002	-0.01	0.00
Cohort × Low Income (β_{25})	0.61	0.78	0.4380	0.00	0.00
Cohort × Hispanic (β_{26})	-2.90	1.00	0.0038	-0.01	0.00
Cohort × African American (β_{27})	-6.34	2.99	0.0339	-0.01	0.00
Cohort × Pacific Islander (β_{28})	-3.75	2.75	0.1722	0.00	0.00
Cohort × American Indian (β_{29})	-5.95	3.57	0.0955	-0.01	0.00
Cohort × Multiple (β_{210})	-1.02	2.05	0.6178	0.00	0.00
Cohort × Asian (β_{211})	-9.19	2.82	0.0011	-0.01	0.00

Note: SE=Standard Error of Unstandardized Coefficient. R^2=Partial R squared. For the effect of special groups, the coefficient represents the difference compared to their contrast group; SPED = Special Education Status *vs*. Non-SPED. LEP=Limited English Proficiency *vs.* Non-LEP, Low Income = Low Income *vs.* Non-Low Income. For the effect of ethnic groups, the coefficient represents differential growth rate compared to White students.

APPENDIX 1-G

INVESTIGATING THE EFFECTS OF DICTIONARY AVAILABILITY ON ITEM PERFORMANCE

USOE would like to provide dictionary access to students during SAGE test administrations. The goal of providing a dictionary is to help improve access to test content for English language learners (ELLs). Providing students with a dictionary may reduce construct irrelevant barriers to accessing test content for ELL students, resulting in more valid estimates of student ability across subject area assessments. This memo describes the results of an initial investigation of the effects of providing students access to a dictionary on their performance on test items.

The principle concern with providing students access to a dictionary is that the assessed constructed may be altered. For example, if an item is designed to assess whether students can infer the meaning of complex terms from passage context, providing students a dictionary may changes the measured construct considerably so that the item measures instead dictionary usage. For ELA items in particular, it may be necessary to reevaluate the alignment of items in an assessment context in which students are provided with a dictionary. It is also worth noting that dictionary access may not simply alter the alignment of some items, but may render some standards unmeasurable, especially those related to acquisition of vocabulary and inferring meaning from context.

To identify whether an accommodation removes a construct irrelevant barrier to accessing test content or alters the construct being assessed can be evaluated by whether the effects of an accommodation are isolated to the group for whom the accommodation is intended or whether the accommodation impacts test performance across groups. When the impact of a test accommodation on student performance is localized to the population with the access limitation, then the accommodation can be said to mitigate construct irrelevant barriers to test content. However, when an accommodation impacts student performance across the general population, the accommodation is likely altering the construct assessed by the test.

To investigate whether providing students a dictionary reduces construct irrelevant barriers to accessing test content for English language learners, ELL and non-ELL students in participating schools were administered an abbreviated SAGE assessment, with students randomly assigned to a dictionary treatment condition.

Design

The study was conducted as a 2 (ELA vs. non-ELA) by 2 (dictionary vs. no dictionary) between subjects design. Students were randomly assigned to the dictionary vs. no dictionary treatment condition. Students assigned to the dictionary condition could use the online Merriam-Webster dictionary to look up the meaning of any word presented during the test administration. To control for wide variation in student achievement and increase the power of the design, student test scores from the spring 2014 administration of SAGE were included as covariates. Responses to math items were covaried using spring 2014 math scale scores, with responses to ELA and science items covaried using spring 2014 ELA and science scale scores, respectively.

Sample

Participation in the study was restricted to students eligible for the grade 6 SAGE assessments. USOE identified a sample of schools for participation in the study. Classification of students as English language learners (ELLs) was based on the demographic information provided in the test student enrollment files uploaded by districts.

The final sample included 1,341 students, including 323 (24%) ELL students, 962 (72%) non-ELL students, and 56 (4%) students with missing ELL information. Students were randomly assigned to treatment condition, with 688 (51%) students provided dictionary access, and 653 (49%) students assigned to the no dictionary condition. The distribution of ELL and non-ELL assigned to treatment and control groups are shown in the table 1.

Table 1. Assignment of Treatment Condition by ELL Status

ELL Status	Treatment Condition	
	Dictionary	**No Dictionary**
Non-ELL	493	469
ELL	171	152
Missing	24	32

Materials
A 24-item multi-subject test form was developed to investigate the effect of dictionary availability across subject area assessments. The assessment included an 8-item passage set to measure reading comprehension, as well as eight items each to measure math and science content. Passage and item selection were directed toward identification of items with subject specific and technical vocabulary for which students could use the dictionary to identify the meaning.

Test Delivery System
The assessment was administered using the same test delivery system used to administer the SAGE operationally. Item groups were selected randomly, so that the position of items varied across test administrations.

Analyses
For each item response, the likelihood providing a correct response was analyzed using a Probit random effects model. Since each student was administered multiple items, and the likelihood of correct responding across items within a student is not independent (e.g., high ability students have a higher likelihood of responding correctly across all items), item responses were grouped by student.

In the base model, the scored item response dependent variable was predicted by

1. students' previous year SAGE scale score in the appropriate subject area assessment (i.e., response to a science item was predicted by previous year science achievement), since likelihood of correct responding is determined in part by student ability;
2. the item on which the response is based, since likelihood of responding correctly is determined also by the characteristics of the item, including the item difficulty;
3. a main effect for student ELL status (ELL or non-ELL), to determine whether the ELL status affects likelihood of correct responding independent of other effects;
4. a main effect for treatment condition (dictionary or no dictionary), to determine whether the accommodation increases the likelihood of correct responding generally;
5. an interaction term between ELL status and treatment condition, to identify whether the treatment differentially affected ELL students.

In a second model, we also investigated whether there might be differential effects of dictionary access for ELL students across subject area assessments, so the second model also included:

6. an interaction term between subject area and treatment condition, to identify whether the treatment differentially affected student performance across subject areas;
7. three-way interaction terms between ELL status, subject area, and treatment condition, to determine whether the dictionary access differentially affected ELL performance across subject areas.

Results

The overall base model was statistically significant ($\chi^2_{(29)}$ = 3942.06; p < .0000). Table 2 shows the regression parameters and statistical tests for each of the modeled effects. As expected, students' ability estimates from the spring 2014 SAGE assessments significantly predicted their likelihood of responding correctly to test items, with previously high achieving students more likely to provide a correct response than lower achieving students. Also as anticipated, the items themselves influenced the likelihood of providing a correct response, with students more likely to respond correctly to easy than difficult items, for example. ELL status also contributed to the likelihood of responding correctly, indicating that ELL students were less likely to answer test items correctly even when accounting for previous achievement. The treatment main effect was not significant. Providing students access to a dictionary did not significantly increase their likelihood of responding correctly. The treatment by ELA status interaction, indicating differential effects of dictionary access for ELL students, also did not reach significance.

Table 2. Parameter Estimates for the Base Model

Parameter	Coefficient	Std. Error	*z*	P>|*z*|
Intercept	-8.952	0.5311	-16.85	0.0000
Math Scale Score	0.003	0.0004	7.38	0.0000
ELA Scale Score	0.002	0.0002	7.09	0.0000
Science Scale Score	0.009	0.0007	11.73	0.0000
Treatment	0.028	0.0242	1.14	0.2540
ELL Status	-0.113	0.0356	-3.19	0.0010
ELL*Treatment Interaction	0.029	0.0496	0.59	0.5540
Item_1	0.759	0.0550	13.81	0.0000
Item_2	-0.601	0.0570	-10.55	0.0000
Item_3	-0.068	0.0544	-1.25	0.2100
Item_4	0.336	0.0540	6.22	0.0000
Item_5	0.113	0.0540	2.10	0.0360
Item_6	-0.153	0.0543	-2.81	0.0050
Item_7	-0.385	0.0553	-6.95	0.0000
Item_8	0.550	0.0545	10.09	0.0000
Item_9	0.704	0.0546	12.88	0.0000
Item_10	0.139	0.0541	2.58	0.0100
Item_11	-0.233	0.0550	-4.24	0.0000
Item_12	-0.690	0.0584	-11.81	0.0000
Item_13	0.276	0.0539	5.11	0.0000
Item_14	0.256	0.0538	4.76	0.0000
Item_15	-0.579	0.0569	-10.18	0.0000
Item_16	-0.039	0.0546	-0.71	0.4800
Item_17	0.264	0.0539	4.90	0.0000
Item_18	0.086	0.0542	1.59	0.1110
Item_19	0.083	0.0541	1.52	0.1270

Parameter	Coefficient	Std. Error	*z*	P>|*z*|
Item_20	-0.287	0.0549	-5.23	0.0000
Item_21	-0.390	0.0560	-6.96	0.0000
Item_22	-1.295	0.0678	-19.11	0.0000
Item_23	0.013	0.0542	0.24	0.8110

The full model, which specified differential treatment by ELL interactions across subject area assessments was also statistically significant ($\chi^2_{(33)} = 3947.21$; $p < .0000$). However, the likelihood ratio between the base and full model was not significant ($\chi^2_{(4)} = 4.66$; n.s.), indicating that the full model did not account for significant variation beyond that of base model. Table 3 shows the parameter estimates and statistical tests for the modeled effects.

As in the base model, students' prior ability estimates significantly predicted the likelihood of responding correctly to the test items presented. Also as with the base model, the likelihood of providing a correct response was item dependent. ELL status continued to contribute to the likelihood of responding correctly. The treatment main effect was not significant. Providing students access to a dictionary did not significantly increase their likelihood of responding correctly. Moreover, there was no statistical support for subject area by treatment interactions, or differential effects of dictionary access for ELL students across subject area assessments.

Table 3. Parameter Estimates for the Full Model

Parameter	Coefficient	Std. Error	*z*	P>|*z*|
Intercept	-8.945	0.5313	-16.84	0.0000
Math Scale Score	0.003	0.0004	7.37	0.0000
ELA Scale Score	0.002	0.0002	7.11	0.0000
Science Scale Score	0.009	0.0007	11.73	0.0000
Treatment	0.028	0.0337	0.84	0.4030
ELL Status	-0.112	0.0356	-3.16	0.0020
Math*Treatment Interaction	-0.028	0.0428	-0.66	0.5090
ELA*Treatment Interaction	0.024	0.0414	0.57	0.5660
Science*ELL*Treatment Interaction	-0.025	0.0620	-0.40	0.6870
ELA*ELL*Treatment Interaction	0.070	0.0616	1.13	0.2590
Math*ELL*Treatment Interaction	0.040	0.0672	0.60	0.5480
Item_1	0.730	0.0583	12.53	0.0000
Item_2	-0.601	0.0569	-10.55	0.0000
Item_3	-0.097	0.0577	-1.67	0.0950
Item_4	0.330	0.0573	5.76	0.0000
Item_5	0.107	0.0573	1.87	0.0620
Item_6	-0.181	0.0576	-3.14	0.0020
Item_7	-0.384	0.0553	-6.95	0.0000
Item_8	0.521	0.0578	9.02	0.0000
Item_9	0.698	0.0579	12.05	0.0000
Item_10	0.111	0.0575	1.93	0.0540
Item_11	-0.240	0.0582	-4.12	0.0000
Item_12	-0.690	0.0584	-11.81	0.0000
Item_13	0.269	0.0572	4.71	0.0000

Parameter	Coefficient	Std. Error	*z*	P>|*z*|
Item_14	0.250	0.0571	4.38	0.0000
Item_15	-0.579	0.0569	-10.18	0.0000
Item_16	-0.046	0.0579	-0.79	0.4310
Item_17	0.236	0.0572	4.12	0.0000
Item_18	0.079	0.0574	1.38	0.1660
Item_19	0.054	0.0575	0.94	0.3480
Item_20	-0.287	0.0549	-5.23	0.0000
Item_21	-0.417	0.0592	-7.05	0.0000
Item_22	-1.295	0.0678	-19.11	0.0000
Item_23	0.013	0.0542	0.24	0.8120

Conclusion

The results of this investigation did not find evidence that providing students with access to a dictionary would differentially affect the performance of ELL students on the SAGE assessments. However, given the relatively low power of the study afforded by small sample size, there is a very real possibility that the study was not sufficiently sensitive to detect real effects, whether main effects of the treatment condition, differential effects of treatment by ELL status, or even differential effects of treatment across subjects by ELL status. Affirming that a dictionary accommodation removes construct irrelevant barriers to test content for ELL students without altering the construct being assessed may require very much larger samples of students. Moreover, effects of dictionary access could vary across grade level assessments as well, further complicating the situation.

Because the risk of a type II error (e.g., failing to reject a false null hypothesis) is substantial, care needs also to be taken to avoid over-interpretation of null results. One could, for example, be tempted to interpret the null results as indicating that, because there were no observed effects for dictionary access on student performance, students can safely be offered the dictionary accommodation without altering the measured construct. Such interpretations are always risky, and are only warranted when the risk of type II error is very low, which is not the case in this study.

Finally, providing students with a dictionary could alter the standards alignment for, and student performance on, only a subset of items, especially in ELA, and such effects would likely only be observed in a more focused investigation of item types. For example, the alignment of items measuring student ability to infer meaning of words from context or demonstrate understanding of grade level vocabulary would certainly be affected by providing students with a dictionary. Moreover, the difficulty of such items would also likely be affected by availability of a dictionary. But such effects would be difficult to detect except in study specifically targeting items measuring those impacted standards. Should USOE consider providing a dictionary during SAGE administrations, it would be necessary to ensure that the alignment of test items, especially in ELA, is still valid.

In the absence of evidence indicating that providing a dictionary impacts student performance, USOE's Technical Advisory Committee (TAC) recommended that USOE make the dictionary tool available to all students. The dictionary tool was available to all students for the spring 2015 SAGE administration.

APPENDIX 3-A

PERCENTAGE OF STUDENTS IN PERFORMANCE LEVELS FOR OVERALL AND BY SUBGROUP

Appendix 3-A
Percentage of Students in Performance Levels for Overall and by Subgroup

Table 3-A-1. SY2020-2021 Grade 3 ELA Percentage of Students in Performance Levels for Overall and by Subgroup

Group	Number Tested	Scale Score Mean	Scale Score SD	% Below Proficient	% Approaching Proficient	% Proficient	% Highly Proficient
All Students	45,290	314	77.94	37	20	31	12
Gender							
Female	22,247	320	76.19	34	21	33	13
Male	23,043	309	79.21	41	20	29	11
Ethnicity							
African American	571	277	70.19	58	21	17	4
American Indian/Alaskan	353	261	71.9	66	18	13	2
Asian	783	319	77.67	35	22	29	14
Hispanic/Latino	8,249	275	72.83	59	19	19	4
Multi-Racial	1,601	320	76.31	34	20	34	12
Native Hawaiian/Pacific Islander	720	276	67.17	59	21	17	3
White	33,013	326	75.74	31	20	34	14
Accommodations							
Limited English Proficiency	5,162	258	67.53	68	18	12	1
Low Income	14,216	284	75.74	53	20	21	5
Special Education	6,235	257	80.58	69	12	14	5

Table 3-A-2. SY2020-2021 Grade 4 ELA Percentage of Students in Performance Levels for Overall and by Subgroup

Group	Number Tested	Scale Score Mean	Scale Score SD	% Below Proficient	% Approaching Proficient	% Proficient	% Highly Proficient
All Students	46,496	347	84.01	38	25	25	13
Gender							
Female	22,619	350	82.39	36	25	25	14
Male	23,873	343	85.38	39	24	24	12
Ethnicity							
African American	667	302	79.49	60	22	12	5
American Indian/Alaskan	393	290	77.74	68	20	8	4
Asian	782	355	84.19	32	26	27	15
Hispanic/Latino	8,720	301	78.66	61	22	13	4
Multi-Racial	1,548	350	83.95	37	25	25	14
Native Hawaiian/Pacific Islander	787	301	73.28	61	24	13	3
White	33,599	361	80.55	30	25	29	16
Accommodations							
Limited English Proficiency	5,453	281	71.35	72	19	8	1
Low Income	14,544	313	81.53	55	23	16	6
Special Education	6,321	279	84.73	72	14	9	5

Table 3-A-3. SY2020-2021 Grade 5 ELA Percentage of Students in Performance Levels for Overall and by Subgroup

Group	Number Tested	Scale Score Mean	Scale Score SD	% Below Proficient	% Approaching Proficient	% Proficient	% Highly Proficient
All Students	47,000	387	86.12	35	21	26	18
Gender							
Female	23,007	394	83.25	31	22	27	20
Male	23,993	380	88.27	39	20	24	17
Ethnicity							
African American	691	339	88.68	58	17	16	8
American Indian/Alaskan	369	331	80.94	62	19	14	5
Asian	800	398	88.16	32	21	25	23
Hispanic/Latino	8,861	343	83	56	21	16	7
Multi-Racial	1,488	389	83.25	33	22	27	18
Native Hawaiian/Pacific Islander	731	345	78.82	55	23	17	5
White	34,060	400	82.46	29	21	28	22
Accommodations							
Limited English Proficiency	4,921	312	72.65	73	18	8	1
Low Income	14,577	351	85.53	52	21	18	9
Special Education	5,817	304	84.99	75	12	9	5

Table 3-A-4. SY2020-2021 Grade 6 ELA Percentage of Students in Performance Levels for Overall and by Subgroup

Group	Number Tested	Scale Score Mean	Scale Score SD	% Below Proficient	% Approaching Proficient	% Proficient	% Highly Proficient
All Students	47,715	414	86.89	37	19	26	18
Gender							
Female	23,280	421	84	34	19	27	20
Male	24,433	408	89.07	40	18	25	17
Ethnicity							
African American	652	359	84.54	65	15	15	5
American Indian/Alaskan	388	357	83.06	65	17	14	4
Asian	792	420	86.92	35	18	28	19
Hispanic/Latino	9,177	368	83.87	60	18	16	6
Multi-Racial	1,496	421	84.17	35	19	27	20
Native Hawaiian/Pacific Islander	705	378	76.01	55	22	18	5
White	34,505	429	82.86	30	19	29	22
Accommodations							
Limited English Proficiency	4,581	328	71.61	82	12	6	1
Low Income	14,523	379	86.81	55	18	19	9
Special Education	5,435	319	81.68	82	8	7	3

Table 3-A-5. SY2020-2021 Grade 7 ELA Percentage of Students in Performance Levels for Overall and by Subgroup

Group	Number Tested	Scale Score Mean	Scale Score SD	% Below Proficient	% Approaching Proficient	% Proficient	% Highly Proficient
All Students	47,169	426	83.77	38	21	26	15
Gender							
Female	22,785	435	81.17	34	22	28	17
Male	24,383	417	85.25	42	21	25	13
Ethnicity							
African American	694	377	82.37	62	18	15	5
American Indian/Alaskan	385	371	77.13	65	17	14	4
Asian	756	441	86.9	33	21	25	22
Hispanic/Latino	8,851	384	80.08	59	19	16	6
Multi-Racial	1,482	432	83.26	34	22	26	17
Native Hawaiian/Pacific Islander	705	385	72.77	59	21	16	4
White	34,296	439	80.57	31	22	29	18
Accommodations							
Limited English Proficiency	4,210	342	63.48	83	12	4	1
Low Income	13,655	393	82.79	55	19	18	7
Special Education	4,987	339	73.36	82	10	6	2

Table 3-A-6. SY2020-2021 Grade 8 ELA Percentage of Students in Performance Levels for Overall and by Subgroup

Group	Number Tested	Scale Score Mean	Scale Score SD	% Below Proficient	% Approaching Proficient	% Proficient	% Highly Proficient
All Students	46,311	446	91.87	34	22	26	17
Gender							
Female	22,096	458	88.41	29	23	28	20
Male	24,213	435	93.59	39	22	24	15
Ethnicity							
African American	596	392	93.56	59	19	15	7
American Indian/Alaskan	357	388	87.63	62	18	17	4
Asian	759	463	95.12	27	23	26	24
Hispanic/Latino	8,588	398	90.8	56	21	17	7
Multi-Racial	1,339	449	90.03	35	21	28	17
Native Hawaiian/Pacific Islander	678	398	86.27	55	24	14	6
White	33,994	460	87.11	28	23	29	20
Accommodations							
Limited English Proficiency	3,482	344	73.77	82	13	5	1
Low Income	12,899	410	93.26	51	21	19	9
Special Education	4,538	344	79.07	81	12	6	1

Table 3-A-7. SY2020-2021 Grade 3 Math Percentage of Students in Performance Levels for Overall and by Subgroup

Group	Number Tested	Scale Score Mean	Scale Score SD	% Below Proficient	% Approaching Proficient	% Proficient	% Highly Proficient
All Students	45,177	309	37.93	35	20	21	24
Gender							
Female	22,179	307	36.27	37	21	21	21
Male	22,998	311	39.34	33	19	21	27
Ethnicity							
African American	566	284	36.91	61	19	13	7
American Indian/Alaskan	353	277	35.64	70	18	7	5
Asian	770	314	38.02	32	18	21	28
Hispanic/Latino	8,200	288	36.23	59	19	13	9
Multi-Racial	1,590	310	38	34	20	23	24
Native Hawaiian/Pacific Islander	718	285	34.56	62	19	14	5
White	32,980	315	35.9	28	20	23	29
Accommodations							
Limited English Proficiency	5,139	281	35.23	66	18	10	6
Low Income	14,129	293	38.54	52	19	15	13
Special Education	6,224	281	42.22	64	13	11	12

Table 3-A-8. SY2020-2021 Grade 4 Math Percentage of Students in Performance Levels for Overall and by Subgroup

Group	Number Tested	Scale Score Mean	Scale Score SD	% Below Proficient	% Approaching Proficient	% Proficient	% Highly Proficient
All Students	46,281	338	45.77	36	19	23	22
Gender							
Female	22,496	335	43.88	39	20	23	18
Male	23,781	341	47.29	34	17	23	25
Ethnicity							
African American	667	307	46.17	63	17	13	7
American Indian/Alaskan	384	306	41.98	68	17	10	5
Asian	782	349	46.9	29	18	21	32
Hispanic/Latino	8,658	312	44.24	61	18	14	8
Multi-Racial	1,535	339	45.38	37	19	22	22
Native Hawaiian/Pacific Islander	778	313	42.24	60	20	12	7
White	33,477	346	43	29	19	26	26
Accommodations							
Limited English Proficiency	5,408	304	42.27	69	17	10	5
Low Income	14,400	319	46.43	54	18	17	11
Special Education	6,272	300	50.95	70	11	10	9

Table 3-A-9. SY2020-2021 Grade 5 Math Percentage of Students in Performance Levels for Overall and by Subgroup

Group	Number Tested	Scale Score Mean	Scale Score SD	% Below Proficient	% Approaching Proficient	% Proficient	% Highly Proficient
All Students	46,621	368	53.03	41	17	23	19
Gender							
Female	22,832	365	50.48	43	18	23	16
Male	23,789	371	55.23	39	16	23	22
Ethnicity							
African American	676	331	51.34	72	13	10	5
American Indian/Alaskan	357	327	51.96	74	11	11	4
Asian	794	380	52.99	33	17	23	27
Hispanic/Latino	8,778	338	50.32	65	16	13	6
Multi-Racial	1,477	367	52.16	42	16	25	18
Native Hawaiian/Pacific Islander	717	339	47.01	68	13	15	5
White	33,822	377	50.23	33	18	26	23
Accommodations							
Limited English Proficiency	4,864	323	45.75	78	12	7	2
Low Income	14,408	345	53.13	59	16	16	9
Special Education	5,764	318	56.06	77	9	9	6

Table 3-A-10. SY2020-2021 Grade 6 Math Percentage of Students in Performance Levels for Overall and by Subgroup

Group	Number Tested	Scale Score Mean	Scale Score SD	% Below Proficient	% Approaching Proficient	% Proficient	% Highly Proficient
All Students	47,277	400	60.28	45	23	18	14
Gender							
Female	23,044	398	58.08	46	24	17	13
Male	24,231	402	62.25	43	22	18	16
Ethnicity							
African American	640	352	61.3	75	14	8	3
American Indian/Alaskan	368	355	58.71	73	16	8	2
Asian	776	410	63.03	40	21	18	21
Hispanic/Latino	9,089	365	57.63	70	18	9	4
Multi-Racial	1,477	402	58.86	44	22	19	15
Native Hawaiian/Pacific Islander	697	375	55.69	63	21	11	5
White	34,230	411	56.6	37	25	21	17
Accommodations							
Limited English Proficiency	4,528	341	52.79	85	11	3	1
Low Income	14,209	373	60.64	63	19	11	6
Special Education	5,375	333	58.71	85	9	4	2

Table 3-A-11. SY2020-2021 Grade 7 Math Percentage of Students in Performance Levels for Overall and by Subgroup

Group	Number Tested	Scale Score Mean	Scale Score SD	% Below Proficient	% Approaching Proficient	% Proficient	% Highly Proficient
All Students	44,439	427	63.63	38	22	28	12
Gender							
Female	21,583	426	60.46	39	23	28	10
Male	22,855	427	66.48	38	21	29	13
Ethnicity							
African American	661	379	62.34	69	18	10	2
American Indian/Alaskan	379	381	61.95	69	17	10	3
Asian	677	440	64.79	32	21	29	18
Hispanic/Latino	8,547	392	62.09	62	20	15	4
Multi-Racial	1,367	429	63.15	38	22	28	13
Native Hawaiian/Pacific Islander	674	391	59.94	63	21	14	2
White	32,134	438	59.59	30	23	33	14
Accommodations							
Limited English Proficiency	4,132	362	53.31	83	12	5	0
Low Income	13,174	400	65.33	56	20	18	6
Special Education	4,846	360	59.49	81	10	6	2

Table 3-A-12. SY2020-2021 Grade 8 Math Percentage of Students in Performance Levels for Overall and by Subgroup

Group	Number Tested	Scale Score Mean	Scale Score SD	% Below Proficient	% Approaching Proficient	% Proficient	% Highly Proficient
All Students	44,290	465	74.5	37	27	24	11
Gender							
Female	21,172	466	69.99	36	29	24	10
Male	23,116	464	78.39	39	26	24	12
Ethnicity							
African American	580	409	74.29	67	20	11	2
American Indian/Alaskan	351	421	67.18	63	24	11	2
Asian	724	480	73.6	32	27	24	16
Hispanic/Latino	8,384	422	71.22	63	23	12	3
Multi-Racial	1,264	463	74.06	38	29	23	10
Native Hawaiian/Pacific Islander	657	428	67.59	56	30	11	3
White	32,330	478	70.4	30	28	28	14
Accommodations							
Limited English Proficiency	3,430	388	60.93	83	14	3	0
Low Income	12,541	435	75.38	55	24	15	6
Special Education	4,389	386	67.11	82	12	4	1

Table 3-A-13. SY2020-2021 Secondary Math I Percentage of Students in Performance Levels for Overall and by Subgroup

Group	Number Tested	Scale Score Mean	Scale Score SD	% Below Proficient	% Approaching Proficient	% Proficient	% Highly Proficient
All Students	3,337	586	51.2	2	11	37	50
Gender							
Female	1,340	583	47.9	2	11	39	48
Male	1,997	588	53.24	2	11	35	52
Ethnicity							
African American	13	567	77.78	8	15	46	31
American Indian/Alaskan	4	492	87.7	50	0	50	0
Asian	121	605	59.43	2	5	29	64
Hispanic/Latino	194	560	63.17	7	23	38	32
Multi-Racial	123	587	44.06	0	12	37	50
Native Hawaiian/Pacific Islander	18	555	57.69	6	33	22	39
White	2,864	587	49.19	2	10	37	51
Accommodations							
Limited English Proficiency	13	513	58.16	23	38	38	0
Low Income	318	578	54.65	3	14	39	43
Special Education	20	567	69.94	5	25	25	45

Table 3-A-14. SY2020-2021 Grade 4 Science Percentage of Students in Performance Levels for Overall and by Subgroup

Group	Number Tested	Scale Score Mean	Scale Score SD	% Below Proficient	% Approaching Proficient	% Proficient	% Highly Proficient
All Students	46,520	550	13.72	29	28	23	20
Gender							
Female	22,605	549	13.01	30	30	23	17
Male	23,911	551	14.31	28	26	24	23
Ethnicity							
African American	672	541	12.95	54	28	11	7
American Indian/Alaskan	394	542	11.91	53	27	14	6
Asian	789	552	13.86	24	28	24	24
Hispanic/Latino	8,717	543	12.92	50	29	14	7
Multi-Racial	1,545	550	13.73	28	28	22	21
Native Hawaiian/Pacific Islander	788	542	11.49	49	33	14	4
White	33,615	552	13.17	22	28	26	24
Accommodations							
Limited English Proficiency	5,456	540	11.89	59	27	11	3
Low Income	14,456	545	13.39	44	29	17	10
Special Education	6,339	540	14.47	60	21	11	8

Table 3-A-15. SY2020-2021 Grade 5 Science Percentage of Students in Performance Levels for Overall and by Subgroup

Group	Number Tested	Scale Score Mean	Scale Score SD	% Below Proficient	% Approaching Proficient	% Proficient	% Highly Proficient
All Students	46,991	550	13.82	29	25	27	18
Gender							
Female	22,997	549	13.16	30	27	27	16
Male	23,994	551	14.40	29	24	27	20
Ethnicity							
African American	692	541	13.66	54	24	16	6
American Indian/Alaskan	373	541	12.86	57	23	15	6
Asian	801	553	14.73	27	22	28	24
Hispanic/Latino	8,867	543	12.39	51	26	17	6
Multi-Racial	1,480	550	13.35	28	27	27	18
Native Hawaiian/Pacific Islander	733	542	11.46	53	31	11	5
White	34,045	552	13.41	23	25	30	22
Accommodations							
Limited English Proficiency	4,905	538	10.48	66	23	9	2
Low Income	14,468	545	13.12	46	26	20	9
Special Education	5,829	539	13.30	65	18	11	6

Table 3-A-16. SY2020-2021 Grade 6 Science Percentage of Students in Performance Levels for Overall and by Subgroup

Group	Number Tested	Scale Score Mean	Scale Score SD	% Below Proficient	% Approaching Proficient	% Proficient	% Highly Proficient
All Students	47,767	849	13.66	27	20	34	18
Gender							
Female	23,289	849	12.95	27	22	36	16
Male	24,476	850	14.30	27	19	33	20
Ethnicity							
African American	654	840	12.41	54	21	20	5
American Indian/Alaskan	383	840	12.31	53	22	22	4
Asian	796	850	14.07	24	21	35	21
Hispanic/Latino	9,201	842	12.15	47	24	24	6
Multi-Racial	1,495	850	13.44	25	21	36	19
Native Hawaiian/Pacific Islander	709	842	11.42	49	23	24	4
White	34,529	851	13.31	21	19	38	22
Accommodations							
Limited English Proficiency	4,576	837	10.17	65	22	12	1
Low Income	14,417	844	13.16	41	22	27	9
Special Education	5,429	837	12.16	66	17	12	4

Table 3-A-17. SY2020-2021 Grade 7 Science Percentage of Students in Performance Levels for Overall and by Subgroup

Group	Number Tested	Scale Score Mean	Scale Score SD	% Below Proficient	% Approaching Proficient	% Proficient	% Highly Proficient
All Students	47,331	848	13.00	29	27	26	18
Gender							
Female	22,850	848	12.33	28	30	26	16
Male	24,480	849	13.59	30	25	25	20
Ethnicity							
African American	691	840	11.17	56	26	13	5
American Indian/Alaskan	389	841	11.79	56	26	12	6
Asian	760	851	13.00	23	27	25	25
Hispanic/Latino	8,925	842	11.73	49	29	15	7
Multi-Racial	1,473	849	13.03	26	28	27	19
Native Hawaiian/Pacific Islander	704	841	10.55	50	31	14	5
White	34,389	850	12.66	22	27	29	22
Accommodations							
Limited English Proficiency	4,256	836	8.96	70	23	6	1
Low Income	13,635	843	12.43	44	28	18	10
Special Education	4,999	837	10.84	69	19	8	3

Table 3-A-18. SY2020-2021 Grade 8 Science Percentage of Students in Performance Levels for Overall and by Subgroup

Group	Number Tested	Scale Score Mean	Scale Score SD	% Below Proficient	% Approaching Proficient	% Proficient	% Highly Proficient
All Students	46,682	850	13.00	26	26	29	20
Gender							
Female	22,250	849	12.27	27	28	29	17
Male	24,429	850	13.61	26	23	29	22
Ethnicity							
African American	603	841	12.26	54	24	16	6
American Indian/Alaskan	368	842	11.64	50	28	18	4
Asian	768	852	13.56	21	23	30	26
Hispanic/Latino	8,730	842	11.83	48	28	17	7
Multi-Racial	1,362	850	13.06	25	27	27	21
Native Hawaiian/Pacific Islander	688	841	11.82	49	28	18	5
White	34,163	852	12.48	19	25	32	24
Accommodations							
Limited English Proficiency	3,550	836	9.60	72	20	7	1
Low Income	12,947	844	12.54	42	27	21	10
Special Education	4,580	837	11.00	68	20	10	3

APPENDIX 3-B

STANDARD ERROR OF MEASUREMENT CURVES BY SUBGROUP

Appendix 3-B
Standard Error of Measurement Curves by Subgroup

Figure 3-B-1. Standard Error of Measurement Curves by Subgroup for Grade 3 ELA

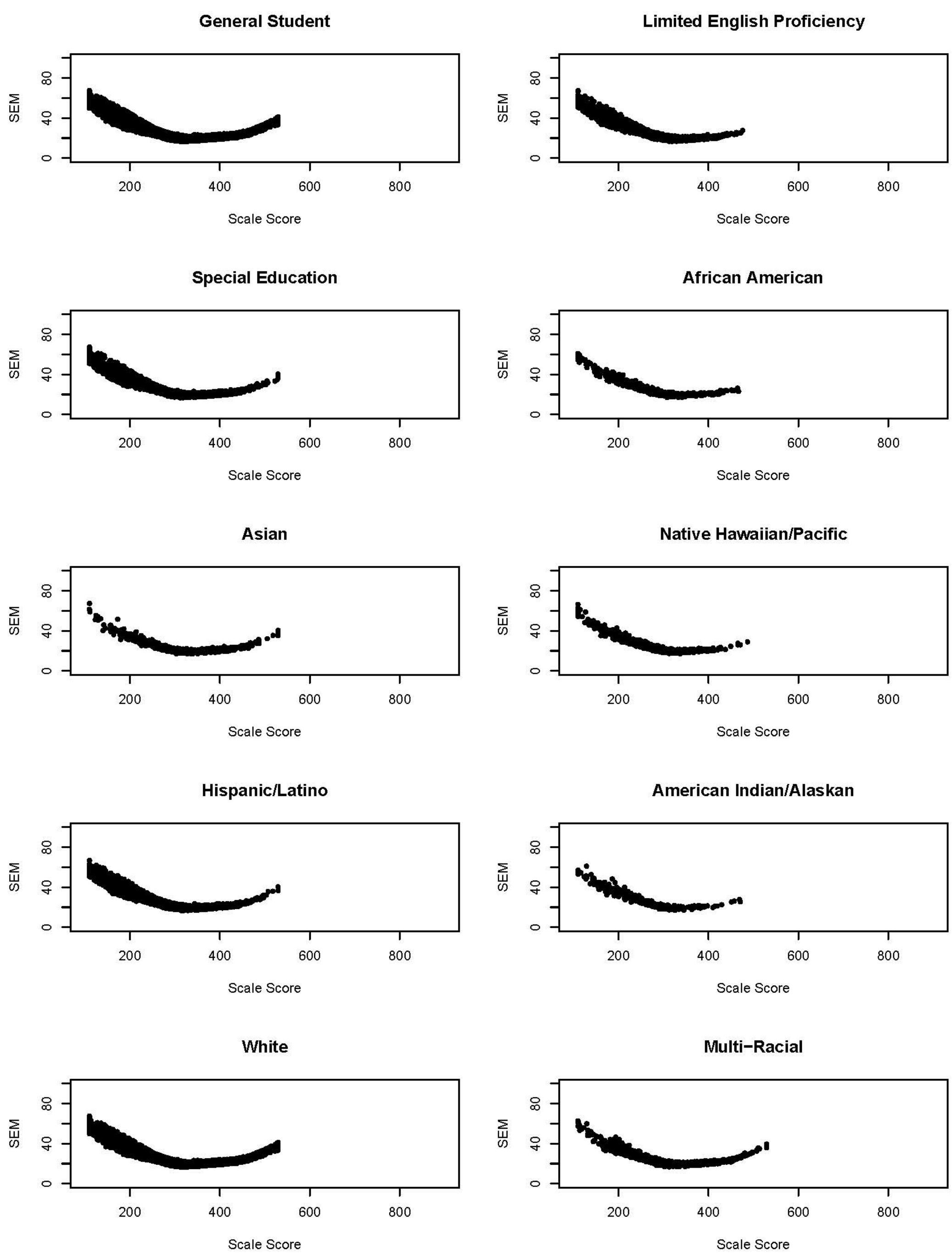


Figure 3-B-2. Standard Error of Measurement Curves by Subgroup for Grade 4 ELA

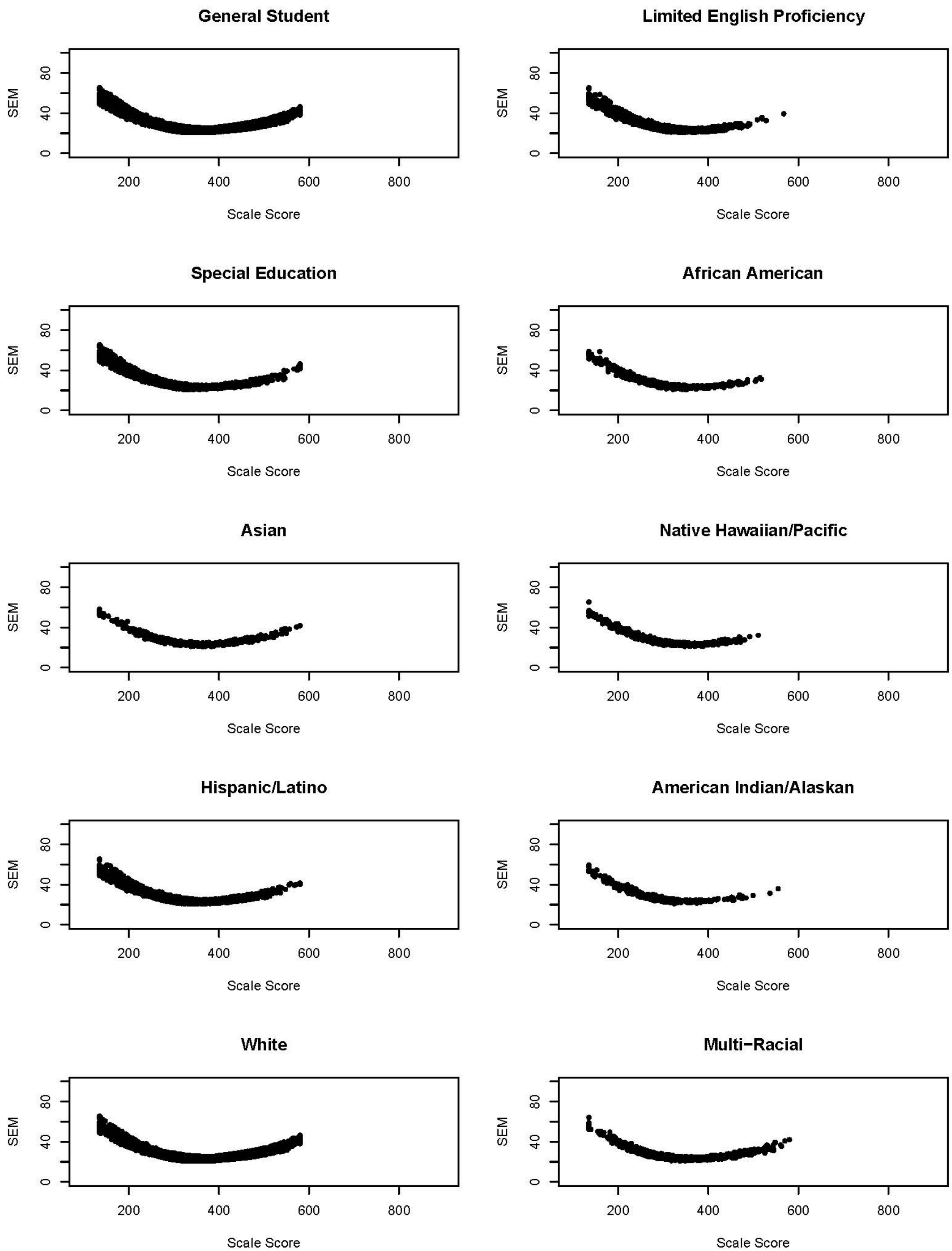


Figure 3-B-3. Standard Error of Measurement Curves by Subgroup for Grade 5 ELA

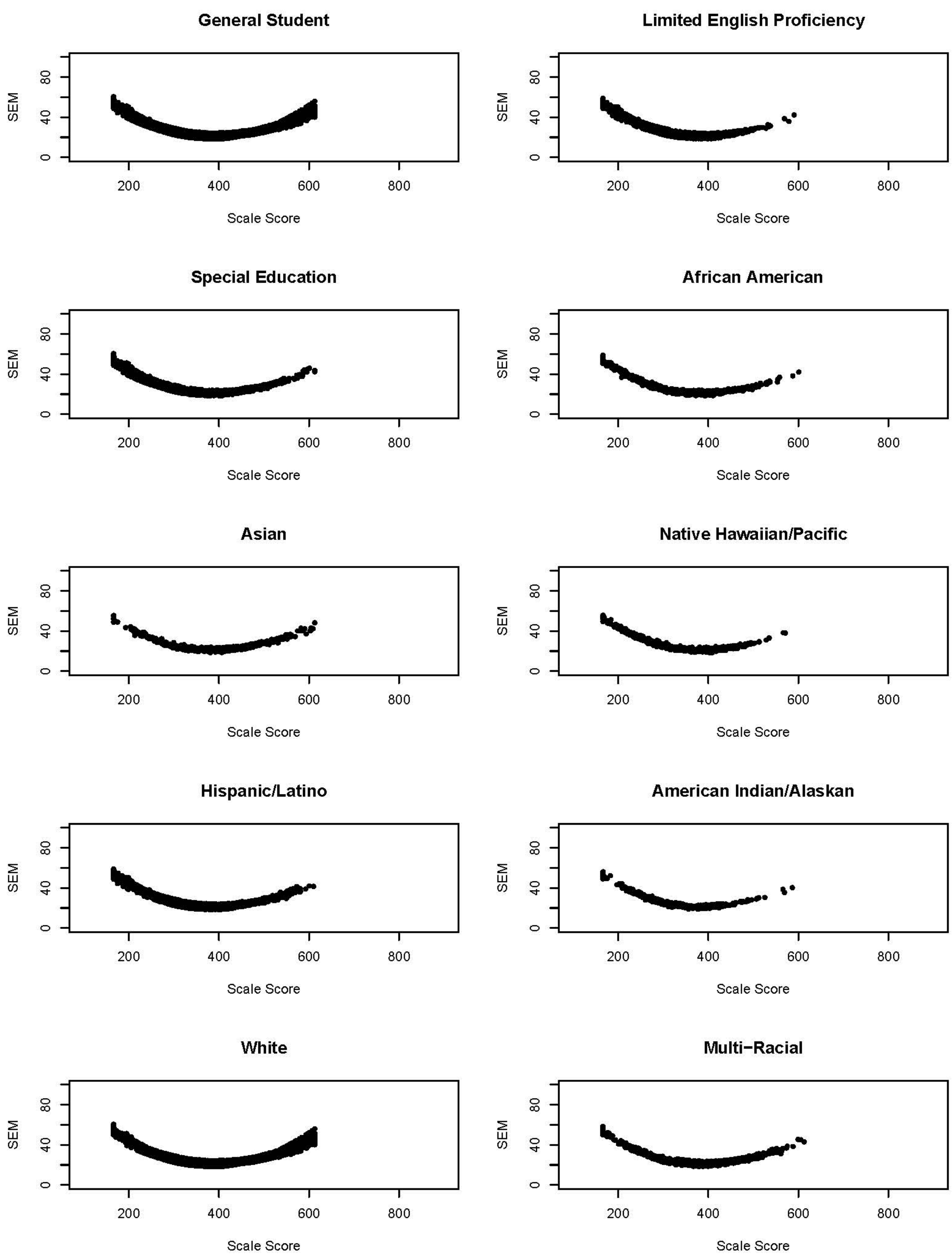


Figure 3-B-4. Standard Error of Measurement Curves by Subgroup for Grade 6 ELA

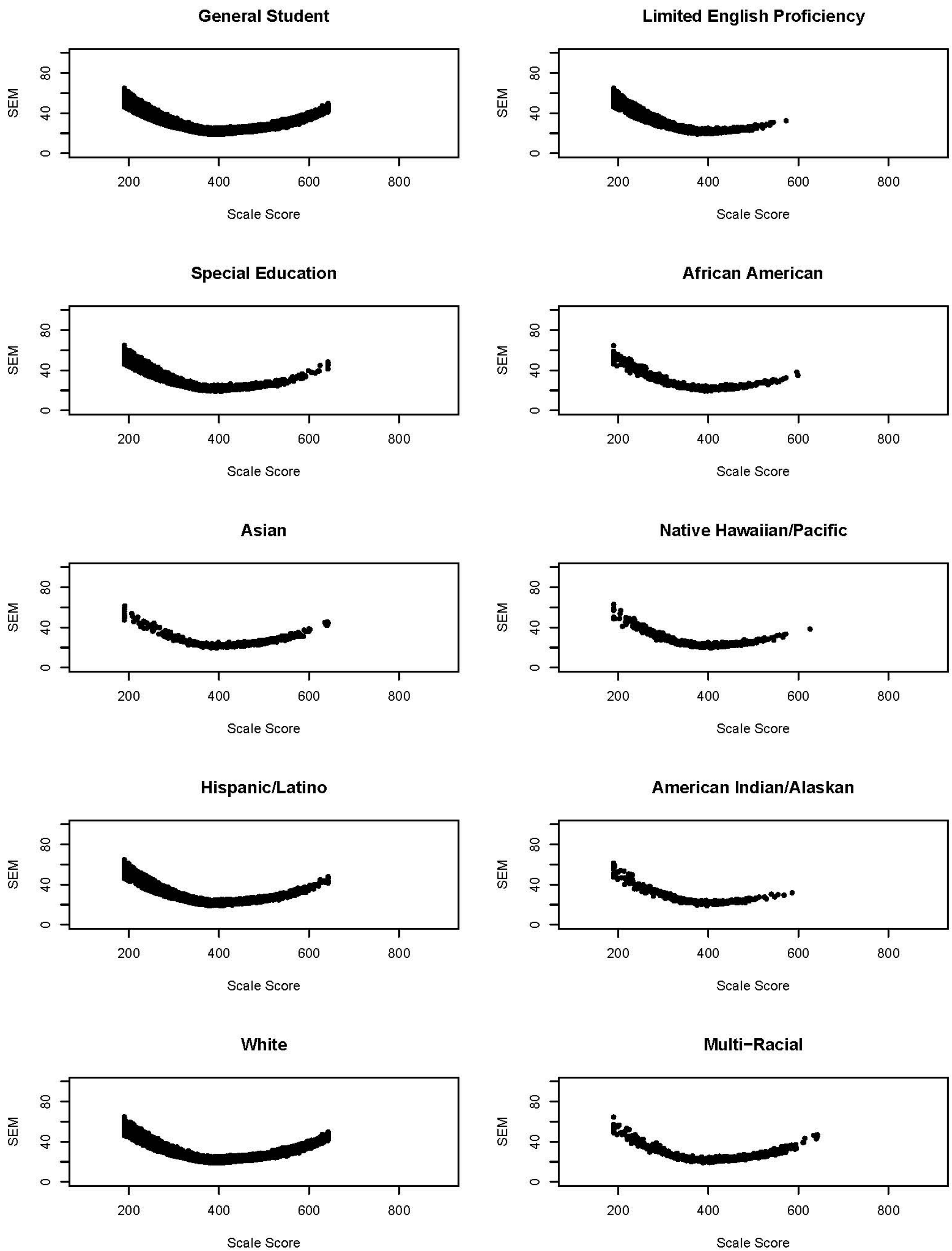


Figure 3-B-5. Standard Error of Measurement Curves by Subgroup for Grade 7 ELA

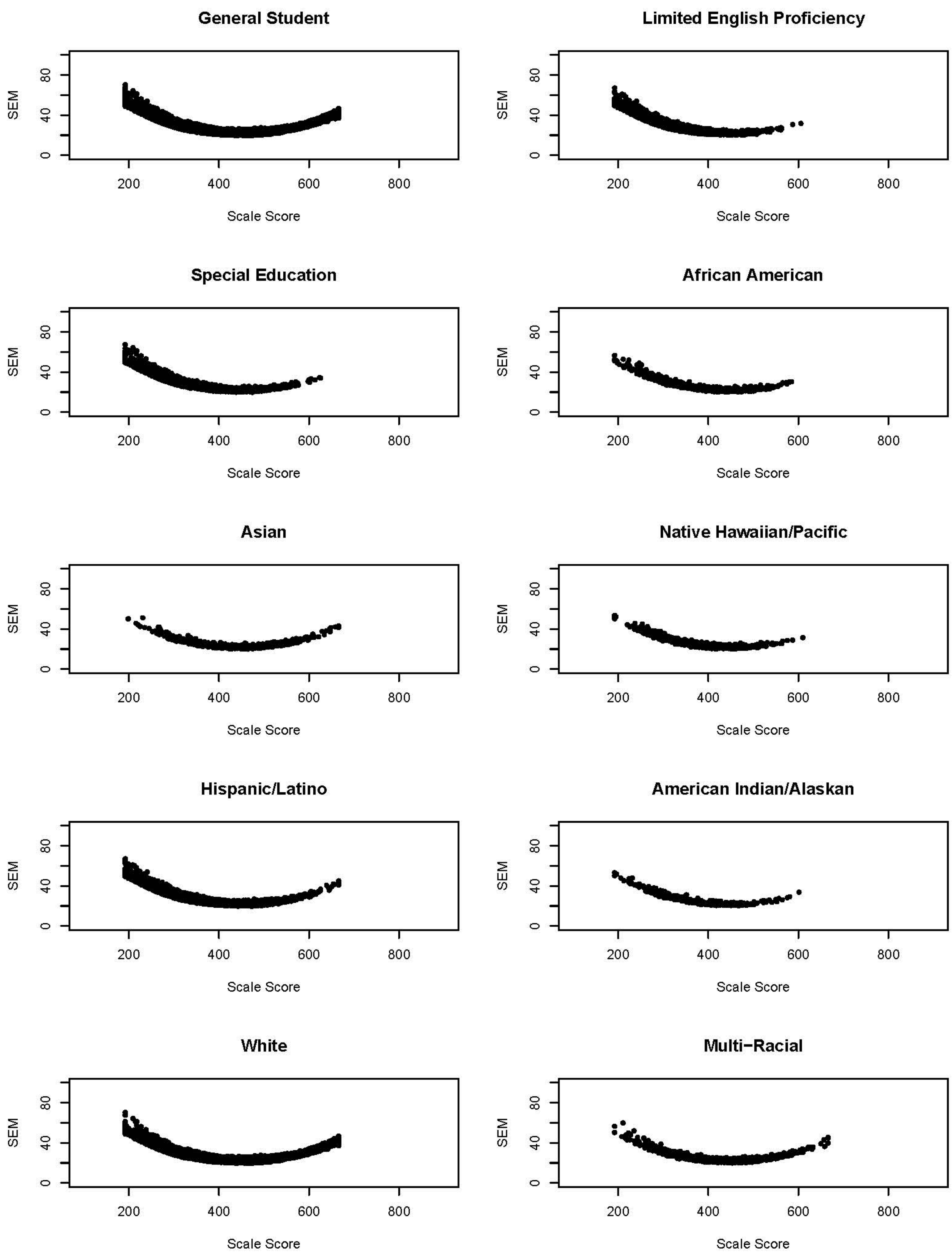


Figure 3-B-6. Standard Error of Measurement Curves by Subgroup for Grade 8 ELA

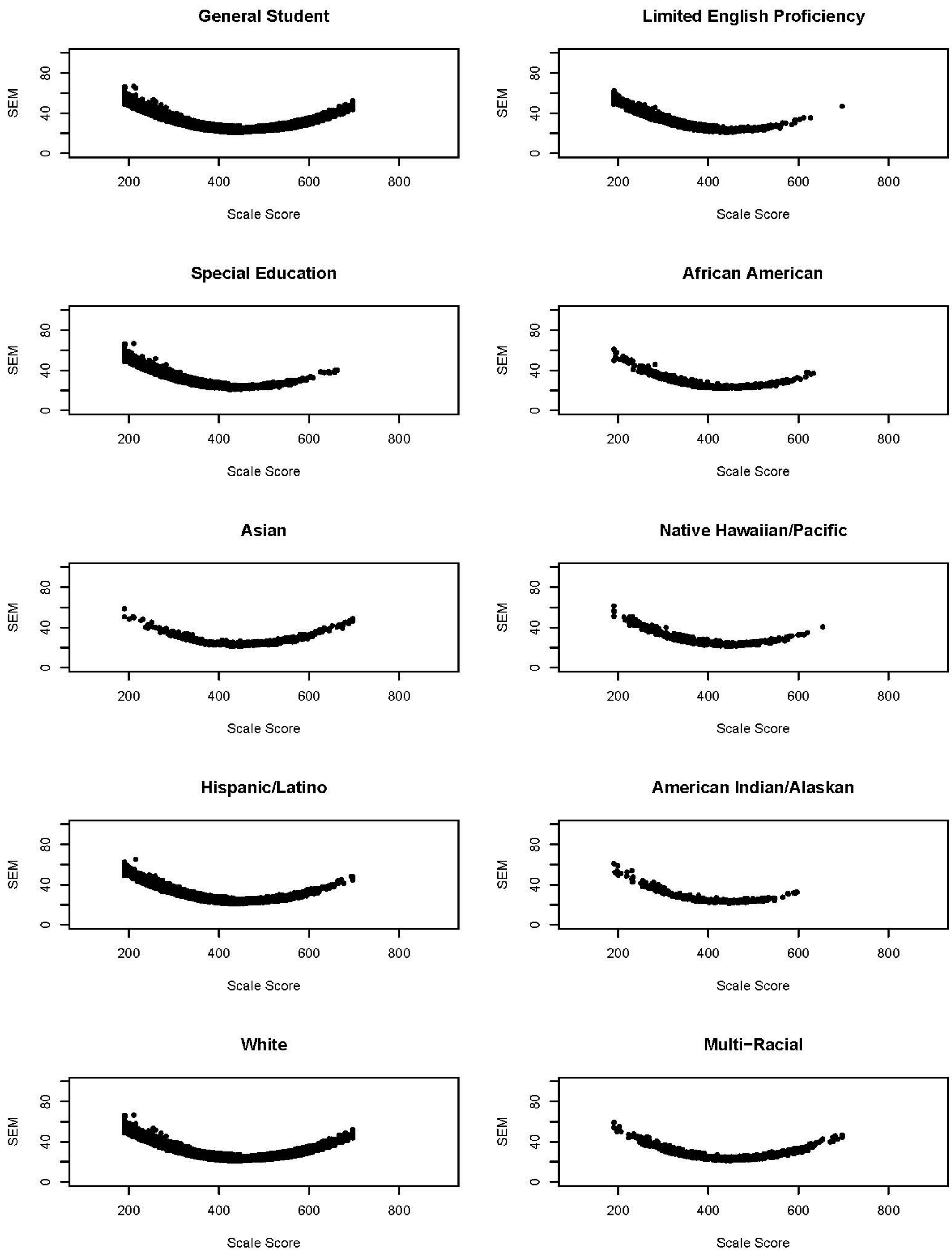


Figure 3-B-7. Standard Error of Measurement Curves by Subgroup for Grade 3 Mathematics

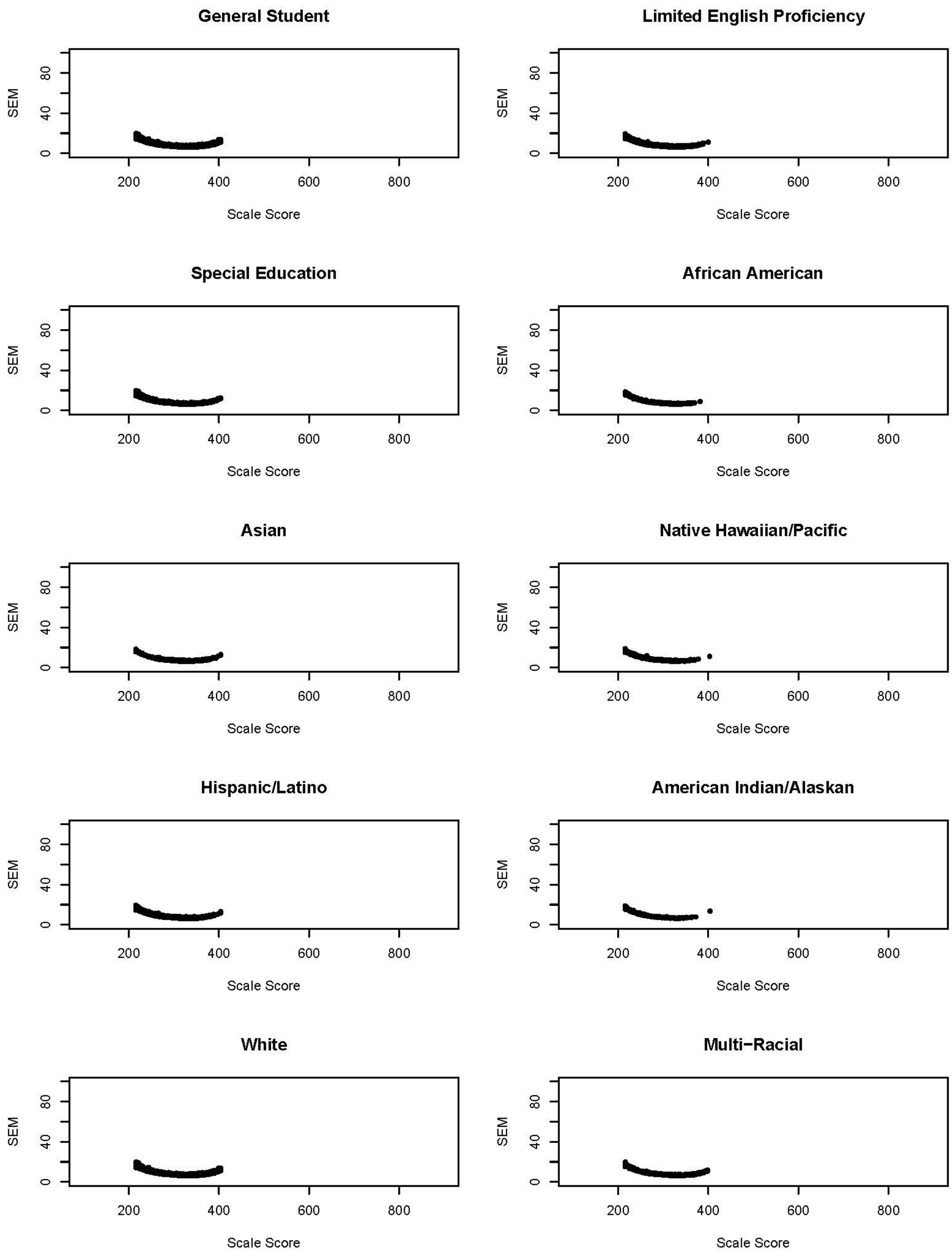


Figure 3-B-8. Standard Error of Measurement Curves by Subgroup for Grade 4 Mathematics

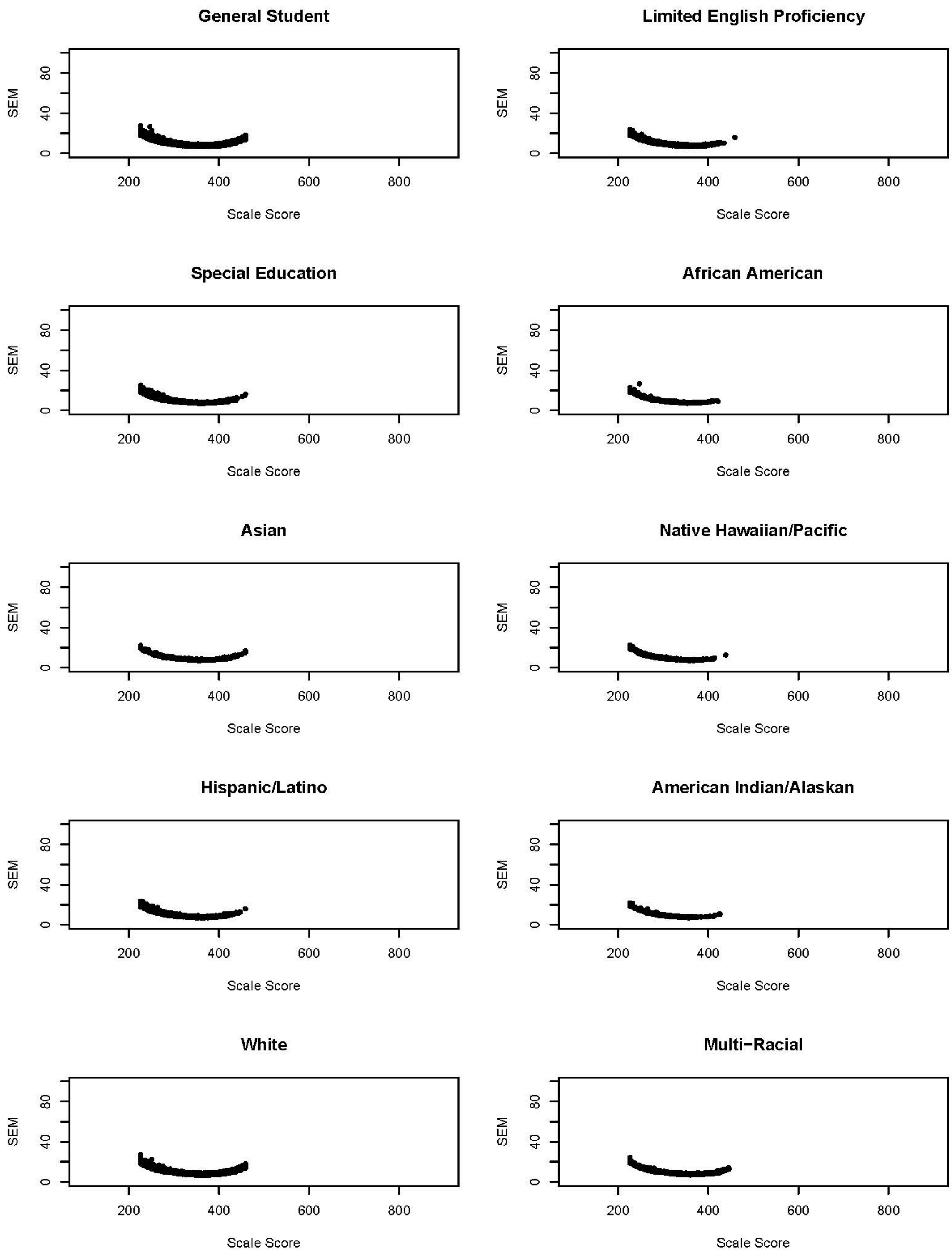


Figure 3-B-9. Standard Error of Measurement Curves by Subgroup for Grade 5 Mathematics

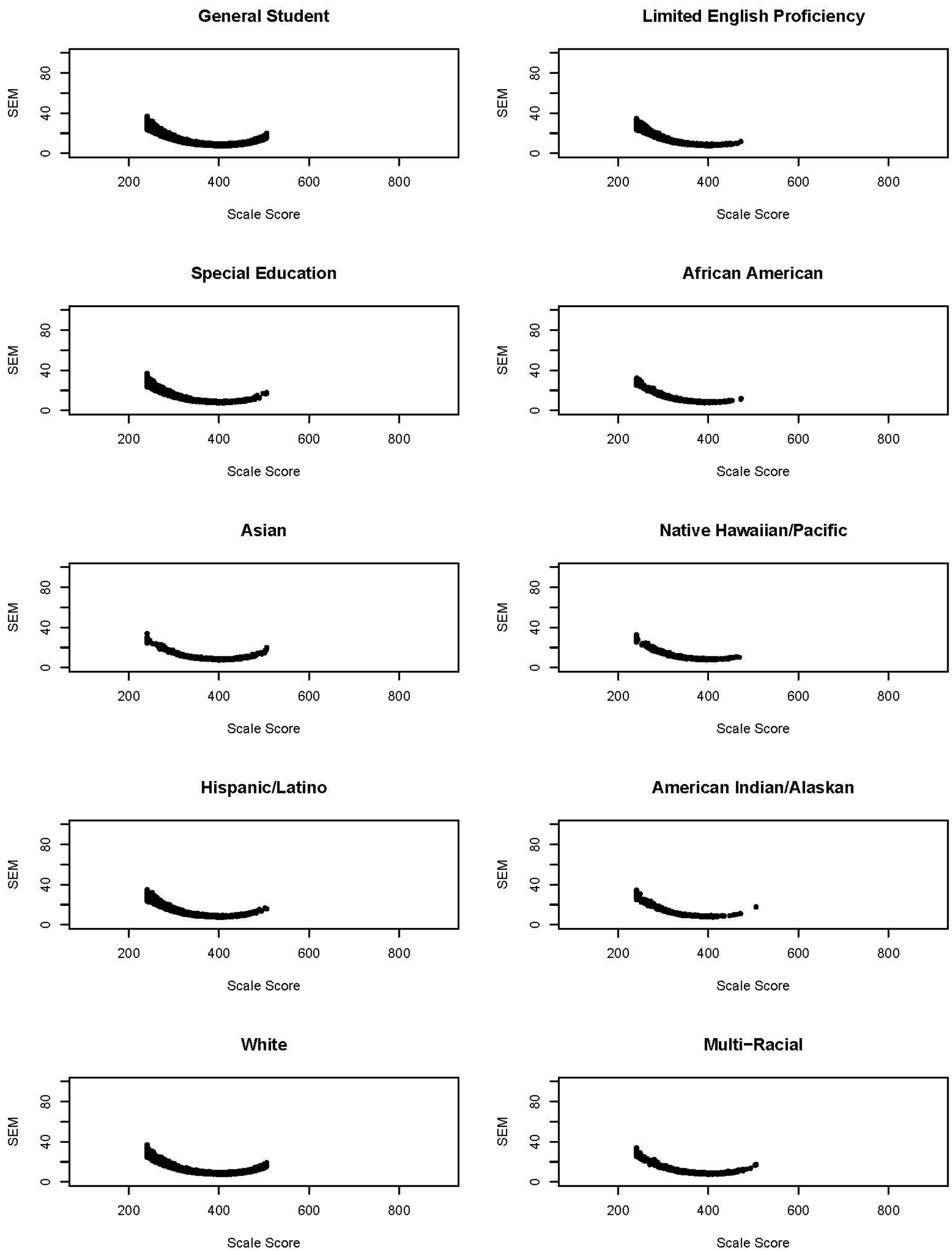


Figure 3-B-10. Standard Error of Measurement Curves by Subgroup for Grade 6 Mathematics

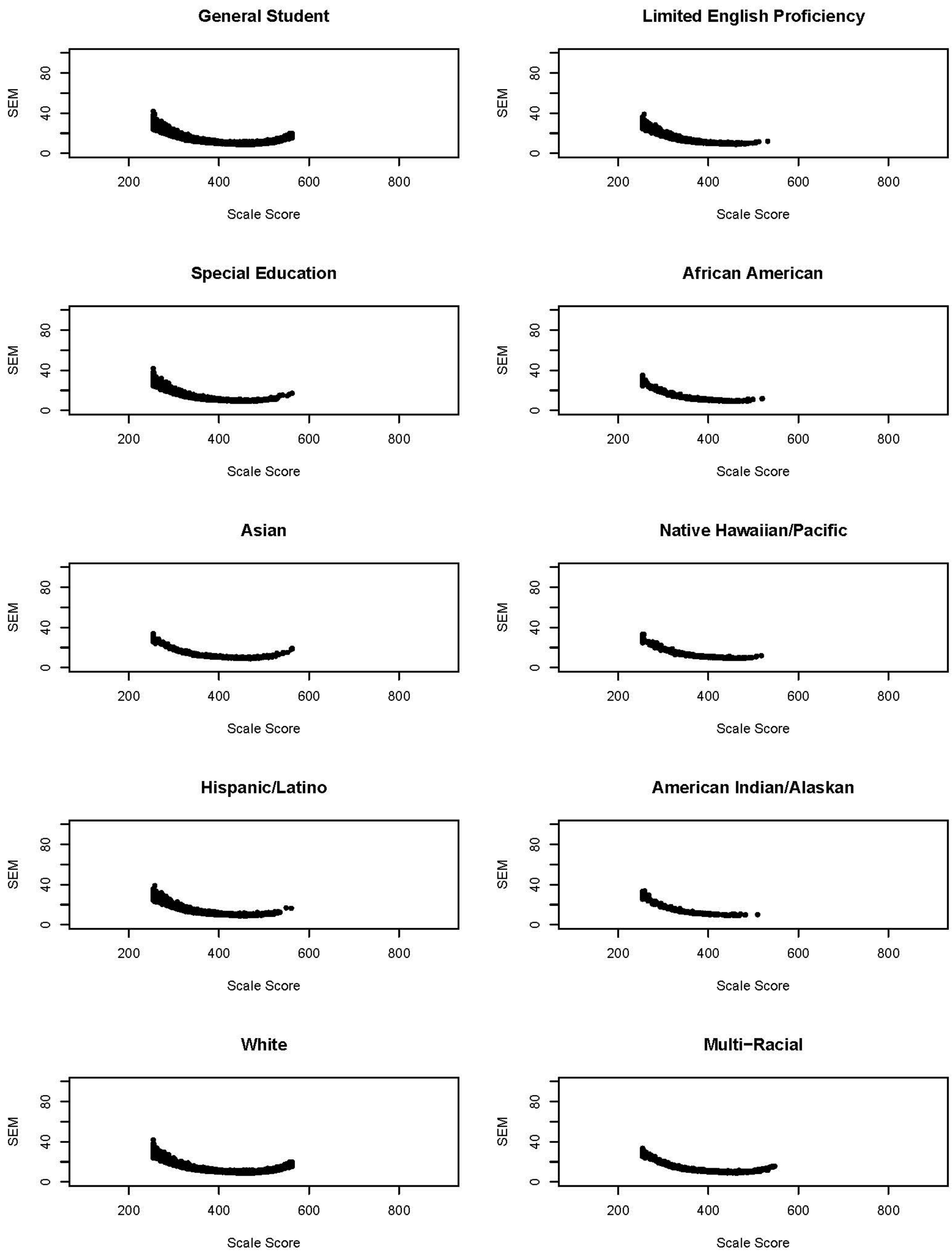


Figure 3-B-11. Standard Error of Measurement Curves by Subgroup for Grade 7 Mathematics

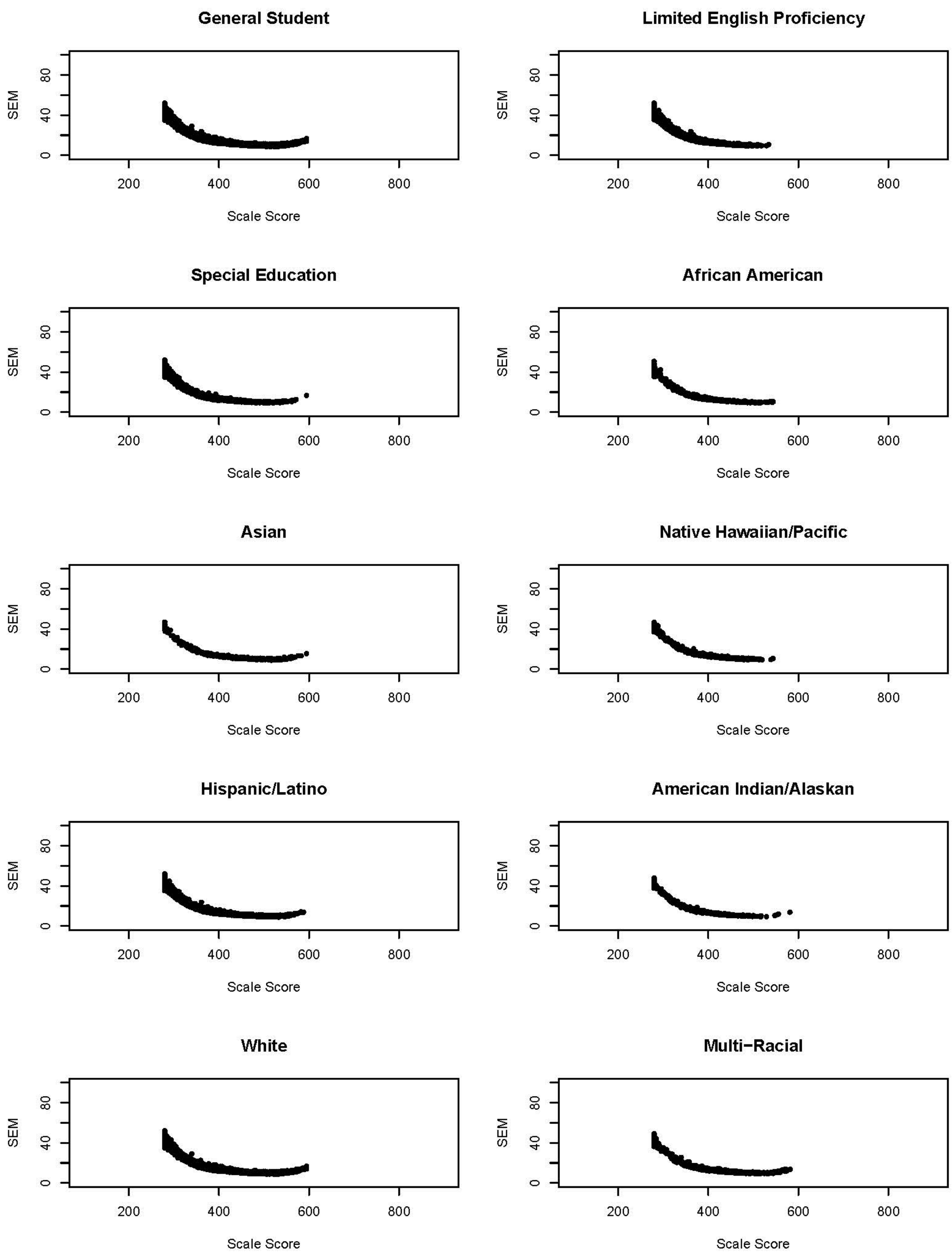


Figure 3-B-12. Standard Error of Measurement Curves by Subgroup for Grade 8 Mathematics

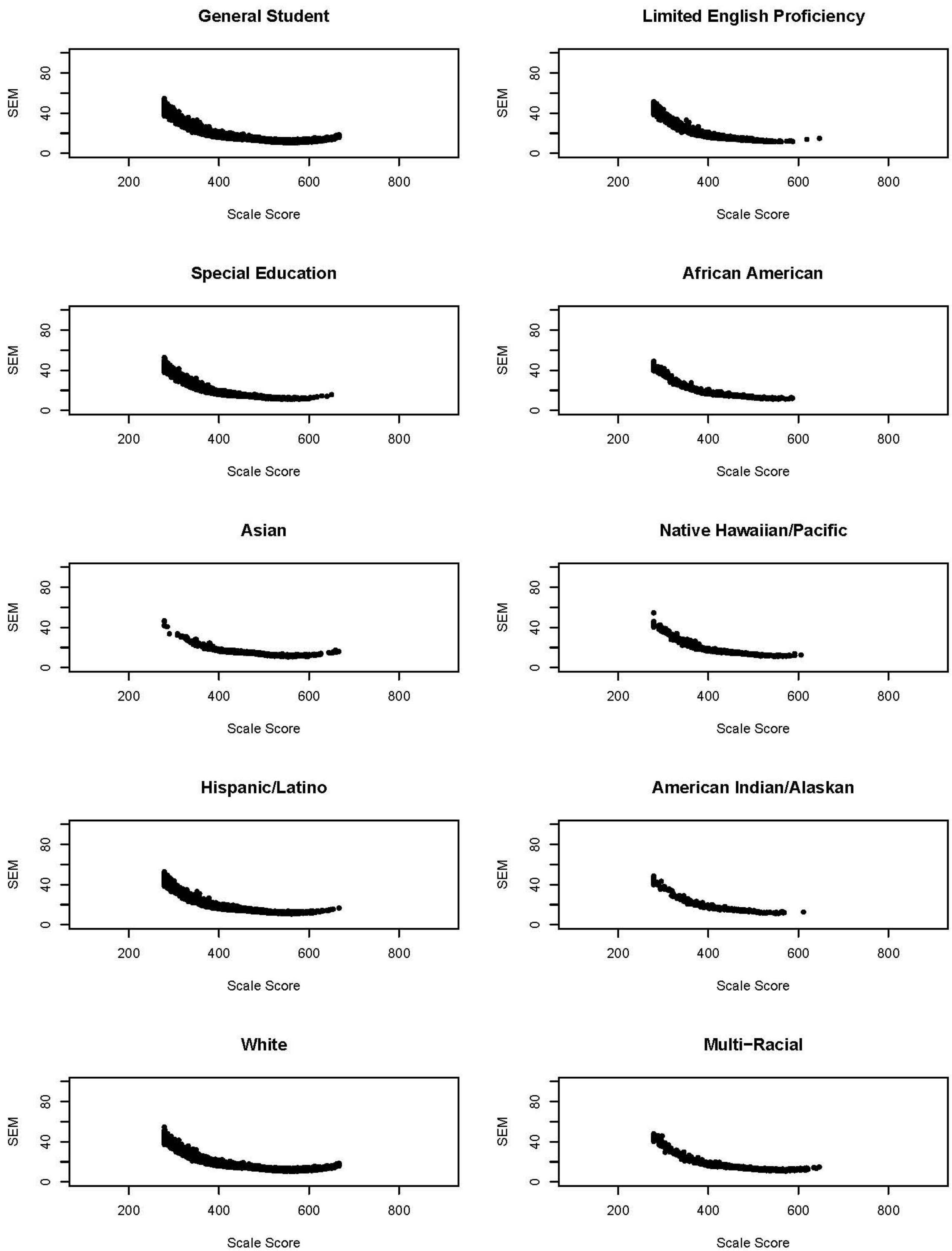


Figure 3-B-13. Standard Error of Measurement Curves by Subgroup for Secondary Mathematics I

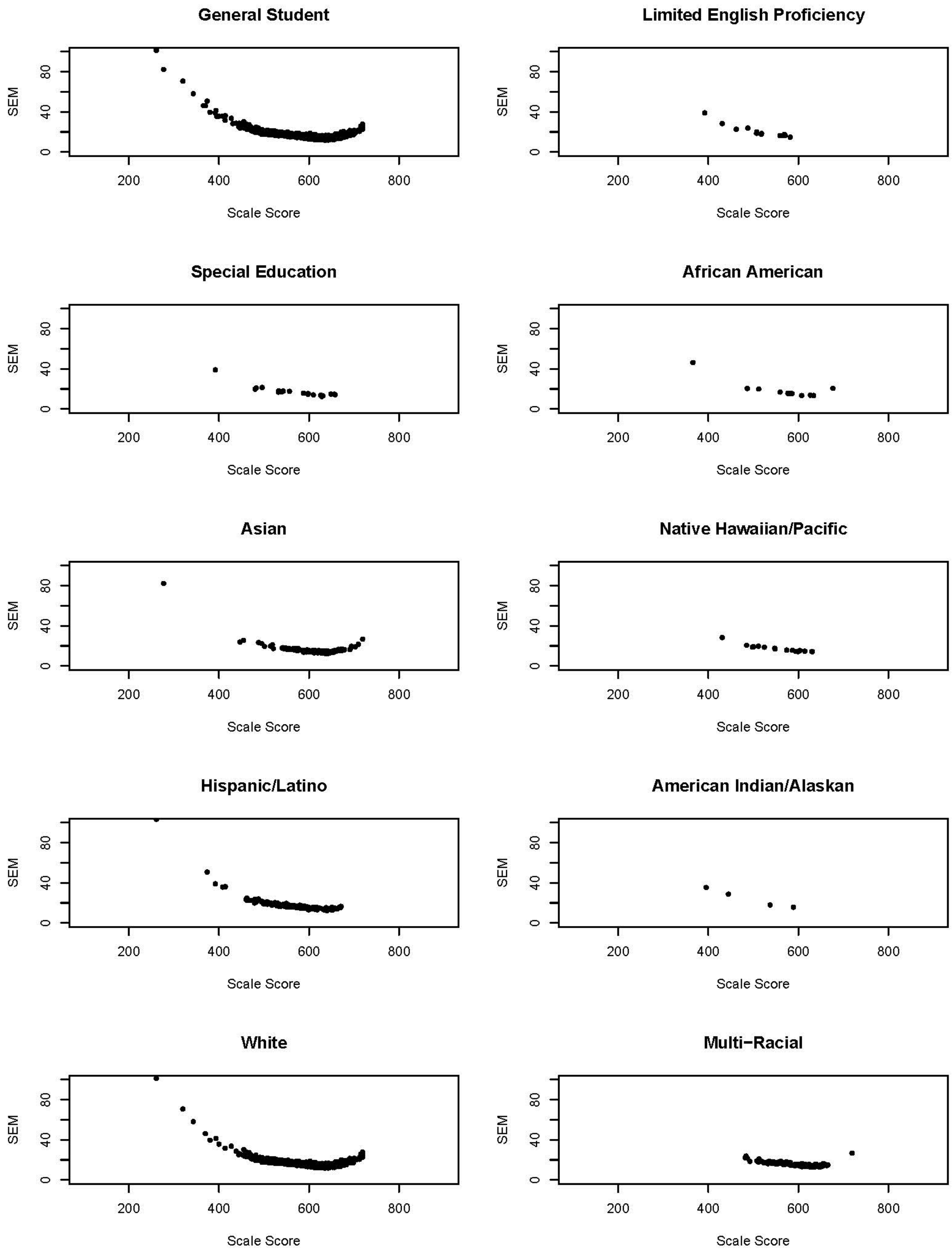


Figure 3-B-14. Standard Error of Measurement Curves by Subgroup for Grade 4 Science

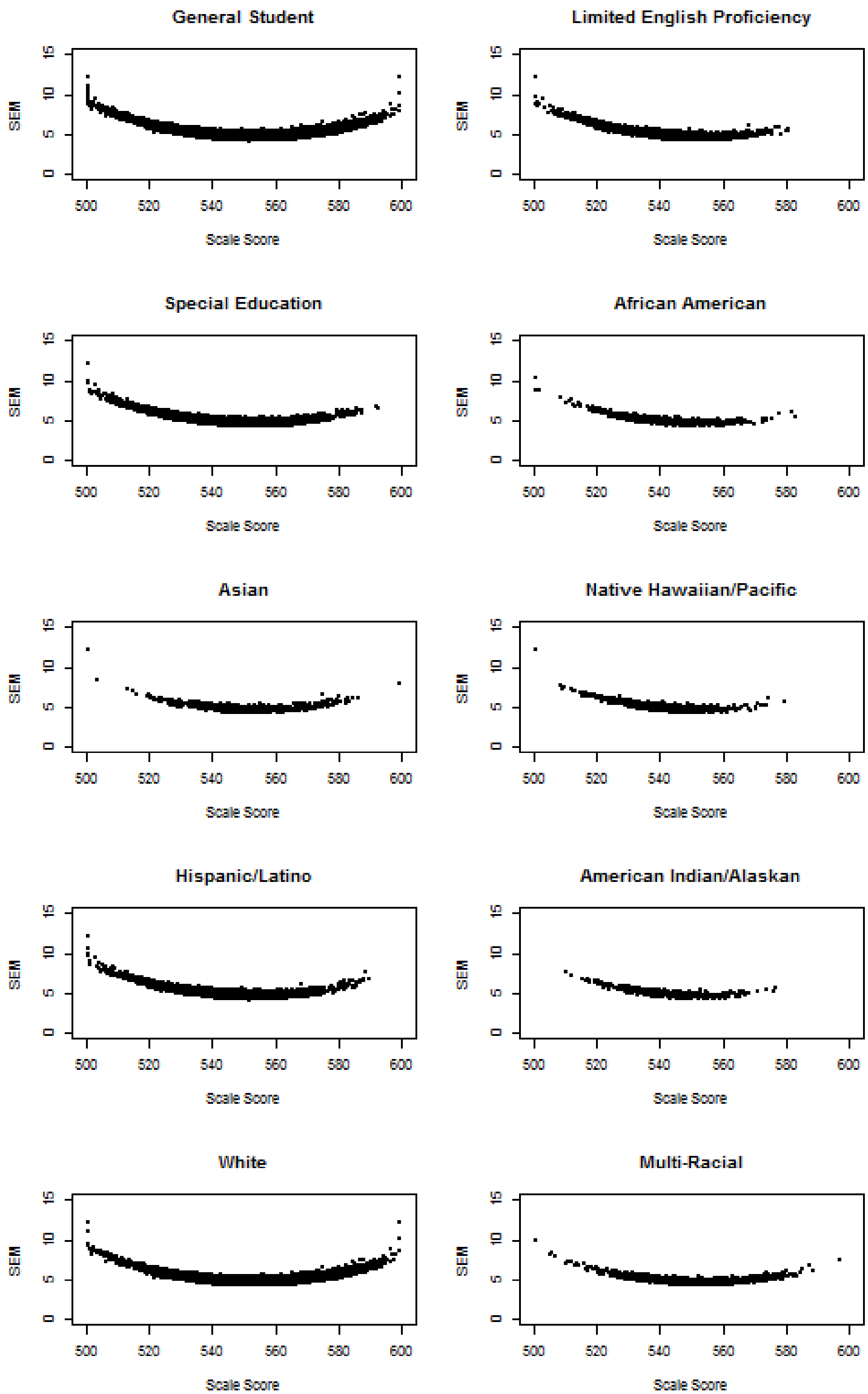


Figure 3-B-15. Standard Error of Measurement Curves by Subgroup for Grade 5 Science

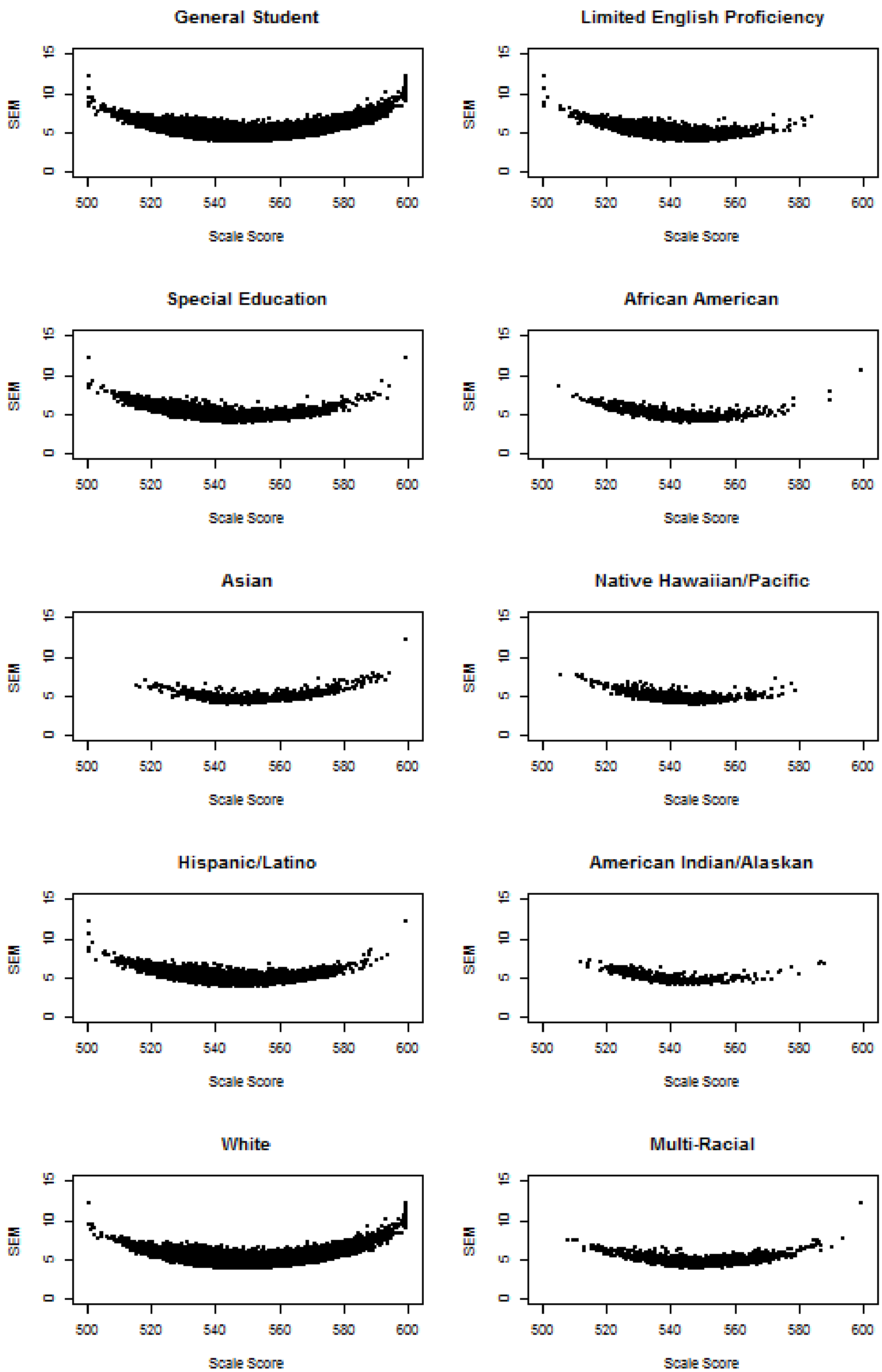


Figure 3-B-16. Standard Error of Measurement Curves by Subgroup for Grade 6 Science

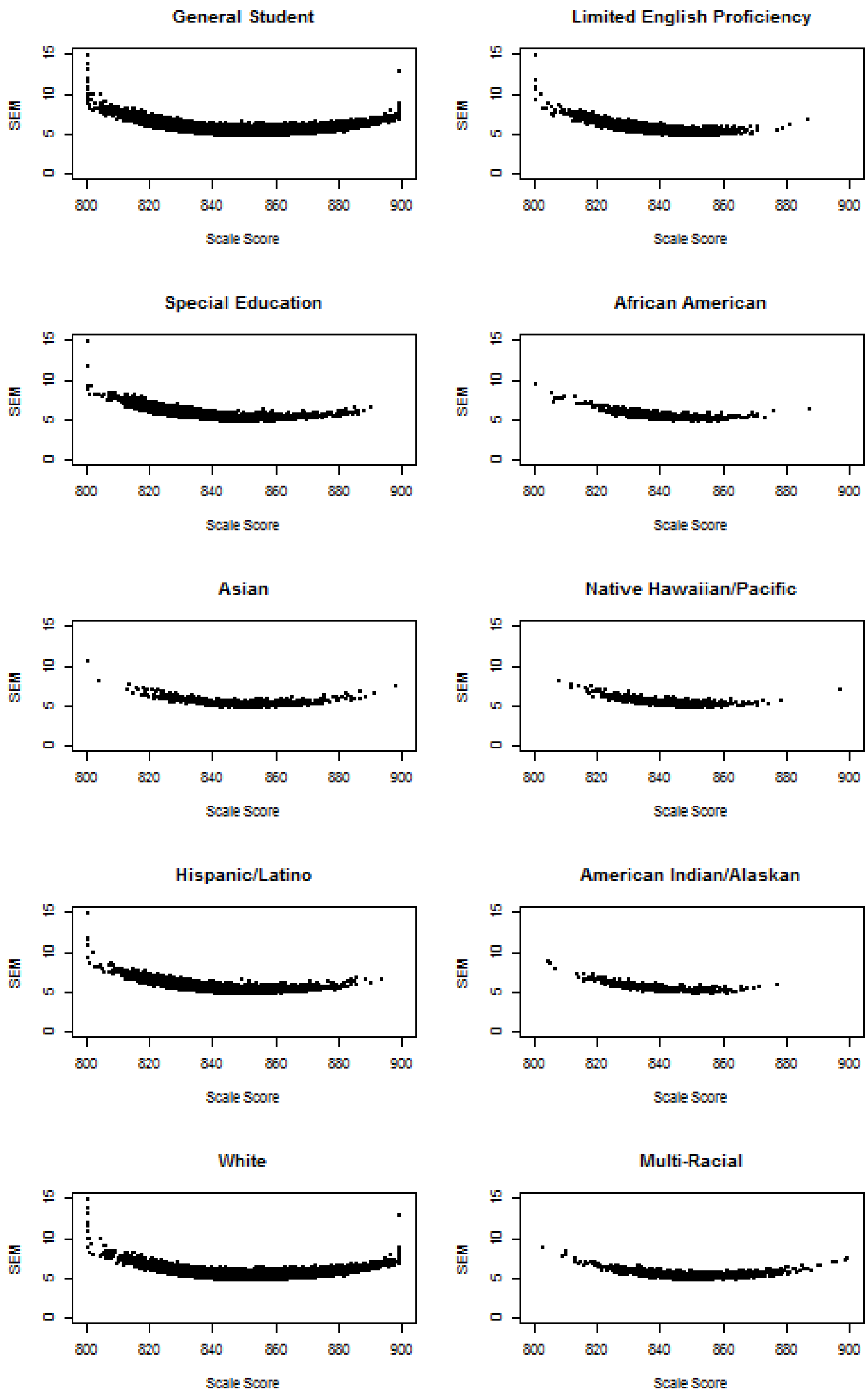


Figure 3-B-17. Standard Error of Measurement Curves by Subgroup for Grade 7 Science

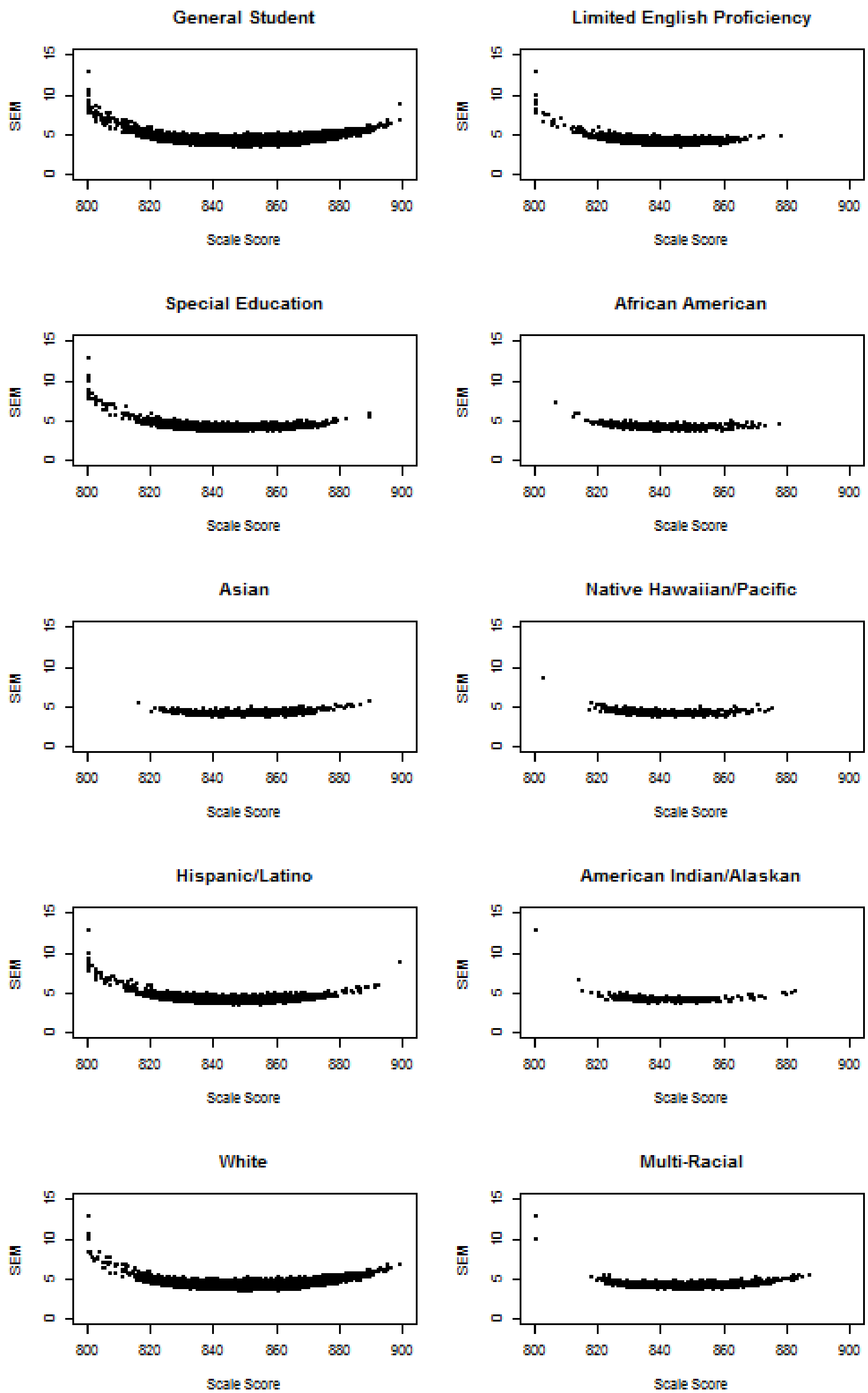
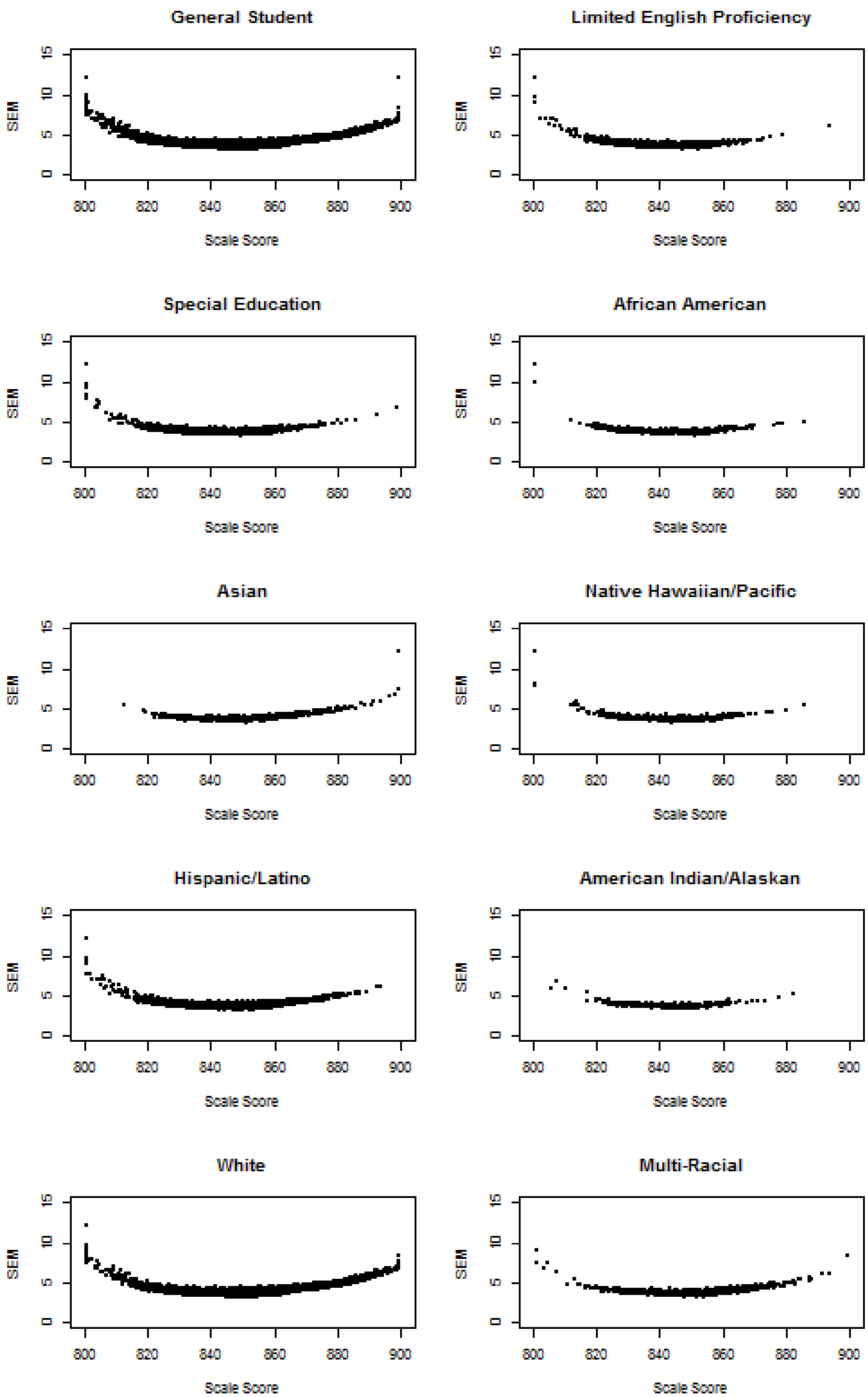


Figure 3-B-18. Standard Error of Measurement Curves by Subgroup for Grade 8 Science



APPENDIX 3-C

STANDARD ERROR OF MEASUREMENT CURVES BY REPORTING CATEGORY

Appendix 3-C
Standard Error of Measurement Curves by Reporting Category

Figure 3-C-1. Standard Error of Measurement Curves by Reporting Category for Grade 3 ELA

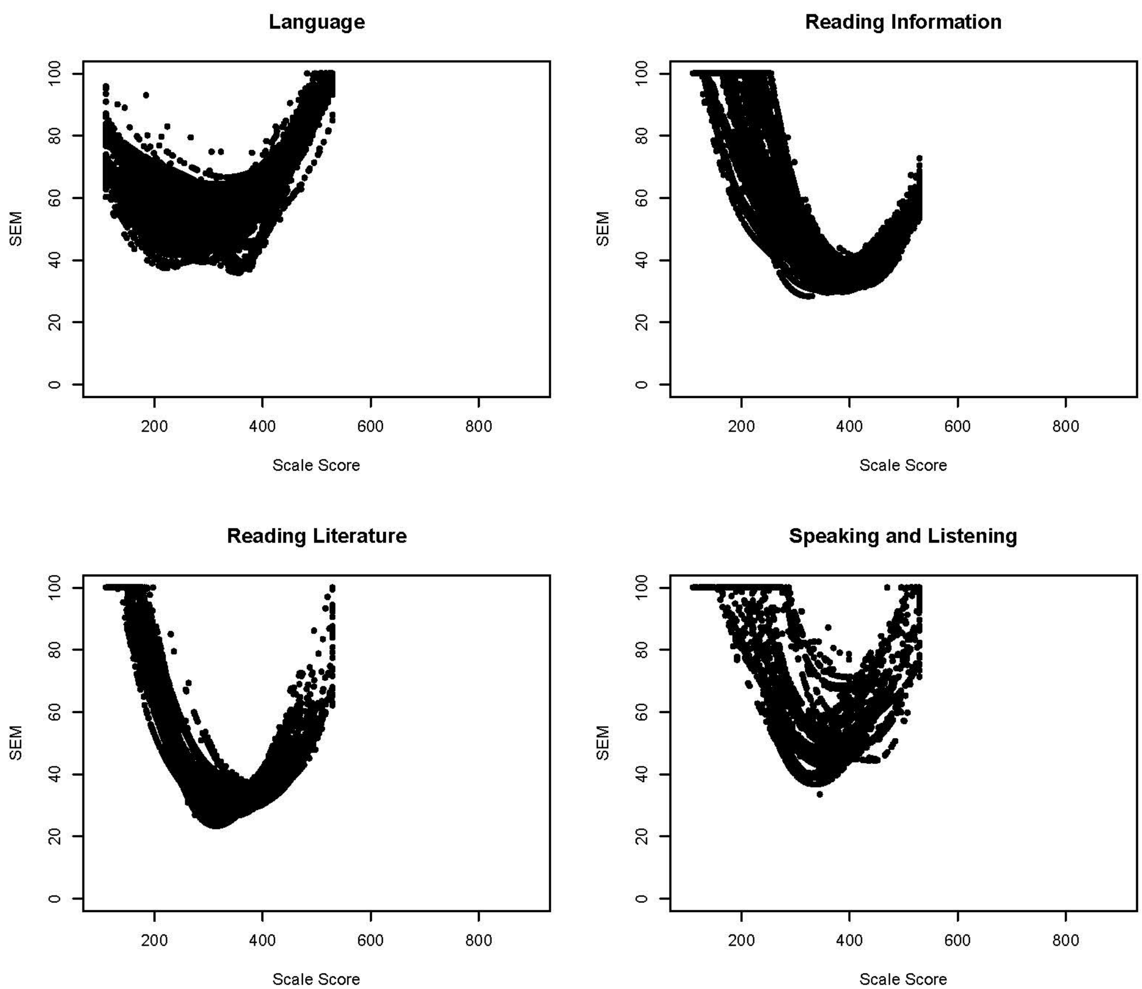


Figure 3-C-2. Standard Error of Measurement Curves by Reporting Category for Grade 4 ELA

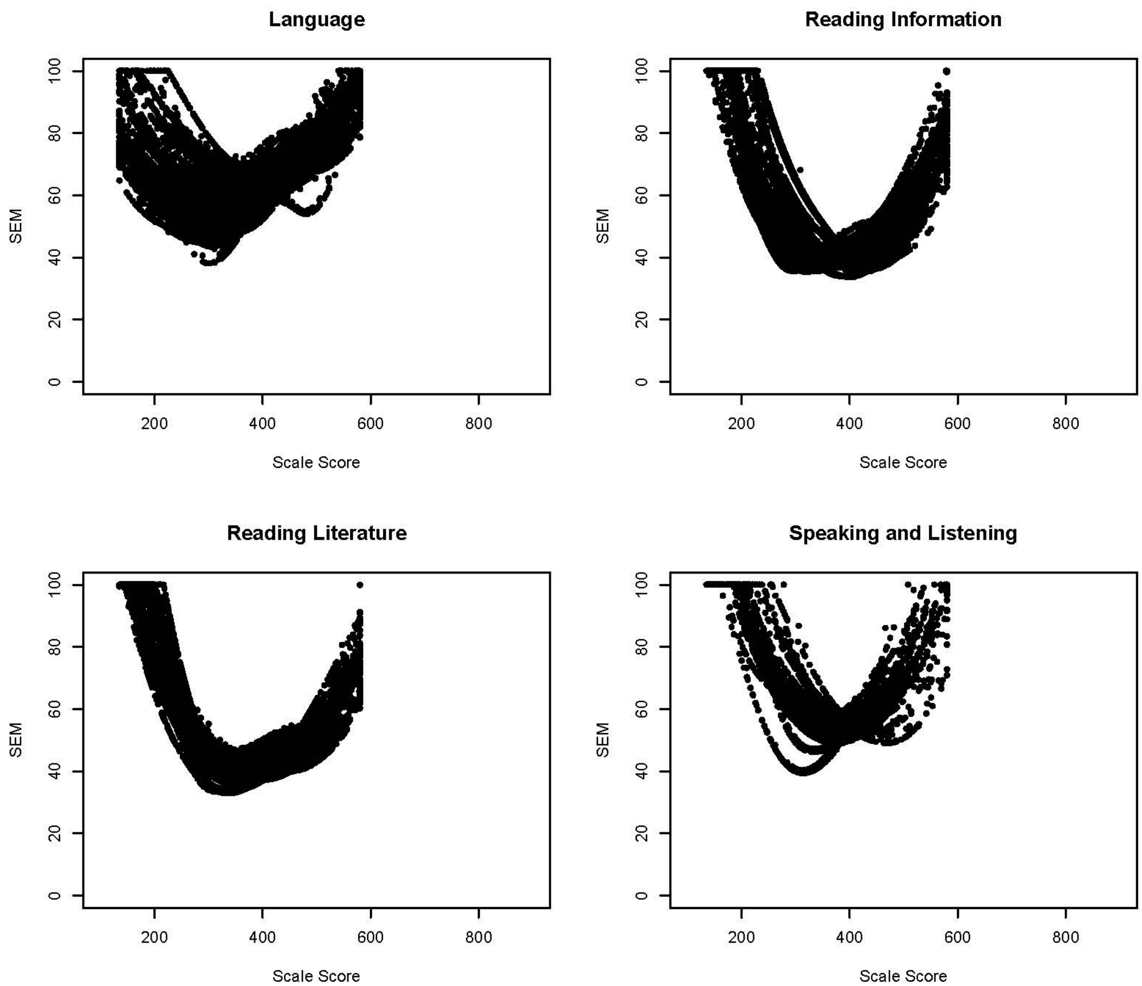


Figure 3-C-3. Standard Error of Measurement Curves by Reporting Category for Grade 5 ELA

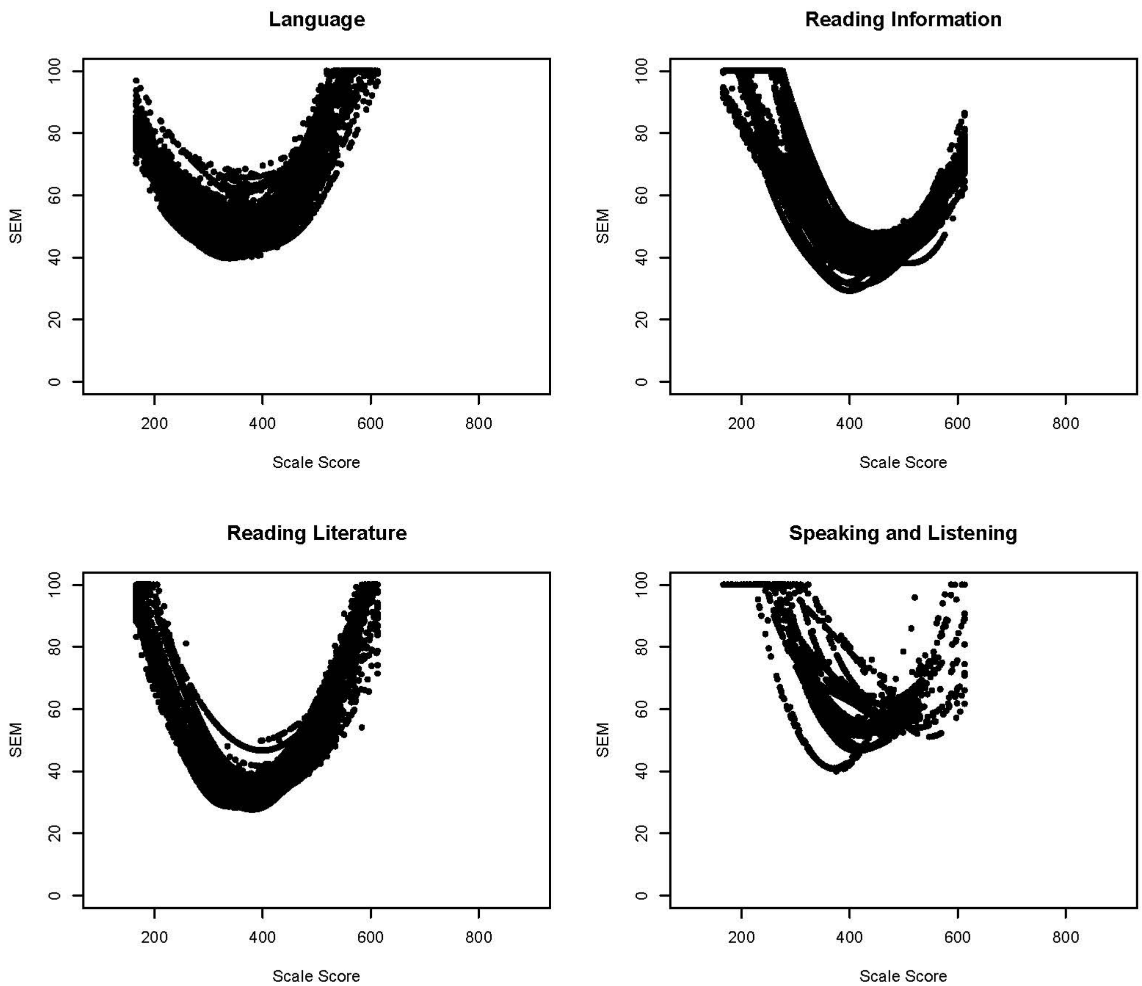


Figure 3-C-4. Standard Error of Measurement Curves by Reporting Category for Grade 6 ELA

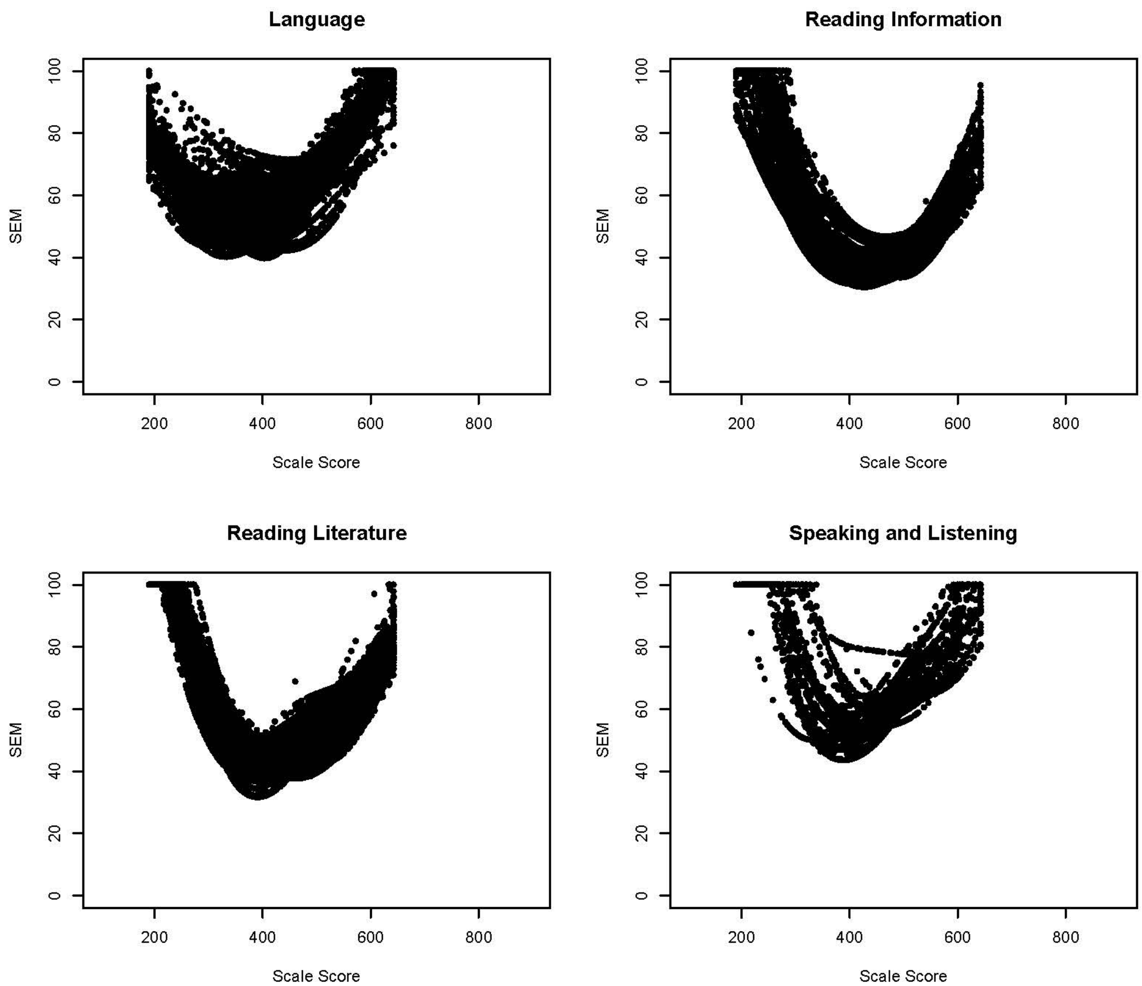


Figure 3-C-5. Standard Error of Measurement Curves by Reporting Category for Grade 7 ELA

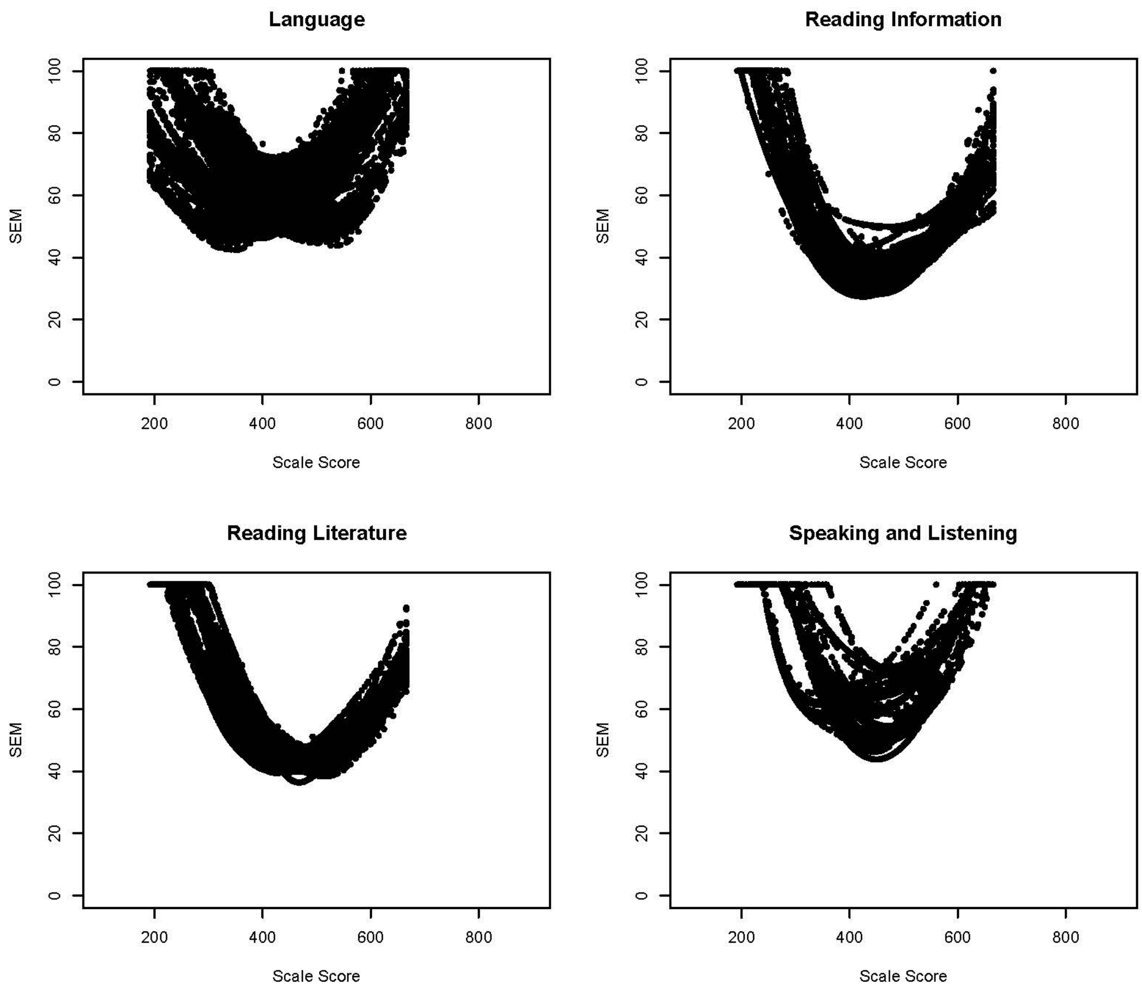


Figure 3-C-6. Standard Error of Measurement Curves by Reporting Category for Grade 8 ELA

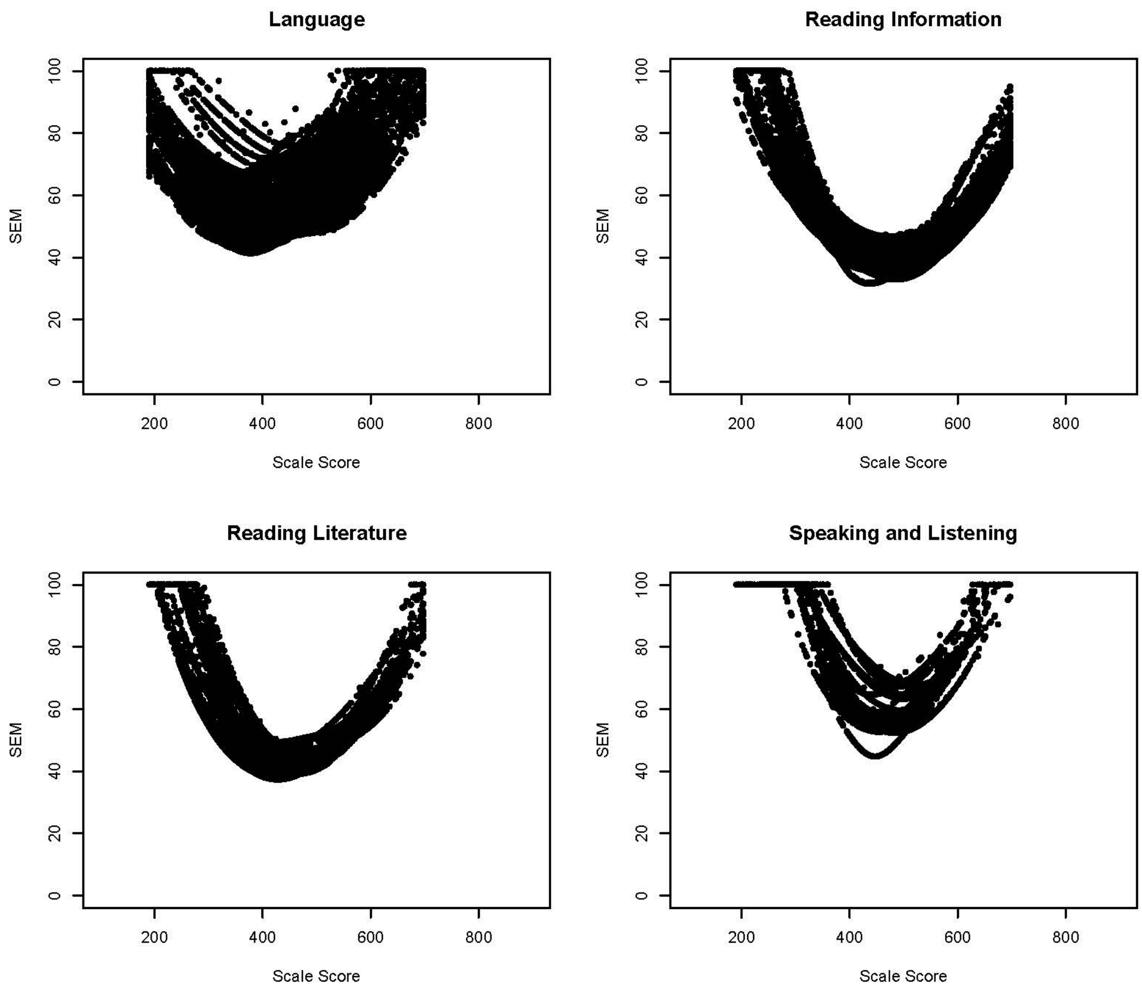


Figure 3-C-7. Standard Error of Measurement Curves by Reporting Category for Grade 3 Mathematics

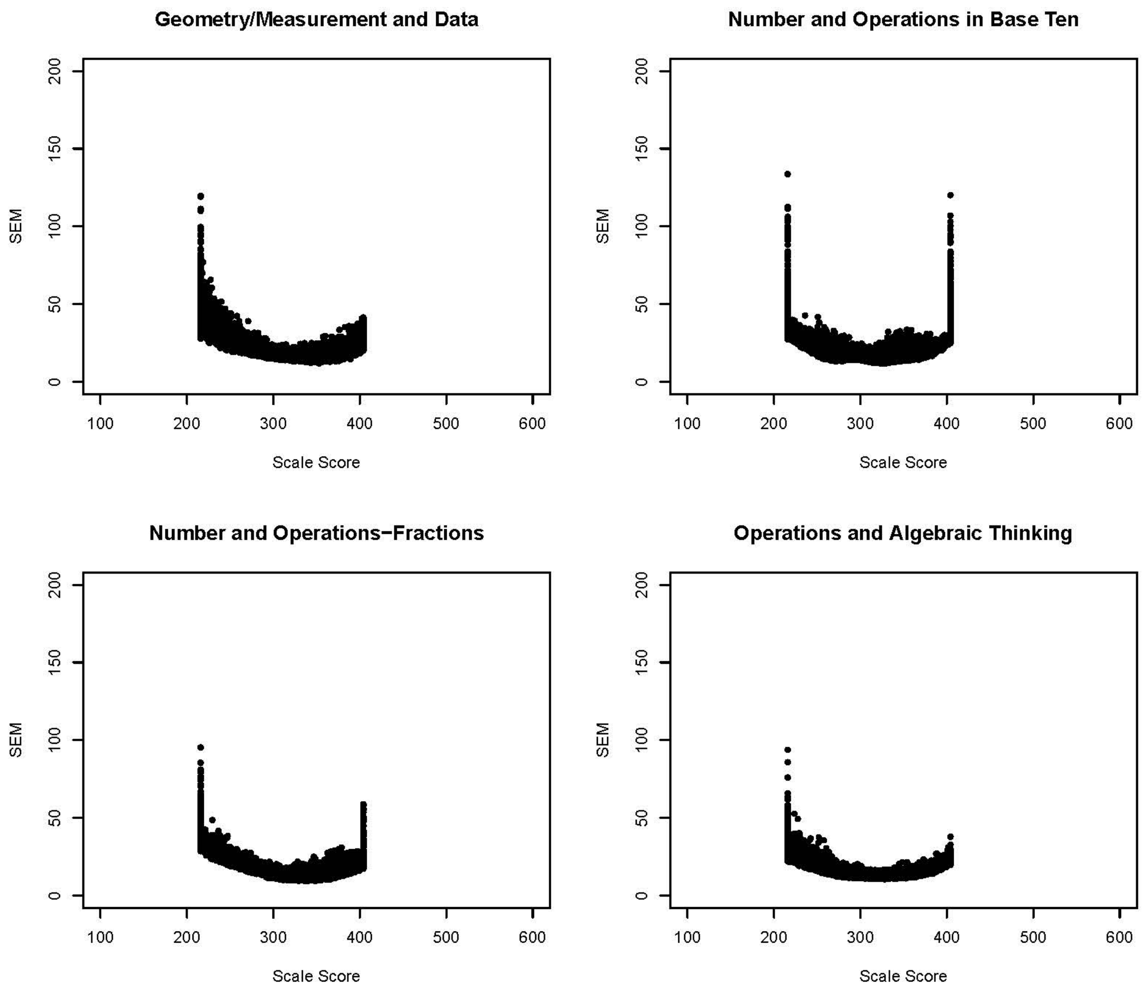


Figure 3-C-8. Standard Error of Measurement Curves by Reporting Category for Grade 4 Mathematics

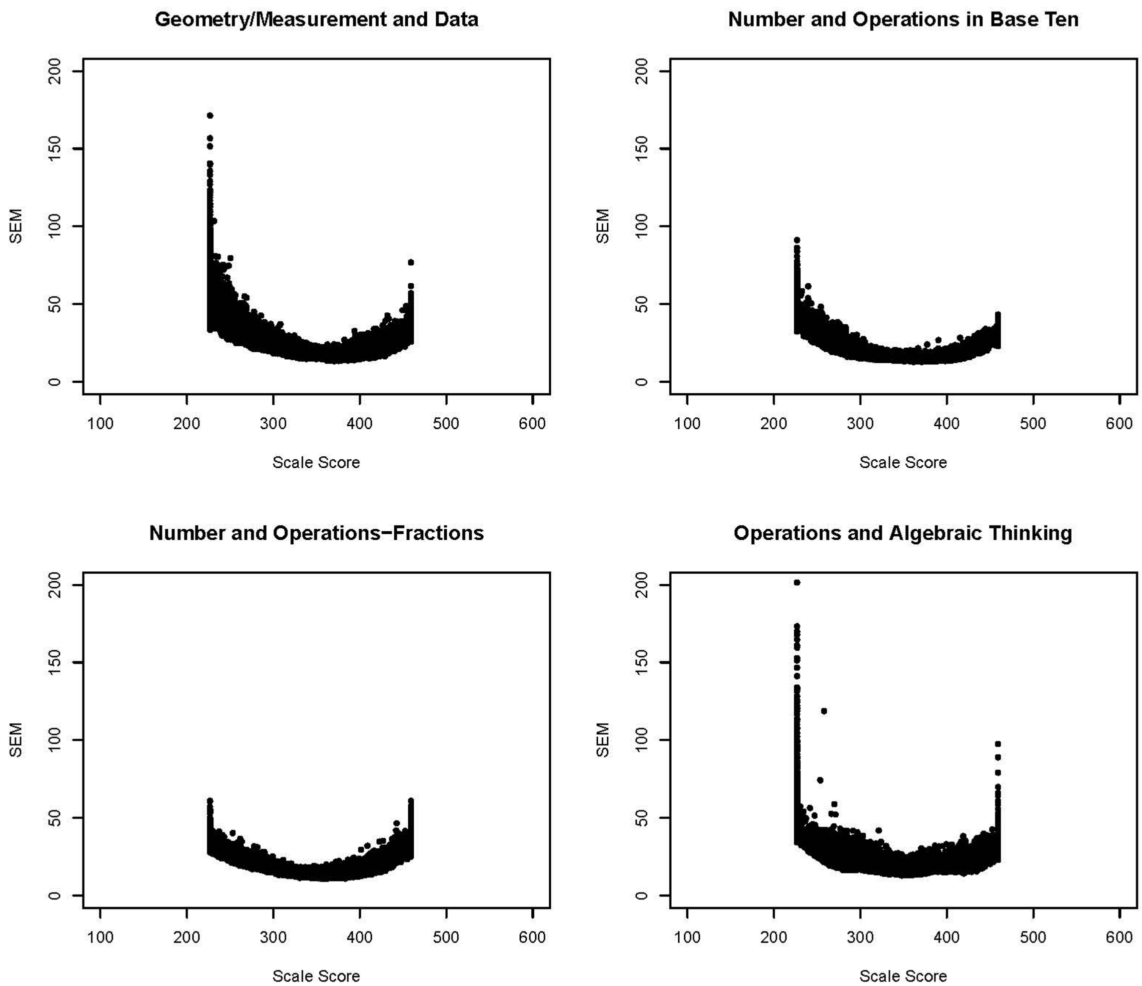


Figure 3-C-9. Standard Error of Measurement Curves by Reporting Category for Grade 5 Mathematics

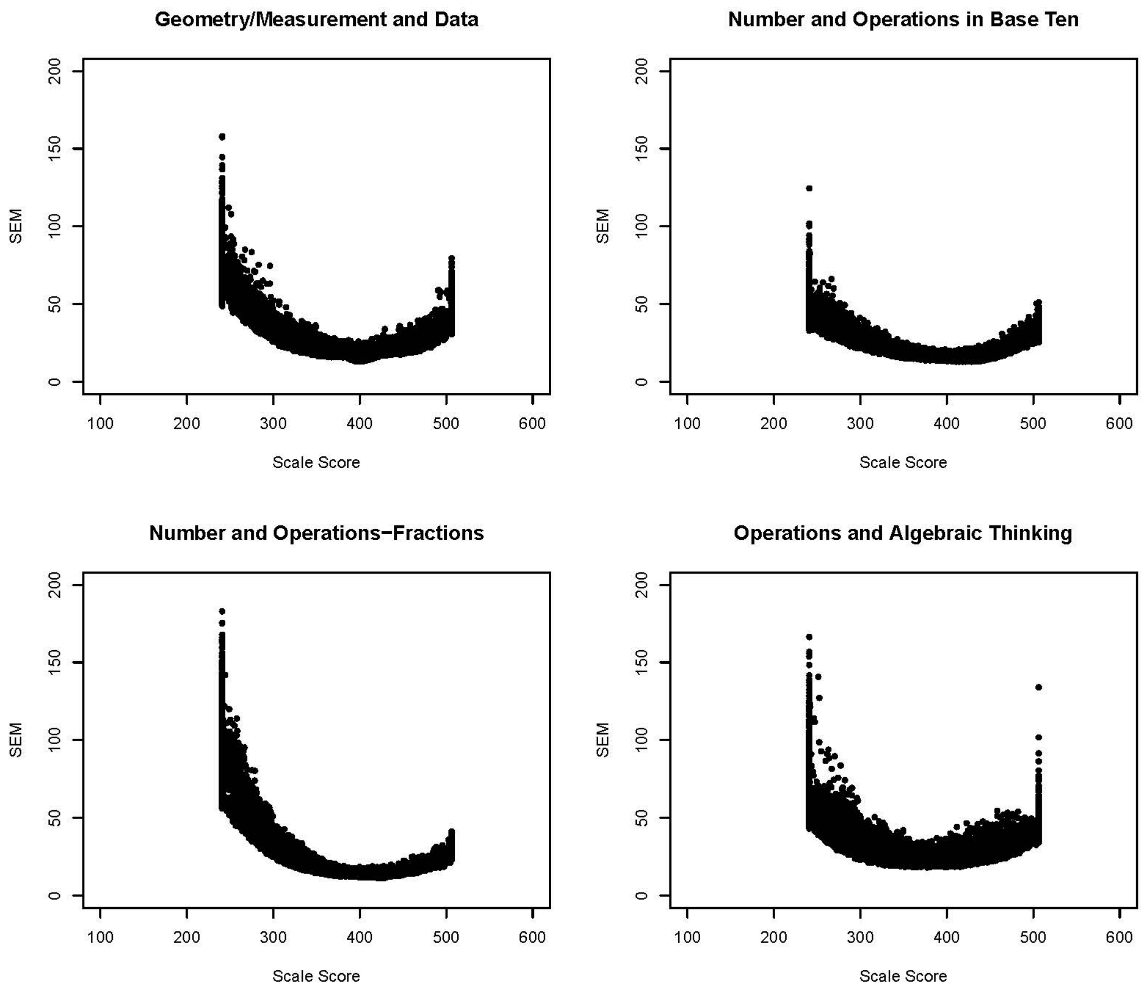


Figure 3-C-10. Standard Error of Measurement Curves by Reporting Category for Grade 6 Mathematics

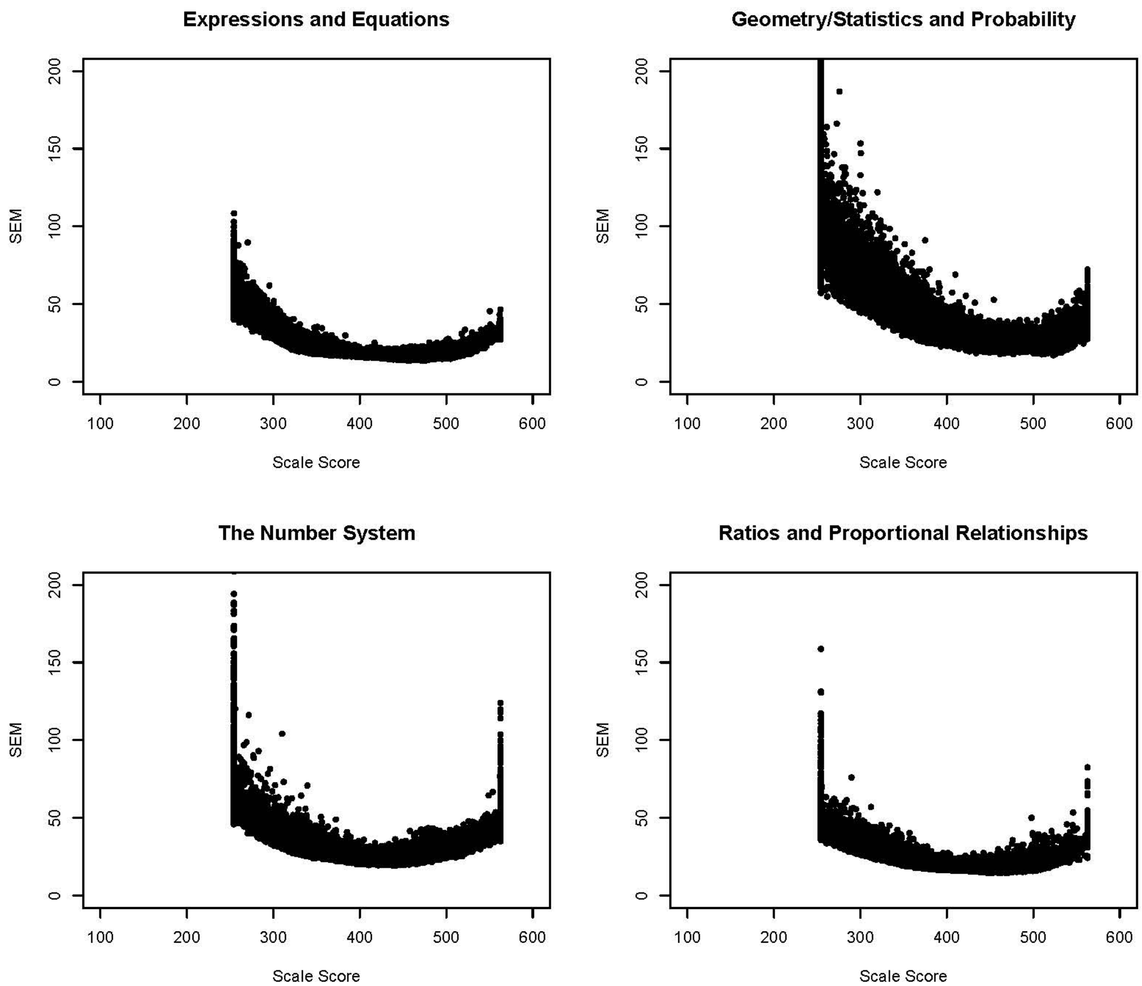


Figure 3-C-11. Standard Error of Measurement Curves by Reporting Category for Grade 7 Mathematics

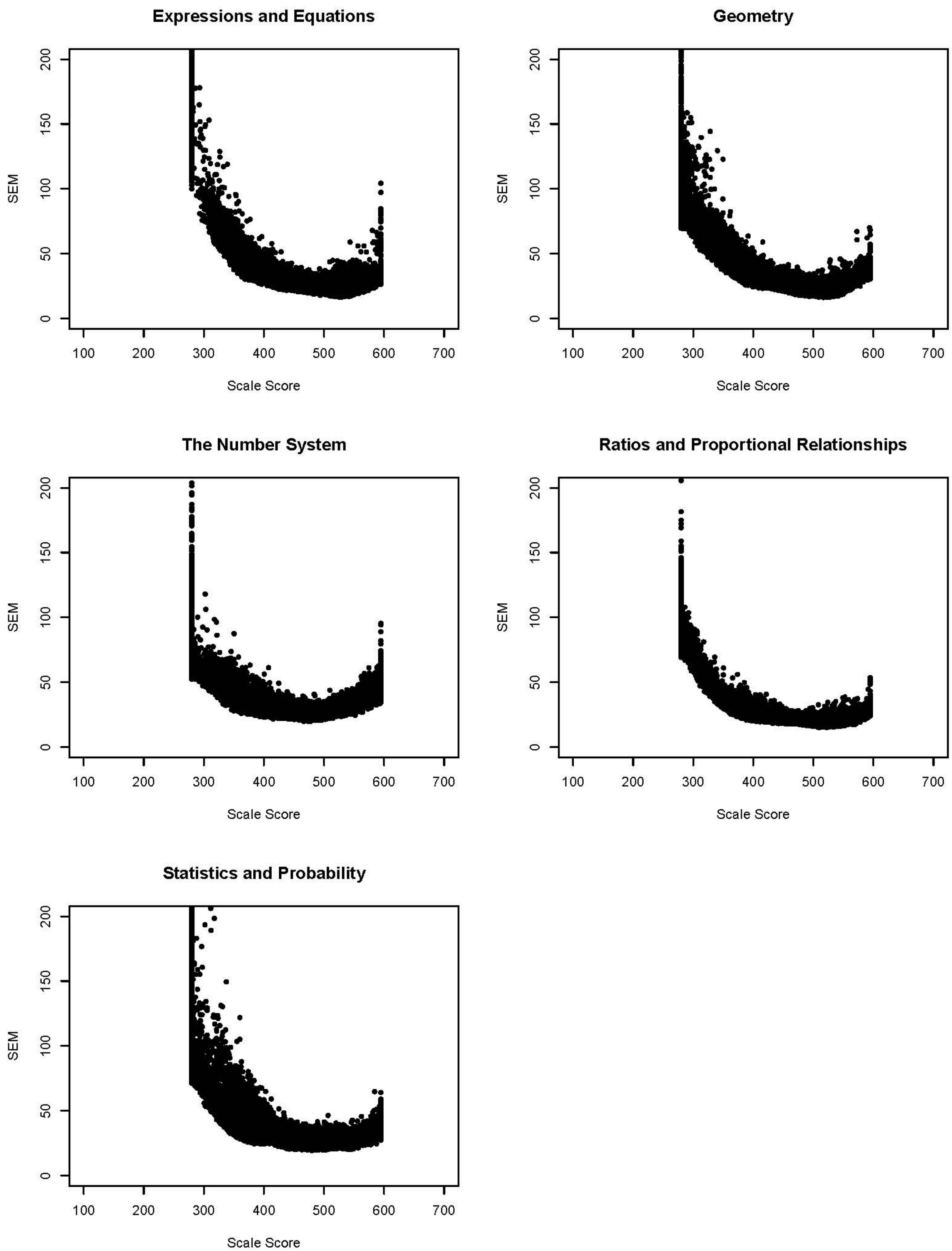


Figure 3-C-12. Standard Error of Measurement Curves by Reporting Category for Grade 8 Mathematics

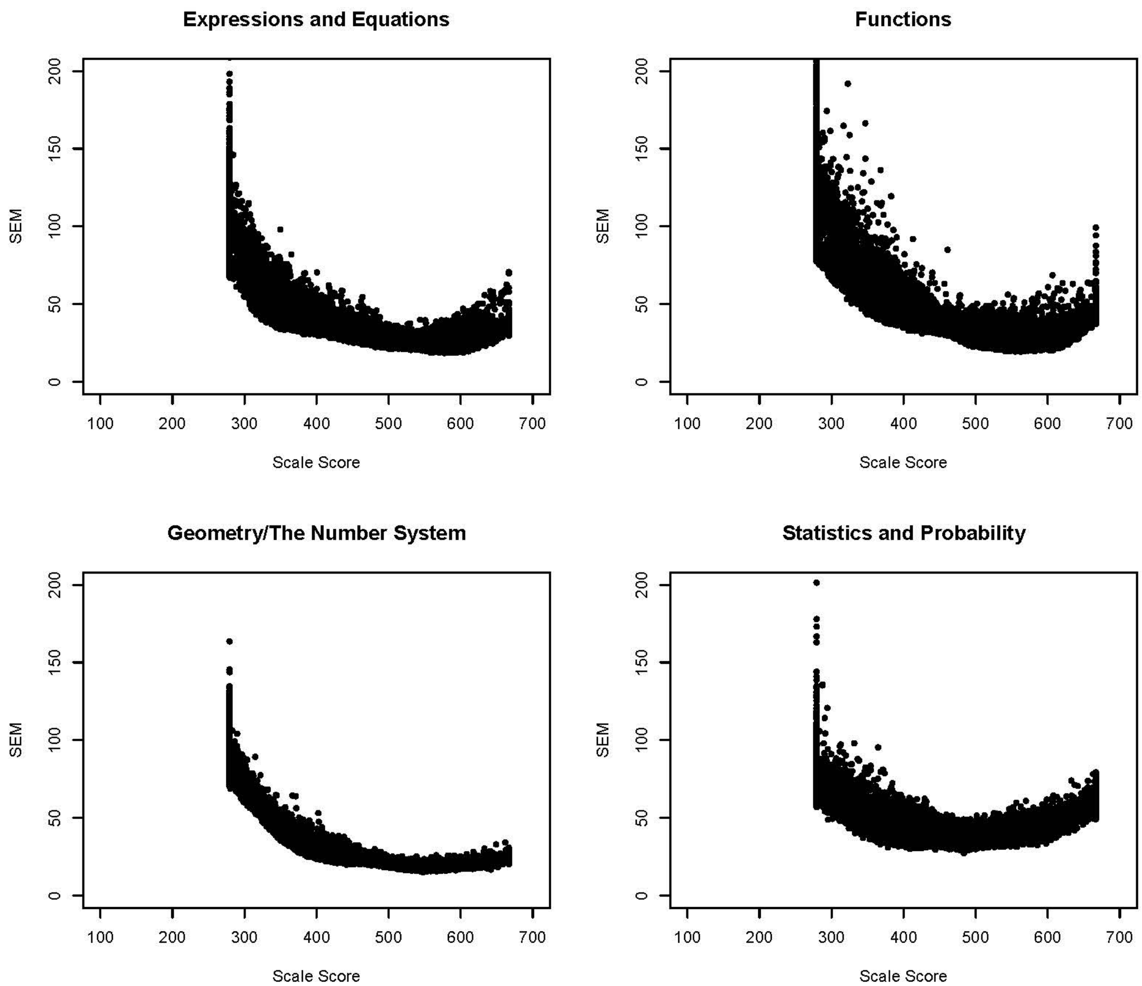


Figure 3-C-13. Standard Error of Measurement Curves by Reporting Category for Secondary Mathematics I

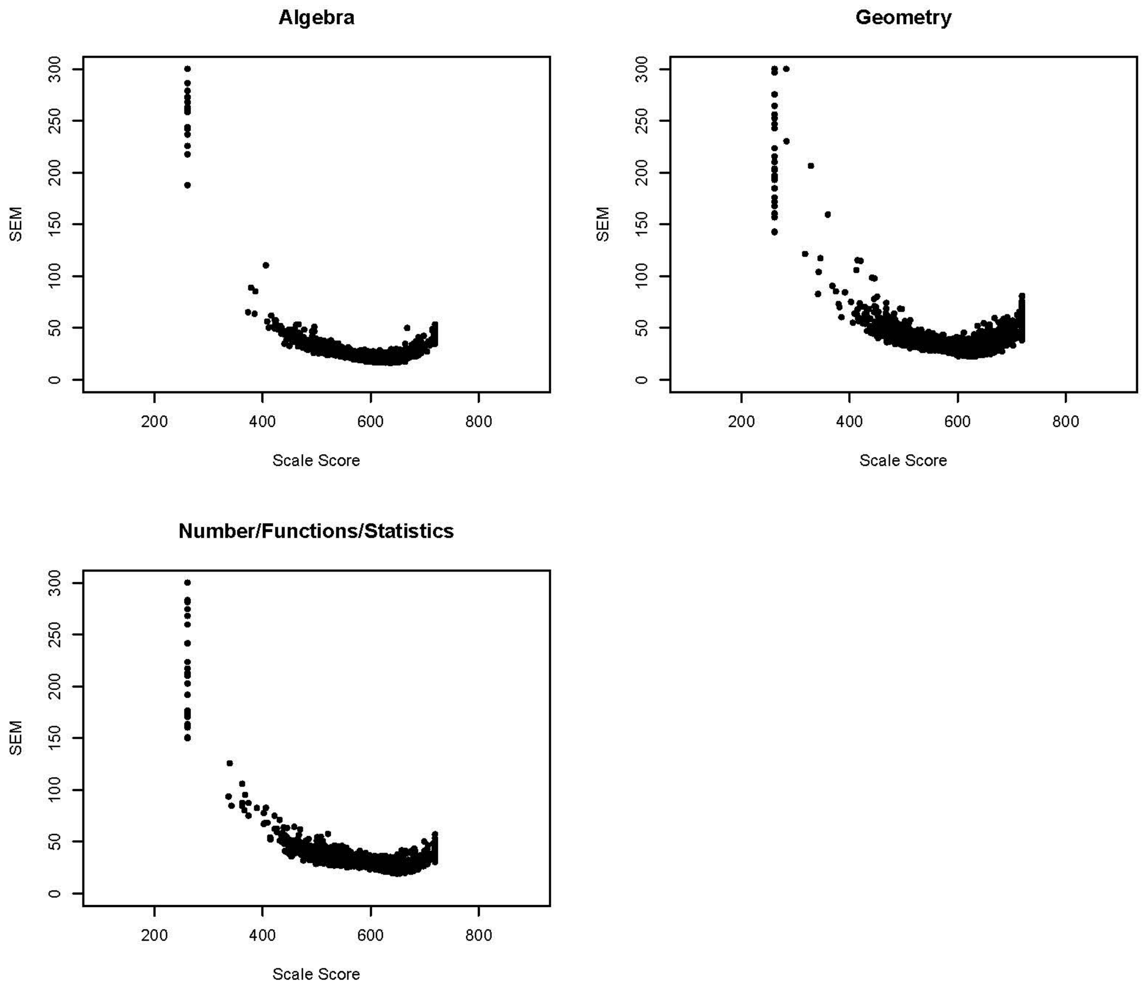


Figure 3-C-14. Standard Error of Measurement Curves by Reporting Category for Grade 4 Science

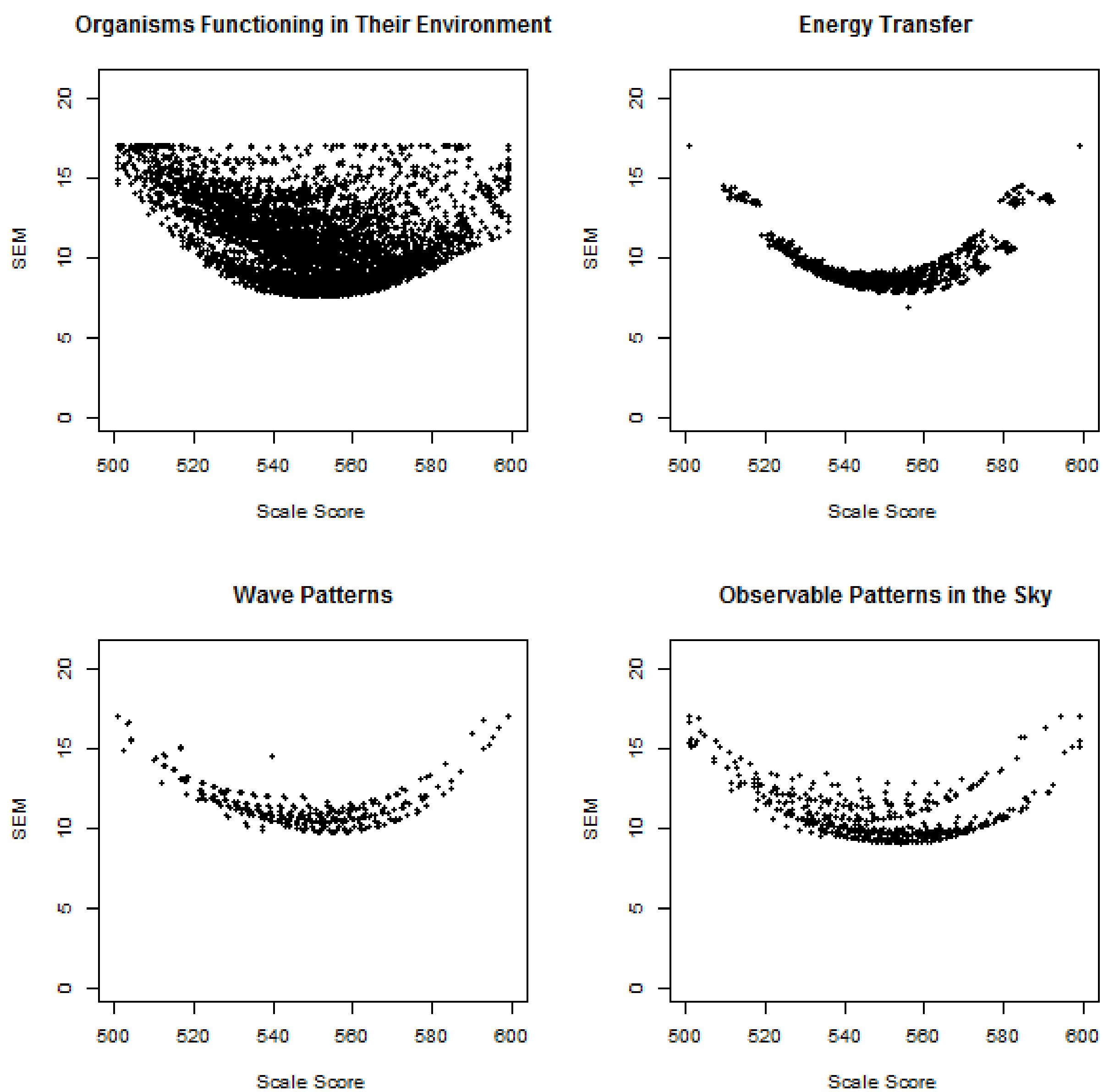


Figure 3-C-15. Standard Error of Measurement Curves by Reporting Category for Grade 5 Science

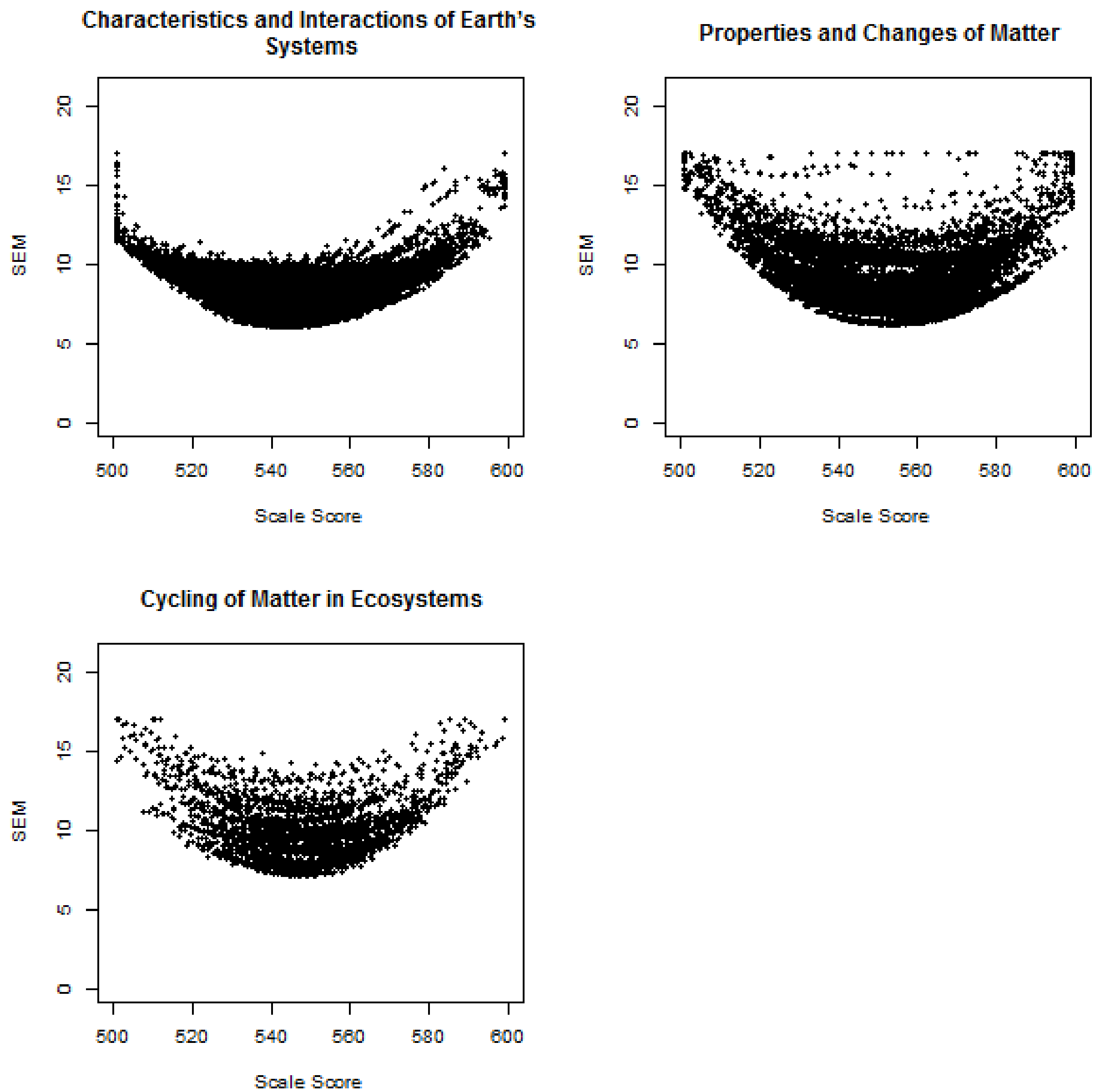


Figure 3-C-16. Standard Error of Measurement Curves by Reporting Category for Grade 6 Science

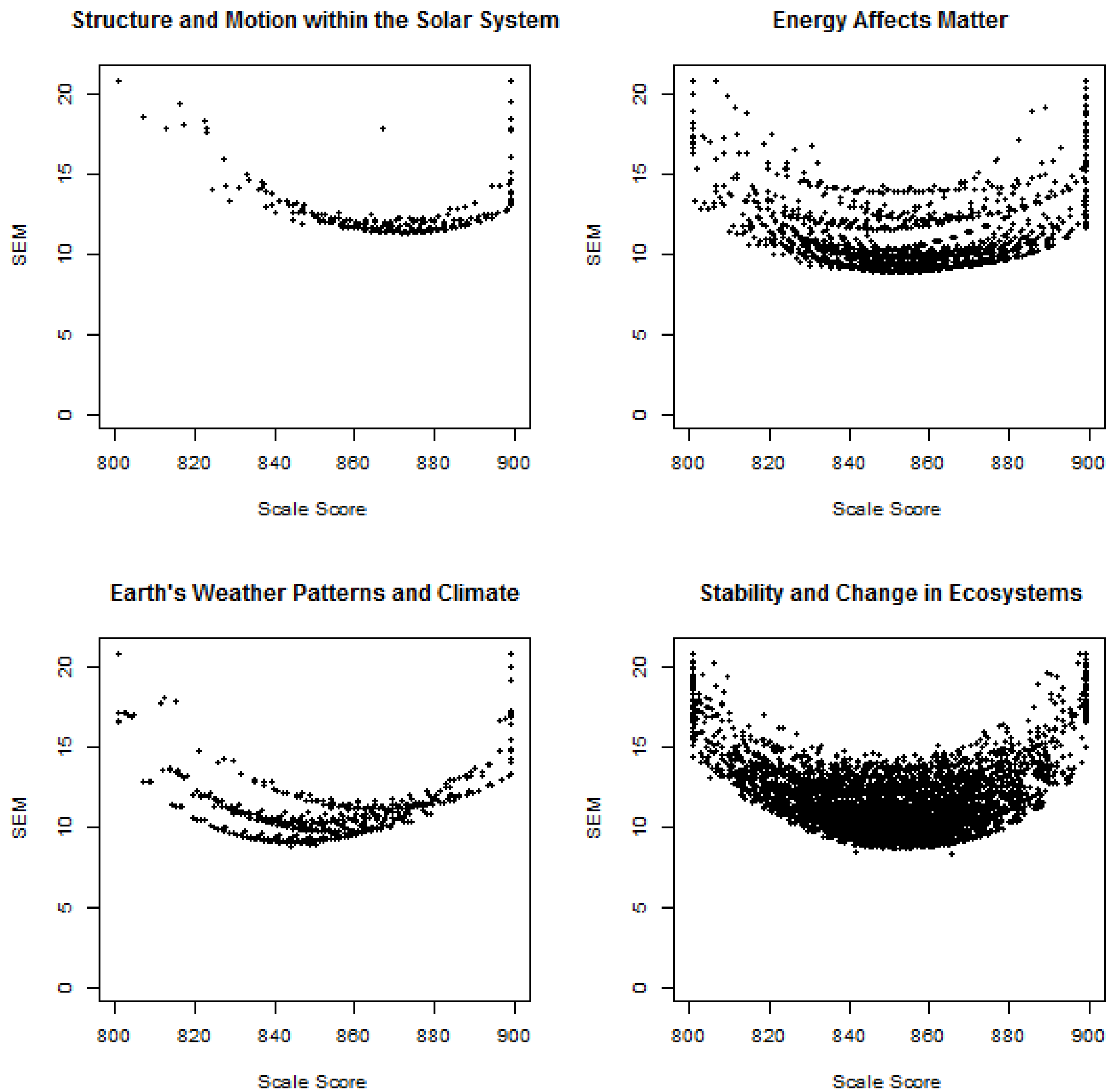


Figure 3-C-17. Standard Error of Measurement Curves by Reporting Category for Grade 7 Science

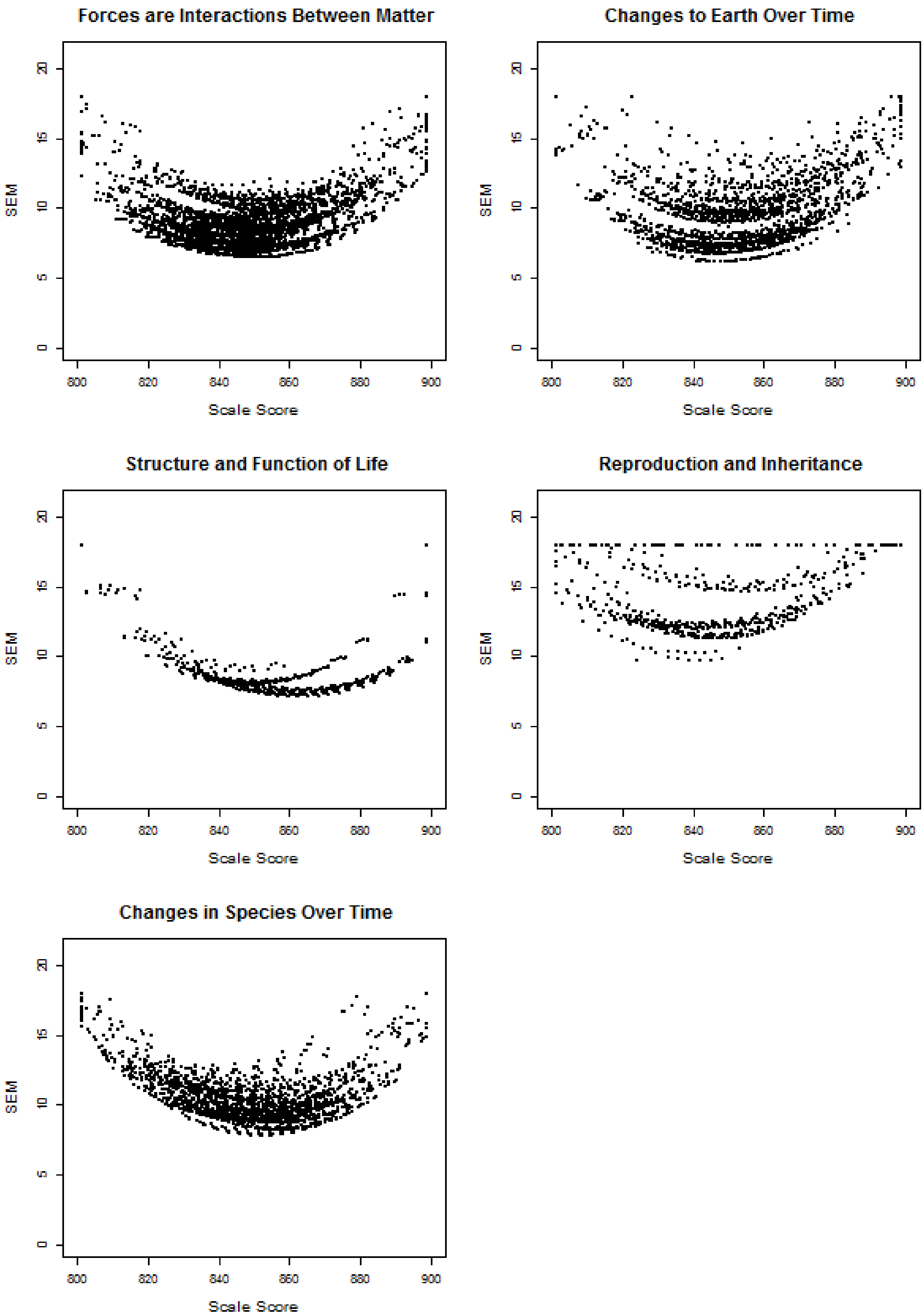
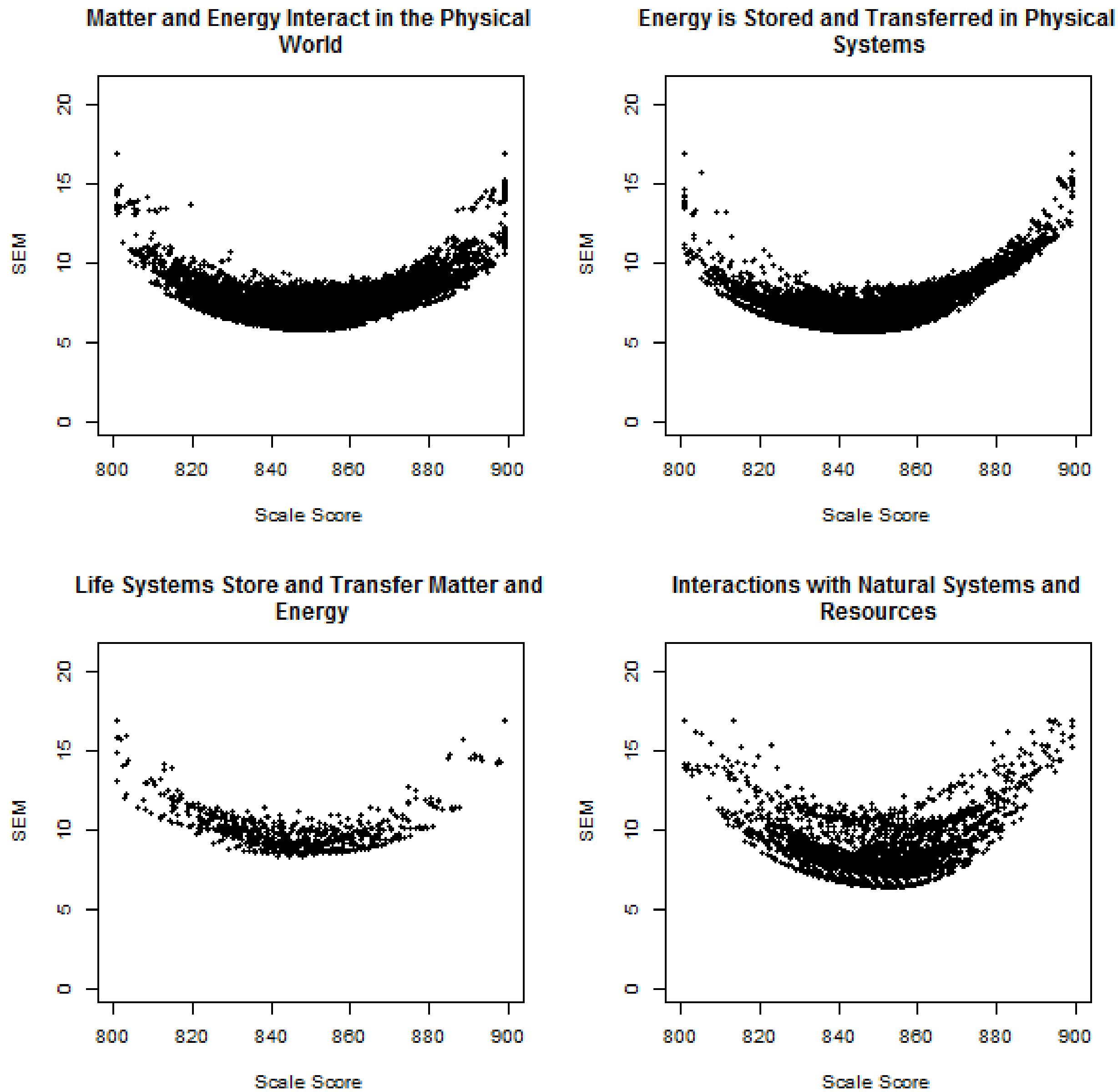


Figure 3-C-18. Standard Error of Measurement Curves by Reporting Category for Grade 8 Science



APPENDIX 3-D

MARGINAL RELIABILITY COEFFICIENTS FOR OVERALL AND BY SUBGROUP

Appendix 3-D
Marginal Reliability Coefficients for Overall and by Subgroup

Table 3-D-1. Marginal Reliability Coefficients for Overall and by Subgroup for ELA

Subgroup	Grade 3			Grade 4			Grade 5			Grade 6			Grade 7			Grade 8		
	N	Rel	SEM	N	Rel	SEM	N	Rel	SEM	N	Rel	SEM	N	Rel	SEM	N	Rel	SEM
All Students	45,290	0.90	24.76	46,496	0.89	27.47	47,000	0.91	26.01	47,715	0.91	26.54	47,169	0.91	25.33	46,311	0.91	27.06
Female	22,247	0.90	24.22	22,619	0.89	27.16	23,007	0.91	25.63	23,280	0.90	26.09	22,785	0.91	24.88	22,096	0.91	26.69
Male	23,043	0.90	25.27	23,873	0.89	27.76	23,993	0.91	26.36	24,433	0.91	26.96	24,383	0.91	25.75	24,213	0.91	27.40
African American	571	0.85	27.03	667	0.86	29.72	691	0.90	28.24	652	0.88	28.97	694	0.89	27.75	596	0.90	29.19
American Indian/Alaskan	353	0.84	29.18	393	0.85	30.56	369	0.88	27.92	388	0.88	29.00	385	0.87	27.45	357	0.89	28.93
Asian	783	0.90	24.24	782	0.89	27.31	800	0.91	26.14	792	0.91	26.53	756	0.92	25.21	759	0.92	27.34
Hispanic/Latino	8,249	0.86	27.64	8,720	0.86	29.73	8,861	0.89	27.32	9,177	0.89	28.28	8,851	0.89	26.95	8,588	0.90	28.55
Multi-Racial	1,601	0.90	24.33	1,548	0.89	27.28	1,488	0.90	25.69	1,496	0.90	26.10	1,482	0.91	25.10	1,339	0.91	26.84
Native Hawaiian/Pacific Islander	720	0.84	26.98	787	0.84	29.26	731	0.88	26.77	705	0.88	26.79	705	0.87	26.26	678	0.89	28.06
White	33,013	0.90	23.86	33,599	0.89	26.73	34,060	0.90	25.58	34,505	0.90	25.99	34,296	0.91	24.81	33,994	0.91	26.60
Limited English Proficiency	5,162	0.81	29.18	5,453	0.81	31.08	4,921	0.84	28.92	4,581	0.81	30.87	4,210	0.79	29.37	3,482	0.82	31.31
Low Income	14,216	0.87	26.98	14,544	0.87	29.07	14,577	0.90	27.13	14,523	0.90	27.91	13,655	0.90	26.63	12,899	0.91	28.18
Special Education	6,235	0.85	30.74	6,321	0.85	32.56	5,817	0.87	31.00	5,435	0.84	33.04	4,987	0.83	30.40	4,538	0.84	31.88

Table 3-D-2. Marginal Reliability Coefficients for Overall and by Subgroup for Mathematics

Subgroup	Grade 3			Grade 4			Grade 5			Grade 6		
	N	Rel	SEM	N	Rel	SEM	N	Rel	SEM	N	Rel	SEM
All Students	45,177	0.96	7.98	46,281	0.96	9.27	46,621	0.95	11.55	47,277	0.96	12.59
Female	22,179	0.95	7.93	22,496	0.96	9.22	22,832	0.95	11.40	23,044	0.95	12.48
Male	22,998	0.96	8.03	23,781	0.96	9.32	23,789	0.96	11.68	24,231	0.96	12.70
African American	566	0.94	9.23	667	0.94	11.13	676	0.92	14.65	640	0.93	16.44
American Indian/Alaskan	353	0.93	9.61	384	0.94	10.68	357	0.92	15.14	368	0.93	15.88
Asian	770	0.96	7.81	782	0.96	9.04	794	0.96	10.76	776	0.96	12.36
Hispanic/Latino	8,200	0.94	8.91	8,658	0.94	10.47	8,778	0.93	13.69	9,089	0.93	14.71
Multi-Racial	1,590	0.96	7.97	1,535	0.96	9.18	1,477	0.95	11.54	1,477	0.96	12.33
Native Hawaiian/Pacific Islander	718	0.93	8.91	778	0.94	10.23	717	0.92	13.05	697	0.94	13.87
White	32,980	0.95	7.67	33,477	0.96	8.86	33,822	0.95	10.78	34,230	0.96	11.83
Limited English Proficiency	5,139	0.93	9.27	5,408	0.93	10.96	4,864	0.89	14.97	4,528	0.90	16.70
Low Income	14,129	0.95	8.73	14,400	0.95	10.24	14,408	0.94	13.37	14,209	0.94	14.37
Special Education	6,224	0.95	9.84	6,272	0.94	12.05	5,764	0.91	16.74	5,375	0.91	18.05

Table 3-D-2. Marginal Reliability Coefficients for Overall and by Subgroup for Mathematics (continued)

Subgroup	Grade 7			Grade 8			Secondary Mathematics I		
	N	Rel	SEM	N	Rel	SEM	N	Rel	SEM
All Students	44,439	0.94	15.71	44,290	0.95	17.02	3,337	0.88	17.66
Female	21,583	0.94	15.20	21,172	0.94	16.49	1,340	0.88	16.67
Male	22,855	0.94	16.17	23,116	0.95	17.49	1,997	0.88	18.29
African American	661	0.88	21.38	580	0.91	22.39	13	0.93	20.17
American Indian/Alaskan	379	0.89	20.60	351	0.91	20.00	4	0.92	25.49
Asian	677	0.95	14.56	724	0.95	15.63	121	0.91	17.45
Hispanic/Latino	8,547	0.90	19.42	8,384	0.92	20.23	194	0.89	20.59
Multi-Racial	1,367	0.94	15.36	1,264	0.95	17.19	123	0.87	15.95
Native Hawaiian/Pacific Islander	674	0.89	19.46	657	0.92	19.39	18	0.91	17.47
White	32,134	0.94	14.28	32,330	0.95	15.90	2,864	0.87	17.49
Limited English Proficiency	4,132	0.82	22.89	3,430	0.85	23.34	13	0.86	21.54
Low Income	13,174	0.92	18.76	12,541	0.93	19.36	318	0.88	19.09
Special Education	4,846	0.84	24.15	4,389	0.87	24.15	20	0.93	18.11

Table 3-D-3. Marginal Reliability Coefficients for Overall and by Subgroup for Science

Subgroup	Grade 4			Grade 5			Grade 6			Grade 7			Grade 8		
	N	Rel	SEM	N	Rel	SEM	N	Rel	SEM	N	Rel	SEM	N	Rel	SEM
All Students	46,520	0.87	4.94	46,991	0.87	4.93	47,767	0.84	5.40	47,331	0.89	4.23	46,682	0.91	3.87
Female	22,605	0.86	4.93	22,997	0.86	4.90	23,289	0.83	5.38	22,850	0.88	4.21	22,250	0.90	3.84
Male	23,911	0.88	4.96	23,994	0.88	4.95	24,476	0.86	5.41	24,480	0.90	4.24	24,429	0.92	3.90
African American	672	0.84	5.12	692	0.86	5.06	654	0.80	5.57	691	0.86	4.23	603	0.90	3.85
American Indian/Alaskan	394	0.82	5.08	373	0.84	5.05	383	0.80	5.54	389	0.87	4.25	368	0.89	3.82
Asian	789	0.87	4.93	801	0.88	4.98	796	0.85	5.40	760	0.89	4.22	768	0.92	3.92
Hispanic/Latino	8,717	0.84	5.09	8,867	0.84	4.96	9,201	0.79	5.50	8,925	0.87	4.24	8,730	0.89	3.82
Multi-Racial	1,545	0.87	4.93	1,480	0.86	4.89	1,495	0.84	5.38	1,473	0.89	4.24	1,362	0.91	3.88
Native Hawaiian/Pacific Islander	788	0.80	5.05	733	0.81	4.94	709	0.77	5.50	704	0.84	4.22	688	0.89	3.84
White	33,615	0.86	4.90	34,045	0.86	4.91	34,529	0.84	5.37	34,389	0.89	4.22	34,163	0.90	3.89
Limited English Proficiency	5,456	0.81	5.15	4,905	0.77	5.03	4,576	0.69	5.62	4,256	0.77	4.26	3,550	0.84	3.83
Low Income	14,456	0.86	5.04	14,468	0.86	4.95	14,417	0.83	5.48	13,635	0.88	4.24	12,947	0.91	3.84
Special Education	6,339	0.87	5.24	5,829	0.85	5.10	5,429	0.78	5.68	4,999	0.84	4.29	4,580	0.88	3.85

APPENDIX 4-A

INTERIM TARGET BLUEPRINTS AND SUMMARY OF MODULAR BENCHMARKS

Appendix 4-A
Interim Target Blueprints

Table 4-A-1. Minimum/Maximum Number of Test Items by Score-Reporting Category for Classroom Period Interim ELA

Strands	Min	Max
Grade 3 ELA Classroom Period	**27**	**31**
Reading Standards for Literature	8	10
Reading Standards for Informational Text	8	10
Listening Comprehension (informational)	5	6
Language (vocabulary items, editing task sets)	6	8
DOK 1	5	9
DOK 2	8	14
DOK 3	6	10
Grade 4 ELA Classroom Period	**24**	**31**
Reading Standards for Literature	8	10
Reading Standards for Informational Text	6	10
Listening Comprehension (informational)	5	6
Language (vocabulary items, editing task sets)	5	8
DOK 1	5	9
DOK 2	8	14
DOK 3	5	10
Grade 5 ELA Classroom Period	**26**	**31**
Reading Standards for Literature	8	10
Reading Standards for Informational Text	7	10
Listening Comprehension (informational)	5	6
Language (vocabulary items, editing task sets)	6	8
DOK 1	8	9
DOK 2	8	14
DOK 3	5	10
Grade 6 ELA Classroom Period	**26**	**30**
Reading Standards for Literature	8	10
Reading Standards for Informational Text	8	10
Listening Comprehension (informational)	5	6
Language (vocabulary items, editing task sets)	6	8
DOK 1	5	9
DOK 2	8	14
DOK 3	5	11
Grade 7 ELA Classroom Period	**26**	**30**
Reading Standards for Literature	6	10
Reading Standards for Informational Text	8	10
Listening Comprehension (informational)	5	6
Language (vocabulary items, editing task sets)	6	8

Strands	Min	Max
DOK 1	5	9
DOK 2	8	14
DOK 3	6	11
Grade 8 ELA Classroom Period	**25**	**30**
Reading Standards for Literature	6	8
Reading Standards for Informational Text	8	12
Listening Comprehension (informational)	5	6
Language (vocabulary items, editing task sets)	5	8
DOK 1	5	9
DOK 2	7	14
DOK 3	4	11

Table 4-A-2. Minimum/Maximum Number of Test Items by Score-Reporting Category for Classroom Period Interim Mathematics

Domains	Min	Max
Grade 3 Mathematics Classroom Period	**32**	**32**
Operations and Algebraic Thinking	9	12
Number and Operations in Base Ten	6	7
Number and Operations—Fractions	8	10
Measurement and Data and Geometry	6	7
DOK 1	6	10
DOK 2	12	18
DOK 3	6	6
Grade 4 Mathematics Classroom Period	**34**	**34**
Operations and Algebraic Thinking	6	8
Number and Operations in Base Ten	9	11
Number and Operations—Fractions	9	11
Measurement and Data and Geometry	6	8
DOK 1	7	13
DOK 2	13	20
DOK 3	6	6
Grade 5 Mathematics Classroom Period	**34**	**34**
Operations and Algebraic Thinking	6	7
Number and Operations in Base Ten	9	12
Number and Operations—Fractions	9	12
Measurement and Data and Geometry	6	8
DOK 1	6	9
DOK 2	17	22
DOK 3	6	6
Grade 6 Mathematics Classroom Period	**34**	**34**
Ratios and Proportional Relationships (Segment 1)	9	11
The Number System (Segment 1)	6	8
Expressions and Equations (Segment 1)	9	12
Geometry / Statistics and Probability (Segment 2)	6	7
DOK 1	6	11
DOK 2	15	21
DOK 3	6	6
Grade 7 Mathematics Classroom Period	**34**	**34**
Ratios and Proportions	6	8
Expressions and Equations	6	7
The Number System	6	8
Geometry	6	8
Statistics and Probability	6	8
DOK 1	6	9
DOK 2	16	22
DOK 3	6	6

Domains	Min	Max
Grade 8 Mathematics Classroom Period	**34**	**34**
Functions	6	8
Expressions and Equations	6	8
Geometry / The Number System	11	14
Statistics and Probability	6	7
DOK 1	6	12
DOK 2	13	18
DOK 3	6	6
Secondary Mathematics I Classroom Period	**28**	**28**
Algebra	8	10
Number and Quantity / Functions / Statistics and Probability	8	11
Geometry	8	10
DOK 1	6	8
DOK 2	12	16
DOK 3	6	6

Appendix D
Summary of Modular Benchmarks

Table 4-A-4. Benchmark Modules, ELA Grade 3

Test Name	What This Test Measures	Form	Number of Items
Benchmark Module: ELA Grade 3 – Informational	This test measures a student's ability to determine key ideas and details, examine craft and structure, and integrate knowledge and ideas in grade-appropriate informational passages.	A	22
		B	22
Benchmark Module: ELA Grade 3 – Literature	This test measures a student's ability to determine key ideas and details, examine craft and structure, and integrate knowledge and ideas in grade-appropriate literature passages.	A	12
		B	14
Benchmark Module: ELA Grade 3 – Editing*	This test measures a student's ability to demonstrate command of the conventions of standard English in grade-appropriate writing.	A	6
		B	7
Benchmark Module: ELA Grade 3 – Listening	This test measures a student's ability to integrate and evaluate information presented in diverse, grade-appropriate media and formats and evaluate a speaker's point of view, reasoning, and use of evidence/rhetoric.	A	11
Benchmark Module: Writing Grade 3 – Informative	This test measures a student's ability to write informative/explanatory texts to examine a topic and convey ideas and information clearly.	A	1
Benchmark Module: Writing Grade 3 – Opinion	This test measures a student's ability to write opinion pieces on topics or texts, supporting a point of view with reasons.	A	1

**Note:* All editing task sets contain five errors. Each form contains two sets for a total of 10 errors. Paragraphs with multiple errors count as one item with 2 points for scoring purposes.

Table 4-A-5. Benchmark Modules, ELA Grade 4

Test Name	What This Test Measures	Form	Number of Items
Benchmark Module: ELA Grade 4 – Informational	This test measures a student's ability to determine key ideas and details, examine craft and structure, and integrate knowledge and ideas in grade-appropriate informational passages.	A	15
		B	14
Benchmark Module: ELA Grade 4 – Literature	This test measures a student's ability to determine key ideas and details, examine craft and structure, and integrate knowledge and ideas in grade-appropriate literature passages.	A	23
		B	24
Benchmark Module: ELA Grade 4 – Editing*	This test measures a student's ability to demonstrate command of the conventions of standard English in grade-appropriate writing.	A	8
		B	7
Benchmark Module: ELA Grade 4 – Listening	This test measures a student's ability to integrate and evaluate information presented in diverse, grade-appropriate media and formats and evaluate a speaker's point of view, reasoning, and use of evidence/rhetoric.	A	10
Benchmark Module: Writing Grade 4 – Informative	This test measures a student's ability to write informative/explanatory texts to examine a topic and convey ideas and information clearly.	A	1
Benchmark Module: Writing Grade 4 – Opinion	This test measures a student's ability to write opinion pieces on topics or texts, supporting a point of view with reasons and information.	A	1

**Note:* All editing task sets contain five errors. Each form contains two sets for a total of 10 errors. Paragraphs with multiple errors count as one item with 2 points for scoring purposes.

Table 4-A-6. Benchmark Modules, ELA Grade 5

Test Name	What This Test Measures	Form	Number of Items
Benchmark Module: ELA Grade 5 – Informational	This test measures a student's ability to determine key ideas and details, examine craft and structure, and integrate knowledge and ideas in grade-appropriate informational passages.	A	19
		B	22
Benchmark Module: ELA Grade 5 – Literature	This test measures a student's ability to determine key ideas and details, examine craft and structure, and integrate knowledge and ideas in grade-appropriate literature passages.	A	22
		B	23
Benchmark Module: ELA Grade 5 – Editing*	This test measures a student's ability to demonstrate command of the conventions of standard English in grade-appropriate writing.	A	6
		B	7
Benchmark Module: ELA Grade 5 – Listening	This test measures a student's ability to integrate and evaluate information presented in diverse, grade-appropriate media and formats and evaluate a speaker's point of view, reasoning, and use of evidence/rhetoric.	A	11
Benchmark Module: Writing Grade 5 – Informative	This test measures a student's ability to write informative/explanatory texts to examine a topic and convey ideas and information clearly.	A	1
Benchmark Module: Writing Grade 5 – Opinion	This test measures a student's ability to write opinion pieces on topics or texts, supporting a point of view with reasons and information.	A	1

**Note:* All editing task sets contain five errors. Each form contains two sets for a total of 10 errors. Paragraphs with multiple errors count as one item with 2 points for scoring purposes.

Table 4-A-7. Benchmark Modules, ELA Grade 6

Test Name	What This Test Measures	Form	Number of Items
Benchmark Module: ELA Grade 6 – Informational	This test measures a student's ability to determine key ideas and details, examine craft and structure, and integrate knowledge and ideas in grade-appropriate informational passages.	A	22
		B	22
		C	14
Benchmark Module: ELA Grade 6 – Literature	This test measures a student's ability to determine key ideas and details, examine craft and structure, and integrate knowledge and ideas in grade-appropriate literature passages.	A	21
		B	22
Benchmark Module: ELA Grade 6 – Editing*	This test measures a student's ability to demonstrate command of the conventions of standard English in grade-appropriate writing.	A	6
		B	7
		C	8
Benchmark Module: ELA Grade 6 – Listening	This test measures a student's ability to integrate and evaluate information presented in diverse, grade-appropriate media and formats and evaluate a speaker's point of view, reasoning, and use of evidence/rhetoric.	A	14
Benchmark Module: Writing Grade 6 – Informative	This test measures a students' ability to write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.	A	1
Benchmark Module: Writing Grade 6 – Argumentative	This test measures a student's ability to write arguments to support claims with clear reasons and relevant evidence.	A	1

**Note:* All editing task sets contain five errors. Each form contains two sets for a total of 10 errors. Paragraphs with multiple errors count as one item with 2 points for scoring purposes.

Table 4-A-8. Benchmark Modules, ELA Grade 7

Test Name	What This Test Measures	Form	Number of Items
Benchmark Module: ELA Grade 7 – Informational	This test measures a student's ability to determine key ideas and details, examine craft and structure, and integrate knowledge and ideas in grade-appropriate informational passages.	A	23
		B	23
		C	15
Benchmark Module: ELA Grade 7 – Literature	This test measures a student's ability to determine key ideas and details, examine craft and structure, and integrate knowledge and ideas in grade-appropriate literature passages.	A	23
		B	22
Benchmark Module: ELA Grade 7 – Editing*	This test measures a student's ability to demonstrate command of the conventions of standard English in grade-appropriate writing.	A	8
		B	7
Benchmark Module: ELA Grade 7 – Listening	This test measures a student's ability to integrate and evaluate information presented in diverse, grade-appropriate media and formats and evaluate a speaker's point of view, reasoning, and use of evidence/rhetoric.	A	10
Benchmark Module: Writing Grade 7 – Informative	This test measures a student's ability to write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.	A	1
Benchmark Module: Writing Grade 7 – Argumentative	This test measures a student's ability to write arguments to support claims with clear reasons and relevant evidence.	A	1

**Note:* All editing task sets contain five errors. Each form contains two sets for a total of 10 errors. Paragraphs with multiple errors count as one item with 2 points for scoring purposes.

Table 4-A-9. Benchmark Modules, ELA Grade 8

Test Name	What This Test Measures	Form	Number of Items
Benchmark Module: ELA Grade 8 – Informational	This test measures a student's ability to determine key ideas and details, examine craft and structure, and integrate knowledge and ideas in grade-appropriate informational passages.	A	21
		B	22
Benchmark Module: ELA Grade 8 – Literature	This test measures a student's ability to determine key ideas and details, examine craft and structure, and integrate knowledge and ideas in grade-appropriate literature passages.	A	22
		B	23
Benchmark Module: ELA Grade 8 – Editing*	This test measures a student's ability to demonstrate command of the conventions of standard English in grade-appropriate writing.	A	7
		B	8
Benchmark Module: ELA Grade 8 – Listening	This test measures a student's ability to integrate and evaluate information presented in diverse, grade-appropriate media and formats and evaluate a speaker's point of view, reasoning, and use of evidence/rhetoric.	A	8
Benchmark Module: Writing Grade 8 – Informative	This test measures a student's ability to write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.	A	1
Benchmark Module: Writing Grade 8 – Argumentative	This test measures a student's ability to write arguments to support claims with clear reasons and relevant evidence	A	1

**Note:* All editing task sets contain five errors. Each form contains two sets for a total of 10 errors. Paragraphs with multiple errors count as one item with 2 points for scoring purposes.

Table 4-A-10. Benchmark Modules, Mathematics Grade 3

Test Name	What This Test Measures	Form	Number of Items
Benchmark Module: Math Grade 3 – Measurement, Data and Geometry	This test measures a student's ability to solve problems involving measurement and estimation, represent and interpret data, understand concepts of area, recognize perimeter, and reason with shapes and their attributes.	A	11
		B	12
Benchmark Module: Math Grade 3 – Number and Operations Base 10	This test measures a student's ability to use place value understanding and properties of operations to perform multi-digit arithmetic.	A	12
		B	12
Benchmark Module: Math Grade 3 – Number and Operations Fractions	This test measures a student's ability to develop an understanding of fractions as numbers.	A	9
		B	9
		C	9
Benchmark Module: Math Grade 3 – Operations and Algebraic Thinking	This test measures a student's ability to represent and solve problems involving multiplication and division.	A	9
		B	9
		C	9
		D	12

Table 4-A-11. Benchmark Modules, Mathematics Grade 4

Test Name	What This Test Measures	Form	Number of Items
Benchmark Module: Math Grade 4 – Measurement, Data and Geometry	This test measures a student's ability to solve problems involving measurement and conversion of measurements, represent and interpret data, understand concepts of angle and measure angles, draw and identify lines and angles, and classify shapes by properties of their lines and angles.	A	10
		B	10
		C	8
Benchmark Module: Math Grade 4 – Number and Operations Base 10	This test measures a student's ability to generalize place value understanding for multi-digit whole numbers and to use place value understanding and properties of operations to perform multi-digit arithmetic.	A	12
		B	12
		C	12
Benchmark Module: Math Grade 4 – Number and Operations Fractions	This test measures a student's ability to extend understanding of fraction equivalence and ordering, build fractions from unit fractions, understand decimal notation for fractions, and compare decimal fractions.	A	10
		B	10
		C	12
Benchmark Module: Math Grade 4 – Operations and Algebraic Thinking	This test measures a student's ability to use the four operations with whole numbers to solve problems, gain familiarity with factors and multiples, and generate and analyze patterns.	A	8
		B	8
		C	9

Table 4-A-12. Benchmark Modules, Mathematics Grade 5

Test Name	What This Test Measures	Form	Number of Items
Benchmark Module: Math Grade 5 – Measurement, Data and Geometry	This test measures a student's ability to convert like measurement units within a given measurement system, represent and interpret data, and understand concepts of volume.	A	9
		B	9
		C	9
Benchmark Module: Math Grade 5 – Number and Operations Base 10	This test measures a student's ability to understand the place value system and to perform operations with multi-digit whole numbers and with decimals to hundredths.	A	10
		B	10
		C	10
		D	9
Benchmark Module: Math Grade 5 – Number and Operations Fractions	This test measures a student's ability to use equivalent fractions as a strategy to add and subtract fractions and to apply and extend previous understandings of multiplication and division.	A	12
		B	12
		C	11
Benchmark Module: Math Grade 5 – Operations and Algebraic Thinking	This test measures a student's ability to write and interpret numerical expressions and to analyze patterns and relationships.	A	12
		B	11

Table 4-A-13. Benchmark Modules, Mathematics Grade 6

Test Name	What This Test Measures	Form	Number of Items
Benchmark Module: Math Grade 6 – Expressions & Equations	This test measures the student's ability to apply and extend previous understandings of arithmetic to algebraic expressions, reason with and solve one-variable equations and inequalities, and represent and analyze quantitative relationships between dependent and independent variables.	A	11
		B	12
		C	11
Benchmark Module: Math Grade 6 – Geometry/Statistics & Probability	This test measures the student's ability to solve real-world and mathematical problems involving area, surface area, and volume; develop an understanding of statistical variability; and summarize and describe distributions.	A	12
		B	12
Benchmark Module: Math Grade 6 – Ratios & Proportional Relationships	This test measures the student's ability to understand ratio concepts and to use ratio reasoning to solve problems.	A	12
		B	11
		C	12
Benchmark Module: Math Grade 6 – The Number System	This test measures the student's ability to apply and extend previous understandings of multiplication and division to divide fractions by fractions, compute fluently with multi-digit numbers and find common factors and multiples, and apply and extend previous understandings of numbers to the system of rational numbers.	A	13
		B	12

Table 4-A-14. Benchmark Modules, Mathematics Grade 7

Test Name	What This Test Measures	Form	Number of Items
Benchmark Module: Math Grade 7 – Expressions and Equations	This test measures the student's ability to use properties of operations to generate equivalent expressions and to solve real-life and mathematical problems using numerical and algebraic expressions and equations.	A	8
		B	8
Benchmark Module: Math Grade 7 – Geometry	This test measures the student's ability to draw, construct, and describe geometrical figures and describe the relationships between them and to solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	A	8
		B	8
		C	8
Benchmark Module: Math Grade 7 – Ratios and Proportions	This test measures the student's ability to analyze proportional relationships and use them to solve real-world and mathematical problems.	A	8
		B	9
		C	9
Benchmark Module: Math Grade 7 – Statistics and Probability	This test measures the student's ability to use random sampling to draw inferences about a population; draw informal comparative inferences about two populations; and investigate chance processes and develop, use, and evaluate probability models.	A	12
		B	13
Benchmark Module: Math Grade 7 – Number System	This test measures the student's ability to apply and extend previous understandings of operations with fractions.	A	8
		B	8
		C	9

Table 4-A-15. Benchmark Modules, Mathematics Grade 8

Test Name	What This Test Measures	Form	Number of Items
Benchmark Module: Math Grade 8 – Expressions and Equations	This test measures the student's ability to work with radicals and integer exponents; understand the connections between proportional relationships, lines, and linear equations; and analyze and solve linear equations and pairs of simultaneous linear equations.	A	10
		B	11
Benchmark Module: Math Grade 8 – Functions	This test measures the student's ability to define, evaluate, and compare functions and to use functions to model relationships between quantities.	A	12
		B	13
Benchmark Module: Math Grade 8 – Geometry/The Number System	This test measures the student's ability to understand congruence and similarity using physical models, transparencies, or geometry software; understand and apply the Pythagorean Theorem; solve real-world and mathematical problems involving volume of cylinders, cones, and spheres; and know that there are numbers that are not rational, and approximate them by rational numbers.	A	12
		B	12
		C	12
		D	12
Benchmark Module: Math Grade 8 – Statistics and Probability	This test measures the student's ability to investigate patterns of association in bivariate data.	A	9
		B	9

Table 4-A-16. Benchmark Modules, Secondary Mathematics I

Test Name	What This Test Measures	Form	Number of Items
Benchmark Module: Math SM1 – Algebra	This test measures the student's ability to solve systems of equations, represent and solve equations and inequalities graphically, create equations that describe numbers or relationships, and solve equations and inequalities in one variable.	A	10
		B	11
		C	12
Benchmark Module: Math SM1 – Geometry	This test measures the student's ability to experiment with transformations in the plane, use coordinates to prove simple geometric theorems algebraically, make geometric constructions, and understand congruence in terms of rigid motions.	A	10
		B	10
		C	9
Benchmark Module: Math SM1 – Number Quantity/Functions/ Statistics and Probability	This test measures the student's ability to construct and compare linear, quadratic, and exponential models and solve problems; interpret functions that arise in applications in terms of the context; build a function that models a relationship between two quantities; analyze functions using different representations; reason quantitatively and use units to solve problems; understand the concept of a function and use function notation; and summarize, represent, and interpret data on a single count or measurement variable.	A	24
		B	23

UTAH READINESS IMPROVEMENT SUCCESS EMPOWERMENT (RISE)

TESTING PROCEDURES FOR THE ITEM-SELECTION ALGORITHM

SCHOOL YEAR 2020-2021 ADMINISTRATION

SUMMATIVE TESTING

- MATHEMATICS GRADES 3-8, AND SECONDARY MATHEMATICS I
- ENGLISH LANGUAGE ARTS IN GRADES 3-8
- SCIENCE IN GRADES 4-8

CAMBIUM ASSESSMENT, INC.

INTRODUCTION

This document describes the results of simulated test administrations used to configure and evaluate the adequacy of the item selection algorithm used to administer the RISE 2020-2021 RISE summative assessments. The purpose of the simulations is to configure the adaptive algorithm to optimize item selection to both meet blueprint specifications while targeting test information to student ability. When the adaptive algorithm is optimized, the observed score is measured more precisely than would otherwise be possible in a fixed-form environment, especially for high and low performing students. Consequently, the test administrations (forms) generated by the adaptive algorithm will not and should not be statistically parallel. Nevertheless, scores from the assessment should be comparable, and each test form should measure the same content, albeit with a different set of test items.

Test administrations were simulated separately for the following tests:

1. ELA (Reading, Language, and Listening only) Grades 3-8
2. Mathematics Grades 3-8, and Secondary Math I
3. Science Grades 4-8

In addition, writing test admnistrations were simulated simply to ensure that students were administered one writing task from each of the two genre.

TESTING PLAN

Each test in the RISE system is administered as a required end-of-year summative assessment that is mandatory for all students and statistfies state and federal accountability requirements. In parallel to each of the summative assessments, USBE offers local-use, optional interim assessments that can be used to inform instruction and monitor student progress. Students in participating schools have two opportunities to participate in each of the interim assessments that are aligned to the RISE tests. The summative and interim assessments are comprised of separate item banks. Prior to the opening of the 2020-2021 test administration window, USBE established and will maintain separate interim and summative item pools, each of which is configured independently for administration. The use of different item pools enhances the security of the accountability assessmets, limiting the exposure of test items each year. This report summarizes the results of the summative test item selection algorithm properties and resulting test simualtions.

The testing plan begins by generating a sample of examinees from a Normal (μ,σ) distribution for each grade and subject. The parameters for the normal distribution were based on operational test scores obtained from the Spring 2019 test administration.

STATISTICAL SUMMARIES

Some of the tables in this document provide statistical summaries of the data by grade and by subject. The statistics computed include the statistical bias of the estimated theta parameter; mean squared error (MSE); significance of the bias; average standard error of the estimated theta; the standard error at the 5th, 25th, 75th, and 95th percentiles; and the percentage of students falling inside the 95% and 99% confidence intervals.

Statistical bias refers to whether test scores systematically underestimate or overestimate the student's true ability and is distinguished from differential item functioning analyses which are used to detect "bias" or unfairness in the performance of test items across subgroups.

Computational details of each statistic are provided below.

$$\boldsymbol{bias} = \boldsymbol{N^{-1}} \textstyle\sum_{i=1}^{N} (\boldsymbol{\theta} - \hat{\boldsymbol{\theta}}) \tag{1}$$

$$\boldsymbol{MSE} = \boldsymbol{N^{-1}} \sum_{i=1}^{N} (\boldsymbol{\theta} - \hat{\boldsymbol{\theta}})^2$$

where θ is the true score and $\hat{\theta}$ is the observed score. For the variance of the bias, we use a first-order Taylor series of Equation (1) as:

$$\boldsymbol{var}(\ \boldsymbol{bias}) = \boldsymbol{\sigma^2} * \boldsymbol{g}'(\hat{\boldsymbol{\theta}})^2$$
$$= \frac{\mathbf{1}}{\boldsymbol{N}(\boldsymbol{N}-\mathbf{1})} \sum_{i=1}^{N} (\boldsymbol{\theta}_i - \bar{\hat{\boldsymbol{\theta}}})^2$$

Significance of the bias is then tested as:

$$\boldsymbol{z} = \boldsymbol{bias} / \sqrt{\boldsymbol{var}(\ \boldsymbol{bias})}.$$

A *p*-value for the significance of the bias is reported from this *z* test.

The average standard error is computed as:

$$\boldsymbol{mean}(\boldsymbol{se}) = \sqrt{\boldsymbol{N^{-1}} \sum_{i=1}^{N} \boldsymbol{se}_i^2}$$

where se_i^2 is the standard error of the estimated θ for individual *i*.

To determine the number of students falling outside the 95% and 99% confidence interval coverage, a t-test is performed as follows:

$$\boldsymbol{t} = \frac{\boldsymbol{\theta}_i - \hat{\boldsymbol{\theta}}_i}{\boldsymbol{se}(\hat{\boldsymbol{\theta}}_i)}$$

Where $\hat{\theta}$ is the ability estimate for individual *i* and θ is the true score for individual *i*. The percentage of students falling outside the coverage is determined by comparing the absolute value of the *t*-statistic to a critical value of 1.96 for the 95% coverage and to 2.58 for the 99% coverage.

TEST BLUEPRINTS AND AFFINITY GROUPS

The adaptive item selection algorithm must administer each student a unique test that adheres to the content requirements described in the RISE test specifications, ensuring a comparable and sufficient coverage of the content of the Utah Core Standards.

In addition to content constraints, all ELA and Mathematics tests had constraints associated with affinity groups. Affinity groups define additional characteristics of a test that further constrain the test assembly algorithm. For example, the desired number of DOK 3 items to administer in a test is an affinity group constraint. The affinity groups for RISE assessments were:

1. ELA (Reading, Language, and Listening): DOK levels (1, 2, 3).

2. Mathematics: DOK levels (1, 2, 3).

Reading simulations also imposed other constraints. These included limiting the number of passages administered to four, and ensuring students were not administered truncated editing tasks.

In ELA, all content strand and sub-strand blueprint elements are configured to have strictly enforced maximums for the items administered in Reading, Language, and Listening. In Mathematics, strand and DOK maximums were strictly enforced in mathematics grades 3-8, and sub-strand maximums were strictly enforced in mathematics grades 4 and 5. Domain maximums were strictly enforced in the high school Mathematics assessments. In Science, strict maximums were enforced for the strand levels and standard levels.

The tables in Appendix A provide a detailed summary of the blueprint configuration used in the simulations[1], including the major content constraints, lower level content constraints and affinity group constraints. The tables include the minimum and maximum items to be delivered for a given content area or affinity group, as well as whether a strict maximum was imposed, indicating that the constraint is required to be met exactly (TRUE = imposition of a strict maximum).

[1] Note that the min/max ranges for the simulation blueprint may be set differently from the min/max ranges for published blueprint. For example, the published blueprint may have a range of 14-16 for a given content strand, but the simulation blueprint may be set to 15-15. This change in the simulation blueprint is used to help constrain the algorithm so that the desired test is delivered.

FACTORS AFFECTING SIMULATION RESULTS

There are a number of factors that may influence simulation results for an adaptive test administration. These include:

1. The proportional relationship between the pool and the constraints to be met. Proportionally distributed pools tend to make better use of the pool (i.e., more uniform item exposure) and make it easier to meet blueprint and other constraints. For example, if the specifications call for 50 percent of the items to be technology enhanced (TE) items, but the pool only contains 6 percent TE items, it may be difficult to meet this constraint.

2. The correlational structure between constraints. It is easier to satisfy a constraint if there are instances of the constraint at all levels of another constraint. For example, if DOK3 items are only associated with a specific content area, it may be difficult to meet both the desired distribution of content and the desired distribution of DOK.

3. Whether or not there is a “strict maximum” on a given constraint, meaning that the requirement must be met exactly in each test administration.

RESULTS OF SIMULATED TEST ADMINISTRATIONS

Simulations were evaluated using 3,000 simulated cases for mathematics and ELA and 5000 cases for Science. This section describes the item selection algorithm with respect to:

- The degree to which student test comply with content or blueprint specificaitions,
- the range of content expected to administered to each given student,
- the precision of resulting student ability estimates,
- and exposure of items within the bank.

BLUEPRINT MATCH

Summaries of the item pool and simulation configurations for ELA (Reading, Listening, and Language), Mathematics, and Science, are presented in Tables 1-3, respectively. Separate simulations were run for Writing simply to ensure that students were administered one writing task from each of the writing genres. The tables show the grade/course, test length, operational pool size, and components where strict maximums were imposed.

Table 1. Reading, Language, Listening Simulation Pool Size and Configuration Summary

Grade	Test Length	Operational Pool Size	Exactly Four Passages	Non-truncated Editing Task	Strict Ranges Imposed
3	44	550	100%	100%	Strand, Sub-strand
4	45	608	100%	100%	Strand, Sub-strand
5	44	541	100%	100%	Strand, Sub-strand
6	46	656	100%	100%	Strand, Sub-strand
7	46	578	100%	100%	Strand, Sub-strand
8	47	551	100%	100%	Strand, Sub-strand

Table 1. Mathematics Simulation Pool Size and Configuration Summary

Grade/Course	Test Length	Operational Pool Size	Strict Ranges Imposed
3	45	682	Strand, DOK, Sub-strand
4	50	767	Strand, DOK, Sub-strand
5	50	743	Strand, DOK, Sub-strand
6	50	685	Strand, DOK, Sub-strand
7	50	609	Strand, DOK, Sub-strand
8	50	698	Strand, DOK, Sub-strand
SM I	40	529	Strand

Table 3. Science Simulation Pool Size and Configuration Summary

Grade	Test Length	Operational Pool Size	Strict Ranges Imposed
4	8	27	Strand, Standard
5	8	34	Strand, Standard
6	8	24	Strand, Standard
7	10	34	Strand, Standard
8	10	38	Strand, Standard

STRAND BLUEPRINT MATCH

Blueprint matches at the strand level were 100 percent for all ELA, Mathematics and Science assessments.

BLUEPRINT VIOLATIONS

Even though the simulation blueprints may be altered to constrain the delivery algorithm, blueprint violations are assessed according to the published blueprint.

Appendix B shows the percentage of constraint violations by domain and strand areas and affinity group levels. Each row of the table indicates the blueprint element and the number of "students" (percentage) for which the blueprint element missed the specific specification. The columns represent whether the violation was over (more (+) items were administered than intended according to the blueprint) or under (fewer (-) items were administered than intended according to the blueprint) and by how much.

CONTENT COVERAGE

Tables 4-9 present the number of unique standards administered in the simulated tests by grade. The table includes the number of standards measured within each strand, the mean number of standards administered to students within each strand, as well as the standard deviation and minimum and maximum number of standards administered within each strand. Appendix C presents the summary of number of Non-MC items administered to the simulated students by subjects and grades.

Table 4. Number of Unique Substrands Administered by Strand by Grade for ELA

Grade	Total Standards in Pool				Mean				Standard Deviation				Range (Minimum - Maximum)			
	RL	RI	SL	L	RL	RI	SL	L	RL	RI	SL	L	RL	RI	SL	L
3	8	9	3	13	7.2	8.5	3	9.2	0.4	0.6	0.1	1.1	7-8	7-9	2-3	6-13
4	8	9	5	12	7.6	8.1	4.6	9.4	0.5	0.6	0.7	1.2	7-8	7-9	3-5	7-12
5	8	9	5	11	7.7	8.2	4.2	8	0.5	0.8	1.3	0.9	7-8	7-9	2-5	6-11
6	7	9	4	10	7	8.8	3.9	8	0	0.5	0.4	0.8	6-7	7-9	2-4	6-10
7	7	9	5	9	6	8.1	3.2	6.8	0.7	0.3	0.7	0.7	5-7	8-9	2-5	5-9
8	7	9	4	10	7	8.7	3	7.8	0.2	0.5	0.3	0.7	6-7	8-9	2-4	6-10

RL = Literature, RI = Informational Text, SL = Listening Comprehension, L = Language, W = Writing

Table 5. Number of Unique Standards Administered by Strand by Grade for Mathematics Grades 3-5

Grade	Total Standards in Pool					Mean					Standard Deviation					Range (Minimum - Maximum)				
	G	MD	NBT	NF	OA	G	MD	NBT	NF	OA	G	MD	NBT	NF	OA	G	MD	NBT	NF	OA
3	2	10	3	8	12	2	8	3	8	10.7	0	0.5	0	0	0.6	2-2	7-10	3-3	8-8	10-12
4	3	10	6	12	6	2.7	8.1	6	11.2	6	0.4	0.3	0	0.4	0.1	2-3	8-10	6-6	10-12	5-6
5	5	8	8	11	4	2.4	7.1	8	11	4	0.6	0.3	0	0.1	0	2-5	7-8	8-8	10-11	4-4

G = Geometry, MD = Measurement and Data, NBT = Number and Operations in Base Ten, NF = Number and Operations – Fractions, OA = Operations and Algebraic Thinking

Table 6. Number of Unique Standards Administered by Strand by Grade for Mathematics Grades 6-8

Grade	Total Standards in Pool						Mean						Standard Deviation						Range (Minimum - Maximum)					
	EE	G	F	NS	RP	SP	EE	G	F	NS	RP	SP	EE	G	F	NS	RP	SP	EE	G	F	NS	RP	SP
6	11	4		13	6	8	11	1.8		10.2	6	6.4	0.2	0.7		0.8	0	0.6	10-11	1-4		8-13	6-6	5-8
7	5	6		9	6	11	5	6		8.9	6	9.9	0	0		0.3	0.1	0.5	5-5	6-6		8-9	5-6	8-11
8	12	11	5	3		4	10.2	9.7	5	3		4	0.5	0.7	0	0		0	9-12	9-11	5-5	3-3		4-4

RP = Ratios and Proportional Relationships, NS = The Number System, EE = Expressions and Equations, G = Geometry, SP = Statistics and Probability, F = Functions

Table 7. Number of Unique Clusters Administered by Domain by Grade for Secondary Mathematics I and II (SMI & SMII)

Grade	Total Clusters in Pool					Mean					Standard Deviation					Range (Minimum - Maximum)				
	A	F	G	NQ	SP	A	F	G	NQ	SP	A	F	G	NQ	SP	A	F	G	NQ	SP
SM1	13	7	10	2	5	12.1	4.9	9.6	1.7	4.7	0.4	0.6	0.6	0.5	0.4	10-13	4-7	7-10	1-2	3-5

A = Algebra, NQ = Number and Quantity, G = Geometry, F = Functions, SP = Statistics and Probability

Table 8. Number of Unique Standards Administered by Strand by Grade for Science

Grade	Total Standards in Pool					Mean					Standard Deviation					Range (Minimum - Maximum)				
	I	II	III	IV	V	I	II	III	IV	V	I	II	III	IV	V	I	II	III	IV	V
4	4	4	3	2		2	2	2	2		0	0	0	0		2-2	2-2	2-2	2-2	
5	4	4	4			3	3	2			0	0	0			3-3	3-3	2-2		
6	2	3	3	5		2	2	2	2		0	0	0	0		2-2	2-2	2-2	2-2	
7	5	5	3	3	4	2	2	2	2	2	0	0	0	0	0	2-2	2-2	2-2	2-2	2-2
8	7	6	3	5		3	3	2	2		0	0	0	0		3-3	3-3	2-2	2-2	

I = the first strand in a grade (i.e., 4.1, 5.1, 6.1, 7.1, 8.1), II = the second strand in a grade (i.e., 4.2, 5.2, 6.2, 7.2, 8.2), III = the third strand in a grade (i.e., 4.3, 5.3, 6.3, 7.3, 8.3), IV = the fourth strand in a grade (i.e., 4.4, 6.4, 7.4, 8.4), V = the fifth strand in a grade (i.e., 7.5)

SUMMARY OF STATISTICAL ANALYSES

Each simulated record includes a true score and an ability estimate based on the adaptive test administration. Table 10 shows the correlations between the true score and estimated ability for each of the RISE assessments. As Table 10 shows, correlations between estimated ability and true score are nearly one, indicating that the adaptive test administrations reliably estimate student ability. The correlations for the high school math assessments are attenuated relative to the other assessments, which is likely due to a mismatch between the difficulty of bank items and the ability of the student population, resulting in less information for the estimation of achievement for low ability students, and thus less reliable ability estimation for those students.

Table 2. Correlations between True Score and Estimated Ability by Subject and Grade

Grade	Correlation
ELA	
3	0.957
4	0.957
5	0.96
6	0.958
7	0.955
8	0.95
Mathematics	
3	0.979
4	0.983
5	0.979
6	0.978
7	0.971
8	0.961
SMI	0.894
Science	
4	0.926
5	0.928
6	0.938
7	0.950
8	0.953

Table 11 presents the mean of the biases, which is the average of the biases of the estimated abilities across all students, the standard error of the mean bias, the p-value for the significance of the estimated bias reported from the *z*-test, the mean square error (MSE) of the estimated theta, and the percentage of students falling inside the 95% and 99% intervals by opportunity, subject and grade. In most cases, the mean bias of the estimated abilities is very small and statistically insignificant, providing further evidence that the true score is adequately recovered in the observed score. On average, when the distribution of item difficulties is greater than the distribution of student abilities, the student abilities are somewhat underestimated, especially for low ability students; when the distribution of item difficulties is lower than the student abilities, the student abilities are somewhat overestimated, especially for high ability students. Appendix D presents the plot of biases for each of the assessments.

Table 3. Statistical Summaries of Ability Estimation – Bias of the Estimated Abilities by Subject and Grade

Grade	Mean of the Biases	SE of the Biases	P-value for the Z-Test	MSE	Inside of 95% Interval	Inside of 99% Interval
ELA						
3	0.022	0.010	0.472	0.092	95.1	98.4
4	0.014	0.010	0.483	0.106	97.0	99.6
5	-0.013	0.009	0.483	0.087	95.7	99.5
6	-0.016	0.010	0.480	0.102	94.7	99.1
7	0.016	0.010	0.480	0.093	95.2	98.7
8	-0.007	0.010	0.491	0.108	95.0	99.3
Mathematics						
3	-0.006	0.004	0.489	0.043	93.3	98.1
4	0.000	0.003	0.500	0.035	94.9	99.1
5	0.006	0.004	0.489	0.044	95.2	98.7
6	0.014	0.004	0.475	0.048	95.1	99.0
7	0.012	0.005	0.481	0.061	95.4	99.3
8	0.001	0.005	0.498	0.082	94.8	99.2
SMI	0.065	0.010	0.452	0.292	95.4	98.6
Science						
4	0.007	0.014	0.637	0.171	95.0	99.2
5	0.011	0.014	0.435	0.169	94.9	99.1
6	0.007	0.014	0.640	0.143	94.7	98.9
7	-0.002	0.014	0.862	0.112	95.0	99.0
8	-0.012	0.014	0.404	0.103	95.1	99.1

Table 12 shows the mean standard errors of the ability estimate across all simulated test administrations, as well as the standard error across the ability distribution. As the table indicates, in most of the tests, the standard error is highest at the very low end of the ability spectrum, and relatively lower through much of the range of the ability distribution, increasing somewhat at the very high end of the ability spectrum. For some assessments, such as high school math, the standard errors continue to decrease even for the highest student ability. In these cases, because the difficulty of the item pools is generally greater than the ability of student population, gains in measurement precision continue to accrue for even the highest achieving students. Conversely, of course, absence of easy items results in less precision for measurement of low achieving students. The graphs in Appendix E provide the standard error across estimated theta range for all subjects and grades.

Table 4. Statistical Summaries of Ability Estimation – Standard Errors of the Estimated Abilities by Subject and Grade

Grade	Average SE	SE at 5 Percentile	SE at Bottom Quartile	SE at Top Quartile	SE at 95 Percentile
ELA					
3	0.296	0.217	0.234	0.316	0.486
4	0.327	0.265	0.283	0.337	0.489

Grade	Average SE	SE at 5 Percentile	SE at Bottom Quartile	SE at Top Quartile	SE at 95 Percentile
5	0.302	0.239	0.26	0.317	0.448
6	0.314	0.25	0.265	0.331	0.489
7	0.3	0.247	0.26	0.311	0.431
8	0.313	0.266	0.279	0.321	0.448
Mathematics					
3	0.163	0.12	0.128	0.175	0.298
4	0.175	0.137	0.145	0.184	0.282
5	0.197	0.151	0.16	0.203	0.335
6	0.212	0.173	0.184	0.221	0.303
7	0.236	0.18	0.194	0.246	0.358
8	0.276	0.219	0.24	0.296	0.354
SMI	0.465	0.297	0.344	0.498	0.811
Science					
4	0.402	0.361	0.378	0.416	0.471
5	0.397	0.340	0.364	0.418	0.495
6	0.368	0.333	0.345	0.378	0.430
7	0.330	0.298	0.314	0.342	0.371
8	0.318	0.289	0.301	0.331	0.364

The summary statistics of the estimated abilities show that the item selection algorithm is generally choosing items that are conditional on each examinee's ability, where available. This is limited in the case of ELA by selection of item groups for passages and other stimulus based items, and by relatively difficulty of the upper grade mathematics and lower grade science item banks relative to student ability. The examinee ability estimates generated on the basis of the items chosen almost always recover the true score. In other words, given that we know the true score for each examinee in a simulation, these data show that the true score is almost always recovered—an indication that the algorithm is working as expected for a computer-adaptive test.

GLOBAL ITEM EXPOSURE

The simulator output also reports the degree to which the constraints set forth in the blueprints may yield greater exposure of items to students. This is reported by examining the percentage of test administrations in which an item appears. For instance, in a fixed paper form, 100% of the items appear on 100% of the test administrations because every examinee sees the same items. In an adaptive test with a sufficiently large item pool, we would expect that most of the items would appear on only a relatively small percentage of the test administrations. When this condition holds, it suggests that test administrations between students are more or less unique. Therefore, we calculated the item exposure rate for each item across by dividing the total number of test administrations in which an item appears by the total number of tests administered. Then we report the distribution of the item exposure rate (r) in six bins. The bins are r=0% (unused), 0%<r<=20%, 20%<r<=40%, 40%<r<=60%, 60%<r<=80% and 80%<r<=100%. If global item exposure is minimal, we would expect the largest proportion of items to appear in the 0%<r<=20% bin, an indication that most of the items appear on a very small percentage of the test forms.

Table 13 presents the percentage of items that fall into each exposure bin for all grades. As expected, most test items are administered and they are administered in 20% or fewer test administrations for ELA and Mathematics. For Science, we are still in the process of building the item pool; nevertheless, most items are administered in 40% or fewer test administrations.

Table 5. Item Exposure Rates by Grade: Percent of Items by Exposure Rate, Across All Test Administrations

Grade	Total # items	Unused	0%<r<=20%	20%<r<=40%	40%<r<=60%	60%<r<=80%	80%<r<=100%
				ELA			
3	550	6.91	79.64	6.55	3.82	1.82	1.27
4	608	6.58	83.06	3.78	2.96	2.47	1.15
5	541	7.39	82.44	1.85	3.33	4.07	0.92
6	656	8.38	79.12	8.23	2.13	1.68	0.46
7	578	8.82	79.41	4.67	3.98	1.73	1.38
8	551	5.63	79.85	7.44	3.45	1.63	2.00
				Mathematics			
3	682	0.59	95.01	4.40	0.00	0.00	0.00
4	767	0.13	94.78	4.95	0.13	0.00	0.00
5	743	0.27	92.33	7.00	0.27	0.13	0.00
6	685	0.00	94.60	5.26	0.15	0.00	0.00
7	609	0.99	87.36	10.51	1.15	0.00	0.00
8	698	2.72	87.97	8.17	0.57	0.14	0.43
SMI	529	4.73	83.18	7.56	3.59	0.95	0.00
				Science			
4	27	0.00	48.15	33.33	3.70	11.11	3.70
5	34	0.00	50.00	35.29	11.76	2.94	0.00
6	24	0.00	33.33	37.50	12.50	12.50	4.17
7	34	0.00	41.18	35.29	17.65	5.88	0.00
8	38	0.00	50.00	28.95	15.79	5.26	0.00

To further investigate the item usage across testers, Appendix F presents the number of unique items administerd by item position for simulated examinees.

SUMMARY

Overall, the simulation results show that students will be delivered tests that meet blueprint elements for content domains and strands across tests. DOK constraints were met for all mathematics and for science tests. It was not possible to meet both the DOK levels specified and the content constraints simultaneously for ELA tests.

APPENDIX A

SIMULATION TEST BLUEPRINT FOR RISE SPRING SUMMATIVE

APPENDIX A – SIMULATION TEST BLUEPRINT FOR RISE SPRING SUMMATIVE

Table A-1: Test Blueprint for RISE Summative – Grade 3 Reading, Language, Listening

Content Level ID	Min Items	Max Items	Strict Max
Utah-L	8	10	True
Utah-RI	14	14	True
Utah-RL	14	14	True
Utah-SL	8	8	True
3ELADOK1	8	13	False
3ELADOK2	12	21	False
3ELADOK3	10	15	False
3Language_Info	1	1	True
3Language_Lit	1	1	True
3Paired_Info	7	8	True
3Paired_Lit	7	8	True
Utah-L|3.A	6	8	True
Utah-L|3.A|L.3.1c	0	1	False
Utah-L|3.A|L.3.1d	0	1	False
Utah-L|3.A|L.3.1e	0	1	False
Utah-L|3.A|L.3.1f	0	1	False
Utah-L|3.A|L.3.1g	0	1	False
Utah-L|3.A|L.3.1h	0	1	False
Utah-L|3.A|L.3.1i	0	1	False
Utah-L|3.A|L.3.1j	0	1	False
Utah-L|3.A|L.3.1k	0	1	False
Utah-L|3.A|L.3.2a	0	1	False
Utah-L|3.A|L.3.2b	0	1	False
Utah-L|3.A|L.3.2c	0	1	False
Utah-L|3.A|L.3.2d	0	1	False
Utah-L|3.A|L.3.2e	0	1	False
Utah-L|3.A|L.3.2f	0	1	False
Utah-L|3.A|L.3.2g	0	1	False
Utah-L|3.C	2	2	False
Utah-L|3.C|L.3.4a	0	2	False
Utah-L|3.C|L.3.4b	0	2	False
Utah-L|3.C|L.3.4c	0	2	False
Utah-L|3.C|L.3.4d	0	2	False
Utah-L|3.C|L.3.5a	0	2	False
Utah-L|3.C|L.3.5b	0	2	False
Utah-L|3.C|L.3.5c	0	2	False
Utah-RI|3.A	4	7	False
Utah-RI|3.A|RI.3.1	0	3	False

Content Level ID	Min Items	Max Items	Strict Max
Utah-RI|3.A|RI.3.2	0	3	False
Utah-RI|3.A|RI.3.3	0	3	False
Utah-RI|3.B	4	7	False
Utah-RI|3.B|RI.3.4	0	3	False
Utah-RI|3.B|RI.3.5	0	3	False
Utah-RI|3.B|RI.3.6	0	3	False
Utah-RI|3.C	2	3	False
Utah-RI|3.C|RI.3.7	0	2	False
Utah-RI|3.C|RI.3.8	0	2	False
Utah-RI|3.C|RI.3.9	1	2	False
Utah-RL|3.A	4	7	False
Utah-RL|3.A|RL.3.1	0	3	False
Utah-RL|3.A|RL.3.2	0	3	False
Utah-RL|3.A|RL.3.3	0	3	False
Utah-RL|3.B	4	7	False
Utah-RL|3.B|RL.3.4	0	3	False
Utah-RL|3.B|RL.3.5	0	3	False
Utah-RL|3.B|RL.3.6	0	3	False
Utah-RL|3.C	2	3	False
Utah-RL|3.C|RL.3.7	0	2	False
Utah-RL|3.C|RL.3.9	1	2	False
Utah-SL|3.A	8	8	False
Utah-SL|3.A|SL.3.1c	0	6	False
Utah-SL|3.A|SL.3.1d	0	6	False
Utah-SL|3.A|SL.3.2	1	6	False
Utah-SL|3.A|SL.3.3	1	6	False

Table A-2: Test Blueprint for RISE Summative – Grade 4 Reading, Language, Listening

Content Level ID	Min Items	Max Items	Strict Max
Utah-L	8	10	True
Utah-RI	14	14	True
Utah-RL	14	14	True
Utah-SL	9	9	True
4ELADOK1	8	13	False
4ELADOK2	12	21	False
4ELADOK3	8	15	False
4Language_Info	1	1	True
4Language_Lit	1	1	True
4Paired_Info	7	8	True
4Paired_Lit	7	8	True
Utah-L|4.A	6	8	True
Utah-L|4.A|L.4.1c	0	1	False
Utah-L|4.A|L.4.1d	0	1	False
Utah-L|4.A|L.4.1e	0	1	False
Utah-L|4.A|L.4.1f	0	1	False
Utah-L|4.A|L.4.1g	0	1	False
Utah-L|4.A|L.4.1h	0	1	False
Utah-L|4.A|L.4.1i	0	1	False
Utah-L|4.A|L.4.2a	0	1	False
Utah-L|4.A|L.4.2b	0	1	False
Utah-L|4.A|L.4.2c	0	1	False
Utah-L|4.A|L.4.2d	0	1	False
Utah-L|4.C	0	2	False
Utah-L|4.C|L.4.4a	0	2	False
Utah-L|4.C|L.4.4b	0	2	False
Utah-L|4.C|L.4.4c	0	2	False
Utah-L|4.C|L.4.5a	0	2	False
Utah-L|4.C|L.4.5b	0	2	False
Utah-L|4.C|L.4.5c	0	2	False
Utah-RI|4.A	4	7	False
Utah-RI|4.A|RI.4.1	0	3	False
Utah-RI|4.A|RI.4.2	0	3	False
Utah-RI|4.A|RI.4.3	0	3	False
Utah-RI|4.B	4	7	False
Utah-RI|4.B|RI.4.4	0	3	False
Utah-RI|4.B|RI.4.5	0	3	False

Content Level ID	Min Items	Max Items	Strict Max
Utah-RI|4.B|RI.4.6	0	3	False
Utah-RI|4.C	2	3	False
Utah-RI|4.C|RI.4.7	0	2	False
Utah-RI|4.C|RI.4.8	0	2	False
Utah-RI|4.C|RI.4.9	1	2	False
Utah-RL|4.A	4	7	False
Utah-RL|4.A|RL.4.1	0	3	False
Utah-RL|4.A|RL.4.2	0	3	False
Utah-RL|4.A|RL.4.3	0	3	False
Utah-RL|4.B	4	7	False
Utah-RL|4.B|RL.4.4	0	3	False
Utah-RL|4.B|RL.4.5	0	3	False
Utah-RL|4.B|RL.4.6	0	3	False
Utah-RL|4.C	1	3	False
Utah-RL|4.C|RL.4.7	0	2	False
Utah-RL|4.C|RL.4.9	0	2	False
Utah-SL|4.A	8	8	False
Utah-SL|4.A|SL.4.1c	1	6	False
Utah-SL|4.A|SL.4.1d	1	6	False
Utah-SL|4.A|SL.4.2	1	6	False
Utah-SL|4.A|SL.4.3	1	6	False

Table A-3: Test Blueprint for RISE Summative – Grade 5 Reading, Language, Listening

Content Level ID	Min Items	Max Items	Strict Max
Utah-L	8	10	True
Utah-RI	14	14	True
Utah-RL	14	14	True
Utah-SL	8	8	True
5ELADOK1	8	13	False
5ELADOK2	12	21	False
5ELADOK3	7	15	False
5Language_Info	1	1	True
5Language_Lit	1	1	True
5Paired_Info	7	8	True
5Paired_Lit	7	8	True
Utah-L|5.A	6	8	True
Utah-L|5.A|L.5.1b	0	1	False
Utah-L|5.A|L.5.1c	0	1	False
Utah-L|5.A|L.5.1d	0	1	False
Utah-L|5.A|L.5.1e	0	1	False
Utah-L|5.A|L.5.1f	0	1	False
Utah-L|5.A|L.5.2a	0	1	False
Utah-L|5.A|L.5.2b	0	1	False
Utah-L|5.A|L.5.2c	0	1	False
Utah-L|5.A|L.5.2d	0	1	False
Utah-L|5.A|L.5.2e	0	1	False
Utah-L|5.C	0	2	False
Utah-L|5.C|L.5.4a	0	2	False
Utah-L|5.C|L.5.4b	0	2	False
Utah-L|5.C|L.5.4c	0	2	False
Utah-L|5.C|L.5.5a	0	2	False
Utah-L|5.C|L.5.5b	0	2	False
Utah-L|5.C|L.5.5c	0	2	False
Utah-RI|5.A	4	7	False
Utah-RI|5.A|RI.5.1	0	3	False
Utah-RI|5.A|RI.5.2	0	3	False
Utah-RI|5.A|RI.5.3	0	3	False
Utah-RI|5.B	4	7	False
Utah-RI|5.B|RI.5.4	0	3	False
Utah-RI|5.B|RI.5.5	0	3	False
Utah-RI|5.B|RI.5.6	0	3	False

Content Level ID	Min Items	Max Items	Strict Max
Utah-RI|5.C	2	3	False
Utah-RI|5.C|RI.5.7	0	2	False
Utah-RI|5.C|RI.5.8	0	2	False
Utah-RI|5.C|RI.5.9	1	2	False
Utah-RL|5.A	4	7	False
Utah-RL|5.A|RL.5.1	0	3	False
Utah-RL|5.A|RL.5.2	0	3	False
Utah-RL|5.A|RL.5.3	0	3	False
Utah-RL|5.B	4	7	False
Utah-RL|5.B|RL.5.4	0	3	False
Utah-RL|5.B|RL.5.5	0	3	False
Utah-RL|5.B|RL.5.6	0	3	False
Utah-RL|5.C	2	3	False
Utah-RL|5.C|RL.5.7	0	2	False
Utah-RL|5.C|RL.5.9	0	2	False
Utah-SL|5.A	8	8	False
Utah-SL|5.A|SL.5.1c	0	6	False
Utah-SL|5.A|SL.5.1d	0	6	False
Utah-SL|5.A|SL.5.2	1	6	False
Utah-SL|5.A|SL.5.3	1	6	False

Table A-4: Test Blueprint for RISE Summative – Grade 6 Reading, Language, Listening

Content Level ID	Min Items	Max Items	Strict Max
Utah-L	8	10	True
Utah-RI	16	16	True
Utah-RL	13	13	True
Utah-SL	9	9	True
6ELADOK1	8	13	False
6ELADOK2	12	21	False
6ELADOK3	8	16	False
6Language_Info	1	1	True
6Language_Lit	1	1	True
6Paired_Info	9	10	True
6Paired_Lit	7	8	True
Utah-L|6.A	6	7	True
Utah-L|6.A|L.6.1a	0	2	False
Utah-L|6.A|L.6.1b	0	2	False
Utah-L|6.A|L.6.1c	0	2	False
Utah-L|6.A|L.6.1d	0	2	False
Utah-L|6.A|L.6.1e	0	2	False
Utah-L|6.A|L.6.2a	0	2	False
Utah-L|6.A|L.6.2b	0	2	False
Utah-L|6.C	2	2	False
Utah-L|6.C|L.6.4a	0	4	False
Utah-L|6.C|L.6.4b	0	4	False
Utah-L|6.C|L.6.4c	0	4	False
Utah-L|6.C|L.6.4d	0	4	False
Utah-L|6.C|L.6.5a	0	4	False
Utah-L|6.C|L.6.5b	0	4	False
Utah-L|6.C|L.6.5c	0	4	False
Utah-RI|6.A	6	8	False
Utah-RI|6.A|RI.6.1	0	3	False
Utah-RI|6.A|RI.6.2	0	3	False
Utah-RI|6.A|RI.6.3	0	3	False
Utah-RI|6.B	5	7	False
Utah-RI|6.B|RI.6.4	0	3	False
Utah-RI|6.B|RI.6.5	0	3	False
Utah-RI|6.B|RI.6.6	0	3	False
Utah-RI|6.C	2	4	False
Utah-RI|6.C|RI.6.7	0	2	False

Content Level ID	Min Items	Max Items	Strict Max
Utah-RI|6.C|RI.6.8	0	2	False
Utah-RI|6.C|RI.6.9	0	2	False
Utah-RL|6.A	5	7	False
Utah-RL|6.A|RL.6.1	0	3	False
Utah-RL|6.A|RL.6.2	0	3	False
Utah-RL|6.A|RL.6.3	0	3	False
Utah-RL|6.B	4	6	False
Utah-RL|6.B|RL.6.4	0	3	False
Utah-RL|6.B|RL.6.5	0	3	False
Utah-RL|6.B|RL.6.6	0	3	False
Utah-RL|6.C	0	3	False
Utah-RL|6.C|RL.6.7	0	2	False
Utah-RL|6.C|RL.6.9	0	2	False
Utah-SL|6.A	8	8	False
Utah-SL|6.A|SL.6.1c	0	3	False
Utah-SL|6.A|SL.6.1d	0	3	False
Utah-SL|6.A|SL.6.2	1	6	False
Utah-SL|6.A|SL.6.3	1	6	False

Table A-5: Test Blueprint for RISE Summative – Grade 7 Reading, Language, Listening

Content Level ID	Min Items	Max Items	Strict Max
Utah-L	8	10	True
Utah-RI	16	16	True
Utah-RL	13	13	True
Utah-SL	9	9	True
Utah-UD_ELA1	0	0	False
7ELADOK1	8	13	False
7ELADOK2	12	21	False
7ELADOK3	10	16	False
7Language_Info	1	1	True
7Language_Lit	1	1	True
7Paired_Info	9	10	True
7Paired_Lit	7	8	True
Utah-L|7.A	6	8	True
Utah-L|7.A|L.7.1a	0	2	False
Utah-L|7.A|L.7.1b	0	2	False
Utah-L|7.A|L.7.1c	0	2	False
Utah-L|7.A|L.7.2a	0	2	False
Utah-L|7.A|L.7.2b	0	2	False
Utah-L|7.C	2	2	False
Utah-L|7.C|L.7.4a	0	4	False
Utah-L|7.C|L.7.4b	0	4	False
Utah-L|7.C|L.7.4c	0	4	False
Utah-L|7.C|L.7.4d	0	4	False
Utah-L|7.C|L.7.5a	0	4	False
Utah-L|7.C|L.7.5b	0	4	False
Utah-L|7.C|L.7.5c	0	4	False
Utah-RI|7.A	6	8	False
Utah-RI|7.A|RI.7.1	0	3	False
Utah-RI|7.A|RI.7.2	0	3	False
Utah-RI|7.A|RI.7.3	0	3	False
Utah-RI|7.B	5	7	False
Utah-RI|7.B|RI.7.4	0	3	False
Utah-RI|7.B|RI.7.5	0	3	False
Utah-RI|7.B|RI.7.6	0	3	False
Utah-RI|7.C	2	4	False
Utah-RI|7.C|RI.7.7	0	2	False
Utah-RI|7.C|RI.7.8	0	2	False

Content Level ID	Min Items	Max Items	Strict Max
Utah-RI|7.C|RI.7.9	0	2	False
Utah-RL|7.A	5	7	False
Utah-RL|7.A|RL.7.1	0	3	False
Utah-RL|7.A|RL.7.2	0	3	False
Utah-RL|7.A|RL.7.3	0	3	False
Utah-RL|7.B	4	6	False
Utah-RL|7.B|RL.7.4	0	3	False
Utah-RL|7.B|RL.7.5	0	3	False
Utah-RL|7.B|RL.7.6	0	3	False
Utah-RL|7.C	0	3	False
Utah-RL|7.C|RL.7.7	0	2	False
Utah-RL|7.C|RL.7.9	0	2	False
Utah-SL|7.A	9	9	False
Utah-SL|7.A|SL.7.1c	0	3	False
Utah-SL|7.A|SL.7.1d	0	3	False
Utah-SL|7.A|SL.7.2	1	3	False
Utah-SL|7.A|SL.7.3	1	3	False
Utah-UD_ELA1|7	0	0	False
Utah-UD_ELA1|7|7.1	0	0	False
Utah-UD_ELA1|UD_ELA2	0	0	False
Utah-UD_ELA1|UD_ELA2|UD_ELA3	0	0	False

Table A-6: Test Blueprint for RISE Summative – Grade 8 Reading, Language, Listening

Content Level ID	Min Items	Max Items	Strict Max
Utah-L	9	10	True
Utah-RI	16	16	True
Utah-RL	13	13	True
Utah-SL	9	9	True
8ELADOK1	8	13	False
8ELADOK2	12	21	False
8ELADOK3	10	16	False
8Language_Info	1	1	True
8Language_Lit	1	1	True
8Paired_Info	9	10	True
8Paired_Lit	7	8	True
Utah-L|8.A	7	8	True
Utah-L|8.A|L.8.1a	0	2	False
Utah-L|8.A|L.8.1b	0	2	False
Utah-L|8.A|L.8.1c	0	2	False
Utah-L|8.A|L.8.1d	0	2	False
Utah-L|8.A|L.8.2a	0	2	False
Utah-L|8.A|L.8.2b	0	2	False
Utah-L|8.A|L.8.2c	0	2	False
Utah-L|8.C	2	2	False
Utah-L|8.C|L.8.4a	0	1	False
Utah-L|8.C|L.8.4b	0	1	False
Utah-L|8.C|L.8.4c	0	1	False
Utah-L|8.C|L.8.4d	0	1	False
Utah-L|8.C|L.8.5a	0	1	False
Utah-L|8.C|L.8.5b	0	1	False
Utah-L|8.C|L.8.5c	0	1	False
Utah-RI|8.A	6	8	False
Utah-RI|8.A|RI.8.1	0	3	False
Utah-RI|8.A|RI.8.2	0	3	False
Utah-RI|8.A|RI.8.3	0	3	False
Utah-RI|8.B	3	7	False
Utah-RI|8.B|RI.8.4	0	3	False
Utah-RI|8.B|RI.8.5	0	3	False
Utah-RI|8.B|RI.8.6	0	3	False
Utah-RI|8.C	2	4	False
Utah-RI|8.C|RI.8.7	0	2	False
Utah-RI|8.C|RI.8.8	0	2	False
Utah-RI|8.C|RI.8.9	1	2	False
Utah-RL|8.A	5	7	False

Content Level ID	Min Items	Max Items	Strict Max
Utah-RL|8.A|RL.8.1	0	3	False
Utah-RL|8.A|RL.8.2	0	3	False
Utah-RL|8.A|RL.8.3	0	3	False
Utah-RL|8.B	4	6	False
Utah-RL|8.B|RL.8.4	0	3	False
Utah-RL|8.B|RL.8.5	0	3	False
Utah-RL|8.B|RL.8.6	0	3	False
Utah-RL|8.C	1	3	False
Utah-RL|8.C|RL.8.7	0	2	False
Utah-RL|8.C|RL.8.9	1	2	False
Utah-SL|8.A	9	9	False
Utah-SL|8.A|SL.8.1c	0	3	False
Utah-SL|8.A|SL.8.1d	0	3	False
Utah-SL|8.A|SL.8.2	1	3	False
Utah-SL|8.A|SL.8.3	1	3	False

Table A-7: Test Blueprint for RISE Summative – Grade 5 Writing

Content Level ID	Min Items	Max Items	Strict Max
Utah-W	1	1	TRUE
Utah-W|5.A	0	1	FALSE
Utah-W|5.A|W.5.1a	0	1	FALSE
Utah-W|5.A|W.5.2a	0	1	FALSE
Utah-W|5.A|W.5.2b	0	1	FALSE

Table A-8: Test Blueprint for RISE Summative – Grade 8 Writing

Content Level ID	Min Items	Max Items	Strict Max
Utah-W	1	1	TRUE
Utah-W|8.A	0	1	FALSE
Utah-W|8.A|W.8.1a	0	1	FALSE
Utah-W|8.A|W.8.2a	0	1	FALSE

Table A-9: Test Blueprint for RISE Summative – Grade 3 Mathematics

Content Level ID	Min Items	Max Items	Strict Max
Utah-G	1	2	True
Utah-MD	7	8	True
Utah-NBT	8	10	True
Utah-NF	12	14	True
Utah-OA	13	17	True
3DOK1	8	14	True
3DOK2	17	26	True
3DOK3	4	9	True
Utah-G|3.1-2	1	4	False
Utah-G|3.1-2|3.G.1	0	3	False
Utah-G|3.1-2|3.G.2	0	3	False
Utah-MD|3.1-2	2	4	False
Utah-MD|3.1-2|3.MD.1	0	3	False
Utah-MD|3.1-2|3.MD.2	0	3	False
Utah-MD|3.3-4	2	4	False
Utah-MD|3.3-4|3.MD.3	0	3	False
Utah-MD|3.3-4|3.MD.4	0	3	False
Utah-MD|3.5-7	2	4	False
Utah-MD|3.5-7|3.MD.5a	0	1	False
Utah-MD|3.5-7|3.MD.5b	0	1	False
Utah-MD|3.5-7|3.MD.6	0	1	False
Utah-MD|3.5-7|3.MD.7a	0	1	False
Utah-MD|3.5-7|3.MD.7b	0	1	False
Utah-MD|3.5-7|3.MD.7c	0	1	False
Utah-MD|3.5-7|3.MD.7d	0	1	False
Utah-MD|3.8	0	2	False
Utah-MD|3.8|3.MD.8	0	2	False
Utah-NBT|3.1-3	8	10	False
Utah-NBT|3.1-3|3.NBT.1	0	6	False
Utah-NBT|3.1-3|3.NBT.2	0	6	False
Utah-NBT|3.1-3|3.NBT.3	0	6	False
Utah-NF|3.1-3	12	14	False
Utah-NF|3.1-3|3.NF.1a	0	2	False
Utah-NF|3.1-3|3.NF.1b	0	2	False
Utah-NF|3.1-3|3.NF.2a	0	3	False
Utah-NF|3.1-3|3.NF.2b	0	3	False
Utah-NF|3.1-3|3.NF.3a	0	3	False
Utah-NF|3.1-3|3.NF.3b	0	3	False

Content Level ID	Min Items	Max Items	Strict Max
Utah-NF|3.1-3|3.NF.3c	0	3	False
Utah-NF|3.1-3|3.NF.3d	0	3	False
Utah-OA|3.1-4and7	4	6	False
Utah-OA|3.1-4and7|3.OA.1	0	3	False
Utah-OA|3.1-4and7|3.OA.2	0	3	False
Utah-OA|3.1-4and7|3.OA.3	0	3	False
Utah-OA|3.1-4and7|3.OA.4	0	3	False
Utah-OA|3.1-4and7|3.OA.7a	0	2	False
Utah-OA|3.1-4and7|3.OA.7b	0	1	False
Utah-OA|3.5-6	4	6	False
Utah-OA|3.5-6|3.OA.5	0	5	False
Utah-OA|3.5-6|3.OA.6	0	5	False
Utah-OA|3.8-9	4	6	False
Utah-OA|3.8-9|3.OA.8a	0	3	False
Utah-OA|3.8-9|3.OA.8b	0	2	False
Utah-OA|3.8-9|3.OA.8c	0	1	False
Utah-OA|3.8-9|3.OA.9	0	5	False

Table A-10: Test Blueprint for RISE Summative – Grade 4 Mathematics

Content Level ID	Min Items	Max Items	Strict Max
Utah-G	1	3	True
Utah-MD	7	8	True
Utah-NBT	14	16	True
Utah-NF	14	16	True
Utah-OA	9	11	True
4DOK1	11	20	True
4DOK2	20	29	True
4DOK3	6	11	True
Utah-G|4.1-3	1	3	False
Utah-G|4.1-3|4.G.1	0	3	False
Utah-G|4.1-3|4.G.2	0	3	False
Utah-G|4.1-3|4.G.3	0	3	False
Utah-MD|4.1-2	0	4	False
Utah-MD|4.1-2|4.MD.1	0	2	False
Utah-MD|4.1-2|4.MD.2a	0	1	False
Utah-MD|4.1-2|4.MD.2b	0	1	False
Utah-MD|4.3	0	2	False
Utah-MD|4.3|4.MD.3	0	2	False
Utah-MD|4.4	0	2	False
Utah-MD|4.4|4.MD.4	0	2	False
Utah-MD|4.5-7	0	5	False
Utah-MD|4.5-7|4.MD.5a	0	2	False
Utah-MD|4.5-7|4.MD.5b	0	2	False
Utah-MD|4.5-7|4.MD.6	0	4	False
Utah-MD|4.5-7|4.MD.7a	0	1	False
Utah-MD|4.5-7|4.MD.7b	0	1	False
Utah-NBT|4.1-3	0	10	True
Utah-NBT|4.1-3|4.NBT.1	0	6	False
Utah-NBT|4.1-3|4.NBT.2	0	6	False
Utah-NBT|4.1-3|4.NBT.3	0	6	False
Utah-NBT|4.4-6	0	10	True
Utah-NBT|4.4-6|4.NBT.4	0	6	False
Utah-NBT|4.4-6|4.NBT.5	0	6	False
Utah-NBT|4.4-6|4.NBT.6	0	6	False
Utah-NF|4.1-2	0	6	True
Utah-NF|4.1-2|4.NF.1	0	4	False
Utah-NF|4.1-2|4.NF.2	0	4	False
Utah-NF|4.3-4	0	7	True

Content Level ID	Min Items	Max Items	Strict Max
Utah-NF|4.3-4|4.NF.3a	0	2	False
Utah-NF|4.3-4|4.NF.3b	0	2	False
Utah-NF|4.3-4|4.NF.3c	0	2	False
Utah-NF|4.3-4|4.NF.3d	0	2	False
Utah-NF|4.3-4|4.NF.4a	0	3	False
Utah-NF|4.3-4|4.NF.4b	0	3	False
Utah-NF|4.3-4|4.NF.4c	0	3	False
Utah-NF|4.5-7	0	7	True
Utah-NF|4.5-7|4.NF.5	0	5	False
Utah-NF|4.5-7|4.NF.6	0	5	False
Utah-NF|4.5-7|4.NF.7	0	5	False
Utah-OA|4.1-3	0	8	False
Utah-OA|4.1-3|4.OA.1	0	4	False
Utah-OA|4.1-3|4.OA.2	0	4	False
Utah-OA|4.1-3|4.OA.3a	0	2	False
Utah-OA|4.1-3|4.OA.3b	0	2	False
Utah-OA|4.4	0	3	False
Utah-OA|4.4|4.OA.4	0	4	False
Utah-OA|4.5	0	4	False
Utah-OA|4.5|4.OA.5	0	3	False

Table A-11: Test Blueprint for RISE Summative – Grade 5 Mathematics

Content Level ID	Min Items	Max Items	Strict Max
Utah-G	2	2	True
Utah-MD	8	9	True
Utah-NBT	15	18	True
Utah-NF	14	17	True
Utah-OA	8	10	True
5DOK1	8	14	True
5DOK2	25	32	True
5DOK3	5	12	True
Utah-G|5.1-2	1	3	True
Utah-G|5.1-2|5.G.1a	0	2	False
Utah-G|5.1-2|5.G.1b	0	2	False
Utah-G|5.1-2|5.G.2	0	3	False
Utah-G|5.3-4	0	3	True
Utah-G|5.3-4|5.G.3	0	3	False
Utah-G|5.3-4|5.G.4	0	3	False
Utah-MD|5.1	0	3	False
Utah-MD|5.1|5.MD.1	0	3	False
Utah-MD|5.2	0	3	True
Utah-MD|5.2|5.MD.2	0	3	False
Utah-MD|5.3-5	1	6	True
Utah-MD|5.3-5|5.MD.3a	0	3	False
Utah-MD|5.3-5|5.MD.3b	0	3	False
Utah-MD|5.3-5|5.MD.4	0	4	False
Utah-MD|5.3-5|5.MD.5a	0	2	False
Utah-MD|5.3-5|5.MD.5b	0	2	False
Utah-MD|5.3-5|5.MD.5c	0	2	False
Utah-NBT|5.1-4	0	10	False
Utah-NBT|5.1-4|5.NBT.1	0	5	False
Utah-NBT|5.1-4|5.NBT.2	0	5	False
Utah-NBT|5.1-4|5.NBT.3a	0	3	False
Utah-NBT|5.1-4|5.NBT.3b	0	3	False
Utah-NBT|5.1-4|5.NBT.4	0	4	False
Utah-NBT|5.5-7	0	10	True
Utah-NBT|5.5-7|5.NBT.5	0	4	False
Utah-NBT|5.5-7|5.NBT.6	0	4	False
Utah-NBT|5.5-7|5.NBT.7	0	4	False
Utah-NF|5.1-2	0	7	True
Utah-NF|5.1-2|5.NF.1	0	5	False

Content Level ID	Min Items	Max Items	Strict Max
Utah-NF|5.1-2|5.NF.2	0	5	False
Utah-NF|5.3-7	0	12	False
Utah-NF|5.3-7|5.NF.3	0	5	False
Utah-NF|5.3-7|5.NF.4a	0	3	False
Utah-NF|5.3-7|5.NF.4b	0	3	False
Utah-NF|5.3-7|5.NF.5a	0	3	False
Utah-NF|5.3-7|5.NF.5b	0	3	False
Utah-NF|5.3-7|5.NF.6	0	5	False
Utah-NF|5.3-7|5.NF.7a	0	2	False
Utah-NF|5.3-7|5.NF.7b	0	2	False
Utah-NF|5.3-7|5.NF.7c	0	2	False
Utah-OA|5.1-2	0	8	True
Utah-OA|5.1-2|5.OA.1	0	5	False
Utah-OA|5.1-2|5.OA.2a	0	3	False
Utah-OA|5.1-2|5.OA.2b	0	3	False
Utah-OA|5.3	0	4	True
Utah-OA|5.3|5.OA.3	0	4	False

Table A-12: Test Blueprint for RISE Summative – Grade 6 Mathematics

Content Level ID	Min Items	Max Items	Strict Max
Utah-EE	14	17	True
Utah-NS	9	11	True
Utah-RP	14	16	True
Utah-G	1	6	True
Utah-SP	7	9	True
6S1DOK1	10	15	True
6S1DOK2	20	25	True
6S1DOK3	1	5	True
Utah-EE|6.1-4	5	7	False
Utah-EE|6.1-4|6.EE.1	0	2	False
Utah-EE|6.1-4|6.EE.2a	0	1	False
Utah-EE|6.1-4|6.EE.2b	0	1	False
Utah-EE|6.1-4|6.EE.2c	0	1	False
Utah-EE|6.1-4|6.EE.3	0	2	False
Utah-EE|6.1-4|6.EE.4	0	2	False
Utah-EE|6.5-8	5	7	False
Utah-EE|6.5-8|6.EE.5	0	4	False
Utah-EE|6.5-8|6.EE.6	0	4	False
Utah-EE|6.5-8|6.EE.7	0	4	False
Utah-EE|6.5-8|6.EE.8	0	4	False
Utah-EE|6.9	2	4	False
Utah-EE|6.9|6.EE.9	0	4	False
Utah-NS|6.1	1	3	False
Utah-NS|6.1|6.NS.1a	0	1	False
Utah-NS|6.1|6.NS.1b	0	1	False
Utah-NS|6.1|6.NS.1c	0	1	False
Utah-NS|6.2-4	3	5	False
Utah-NS|6.2-4|6.NS.2	0	2	False
Utah-NS|6.2-4|6.NS.3	0	2	False
Utah-NS|6.2-4|6.NS.4	0	2	False
Utah-NS|6.5-8	3	5	False
Utah-NS|6.5-8|6.NS.5	0	1	False
Utah-NS|6.5-8|6.NS.6a	0	1	False
Utah-NS|6.5-8|6.NS.6b	0	1	False
Utah-NS|6.5-8|6.NS.6c	0	1	False
Utah-NS|6.5-8|6.NS.7a	0	1	False
Utah-NS|6.5-8|6.NS.7b	0	1	False
Utah-NS|6.5-8|6.NS.7c	0	1	False

Content Level ID	Min Items	Max Items	Strict Max
Utah-NS|6.5-8|6.NS.7d	0	1	False
Utah-NS|6.5-8|6.NS.8	0	1	False
Utah-RP|6.1-3	14	16	False
Utah-RP|6.1-3|6.RP.1	0	5	False
Utah-RP|6.1-3|6.RP.2	0	5	False
Utah-RP|6.1-3|6.RP.3a	0	2	False
Utah-RP|6.1-3|6.RP.3b	0	2	False
Utah-RP|6.1-3|6.RP.3c	0	2	False
Utah-RP|6.1-3|6.RP.3d	0	2	False
6S2DOK1	2	3	True
6S2DOK2	5	6	True
6S2DOK3	1	2	True
Utah-G|6.1-4	1	6	False
Utah-G|6.1-4|6.G.1	0	2	False
Utah-G|6.1-4|6.G.2	0	2	False
Utah-G|6.1-4|6.G.3	0	2	False
Utah-G|6.1-4|6.G.4	0	2	False
Utah-SP|6.1-3	3	6	False
Utah-SP|6.1-3|6.SP.1	0	1	False
Utah-SP|6.1-3|6.SP.2	0	3	False
Utah-SP|6.1-3|6.SP.3	0	5	False
Utah-SP|6.4-5	3	4	False
Utah-SP|6.4-5|6.SP.4	0	4	False
Utah-SP|6.4-5|6.SP.5a	0	2	False
Utah-SP|6.4-5|6.SP.5b	0	2	False
Utah-SP|6.4-5|6.SP.5c	0	2	False
Utah-SP|6.4-5|6.SP.5d	0	2	False

Table A-13: Test Blueprint for RISE Summative – Grade 7 Mathematics

Content Level ID	Min Items	Max Items	Strict Max
Utah-EE	8	10	True
Utah-G	9	11	True
Utah-NS	9	11	True
Utah-RP	11	13	True
Utah-SP	9	11	True
7DOK1	6	12	True
7DOK2	24	30	True
7DOK3	10	13	True
Utah-EE|7.1-2	2	6	False
Utah-EE|7.1-2|7.EE.1	0	3	False
Utah-EE|7.1-2|7.EE.2	0	3	False
Utah-EE|7.3-4	2	6	False
Utah-EE|7.3-4|7.EE.3	0	3	False
Utah-EE|7.3-4|7.EE.4a	0	2	False
Utah-EE|7.3-4|7.EE.4b	0	2	False
Utah-G|7.1-3	2	6	False
Utah-G|7.1-3|7.G.1	0	2	False
Utah-G|7.1-3|7.G.2	0	2	False
Utah-G|7.1-3|7.G.3	0	2	False
Utah-G|7.4-6	2	6	False
Utah-G|7.4-6|7.G.4	0	2	False
Utah-G|7.4-6|7.G.5	0	2	False
Utah-G|7.4-6|7.G.6	0	2	False
Utah-NS|7.1-3	9	11	False
Utah-NS|7.1-3|7.NS.1a	0	2	False
Utah-NS|7.1-3|7.NS.1b	0	2	False
Utah-NS|7.1-3|7.NS.1c	0	2	False
Utah-NS|7.1-3|7.NS.1d	0	2	False
Utah-NS|7.1-3|7.NS.2a	0	2	False
Utah-NS|7.1-3|7.NS.2b	0	2	False
Utah-NS|7.1-3|7.NS.2c	0	2	False
Utah-NS|7.1-3|7.NS.2d	0	2	False
Utah-NS|7.1-3|7.NS.3	0	4	False
Utah-RP|7.1-3	11	13	False
Utah-RP|7.1-3|7.RP.1	0	5	False
Utah-RP|7.1-3|7.RP.2a	0	2	False
Utah-RP|7.1-3|7.RP.2b	0	2	False
Utah-RP|7.1-3|7.RP.2c	0	2	False

Content Level ID	Min Items	Max Items	Strict Max
Utah-RP|7.1-3|7.RP.2d	0	2	False
Utah-RP|7.1-3|7.RP.3	0	5	False
Utah-SP|7.1-2	0	3	False
Utah-SP|7.1-2|7.SP.1	0	2	False
Utah-SP|7.1-2|7.SP.2	0	2	False
Utah-SP|7.3-4	0	3	False
Utah-SP|7.3-4|7.SP.3	0	2	False
Utah-SP|7.3-4|7.SP.4	0	2	False
Utah-SP|7.5-8	0	6	False
Utah-SP|7.5-8|7.SP.5	0	2	False
Utah-SP|7.5-8|7.SP.6	0	2	False
Utah-SP|7.5-8|7.SP.7a	0	2	False
Utah-SP|7.5-8|7.SP.7b	0	2	False
Utah-SP|7.5-8|7.SP.8a	0	2	False
Utah-SP|7.5-8|7.SP.8b	0	2	False
Utah-SP|7.5-8|7.SP.8c	0	2	False

Table A-14: Test Blueprint for RISE Summative – Grade 8 Mathematics

Content Level ID	Min Items	Max Items	Strict Max
Utah-EE	10	12	True
Utah-F	10	12	True
Utah-G	11	15	True
Utah-NS	6	8	True
Utah-SP	8	10	True
8DOK1	10	15	True
8DOK2	20	25	True
8DOK3	10	13	True
Utah-EE|8.1-4	0	7	False
Utah-EE|8.1-4|8.EE.1	0	3	False
Utah-EE|8.1-4|8.EE.2	0	3	False
Utah-EE|8.1-4|8.EE.3	0	3	False
Utah-EE|8.1-4|8.EE.4	0	3	False
Utah-EE|8.5-6	0	7	False
Utah-EE|8.5-6|8.EE.5	0	4	False
Utah-EE|8.5-6|8.EE.6	0	4	False
Utah-EE|8.7-8	0	7	False
Utah-EE|8.7-8|8.EE.7a	0	3	False
Utah-EE|8.7-8|8.EE.7b	0	3	False
Utah-EE|8.7-8|8.EE.7c	0	1	False
Utah-EE|8.7-8|8.EE.8a	0	2	False
Utah-EE|8.7-8|8.EE.8b	0	2	False
Utah-EE|8.7-8|8.EE.8c	0	2	False
Utah-F|8.1-3	0	6	False
Utah-F|8.1-3|8.F.1	0	3	False
Utah-F|8.1-3|8.F.2	0	3	False
Utah-F|8.1-3|8.F.3	0	3	False
Utah-F|8.4-5	0	6	False
Utah-F|8.4-5|8.F.4	0	3	False
Utah-F|8.4-5|8.F.5	0	3	False
Utah-G|8.1-5	0	6	False
Utah-G|8.1-5|8.G.1a	0	1	False
Utah-G|8.1-5|8.G.1b	0	1	False
Utah-G|8.1-5|8.G.1c	0	1	False
Utah-G|8.1-5|8.G.2	0	2	False
Utah-G|8.1-5|8.G.3	0	2	False
Utah-G|8.1-5|8.G.4	0	2	False
Utah-G|8.1-5|8.G.5	0	2	False

Content Level ID	Min Items	Max Items	Strict Max
Utah-G|8.6-8	0	6	False
Utah-G|8.6-8|8.G.6	0	3	False
Utah-G|8.6-8|8.G.7	0	3	False
Utah-G|8.6-8|8.G.8	0	3	False
Utah-G|8.9	0	3	False
Utah-G|8.9|8.G.9	0	3	False
Utah-NS|8.1-3	6	8	False
Utah-NS|8.1-3|8.NS.1	0	4	False
Utah-NS|8.1-3|8.NS.2	0	6	False
Utah-NS|8.1-3|8.NS.3	0	2	False
Utah-SP|8.1-4	8	10	False
Utah-SP|8.1-4|8.SP.1	0	10	False
Utah-SP|8.1-4|8.SP.2	0	1	False
Utah-SP|8.1-4|8.SP.3	0	4	False
Utah-SP|8.1-4|8.SP.4	0	1	False

Table A-15: Test Blueprint for RISE Summative – Secondary Mathematics I

Content Level ID	Min Items	Max Items	Strict Max
Utah-A	12	14	True
Utah-F	6	7	True
Utah-G	12	14	True
Utah-N	1	3	True
Utah-S	3	5	True
SM1DOK1	6	10	False
SM1DOK2	18	22	False
SM1DOK3	10	11	False
Utah-A|CED	2	6	False
Utah-A|CED|1-4	2	6	False
Utah-A|CED|1-4|A-CED.1	0	2	False
Utah-A|CED|1-4|A-CED.2	0	2	False
Utah-A|CED|1-4|A-CED.3	0	2	False
Utah-A|CED|1-4|A-CED.4	0	2	False
Utah-A|REI	6	10	False
Utah-A|REI|1	0	1	False
Utah-A|REI|1|A-REI.1	0	1	False
Utah-A|REI|10-12	0	3	False
Utah-A|REI|10-12|A-REI.10	0	1	False
Utah-A|REI|10-12|A-REI.11	0	1	False
Utah-A|REI|10-12|A-REI.12	0	1	False
Utah-A|REI|3	0	1	False
Utah-A|REI|3|A-REI.3a	0	1	False
Utah-A|REI|3|A-REI.3b	0	1	False
Utah-A|REI|3|A-REI.3c	0	1	False
Utah-A|REI|5-6	0	1	False
Utah-A|REI|5-6|A-REI.5	0	1	False
Utah-A|REI|5-6|A-REI.6	0	1	False
Utah-A|SSE	1	2	False
Utah-A|SSE|1	1	2	False
Utah-A|SSE|1|A-SSE.1a	0	2	False
Utah-A|SSE|1|A-SSE.1b	0	2	False
Utah-F|BF	1	4	False
Utah-F|BF|1-2	0	4	False
Utah-F|BF|1-2|F-BF.1a	0	2	False
Utah-F|BF|1-2|F-BF.1b	0	2	False
Utah-F|BF|1-2|F-BF.2	0	2	False
Utah-F|BF|3	0	2	False

Content Level ID	Min Items	Max Items	Strict Max
Utah-F|BF|3|F-BF.3	0	2	False
Utah-F|IF	2	6	False
Utah-F|IF|1-3	0	4	False
Utah-F|IF|1-3|F-IF.1	0	2	False
Utah-F|IF|1-3|F-IF.2	0	2	False
Utah-F|IF|1-3|F-IF.3	0	2	False
Utah-F|IF|4-6	0	4	False
Utah-F|IF|4-6|F-IF.4	0	2	False
Utah-F|IF|4-6|F-IF.5	0	2	False
Utah-F|IF|4-6|F-IF.6	0	2	False
Utah-F|IF|7and9	0	4	False
Utah-F|IF|7and9|F-IF.7a	0	2	False
Utah-F|IF|7and9|F-IF.7e	0	2	False
Utah-F|IF|7and9|F-IF.9	0	2	False
Utah-F|LE	1	4	False
Utah-F|LE|1-3	0	3	False
Utah-F|LE|1-3|F-LE.1a	0	1	False
Utah-F|LE|1-3|F-LE.1b	0	1	False
Utah-F|LE|1-3|F-LE.1c	0	1	False
Utah-F|LE|1-3|F-LE.2	0	1	False
Utah-F|LE|1-3|F-LE.3	0	1	False
Utah-F|LE|5	0	1	False
Utah-F|LE|5|F-LE.5	0	1	False
Utah-G|CO	8	10	False
Utah-G|CO|1-5	1	6	False
Utah-G|CO|1-5|G-CO.1	0	2	False
Utah-G|CO|1-5|G-CO.2	0	2	False
Utah-G|CO|1-5|G-CO.3	0	2	False
Utah-G|CO|1-5|G-CO.4	0	2	False
Utah-G|CO|1-5|G-CO.5	0	3	False
Utah-G|CO|12-13	0	1	False
Utah-G|CO|12-13|G-CO.12	0	1	False
Utah-G|CO|12-13|G-CO.13	0	1	False
Utah-G|CO|6-8	0	4	False
Utah-G|CO|6-8|G-CO.6	0	2	False
Utah-G|CO|6-8|G-CO.7	0	2	False
Utah-G|CO|6-8|G-CO.8	0	2	False
Utah-G|GPE	2	4	False
Utah-G|GPE|4-5and7	0	4	False
Utah-G|GPE|4-5and7|G-GPE.4	0	2	False

Content Level ID	Min Items	Max Items	Strict Max
Utah-G|GPE|4-5and7|G-GPE.5	0	3	False
Utah-G|GPE|4-5and7|G-GPE.7	0	2	False
Utah-N|Q	1	4	False
Utah-N|Q|1-3	1	4	False
Utah-N|Q|1-3|N-Q.1	0	2	False
Utah-N|Q|1-3|N-Q.2	0	2	False
Utah-N|Q|1-3|N-Q.3	0	2	False
Utah-S|ID	3	5	False
Utah-S|ID|1-3	1	3	False
Utah-S|ID|1-3|S-ID.1	0	2	False
Utah-S|ID|1-3|S-ID.2	1	2	False
Utah-S|ID|1-3|S-ID.3	0	2	False
Utah-S|ID|6	0	3	False
Utah-S|ID|6|S-ID.6a	0	2	False
Utah-S|ID|6|S-ID.6b	0	2	False
Utah-S|ID|6|S-ID.6c	0	2	False
Utah-S|ID|7-9	1	3	False
Utah-S|ID|7-9|S-ID.7	1	2	False
Utah-S|ID|7-9|S-ID.8	0	2	False
Utah-S|ID|7-9|S-ID.9	0	1	False

Table A-16: Test Blueprint for RISE Summative – Grade 4 Science

Content Level ID	Min Items	Max Items	Strict Max
4.1	2	2	True
4.2	2	2	True
4.3	2	2	True
4.4	2	2	True
4.1|4.1.1	0	1	True
4.1|4.1.2	0	1	True
4.1|4.1.3	0	1	True
4.1|4.1.4	0	1	True
4.2|4.2.1	0	1	True
4.2|4.2.2	0	1	True
4.2|4.2.3	0	1	True
4.2|4.2.4	0	1	True
4.3|4.3.1	0	1	True
4.3|4.3.2	0	1	True
4.3|4.3.3	0	1	True
4.4|4.4.1	0	1	True
4.4|4.4.2	0	1	True

Table A-17: Test Blueprint for RISE Summative – Grade 5 Science

Content Level ID	Min Items	Max Items	Strict Max
5.1	3	3	True
5.2	3	3	True
5.3	2	2	True
5.1|5.1.1	0	1	True
5.1|5.1.2	0	1	True
5.1|5.1.3	0	1	True
5.1|5.1.4	0	1	True
5.1|5.1.5	0	1	True
5.2|5.2.1	0	1	True
5.2|5.2.2	0	1	True
5.2|5.2.3	0	1	True
5.2|5.2.4	0	1	True
5.3|5.3.1	0	1	True
5.3|5.3.2	0	1	True
5.3|5.3.3	0	1	True
5.3|5.3.4	0	1	True

Table A-17: Test Blueprint for RISE Summative – Grade 6 Science

Content Level ID	Min Items	Max Items	Strict Max
6.1	2	2	True
6.2	2	2	True
6.3	2	2	True
6.4	2	2	True
6.1|6.1.1	0	1	True
6.1|6.1.2	0	1	True
6.1|6.1.3	0	1	True
6.2|6.2.1	0	1	True
6.2|6.2.2	0	1	True
6.2|6.2.3	0	1	True
6.2|6.2.4	0	1	True
6.3|6.3.1	0	1	True
6.3|6.3.2	0	1	True
6.3|6.3.3	0	1	True
6.3|6.3.4	0	1	True
6.4|6.4.1	0	1	True
6.4|6.4.2	0	1	True
6.4|6.4.3	0	1	True
6.4|6.4.4	0	1	True
6.4|6.4.5	0	1	True

Table A-17: Test Blueprint for RISE Summative – Grade 7 Science

Content Level ID	Min Items	Max Items	Strict Max
7.1	2	2	True
7.2	2	2	True
7.3	2	2	True
7.4	2	2	True
7.5	2	2	True
7.1|7.1.1	0	1	True
7.1|7.1.2	0	1	True
7.1|7.1.3	0	1	True
7.1|7.1.4	0	1	True
7.1|7.1.5	0	1	True
7.2|7.2.1	0	1	True
7.2|7.2.2	0	1	True
7.2|7.2.3	0	1	True
7.2|7.2.4	0	1	True
7.2|7.2.5	0	1	True
7.2|7.2.6	0	1	True
7.3|7.3.1	0	1	True
7.3|7.3.2	0	1	True
7.3|7.3.3	0	1	True
7.4|7.4.1	0	1	True
7.4|7.4.2	0	1	True
7.4|7.4.3	0	1	True
7.4|7.4.4	0	1	True
7.5|7.5.1	0	1	True
7.5|7.5.2	0	1	True
7.5|7.5.3	0	1	True
7.5|7.5.4	0	1	True

Table A-17: Test Blueprint for RISE Summative – Grade 8 Science

Content Level ID	Min Items	Max Items	Strict Max
8.1	3	3	True
8.2	3	3	True
8.3	2	2	True
8.4	2	2	True
8.1|8.1.1	0	1	True
8.1|8.1.2	0	1	True
8.1|8.1.3	0	1	True
8.1|8.1.4	0	1	True
8.1|8.1.5	0	1	True
8.1|8.1.6	0	1	True
8.1|8.1.7	0	1	True
8.2|8.2.1	0	1	True
8.2|8.2.2	0	1	True
8.2|8.2.3	0	1	True
8.2|8.2.4	0	1	True
8.2|8.2.5	0	1	True
8.2|8.2.6	0	1	True
8.3|8.3.1	0	1	True
8.3|8.3.2	0	1	True
8.3|8.3.3	0	1	True
8.4|8.4.1	0	1	True
8.4|8.4.2	0	1	True
8.4|8.4.3	0	1	True
8.4|8.4.4	0	1	True
8.4|8.4.5	0	1	True

APPENDIX B

BLUEPRINT VIOLATIONS FOR RISE SPRING SUMMATIVE

APPENDIX B - BLUEPRINT VIOLATIONS FOR RISE TESTS

BLUEPRINT VIOLATIONS FOR READING, LANGUAGE, LISTENING

Test	Content Level	% of Cases Meeting BP	% of Cases Violating BP									
			<-5	-4	-3	-2	-1	1	2	3	4	>5
Grade 3 Reading, Language, Listening	L	100										
	RI	100										
	RL	100										
	SL	100										
	3ELADOK1	53						22	15	10		
	3ELADOK2	100										
	3ELADOK3	100										
	3Language_Info	100										
	3Language_Lit	100										
	3Paired_Info	100										
	3Paired_Lit	100										
Grade 4 Reading, Language, Listening	L	100										
	RI	100										
	RL	100										
	SL	100										
	4ELADOK1	40						36	18	6		
	4ELADOK2	90						4	5	<1		
	4ELADOK3	100										
	4Language_Info	100										
	4Language_Lit	99						<1				
	4Paired_Info	100										
	4Paired_Lit	100										
Grade 5 Reading,	L	100										
	RI	100										

Test	Content Level	% of Cases Meeting BP	% of Cases Violating BP									
			<-5	-4	-3	-2	-1	1	2	3	4	>5
Language, Listening	RL	100										
	SL	100										
	5ELADOK1	56						26	12	6		
	5ELADOK2	94						6				
	5ELADOK3	100										
	5Language_Info	100										
	5Language_Lit	97						3				
	5Paired_Info	100										
	5Paired_Lit	100										
Grade 6 Reading, Language, Listening	L	100										
	RI	100										
	RL	100										
	SL	100										
	6ELADOK1	91						7	2			
	6ELADOK2	100										
	6ELADOK3	100										
	6Language_Info	100										
	6Language_Lit	99						1				
	6Paired_Info	100										
	6Paired_Lit	100										
Grade 7 Reading, Language, Listening	L	100										
	RI	100										
	RL	100										
	SL	100										
	7ELADOK1	96						4				
	7ELADOK2	98						1	<1			
	7ELADOK3	100										
	7Language_Info	98							2			

Test	Content Level	% of Cases Meeting BP	% of Cases Violating BP									
			<-5	-4	-3	-2	-1	1	2	3	4	>5
	7Language_Lit	99						1				
	7Paired_Info	100										
	7Paired_Lit	100										
Grade 8 Reading, Language, Listening	L	100										
	RI	100										
	RL	100										
	SL	100										
	8ELADOK1	31						56	12	<1		
	8ELADOK2	99						<1				
	8ELADOK3	100										
	8Language_Info	100										
	8Language_Lit	100										
	8Paired_Info	100										
	8Paired_Lit	100										

Note. Zero (0) indicates violation < 1%, but N > 0.

BLUEPRINT VIOLATIONS FOR MATHEMATICS

Test	Content Level	% of Cases Meeting BP	% of Cases Violating BP									
			<-5	-4	-3	-2	-1	1	2	3	4	>5
Grade 3 Mathematics	MD_G	100										
	NBT	100										
	NF	100										
	OA	100										
	3DOK1	100										
	3DOK2	100										
	3DOK3	100										
Grade 4 Mathematics	MD_G	100										
	NBT	100										
	NF	100										
	OA	100										
	4DOK1	100										
	4DOK2	100										
	4DOK3	100										
Grade 5 Mathematics	MD_G	100										
	NBT	100										
	NF	100										
	OA	100										
	5DOK1	100										
	5DOK2	100										
	5DOK3	100										
Grade 6 Mathematics	EE	100										
	NS	100										
	RP	100										
	G_SP	100										

Test	Content Level	% of Cases Meeting BP	% of Cases Violating BP									
			<-5	-4	-3	-2	-1	1	2	3	4	>5
	6S1DOK1	100										
	6S1DOK2	100										
	6S1DOK3	100										
	6S2DOK1	100										
	6S2DOK2	100										
	6S2DOK3	100										
Grade 7 Mathematics	EE	100										
	G	100										
	NS	100										
	RP	100										
	SP	100										
	7DOK1	100										
	7DOK2	100										
	7DOK3	100										
Grade 8 Mathematics	EE	100										
	F	100										
	NS_G	100										
	SP	100										
	8DOK1	100										
	8DOK2	100										
	8DOK3	100										
Secondary Mathematics I	A	100										
	NQ_F_S	100										
	G	100										
	SP	100										
	SM1DOK1	100										
	SM1DOK2	100										

Test	Content Level	% of Cases Meeting BP	% of Cases Violating BP									
			<-5	-4	-3	-2	-1	1	2	3	4	>5
	SM1DOK3	100										

BLUEPRINT VIOLATIONS FOR SCIENCE

Test	Content Level	% of Cases Meeting BP	% of Cases Violating BP									
			<-5	-4	-3	-2	-1	1	2	3	4	>5
Grade 4 Science	4.1	100										
	4.2	100										
	4.3	100										
	4.4	100										
	4.1|4.1.1	100										
	4.1|4.1.2	100										
	4.1|4.1.3	100										
	4.1|4.1.4	100										
	4.2|4.2.1	100										
	4.2|4.2.2	100										
	4.2|4.2.3	100										
	4.2|4.2.4	100										
	4.3|4.3.1	100										
	4.3|4.3.2	100										
	4.3|4.3.3	100										
	4.4|4.4.1	100										
	4.4|4.4.2	100										
Grade 5 Science	5.1	100										
	5.2	100										
	5.3	100										
	5.1|5.1.1	100										
	5.1|5.1.2	100										
	5.1|5.1.3	100										
	5.1|5.1.4	100										
	5.1|5.1.5	100										
	5.2|5.2.1	100										

Test	Content Level	% of Cases Meeting BP	% of Cases Violating BP									
			<-5	-4	-3	-2	-1	1	2	3	4	>5
	5.2|5.2.2	100										
	5.2|5.2.3	100										
	5.2|5.2.4	100										
	5.3|5.3.1	100										
	5.3|5.3.2	100										
	5.3|5.3.3	100										
	5.3|5.3.4	100										
Grade 6 Science	6.1	100										
	6.2	100										
	6.3	100										
	6.4	100										
	6.1|6.1.1	100										
	6.1|6.1.2	100										
	6.1|6.1.3	100										
	6.2|6.2.1	100										
	6.2|6.2.2	100										
	6.2|6.2.3	100										
	6.2|6.2.4	100										
	6.3|6.3.1	100										
	6.3|6.3.2	100										
	6.3|6.3.3	100										
	6.3|6.3.4	100										
	6.4|6.4.1	100										
	6.4|6.4.2	100										
	6.4|6.4.3	100										
	6.4|6.4.4	100										
	6.4|6.4.5	100										
Grade 7 Science	7.1	100										

Test	Content Level	% of Cases Meeting BP	% of Cases Violating BP									
			<-5	-4	-3	-2	-1	1	2	3	4	>5
	7.2	100										
	7.3	100										
	7.4	100										
	7.5	100										
	7.1|7.1.1	100										
	7.1|7.1.2	100										
	7.1|7.1.3	100										
	7.1|7.1.4	100										
	7.1|7.1.5	100										
	7.2|7.2.1	100										
	7.2|7.2.2	100										
	7.2|7.2.3	100										
	7.2|7.2.4	100										
	7.2|7.2.5	100										
	7.2|7.2.6	100										
	7.3|7.3.1	100										
	7.3|7.3.2	100										
	7.3|7.3.3	100										
	7.4|7.4.1	100										
	7.4|7.4.2	100										
	7.4|7.4.3	100										
	7.4|7.4.4	100										
	7.5|7.5.1	100										
	7.5|7.5.2	100										
	7.5|7.5.3	100										
	7.5|7.5.4	100										
Grade 8 Science	8.1	100										
	8.2	100										

Test	Content Level	% of Cases Meeting BP	% of Cases Violating BP									
			<-5	-4	-3	-2	-1	1	2	3	4	>5
	8.3	100										
	8.4	100										
	8.1|8.1.1	100										
	8.1|8.1.2	100										
	8.1|8.1.3	100										
	8.1|8.1.4	100										
	8.1|8.1.5	100										
	8.1|8.1.6	100										
	8.1|8.1.7	100										
	8.2|8.2.1	100										
	8.2|8.2.2	100										
	8.2|8.2.3	100										
	8.2|8.2.4	100										
	8.2|8.2.5	100										
	8.2|8.2.6	100										
	8.3|8.3.1	100										
	8.3|8.3.2	100										
	8.3|8.3.3	100										
	8.4|8.4.1	100										
	8.4|8.4.2	100										
	8.4|8.4.3	100										
	8.4|8.4.4	100										
	8.4|8.4.5	100										

Note. Zero (0) indicates violation < 1%, but N > 0.

APPENDIX C

SUMMARY OF NUMBER OF NON-MC ITEMS ADMINISTERED

APPENDIX C - SUMMARY OF NUMBER OF NON-MC ITEMS ADMINISTERED

SUMMARY OF NUMBER OF NON-MC ITEMS ADMINISTERED - READING, LANGUAGE, LISTENING

Grade	# of Non-MC Items Seen	% of Students
Grade 3 Reading, Language, Listening	16	0.1%
	17	0.9%
	18	1.6%
	19	4%
	20	7.4%
	21	7.3%
	22	5.1%
	23	7.1%
	24	9.9%
	25	10%
	26	15.4%
	27	11.4%
	28	7.8%
	29	4%
	30	3.4%
	31	3.1%
	32	0.8%
	33	0.2%
	34	0.1%
	37	0.1%
	38	0.3%
Grade 4 Reading, Language, Listening	20	0.4%
	21	0.2%
	22	1%
	23	1.2%
	24	4.4%
	25	8%
	26	12.1%
	27	8.6%
	28	14.8%

Grade	# of Non-MC Items Seen	% of Students
	29	13.8%
	30	11.6%
	31	5.5%
	32	7.9%
	33	6.3%
	34	2.2%
	35	1.4%
	36	0.5%
	37	0.1%
Grade 5 Reading, Language, Listening	19	0.2%
	20	0.2%
	21	1.1%
	22	3.5%
	23	4.6%
	24	4.1%
	25	7.7%
	26	5.6%
	27	4.9%
	28	8.7%
	29	7.5%
	30	6.9%
	31	12.9%
	32	7.9%
	33	3.8%
	34	7.2%
	35	6.4%
	36	3.3%
	37	2.5%
	38	0.2%
	40	0.5%
	42	0.1%
	43	0.2%
Grade 6 Reading, Language, Listening	21	0.2%
	22	0.3%
	23	0.4%
	24	1.3%

Grade	# of Non-MC Items Seen	% of Students
	25	1.1%
	26	2.4%
	27	5.1%
	28	9.1%
	29	12.7%
	30	11.4%
	31	7.6%
	32	3.1%
	33	5.4%
	34	6.1%
	35	3.8%
	36	5.5%
	37	2.3%
	38	6.8%
	39	2.6%
	40	2.9%
	41	1.7%
	42	4.9%
	43	1.2%
	44	0.7%
	45	1.2%
	46	0.1%
	47	0.1%
Grade 7 Reading, Language, Listening	22	0.1%
	23	1.1%
	24	1.1%
	25	2.4%
	26	2.8%
	27	3.1%
	28	4.1%
	29	5.4%
	30	3.1%
	31	6.7%
	32	13.1%
	33	9.1%
	34	9.4%

Grade	# of Non-MC Items Seen	% of Students
	35	9.3%
	36	6.7%
	37	7.2%
	38	1.7%
	39	5.5%
	40	2.9%
	41	1.8%
	42	2%
	43	0.5%
	44	0.3%
	45	0.2%
	46	0.4%
Grade 8 Reading, Language, Listening	26	0.1%
	27	0.4%
	28	0.3%
	29	0.7%
	30	0.7%
	31	2.6%
	32	1%
	33	3.9%
	34	7%
	35	3.9%
	36	8.4%
	37	10.4%
	38	10.8%
	39	9.1%
	40	11.9%
	41	7.6%
	42	6.9%
	43	6%
	44	3.1%
	45	3%
	46	2%
	47	0.2%

SUMMARY OF NUMBER OF NON-MC ITEMS ADMINISTERED – MATHEMATICS

Grade	# of Non-MC Items Seen	% of Students
Grade 3 Math	30	0.1%
	31	0.1%
	32	0.7%
	33	1.4%
	34	2.9%
	35	4.5%
	36	5.6%
	37	7.5%
	38	9.3%
	39	8.5%
	40	9.4%
	41	10.2%
	42	9.6%
	43	8.9%
	44	8%
	45	5.9%
	46	3.9%
	47	2.1%
	48	1.1%
	49	0.4%
	50	0%
	51	0%
Grade 4 Math	30	0%
	31	0.3%
	32	0.7%
	33	0.9%
	34	2.3%
	35	3.4%
	36	3.5%
	37	5.4%
	38	6%
	39	7.2%
	40	7.6%

Grade	# of Non-MC Items Seen	% of Students
	41	8.3%
	42	9.6%
	43	10.3%
	44	9.1%
	45	8.6%
	46	6.5%
	47	5.1%
	48	2.9%
	49	1.5%
	50	0.6%
	51	0.3%
Grade 5 Math	29	0%
	30	0.2%
	31	0.2%
	32	1.1%
	33	1.3%
	34	2.3%
	35	3.2%
	36	4.9%
	37	5.6%
	38	7%
	39	7.6%
	40	7.1%
	41	8.2%
	42	7.8%
	43	7.5%
	44	8.3%
	45	7.5%
	46	6.2%
	47	5.4%
	48	3.6%
	49	2.4%
	50	1.2%
	51	0.7%
	52	0.4%
	53	0.1%

Grade	# of Non-MC Items Seen	% of Students
	54	0.1%
	55	0%
Grade 6 Math	26	0.1%
	27	0.2%
	28	0.3%
	29	0.6%
	30	0.7%
	31	1.5%
	32	2.5%
	33	3.4%
	34	4.1%
	35	5.4%
	36	5.8%
	37	6.1%
	38	6.8%
	39	5.8%
	40	6%
	41	5%
	42	6.5%
	43	6.1%
	44	6%
	45	5.8%
	46	5.6%
	47	5.8%
	48	4.2%
	49	2.9%
	50	1.6%
	51	0.7%
	52	0.4%
	53	0.1%
	54	0.1%
	55	0%
Grade 7 Math	31	0.1%
	32	0.3%
	33	0.4%
	34	1%

Grade	# of Non-MC Items Seen	% of Students
	35	1.4%
	36	2.6%
	37	3.7%
	38	5.8%
	39	7.5%
	40	8%
	41	10.4%
	42	8.7%
	43	8.8%
	44	9.3%
	45	7.6%
	46	7.2%
	47	6.2%
	48	4.3%
	49	3.3%
	50	2.1%
	51	0.8%
	52	0.4%
	53	0.1%
	54	0.1%
	55	0%
	56	0%
Grade 8 Math	31	0%
	32	0.1%
	33	0.2%
	34	0.5%
	35	0.8%
	36	2.1%
	37	3.9%
	38	4.7%
	39	6.3%
	40	7.6%
	41	9.1%
	42	7.8%
	43	7.9%
	44	9.1%

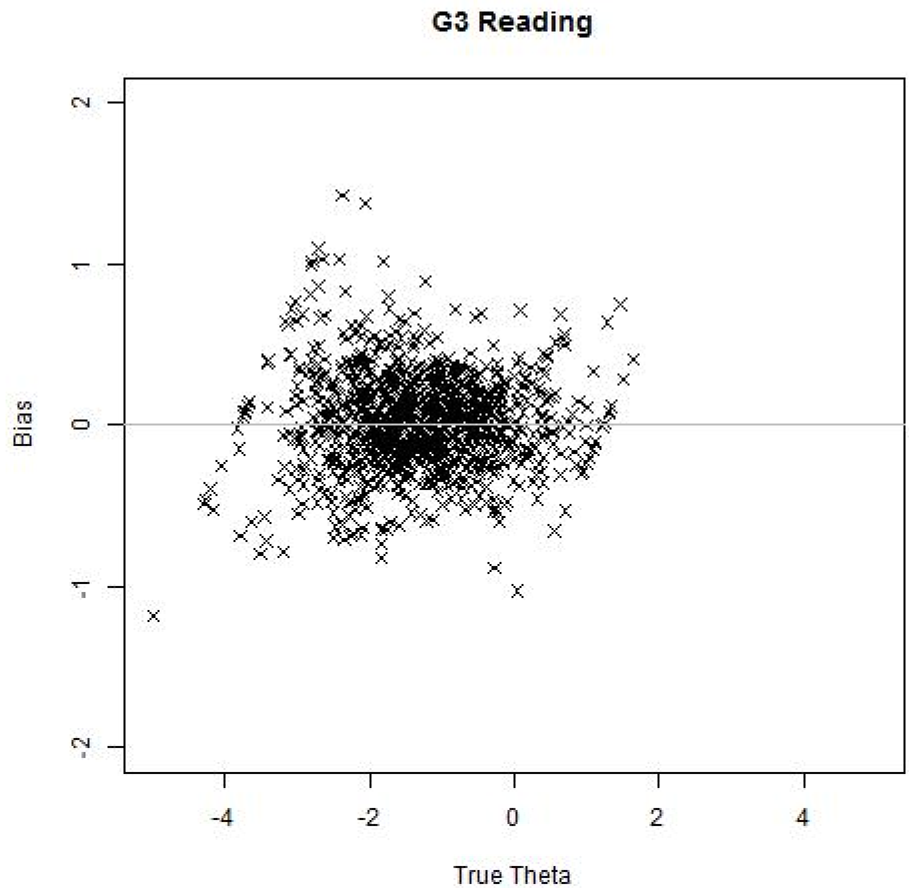
Grade	# of Non-MC Items Seen	% of Students
	45	7.9%
	46	8%
	47	8.1%
	48	5.8%
	49	4.7%
	50	3.1%
	51	1.2%
	52	0.5%
	53	0.4%
	54	0.1%
	55	0%
SMI	14	0.1%
	16	0.1%
	17	0.5%
	18	1.3%
	19	2.9%
	20	4.9%
	21	7.5%
	22	10.6%
	23	12.4%
	24	13.2%
	25	12.5%
	26	11.3%
	27	8.5%
	28	5.9%
	29	3.9%
	30	2.6%
	31	1.2%
	32	0.3%
	33	0.2%
	34	0.1%
	36	0%

APPENDIX D

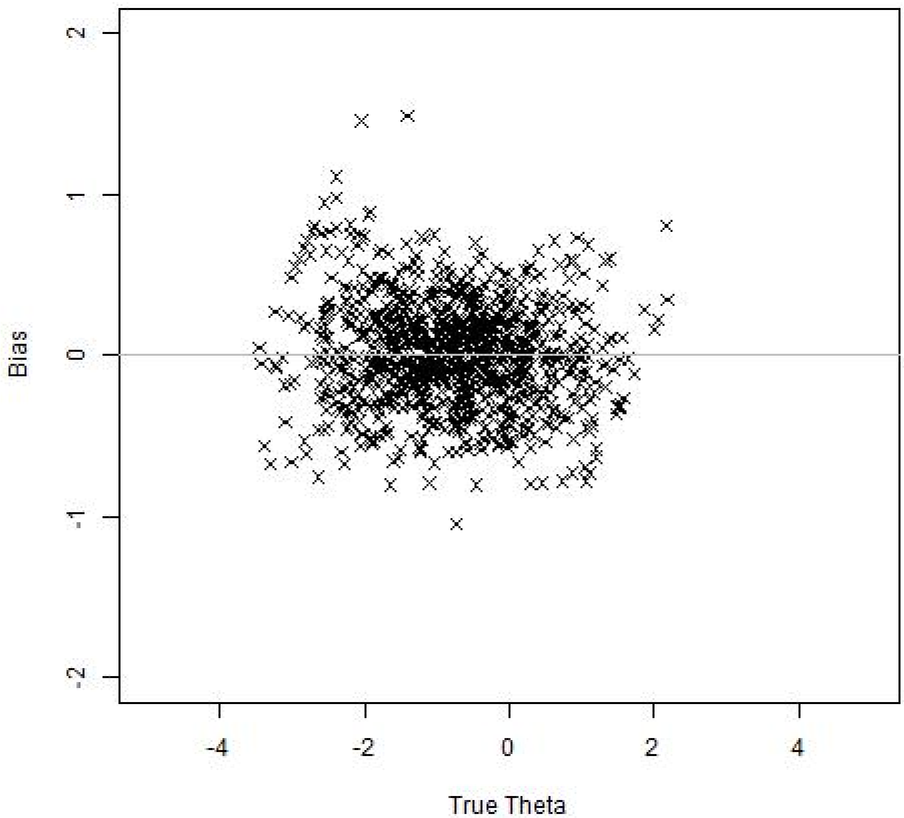
BIAS OF ESTIMATED ABILITIES

APPENDIX D – BIAS OF ESTIMATED ABILITIES

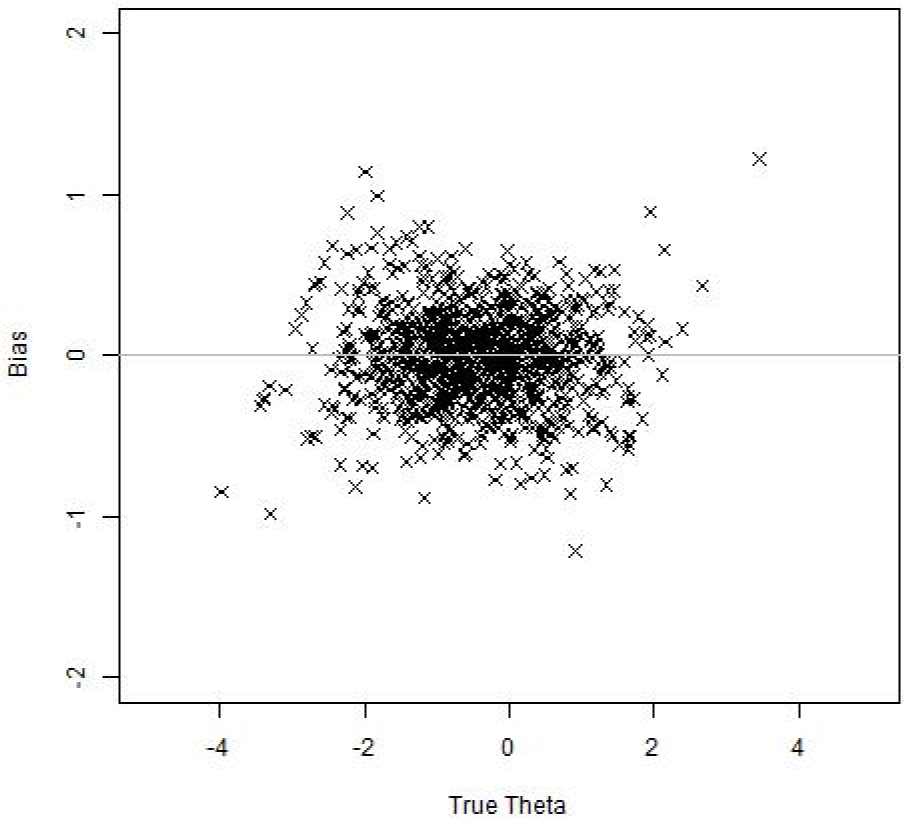
BIAS OF ESTIMATED ABILITIES - READING, LANGUAGE, LISTENING

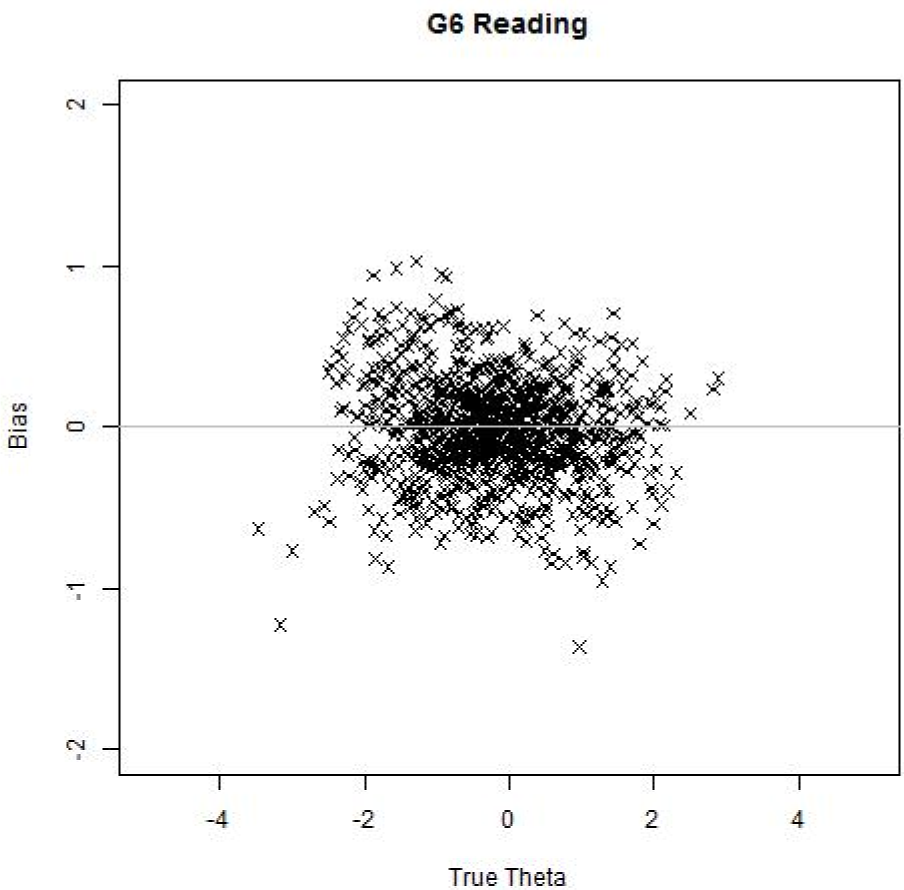


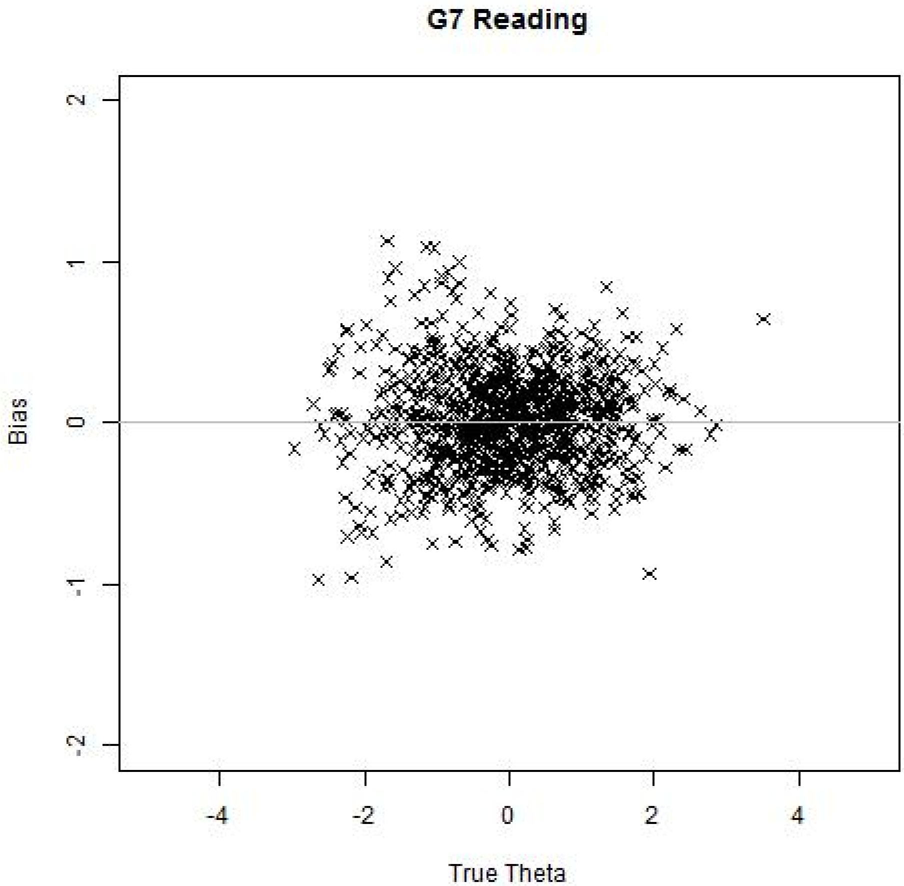
G4 Reading



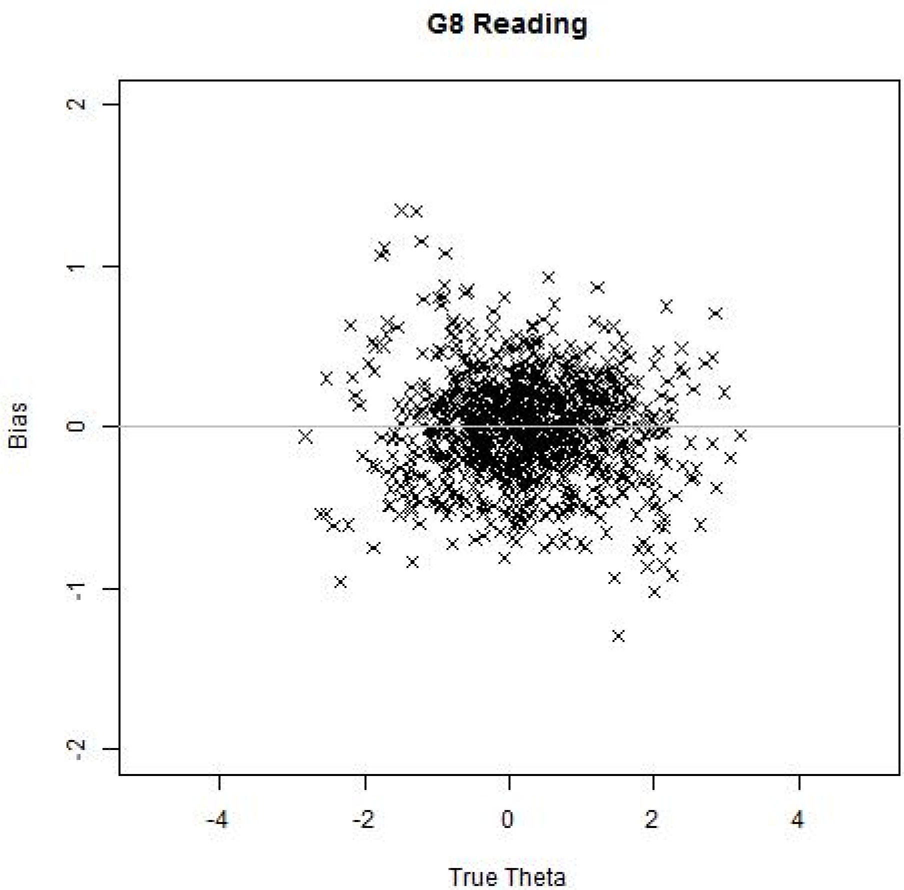
G5 Reading



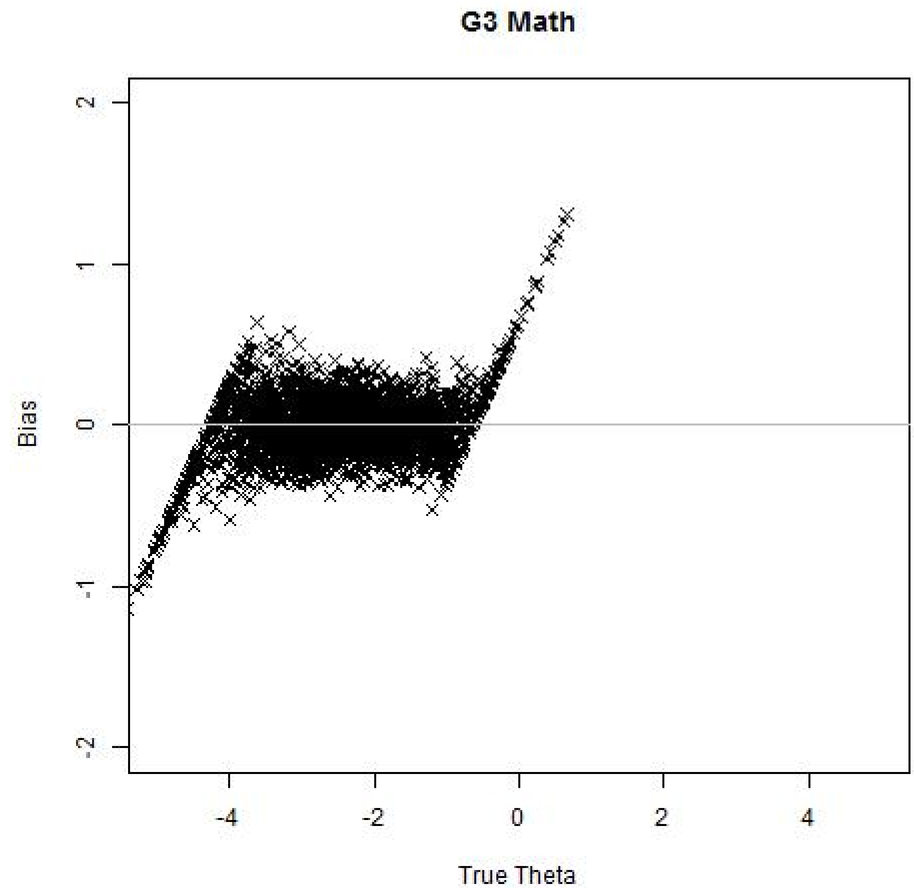

G6 Reading
Bias
2
1
0
-1
-2
-4
-2
0
2
4
True Theta

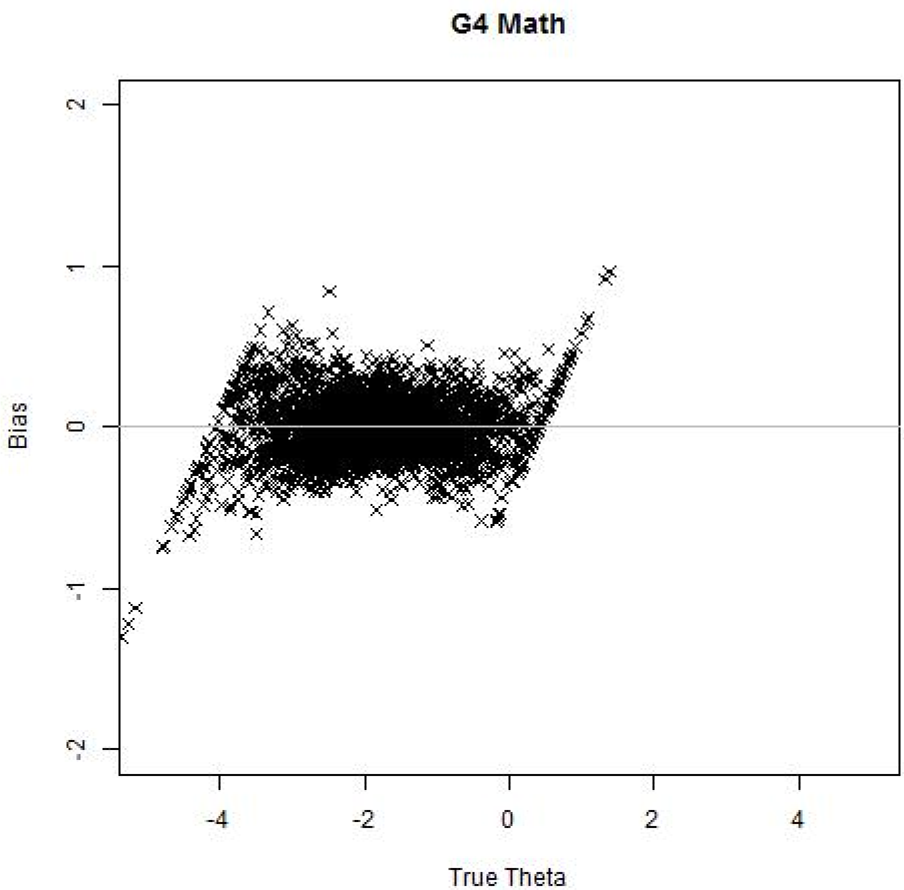


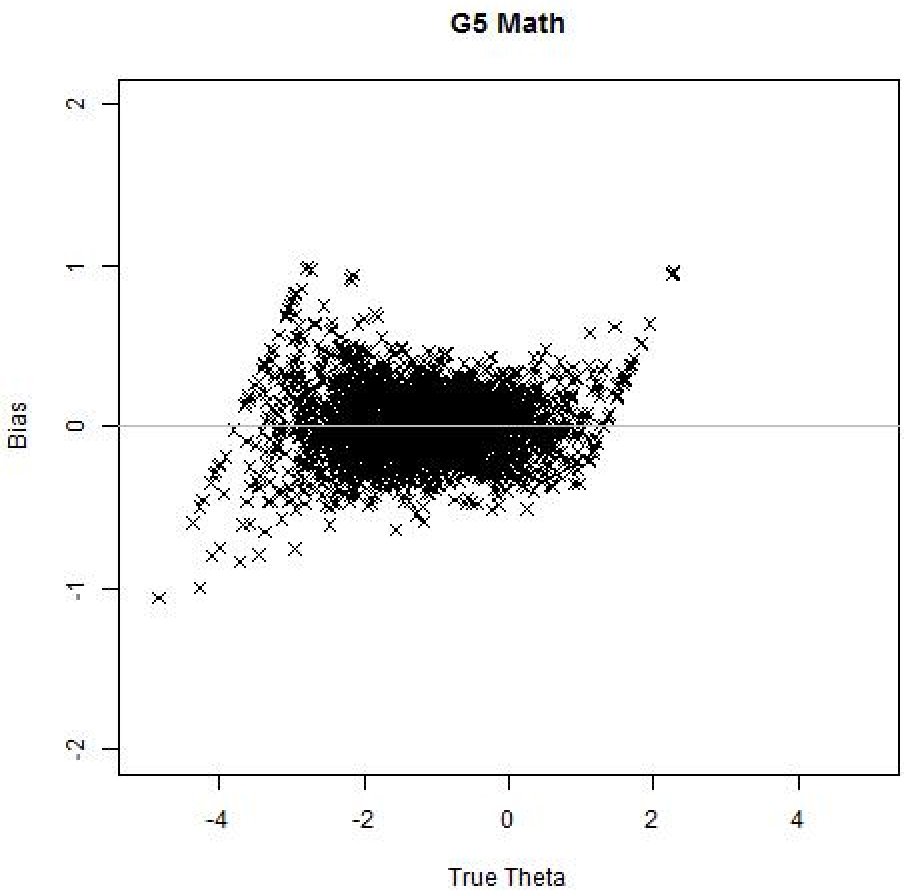
G7 Reading
Bias
True Theta
2
1
0
-1
-2
-4
-2
0
2
4

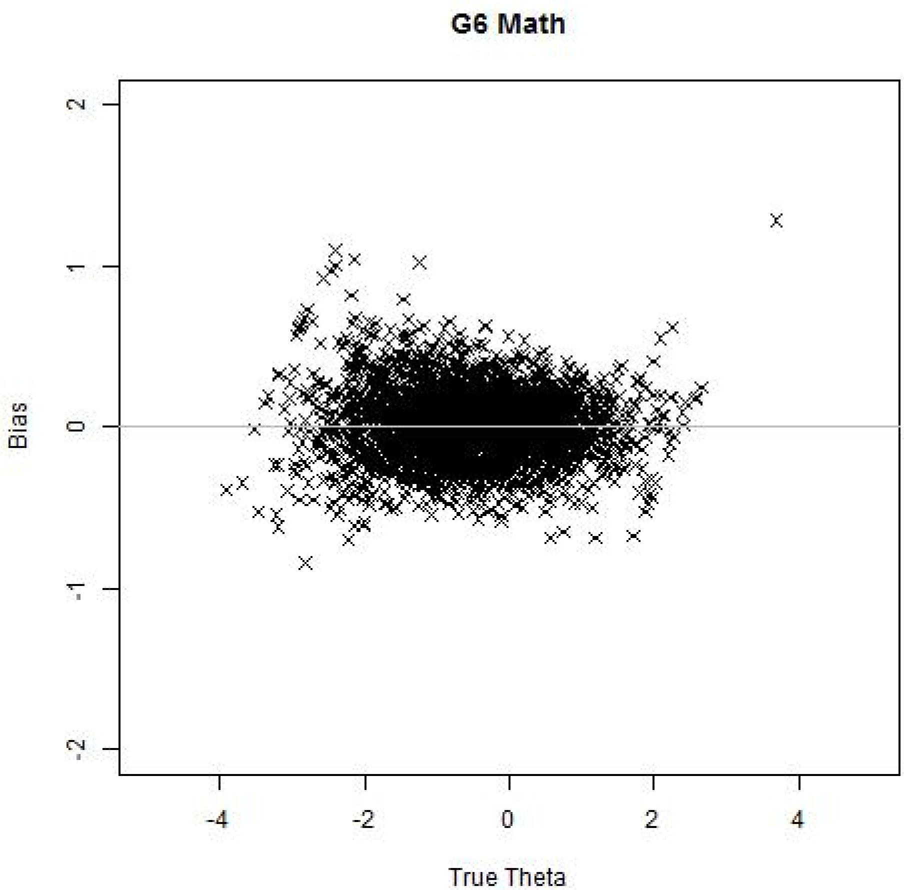

G8 Reading
Bias
True Theta
2
1
0
-1
-2
-4
-2
0
2
4

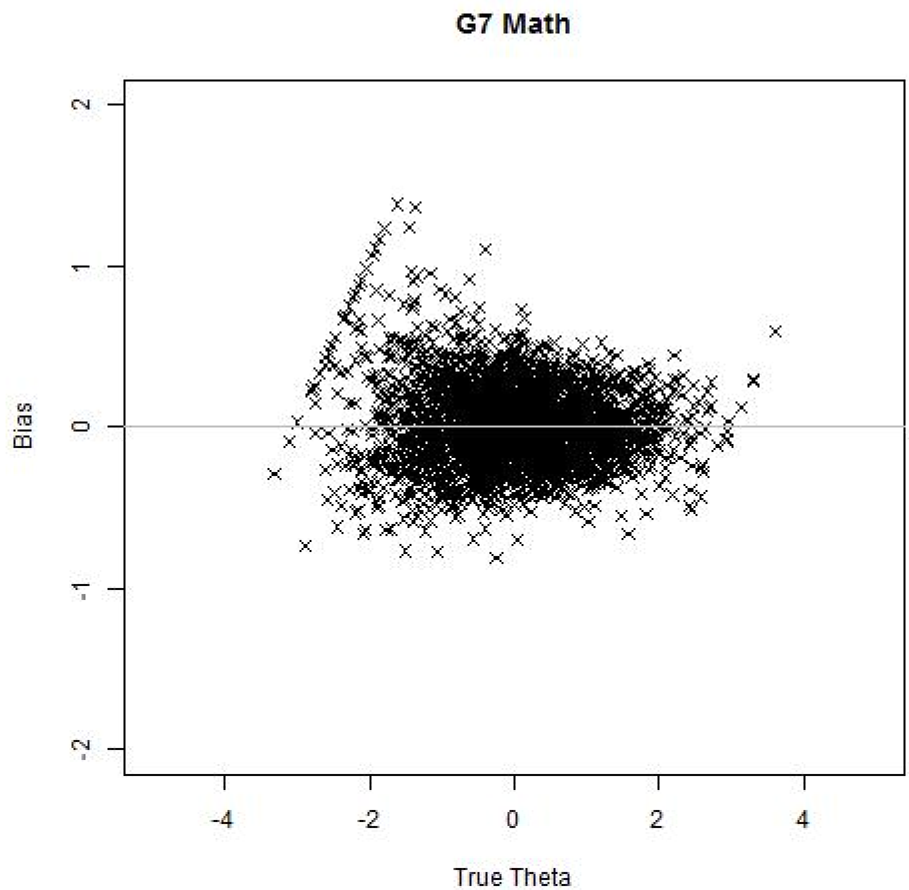
BIAS OF ESTIMATED ABILITIES - MATHEMATICS

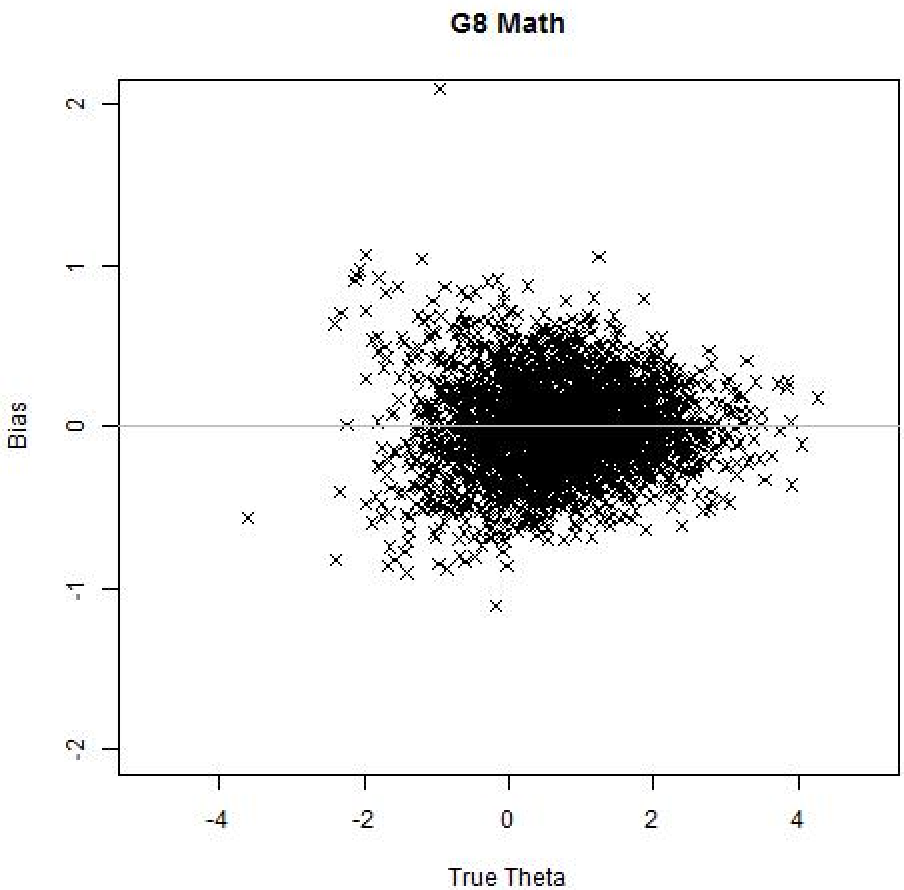


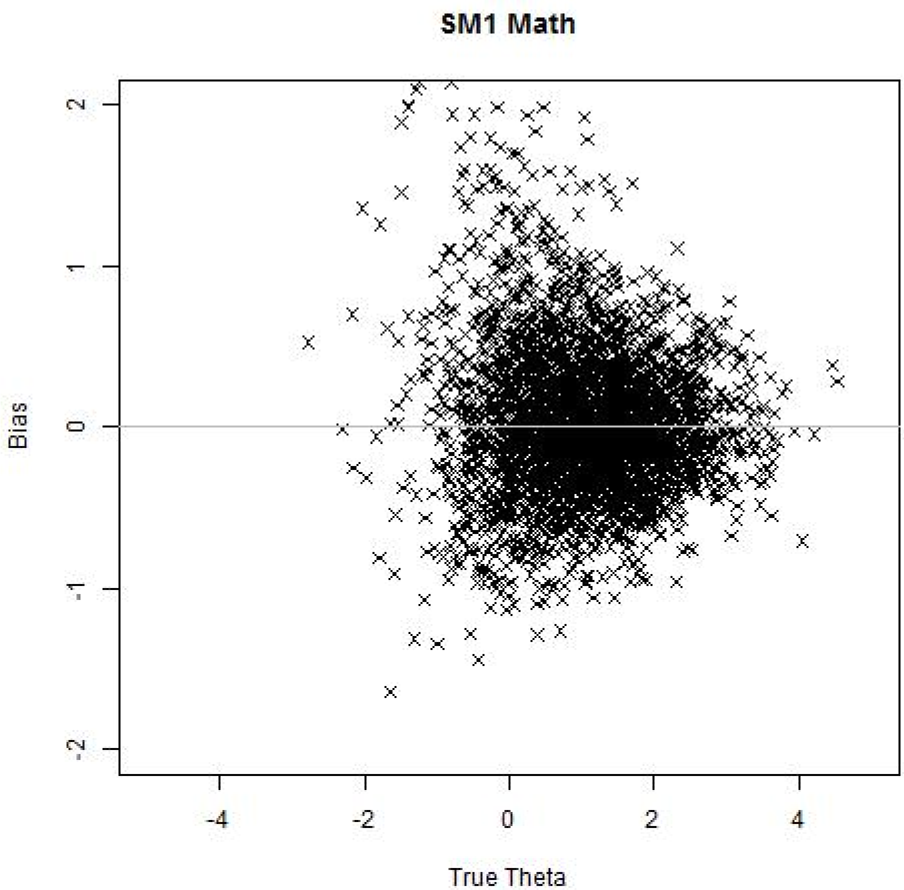

G4 Math
Bias
True Theta
2
1
0
-1
-2
-4
-2
0
2
4


G5 Math
Bias
True Theta
2
1
0
-1
-2
-4
-2
0
2
4

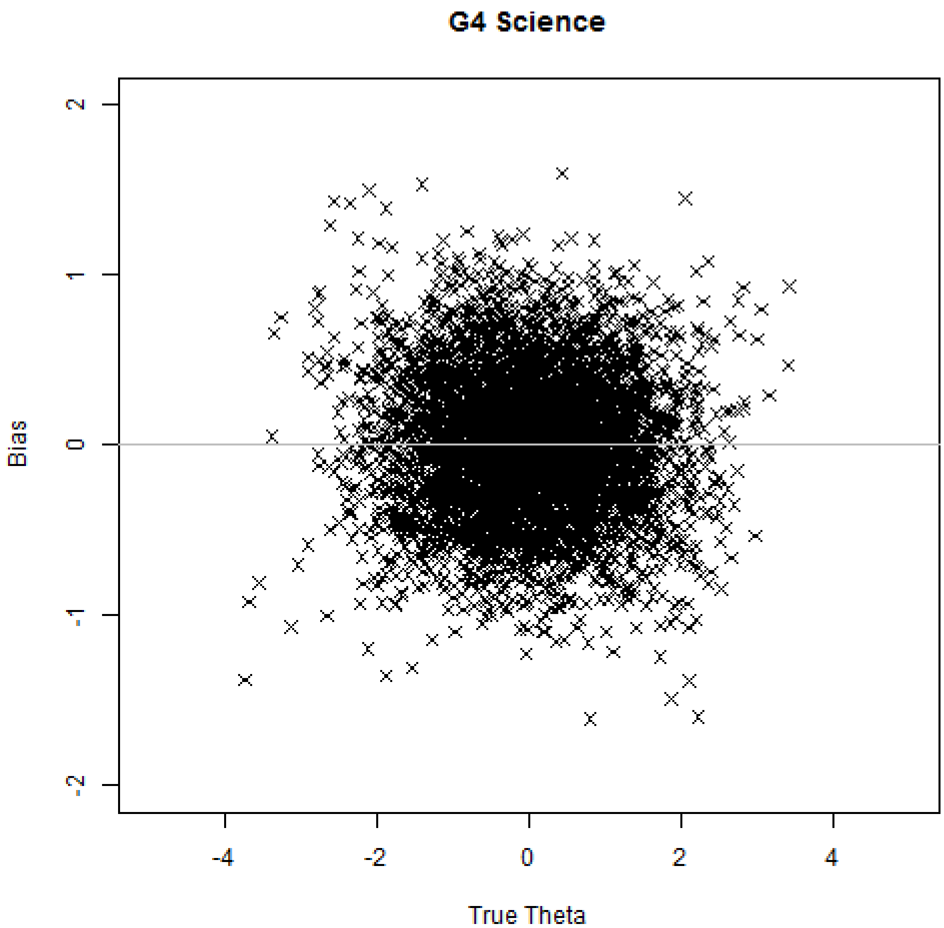

G6 Math
Bias
True Theta
2
1
0
-1
-2
-4
-2
0
2
4

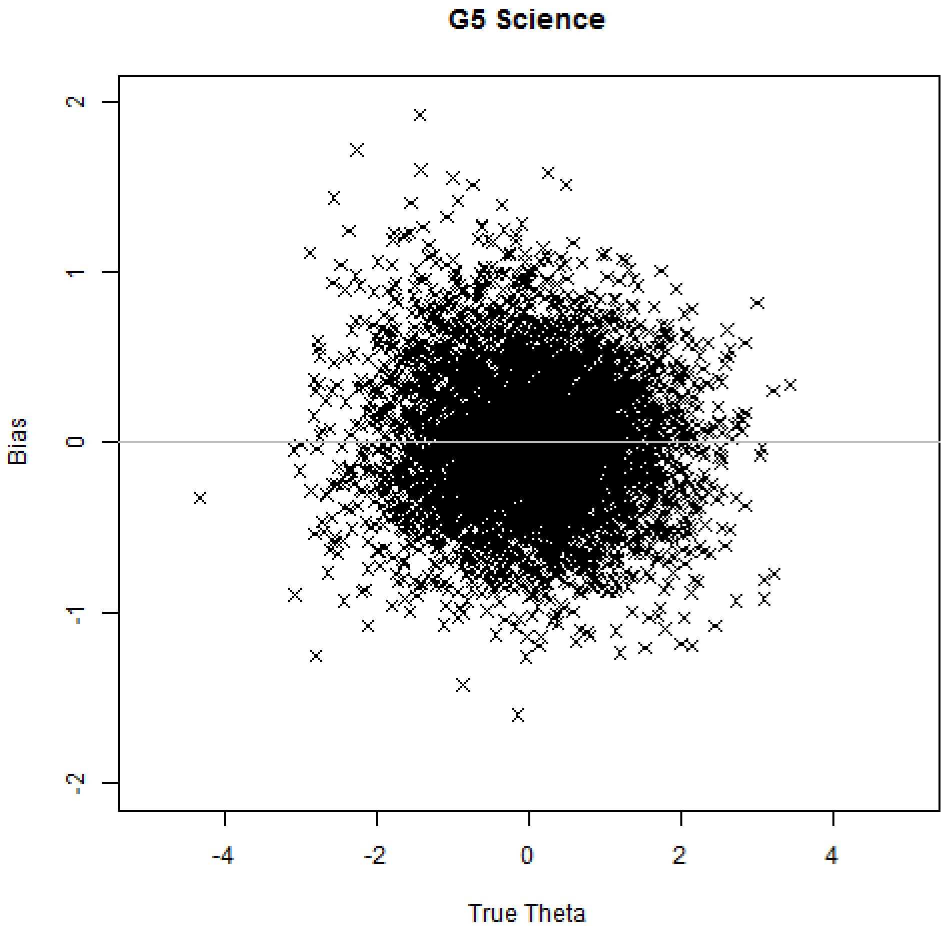

G7 Math
Bias
True Theta
2
1
0
-1
-2
-4
-2
0
2
4

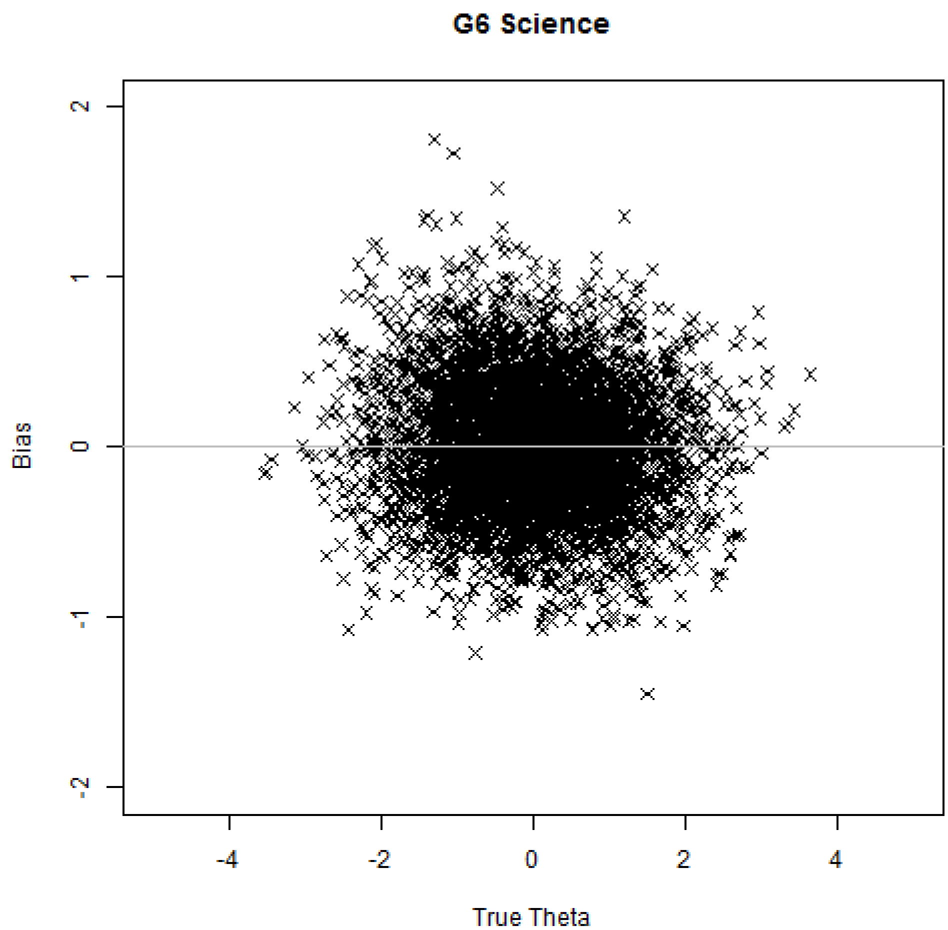

G8 Math
Bias
True Theta
2
1
0
-1
-2
-4
-2
0
2
4

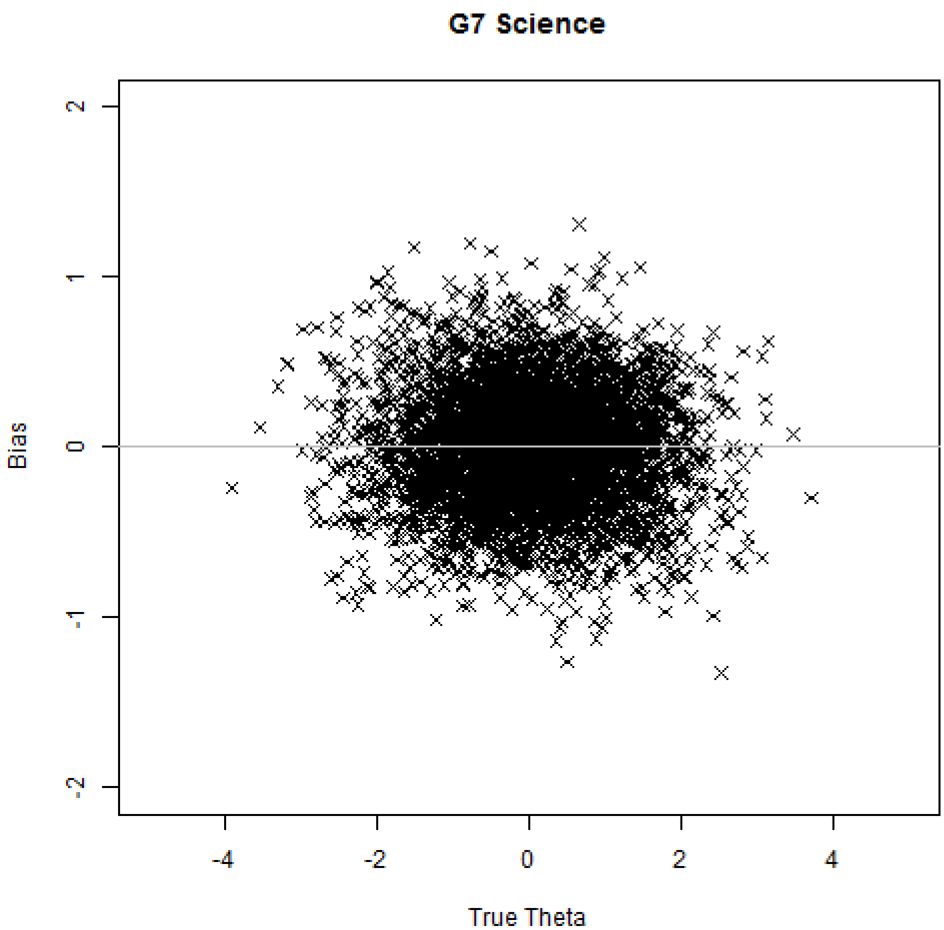

SM1 Math
Bias
True Theta
2
1
0
-1
-2
-4
-2
0
2
4

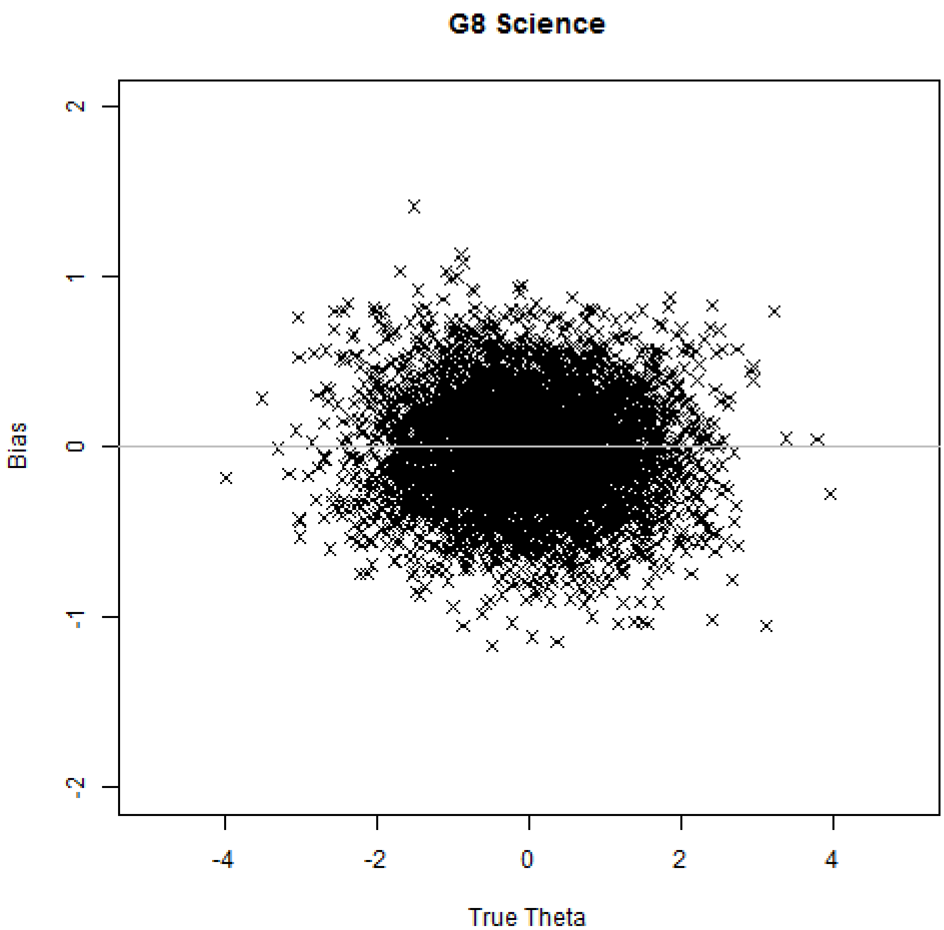
BIAS OF ESTIMATED ABILITY - SCIENCE




G5 Science
2
1
0
-1
-2
Bias
-4
-2
0
2
4
True Theta


G6 Science
Bias
True Theta
2
1
0
-1
-2
-4
-2
0
2
4


G7 Science
Bias
True Theta
2
1
0
-1
-2
-4
-2
0
2
4

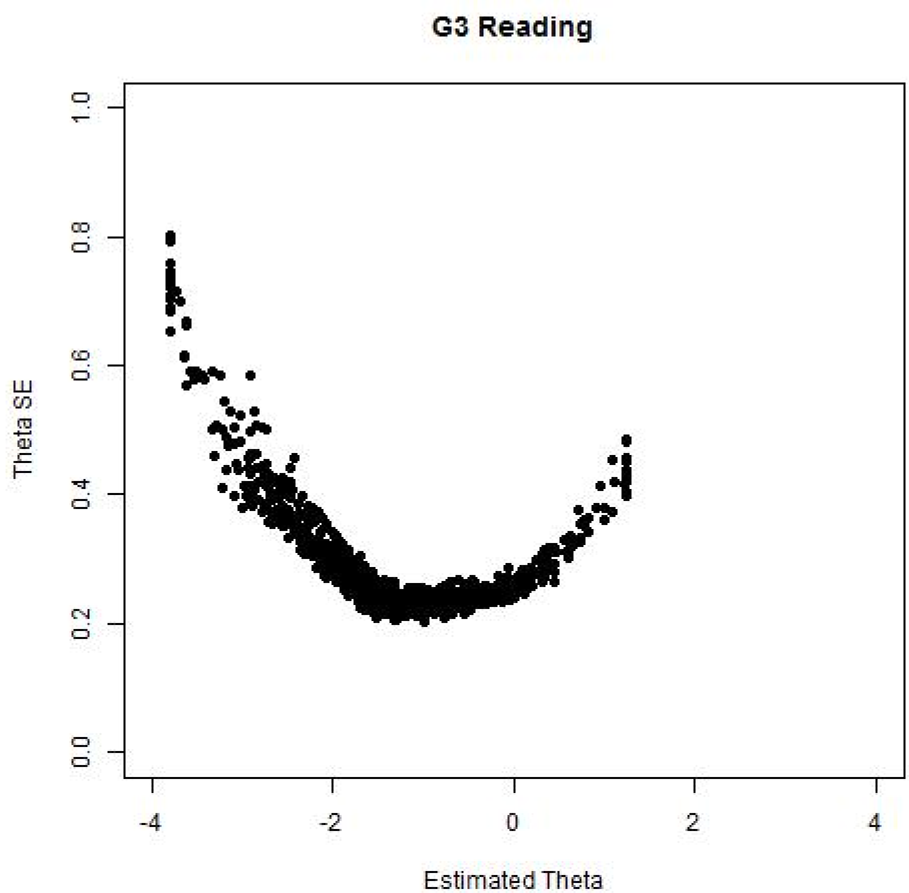

G8 Science
Bias
True Theta
2
1
0
-1
-2
-4
-2
0
2
4

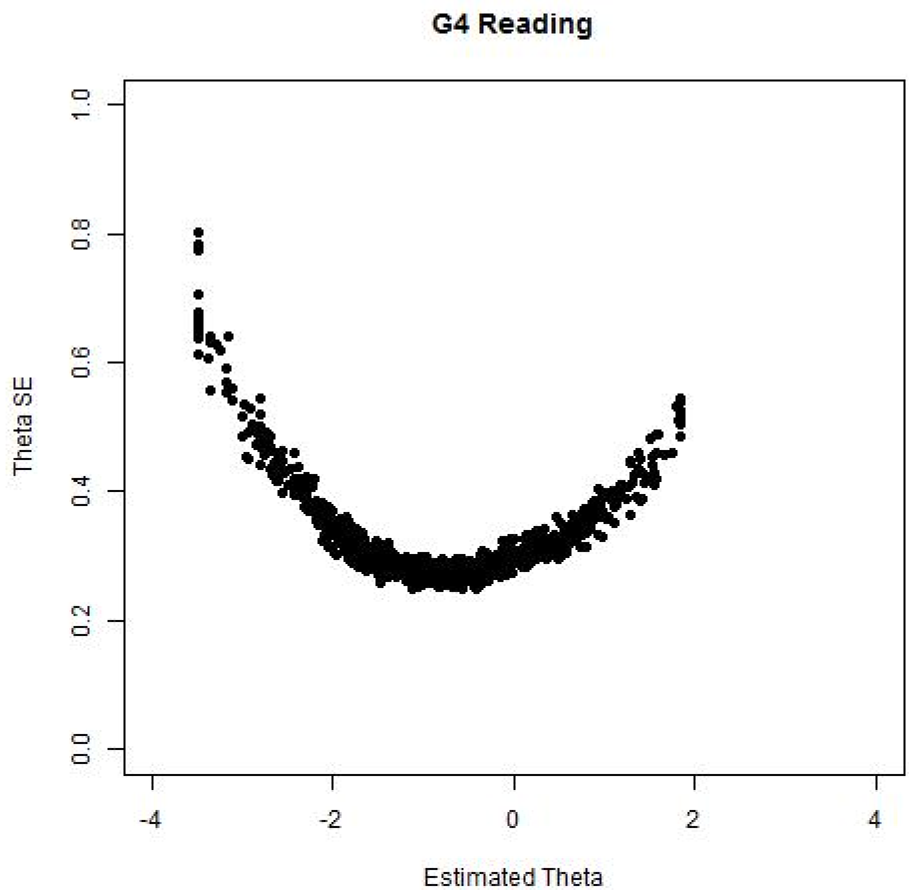
APPENDIX E

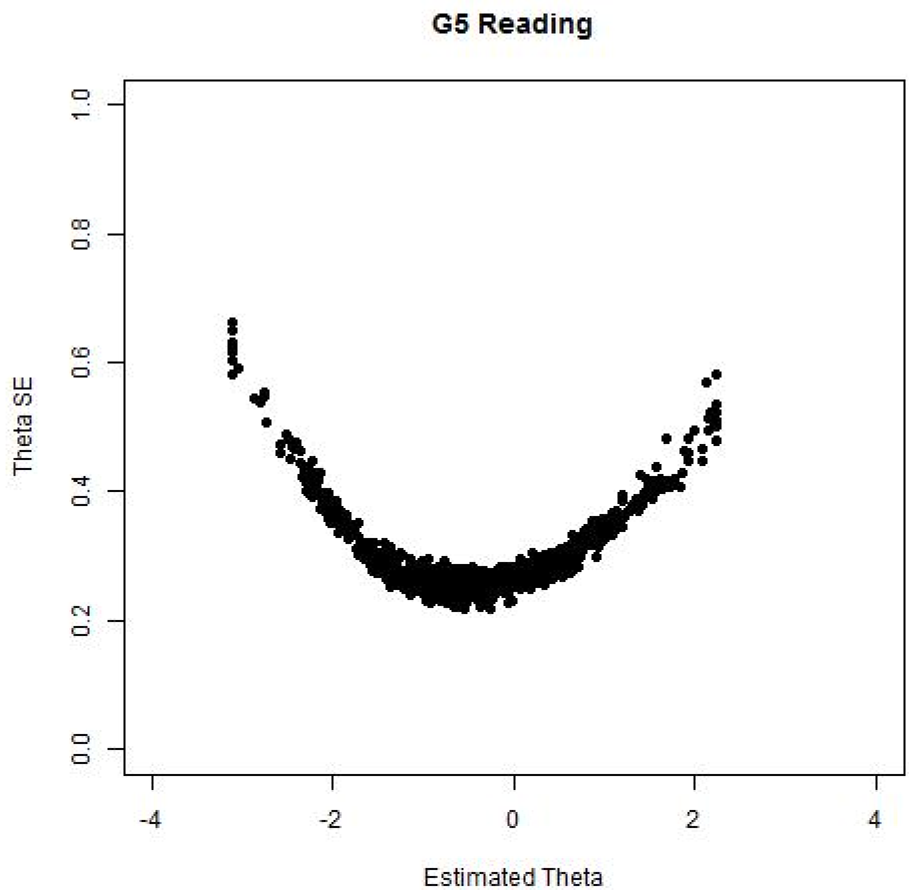
SUMMARY OF STANDARD ERROR ACROSS ESTIMATED THETA RANGE

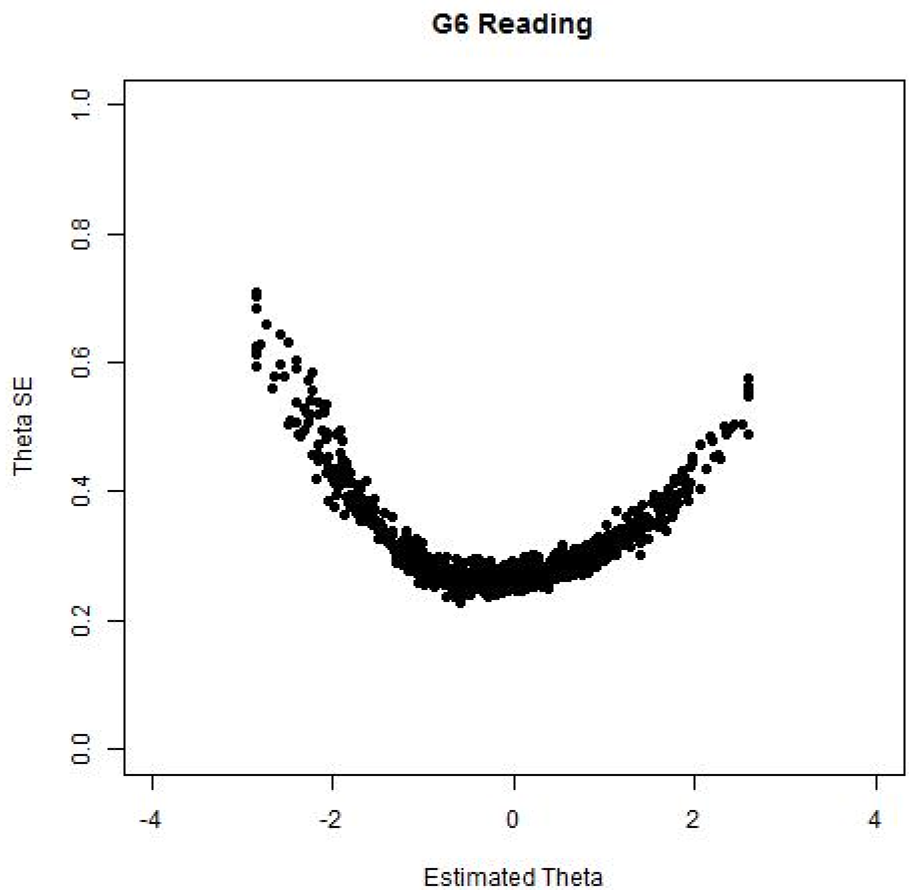
APPENDIX E - SUMMARY OF STANDARD ERROR ACROSS ESTIMATED THETA RANGE

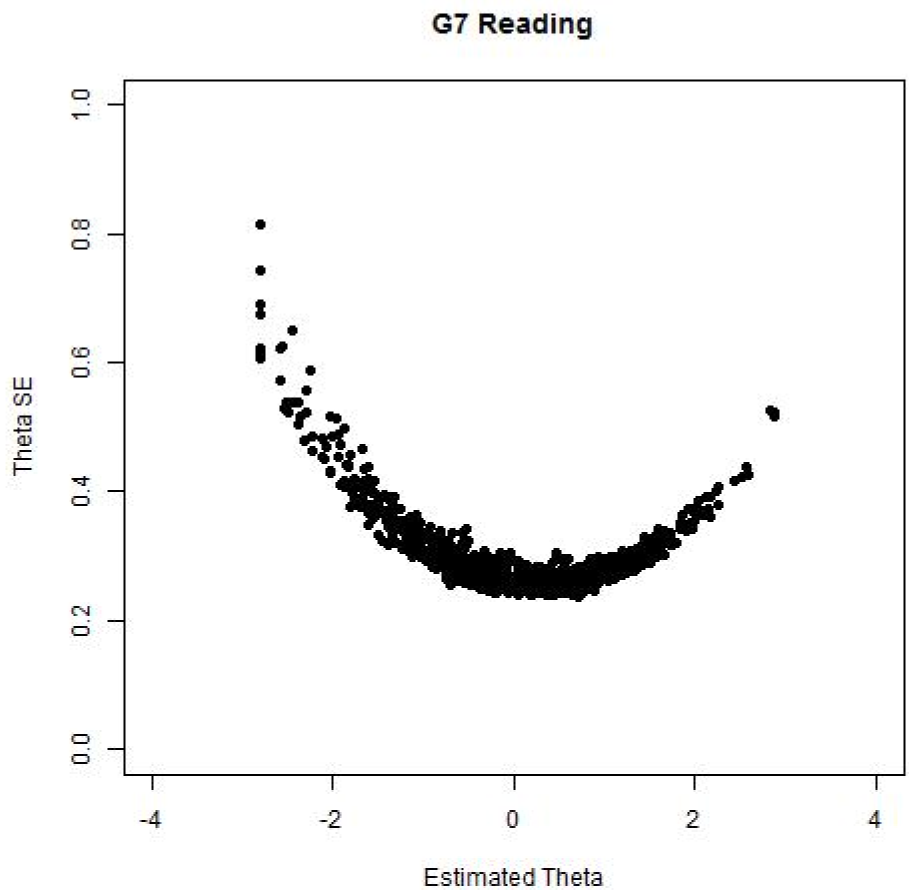
SUMMARY OF STANDARD ERROR ACROSS ESTIMATED THETA RANGE - READING, LANGUAGE, LISTENING

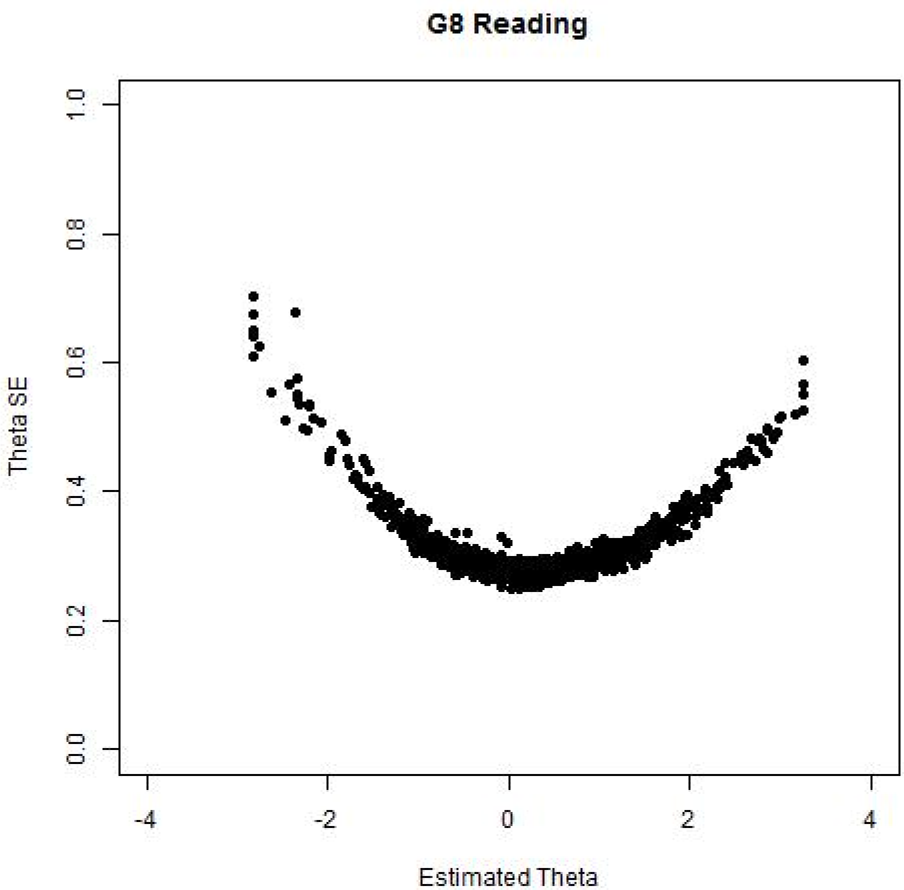



G4 Reading
Theta SE
0.0
0.2
0.4
0.6
0.8
1.0
-4
-2
0
2
4
Estimated Theta

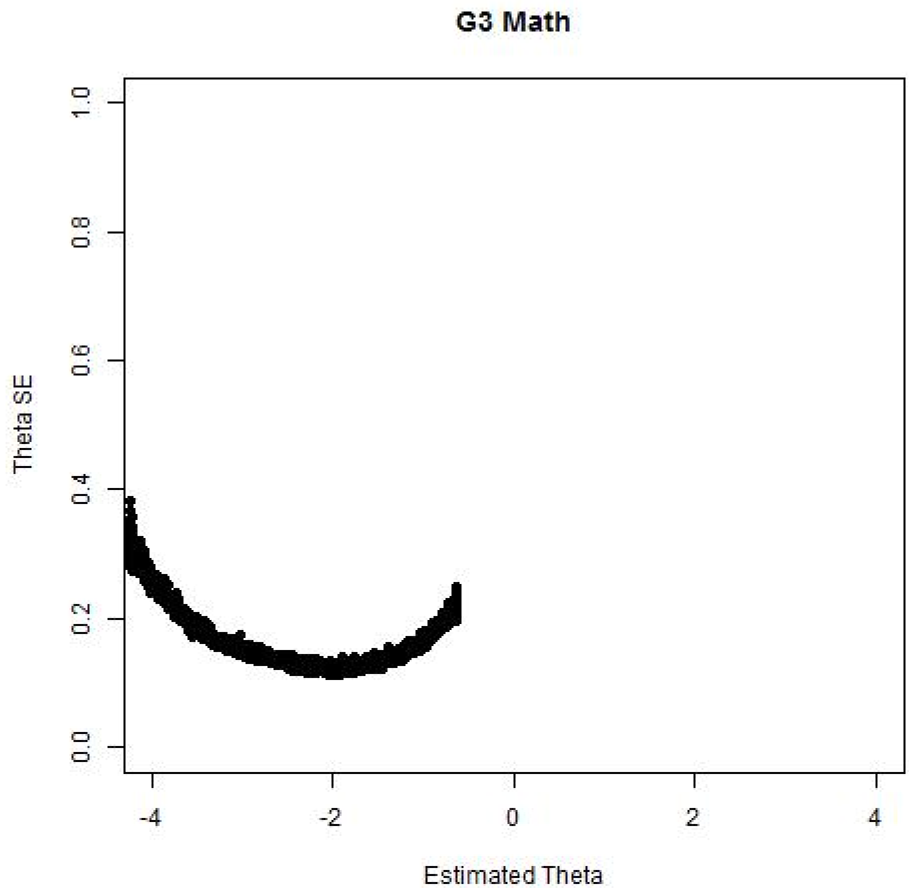

G5 Reading
Theta SE
Estimated Theta
0.0
0.2
0.4
0.6
0.8
1.0
-4
-2
0
2
4

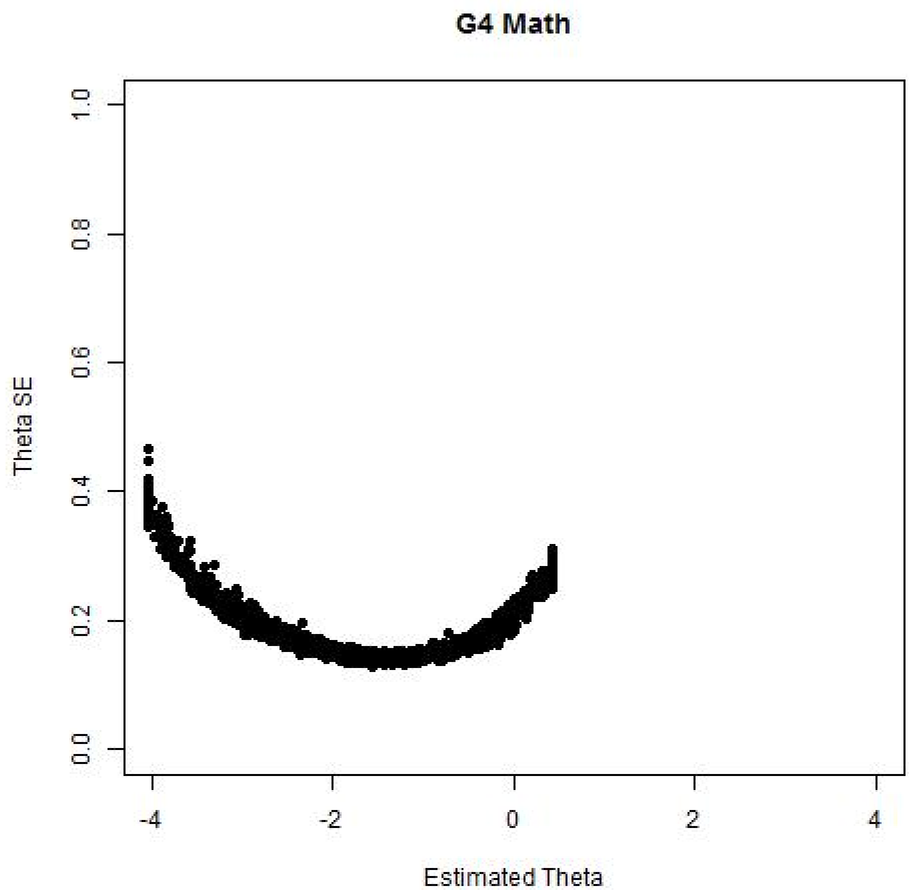

G6 Reading
Theta SE
1.0
0.8
0.6
0.4
0.2
0.0
-4
-2
0
2
4
Estimated Theta


G7 Reading
Theta SE
Estimated Theta
1.0
0.8
0.6
0.4
0.2
0.0
-4
-2
0
2
4


G8 Reading
Theta SE
Estimated Theta
0.0
0.2
0.4
0.6
0.8
1.0
-4
-2
0
2
4

SUMMARY OF STANDARD ERROR ACROSS ESTIMATED THETA RANGE - MATHEMATICS




G4 Math
Theta SE
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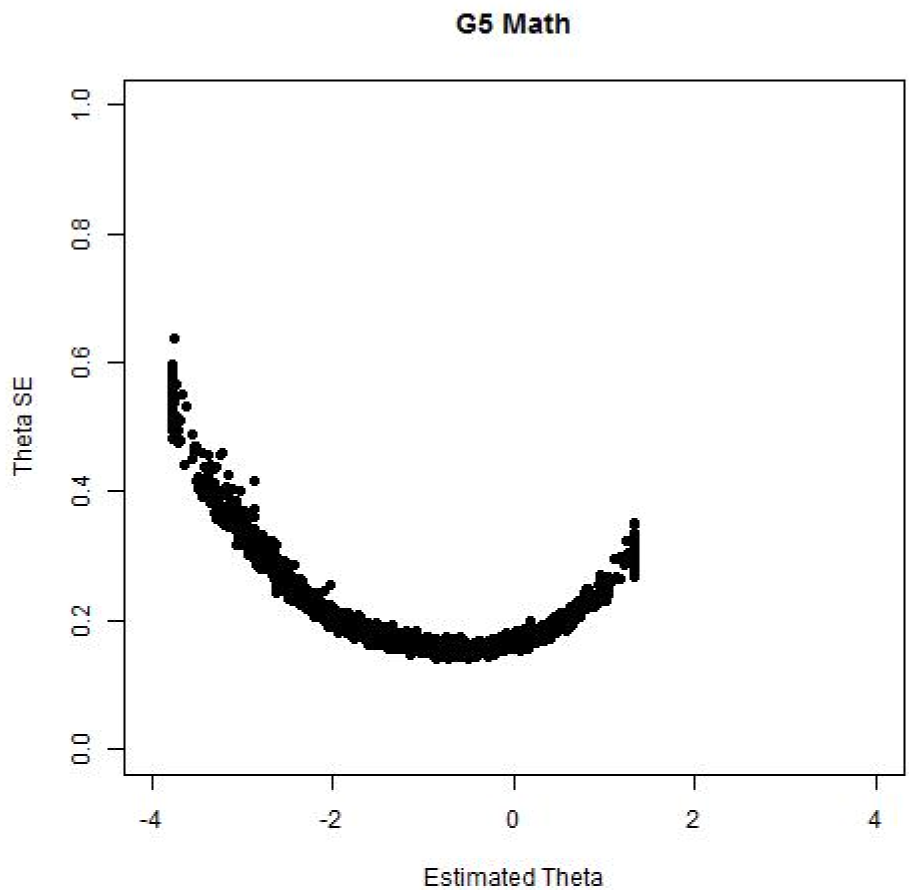
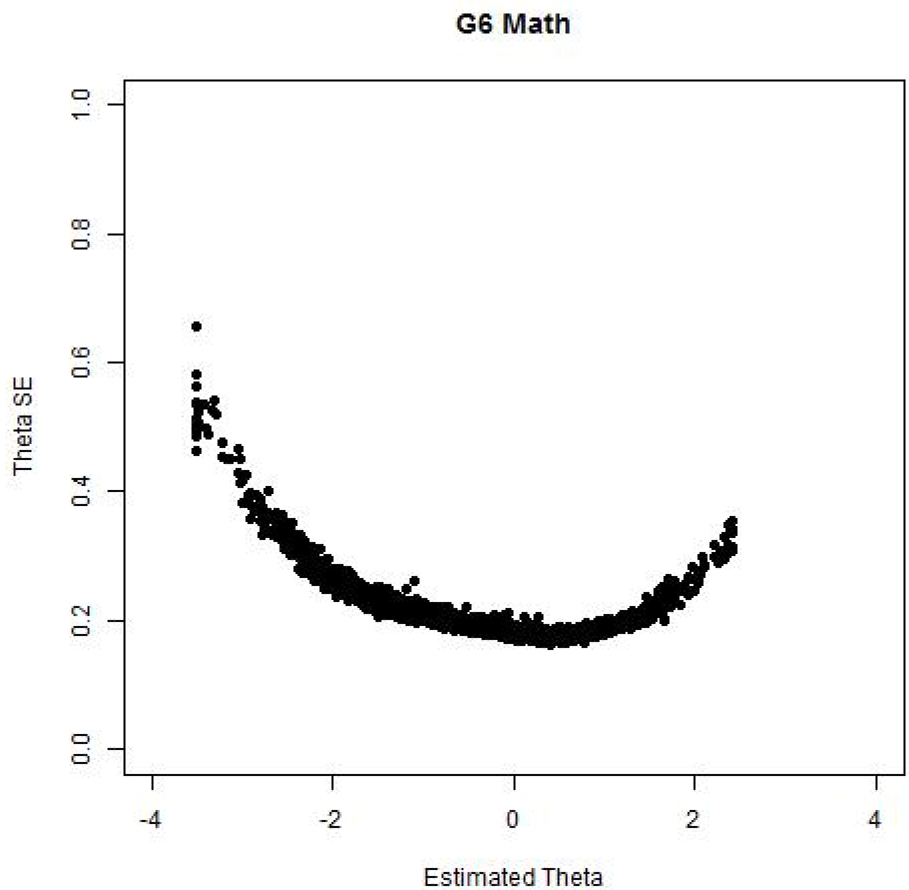
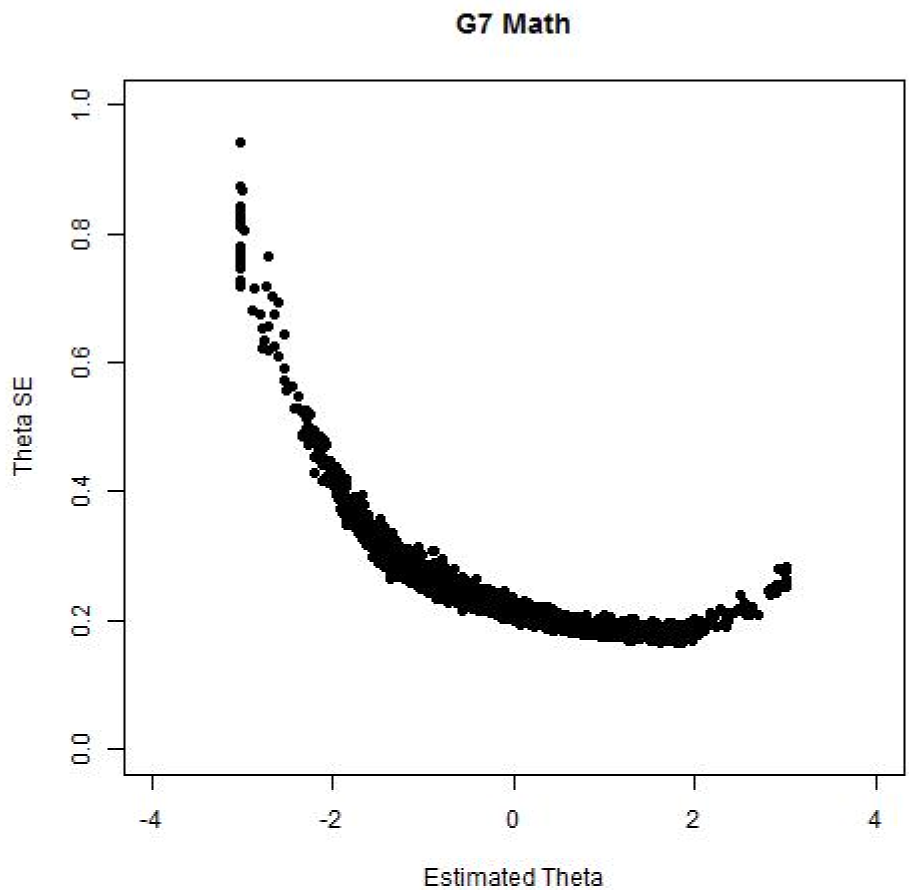
0.8
0.6
0.4
0.2
0.0
-4
-2
0
2
4
Estimated Theta


G5 Math
Theta SE
1.0
0.8
0.6
0.4
0.2
0.0
-4
-2
0
2
4
Estimated Theta



G6 Math
Theta SE
1.0
0.8
0.6
0.4
0.2
0.0
-4
-2
0
2
4
Estimated Theta


G7 Math
Theta SE
1.0
0.8
0.6
0.4
0.2
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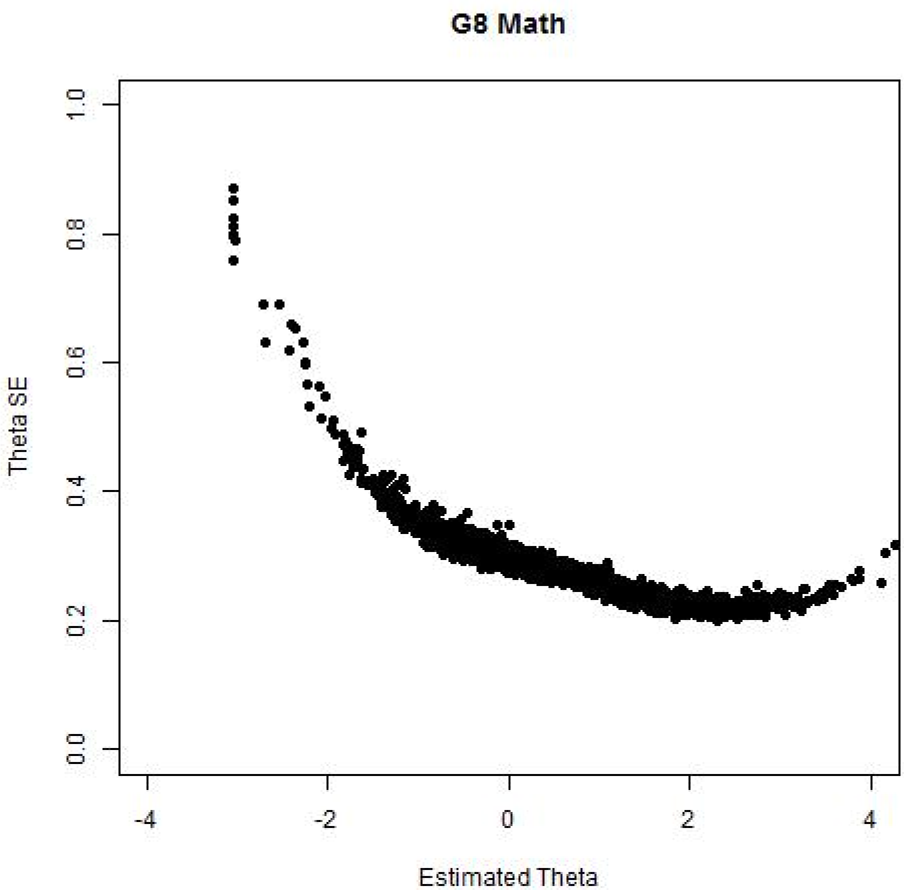
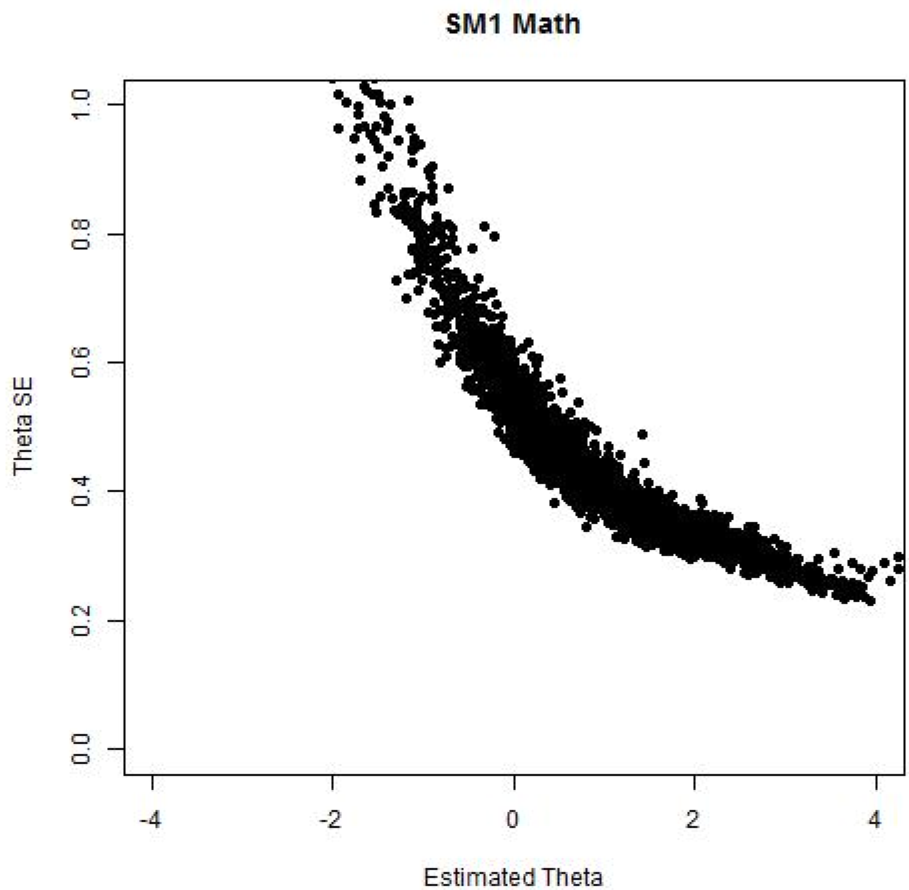
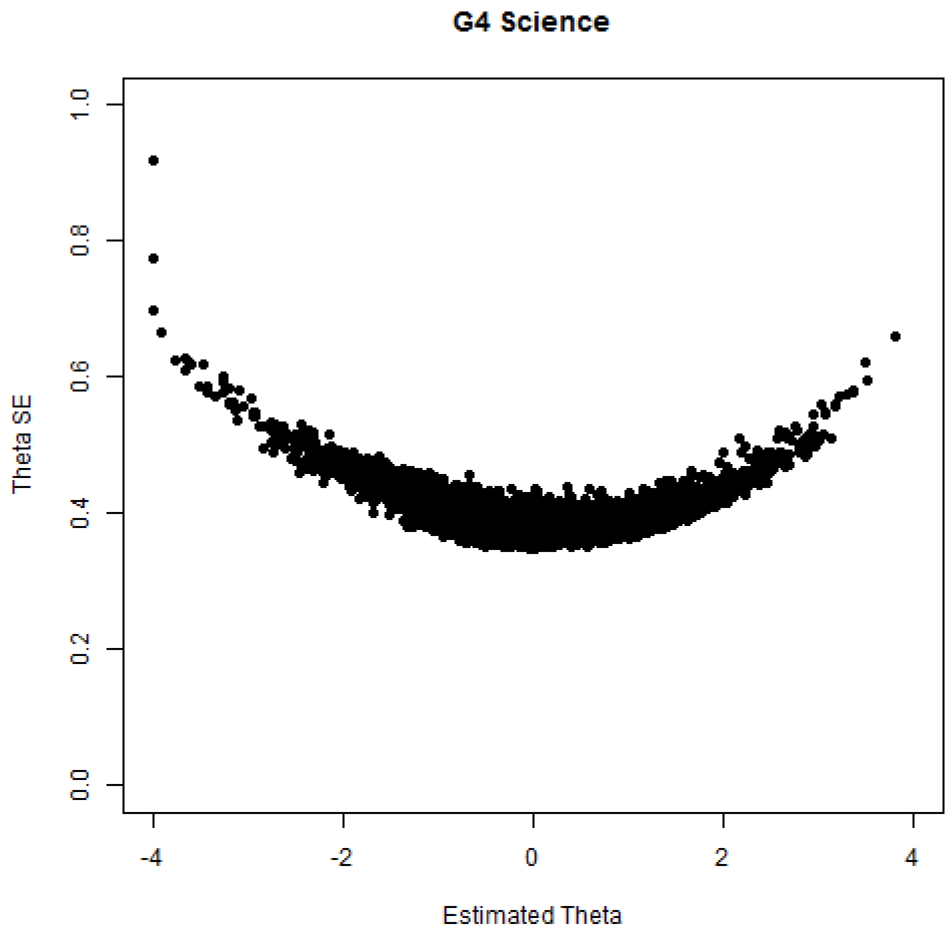
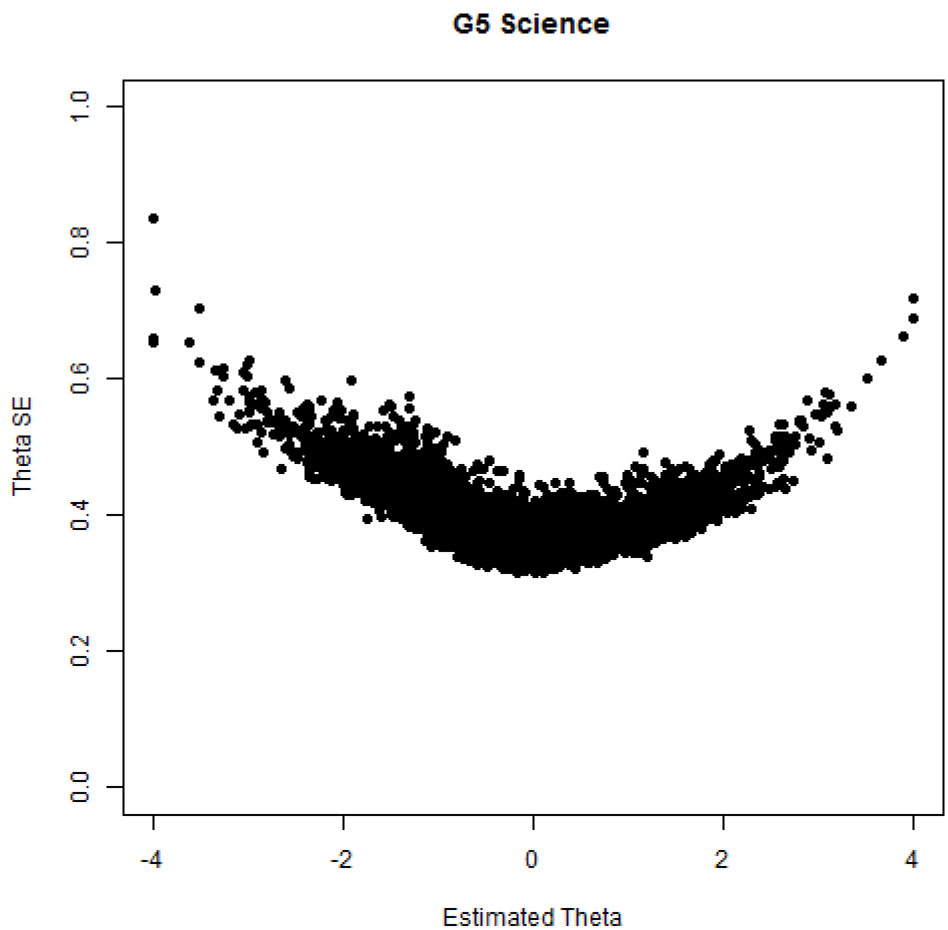
-4
-2
0
2
4
Estimated Theta


G8 Math
Theta SE
Estimated Theta
0.0
0.2
0.4
0.6
0.8
1.0
-4
-2
0
2
4


SM1 Math
Theta SE
Estimated Theta
0.0
0.2
0.4
0.6
0.8
1.0
-4
-2
0
2
4

SUMMARY OF STANDARD ERROR ACROSS ESTIMATED THETA RANGE - SCIENCE




G5 Science
Theta SE
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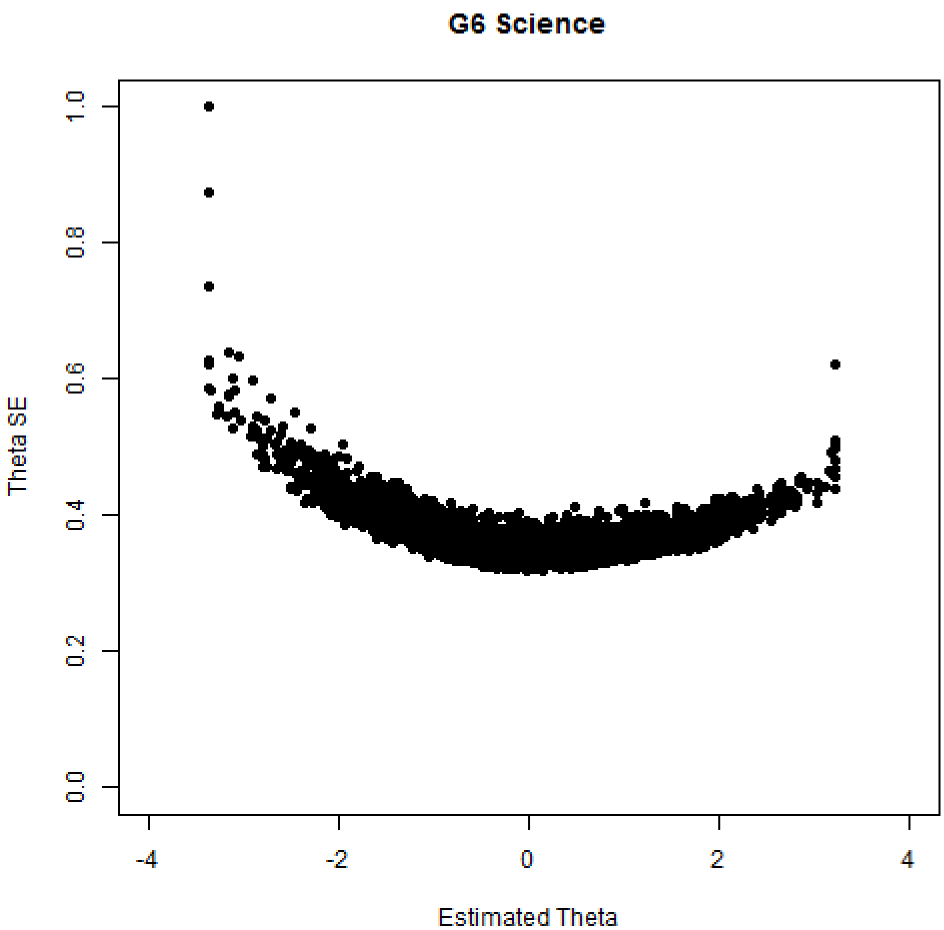
0.8
0.6
0.4
0.2
0.0
-4
-2
0
2
4
Estimated Theta


G6 Science
Theta SE
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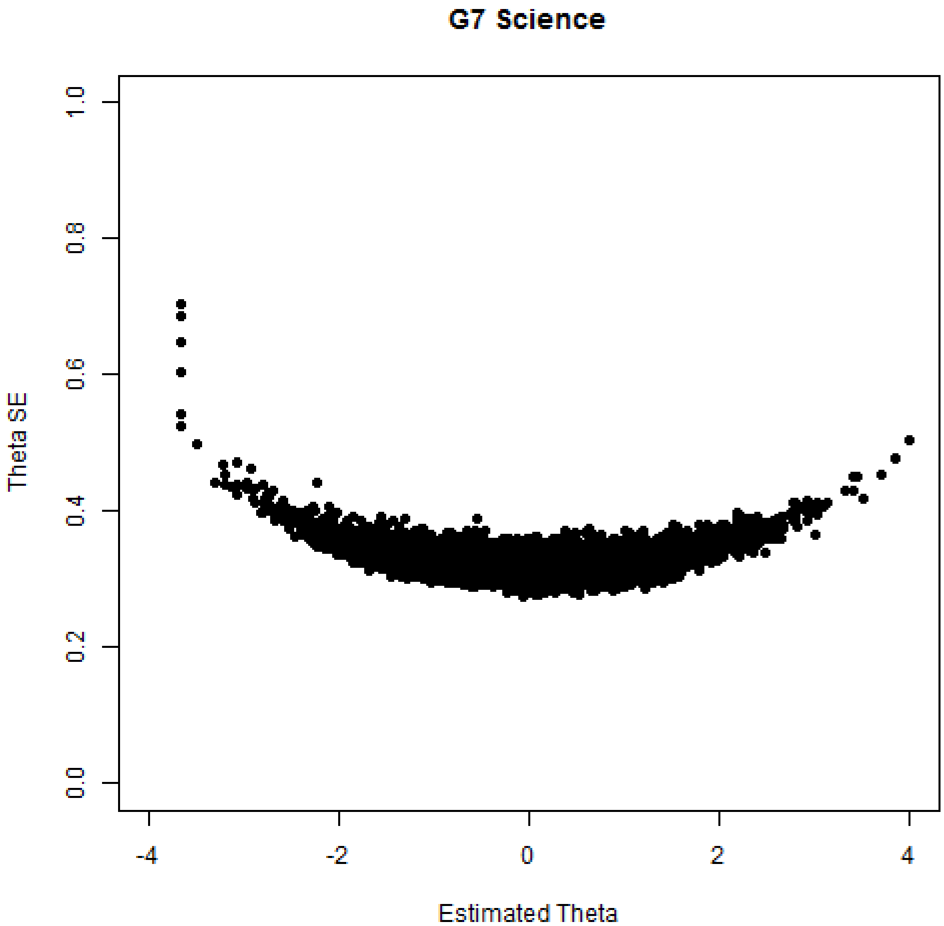
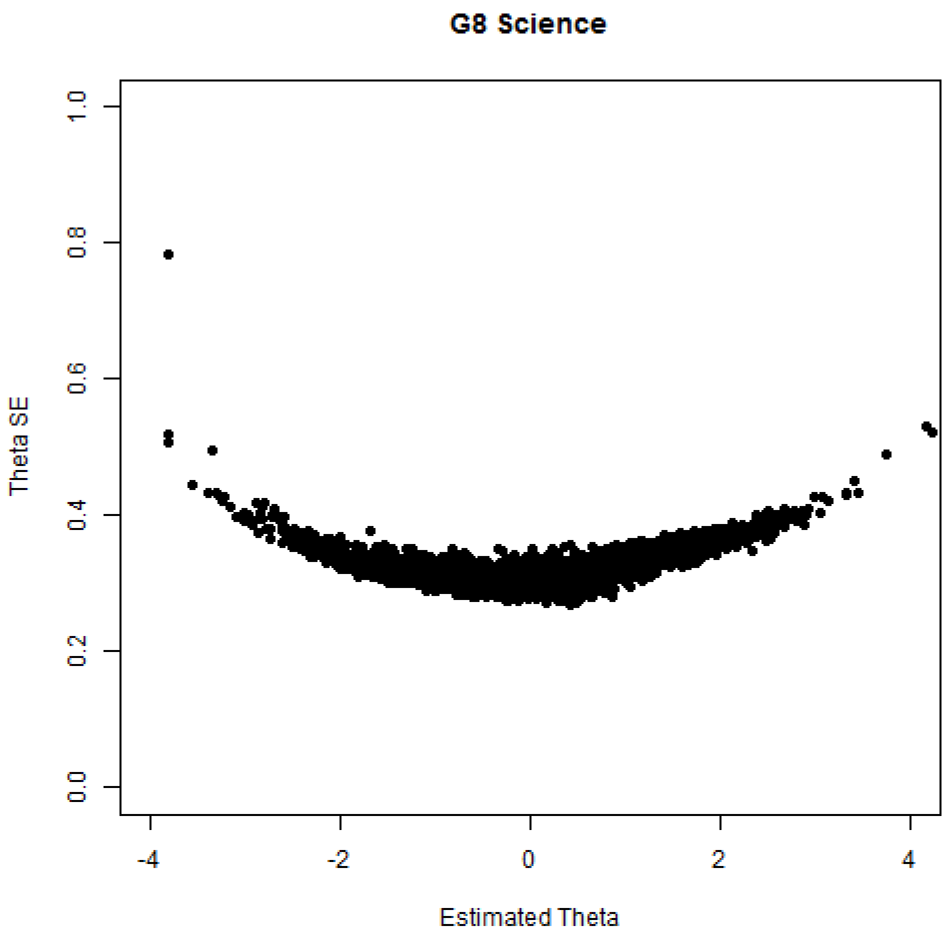
0.8
0.6
0.4
0.2
0.0
-4
-2
0
2
4
Estimated Theta


G7 Science
Theta SE
Estimated Theta
1.0
0.8
0.6
0.4
0.2
0.0
-4
-2
0
2
4

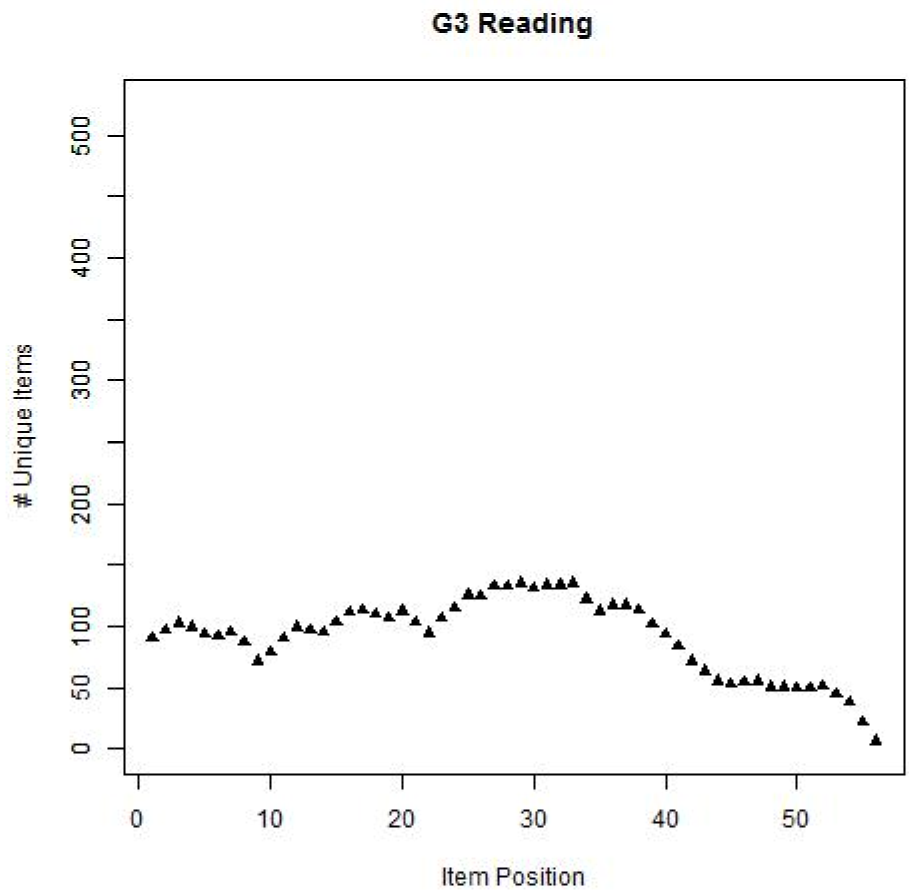

G8 Science
Theta SE
Estimated Theta
0.0
0.2
0.4
0.6
0.8
1.0
-4
-2
0
2
4

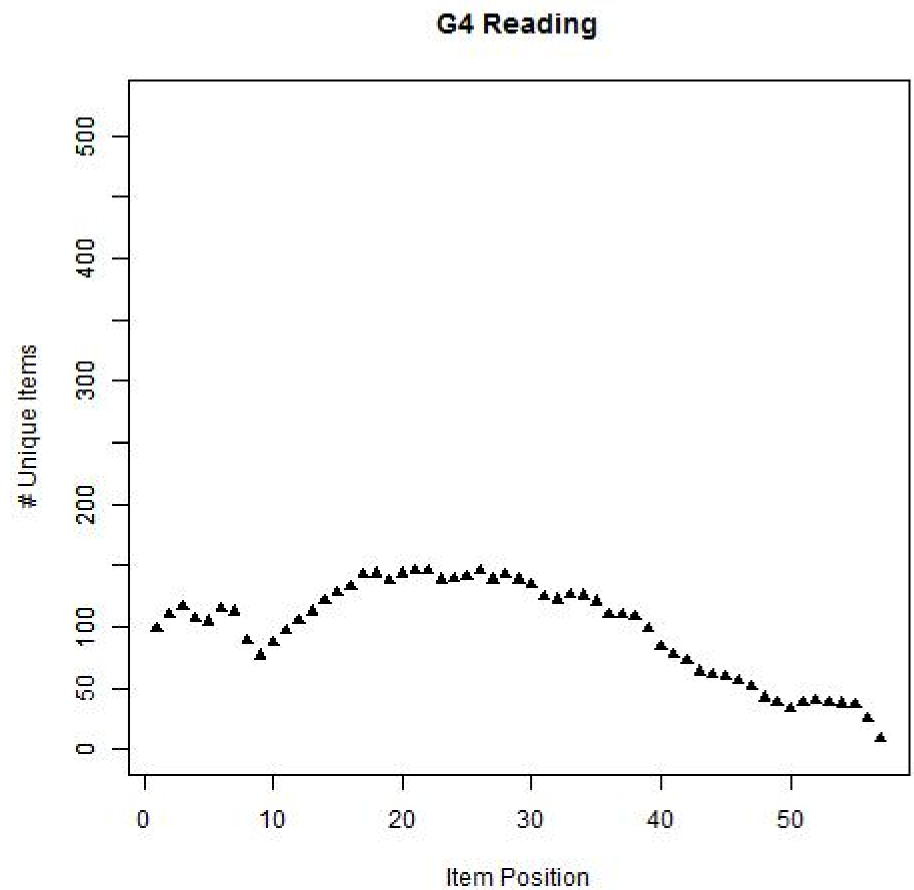
APPENDIX F

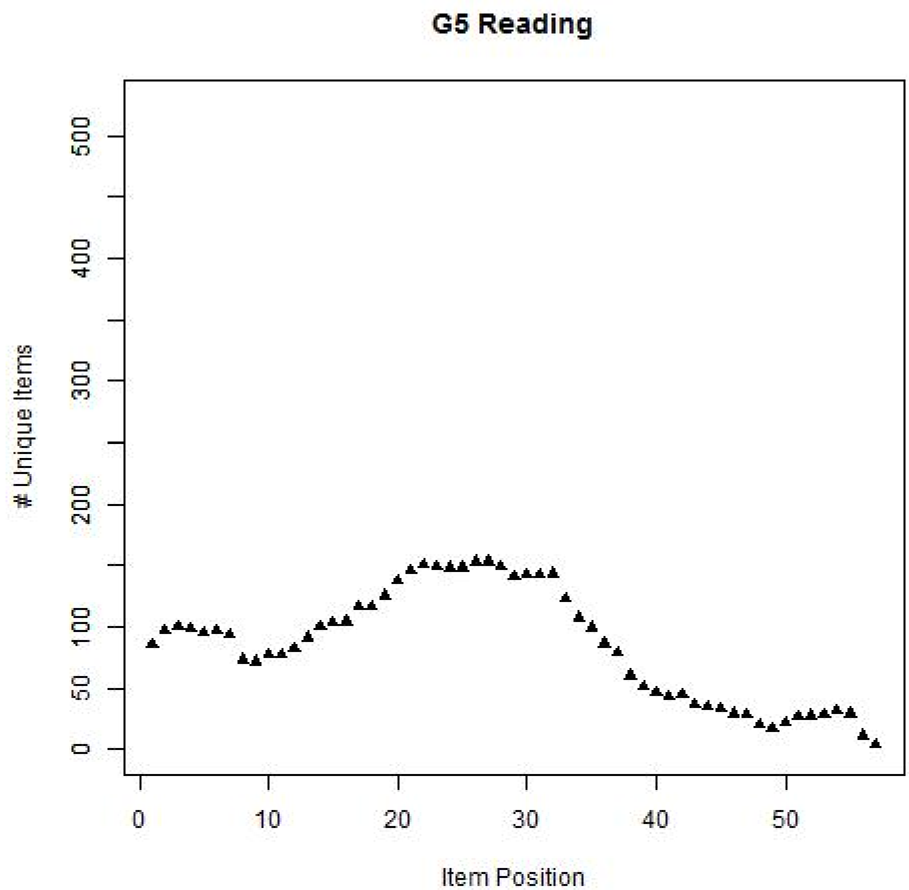
NUMBER OF UNIQUE ITEMS ADMINISTERED BY ITEM POSITION

APPENDIX F - NUMBER OF UNIQUE ITEMS ADMINISTERED BY ITEM POSITION

NUMBER OF UNIQUE ITEMS ADMINISTERED BY ITEM POSITION - READING, LANGUAGE, LISTENING




G4 Reading
Unique Items
500
400
300
200
100
50
0
0
10
20
30
40
50
Item Position


G5 Reading
Unique Items
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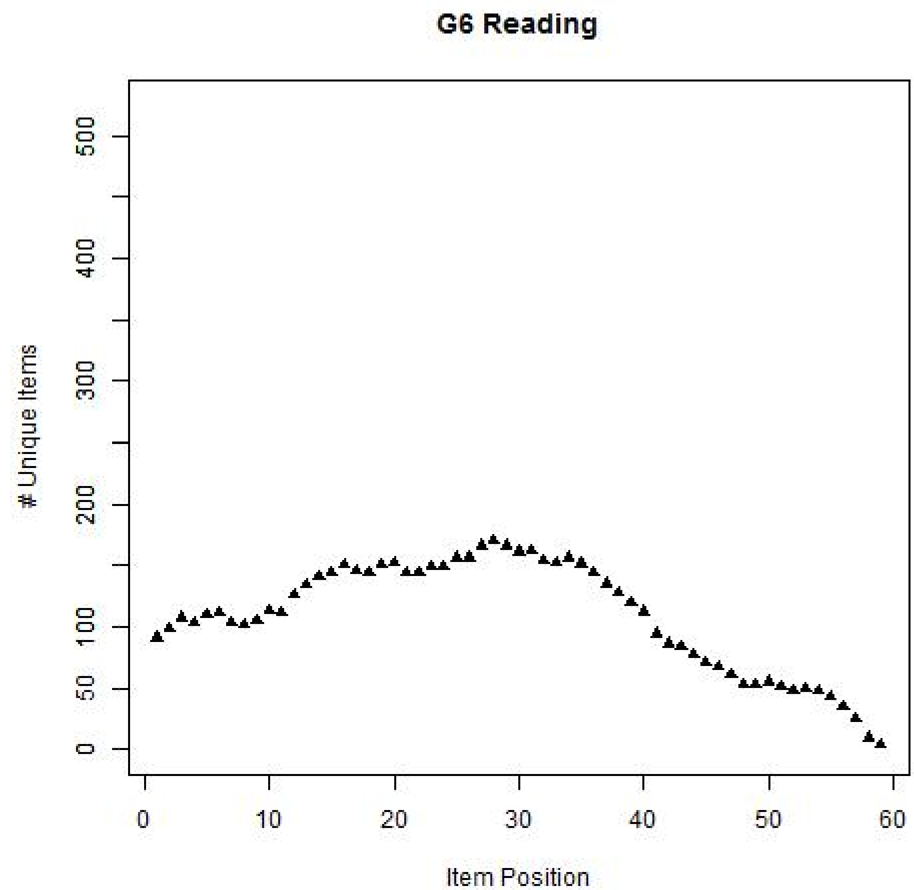
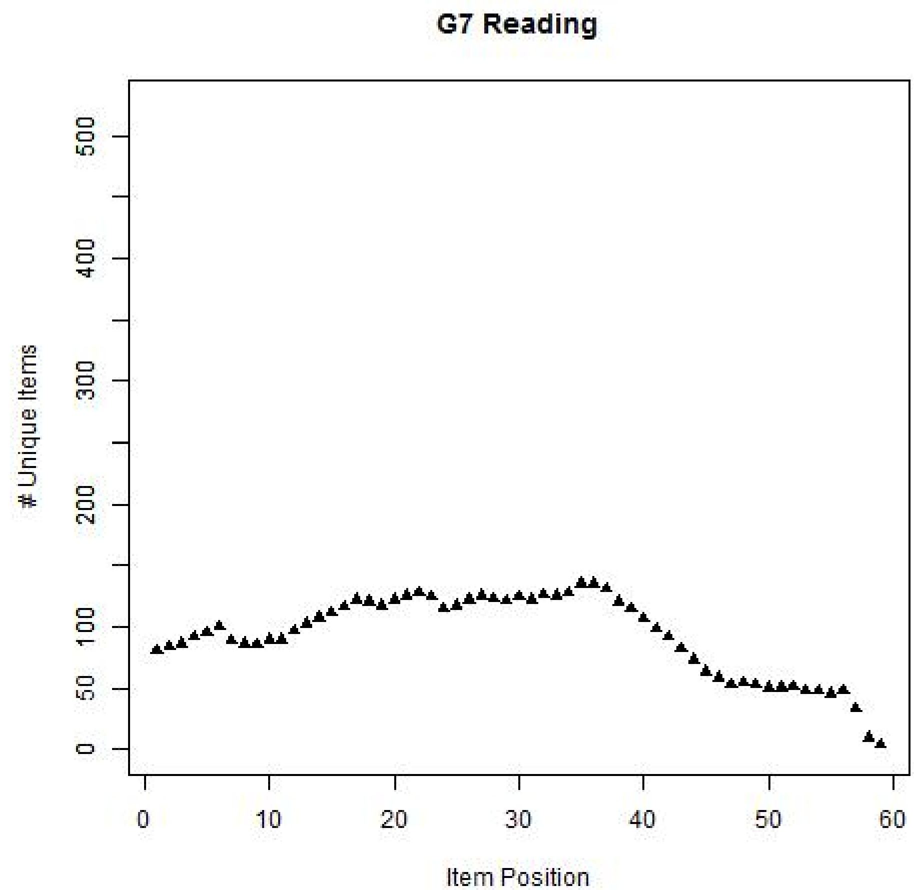
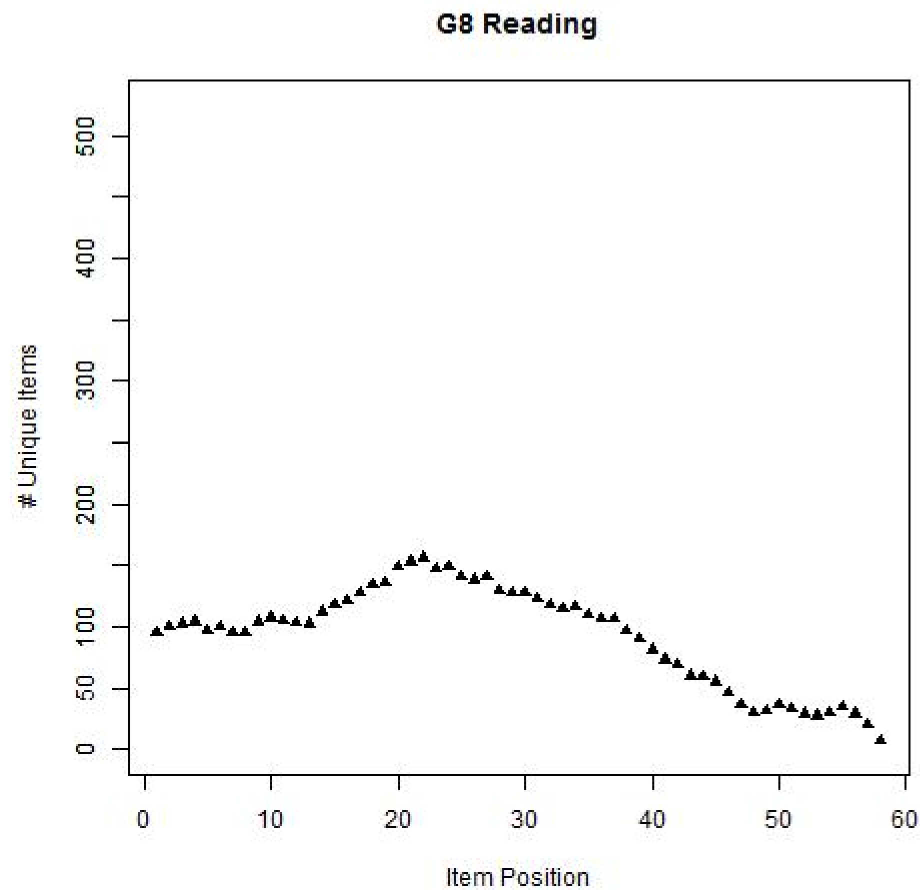
50
100
200
300
400
500
0
10
20
30
40
50
Item Position


G6 Reading
Unique Items
Item Position
0
50
100
200
300
400
500
0
10
20
30
40
50
60


G7 Reading
Unique Items
Item Position
0
50
100
200
300
400
500
0
10
20
30
40
50
60


G8 Reading
Unique Items
0
50
100
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300
400
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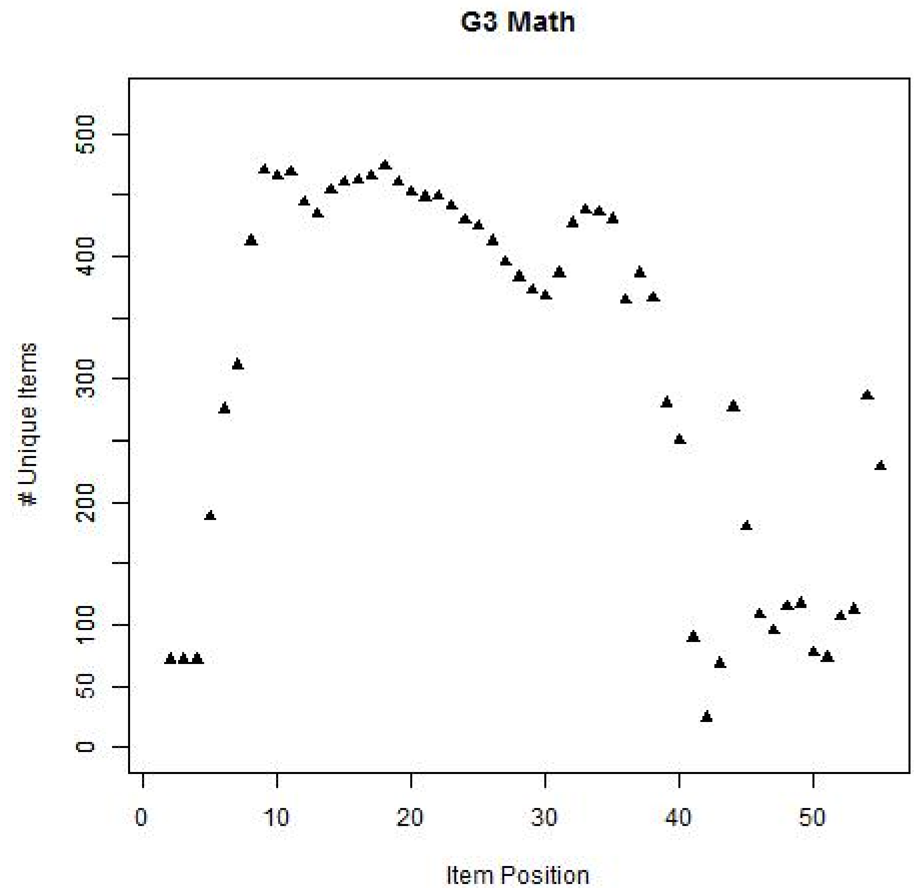
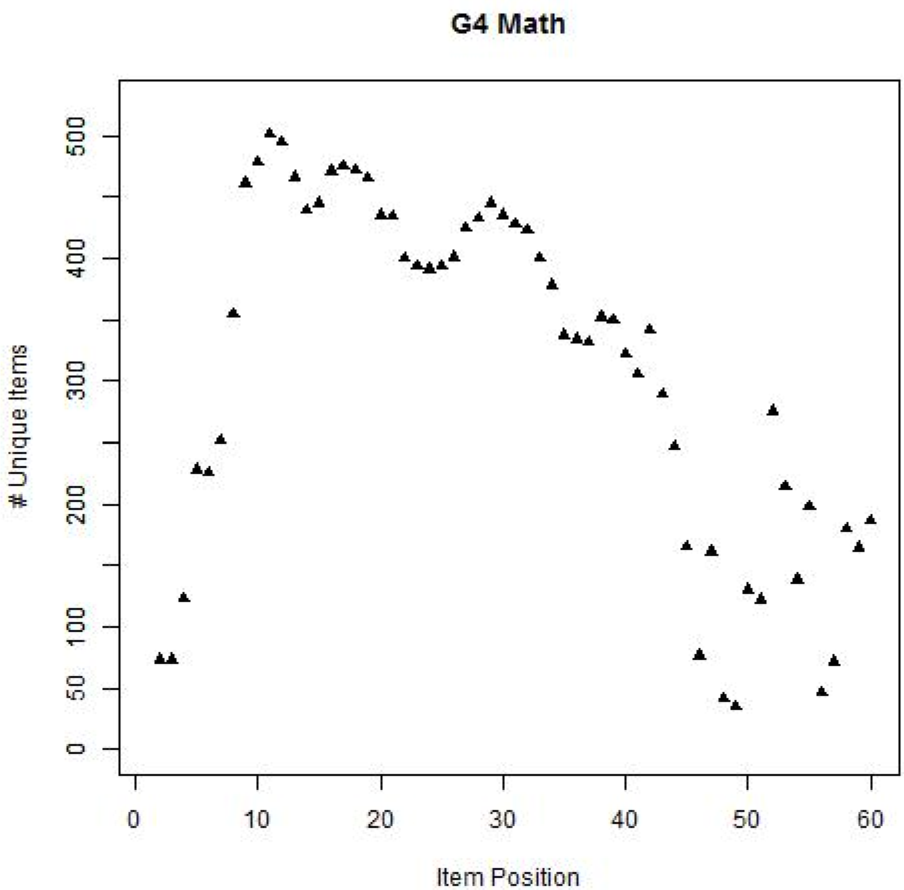
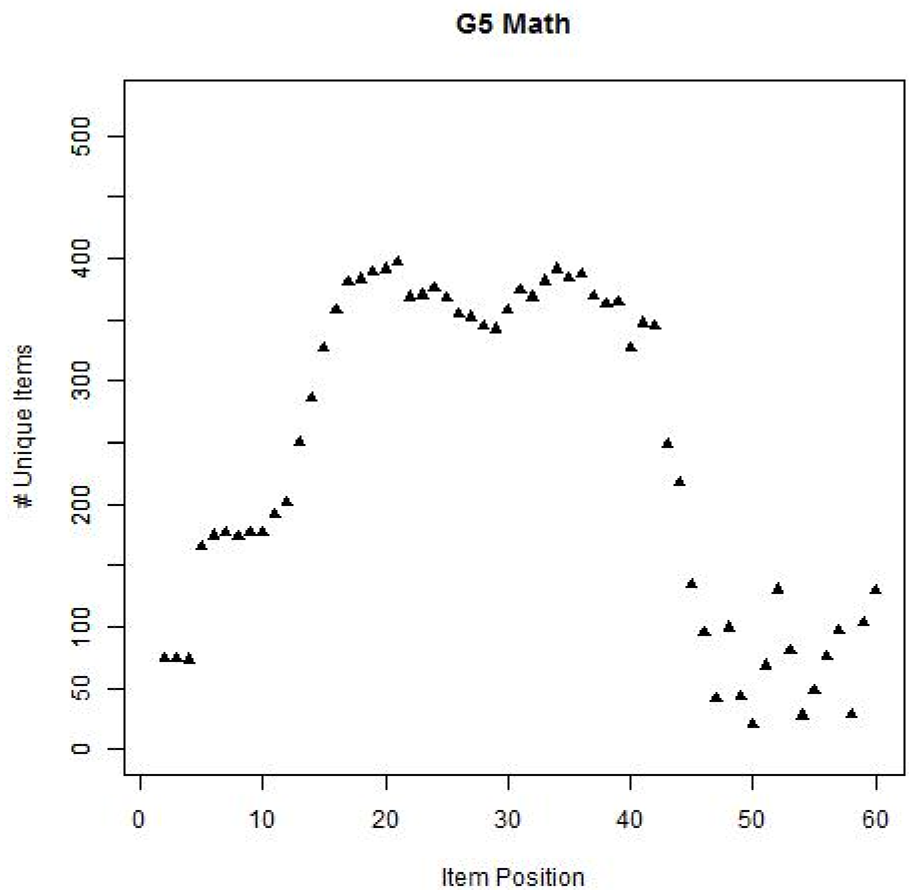
0
10
20
30
40
50
60
Item Position

NUMBER OF UNIQUE ITEMS ADMINISTERED BY ITEM POSITION - MATHEMATICS




G4 Math
Unique Items
0
50
100
200
300
400
500
0
10
20
30
40
50
60
Item Position


G5 Math
Unique Items
Item Position
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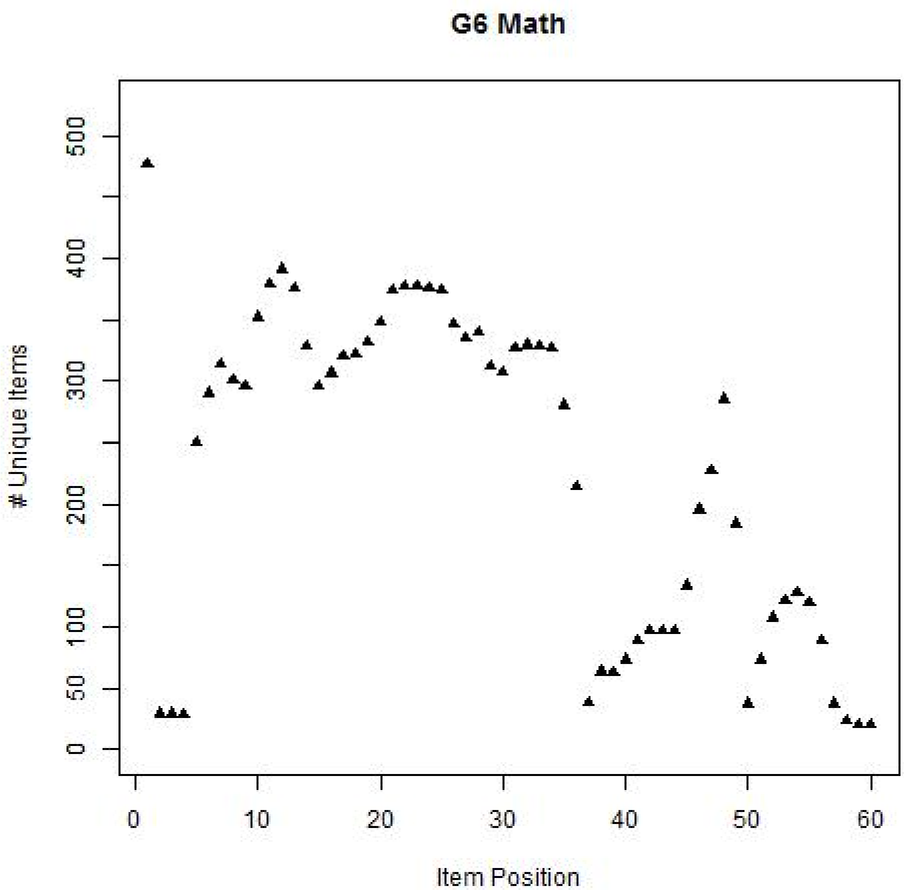
100
200
300
400
500
0
10
20
30
40
50
60



G6 Math
Unique Items
Item Position
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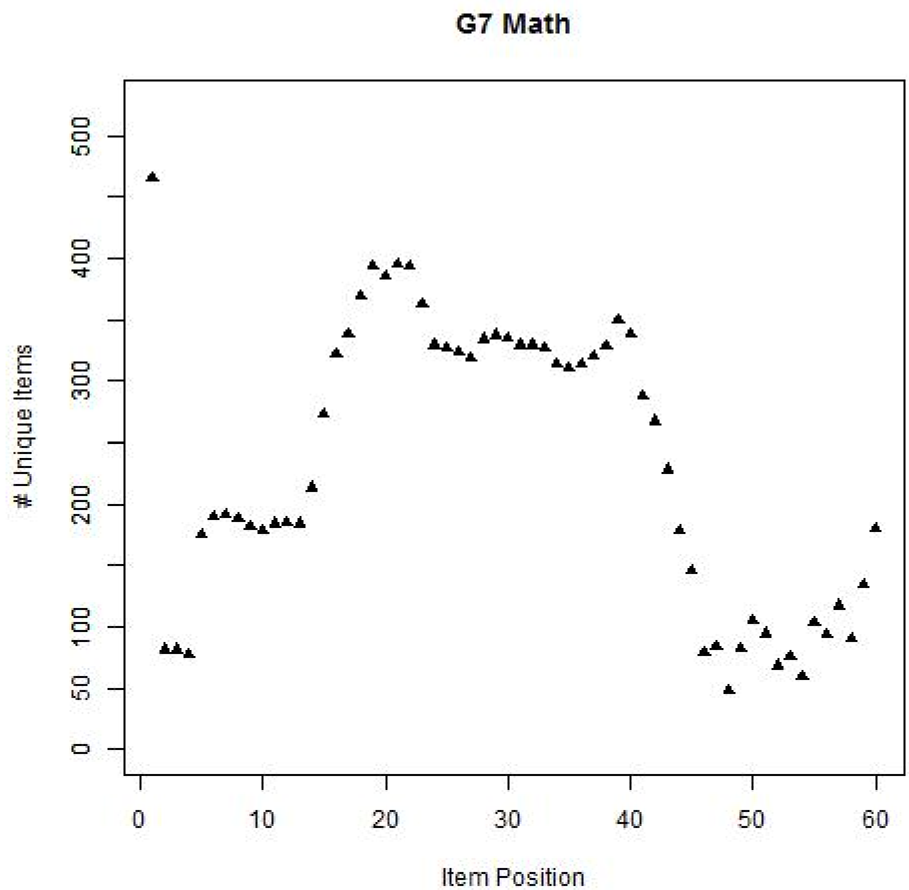
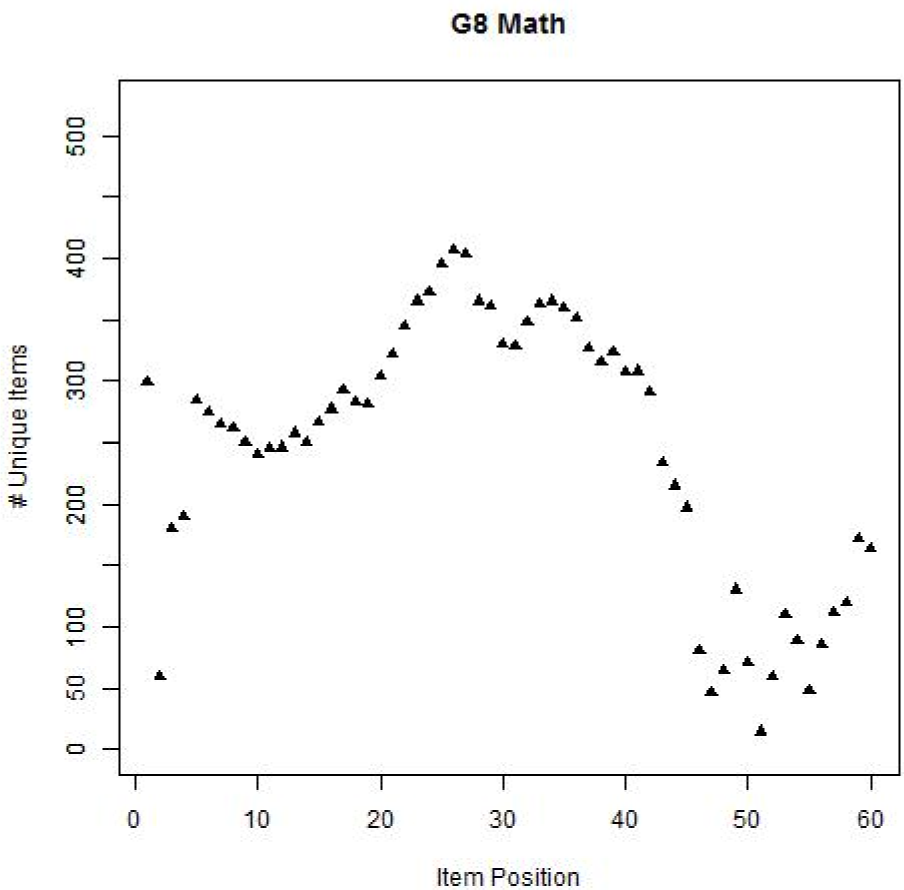
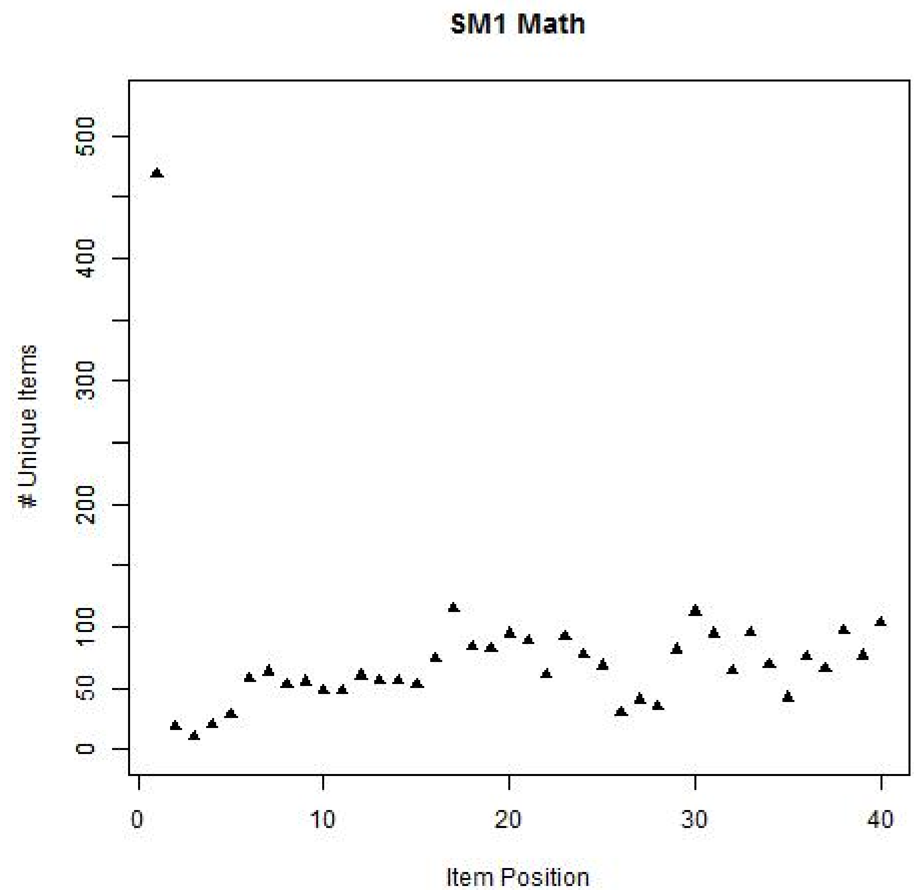
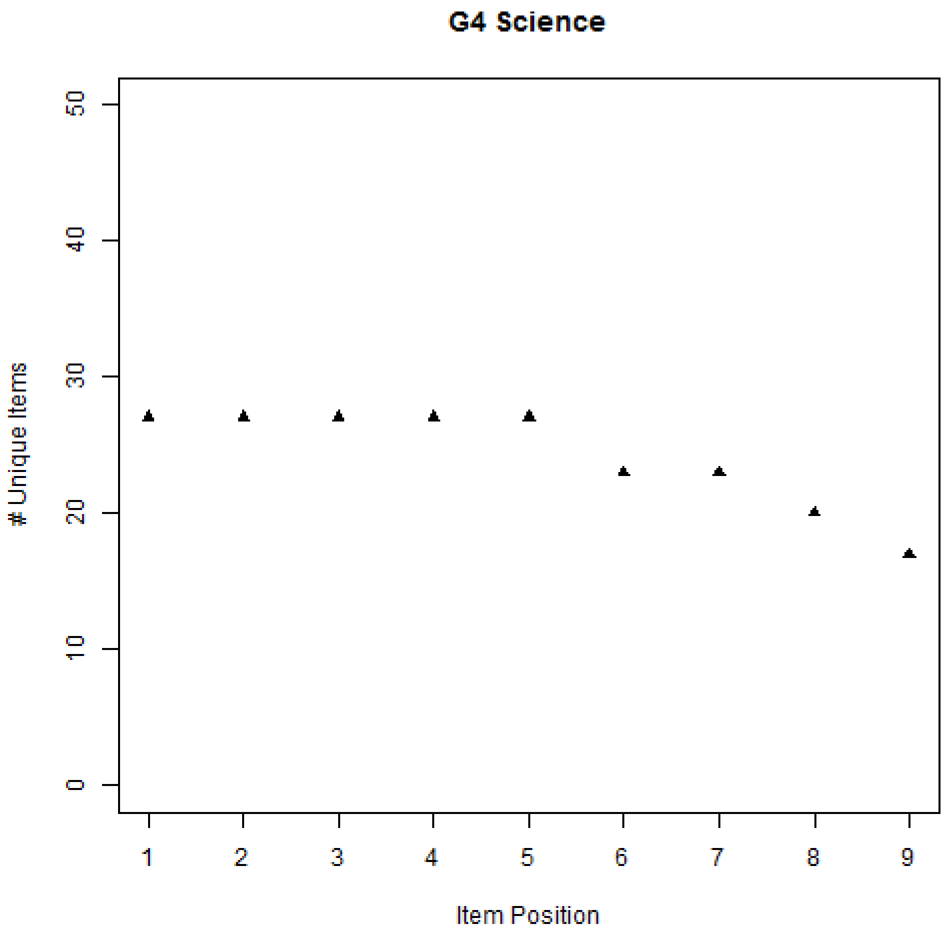
100
200
300
400
500
0
10
20
30
40
50
60

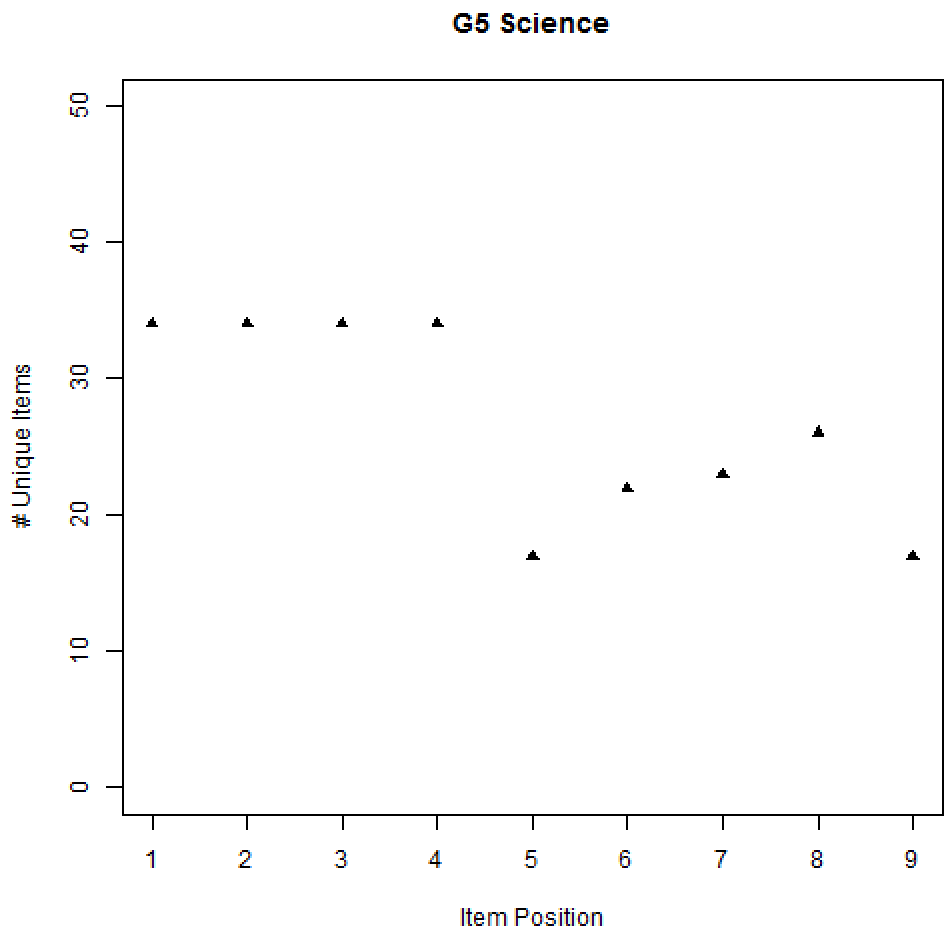

G7 Math
Unique Items
0
50
100
200
300
400
500
0
10
20
30
40
50
60
Item Position

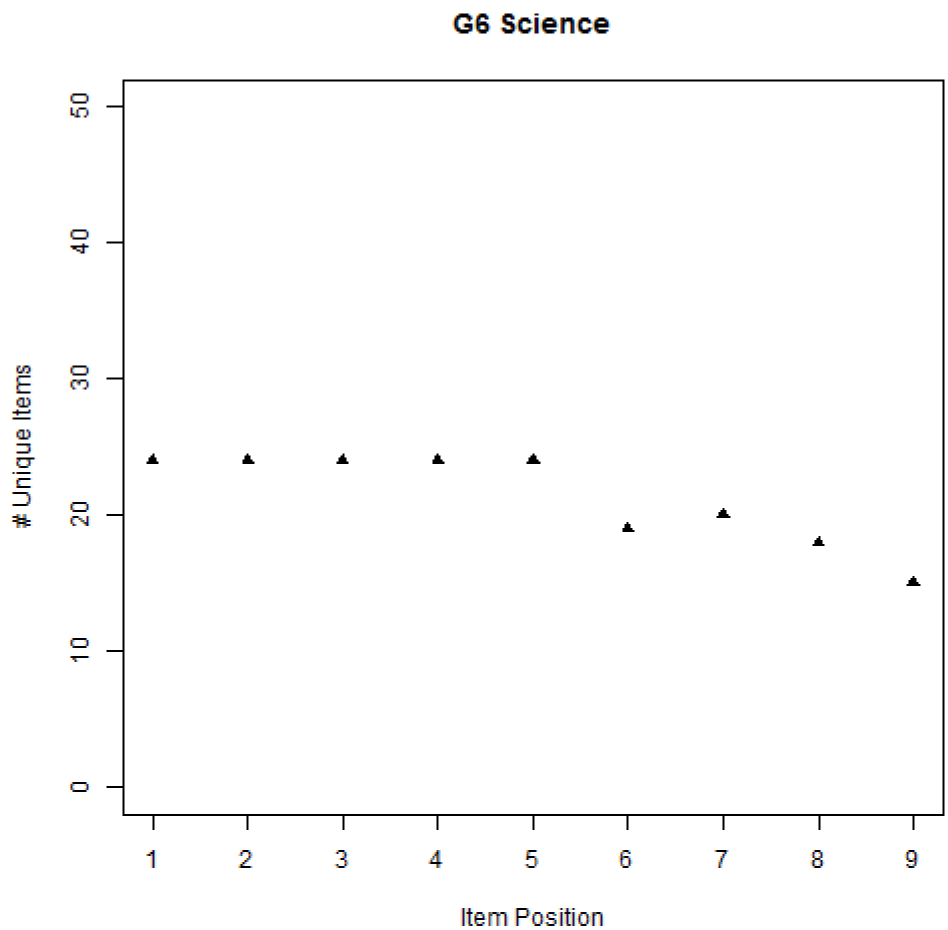

G8 Math
Unique Items
Item Position
0
50
100
200
300
400
500
0
10
20
30
40
50
60


SM1 Math
Unique Items
0
50
100
200
300
400
500
0
10
20
30
40
Item Position

NUMBER OF UNIQUE ITEMS ADMINISTERED BY ITEM POSITION - SCIENCE




G5 Science
Unique Items
0
10
20
30
40
50
1
2
3
4
5
6
7
8
9
Item Position


G6 Science
Unique Items
Item Position
0
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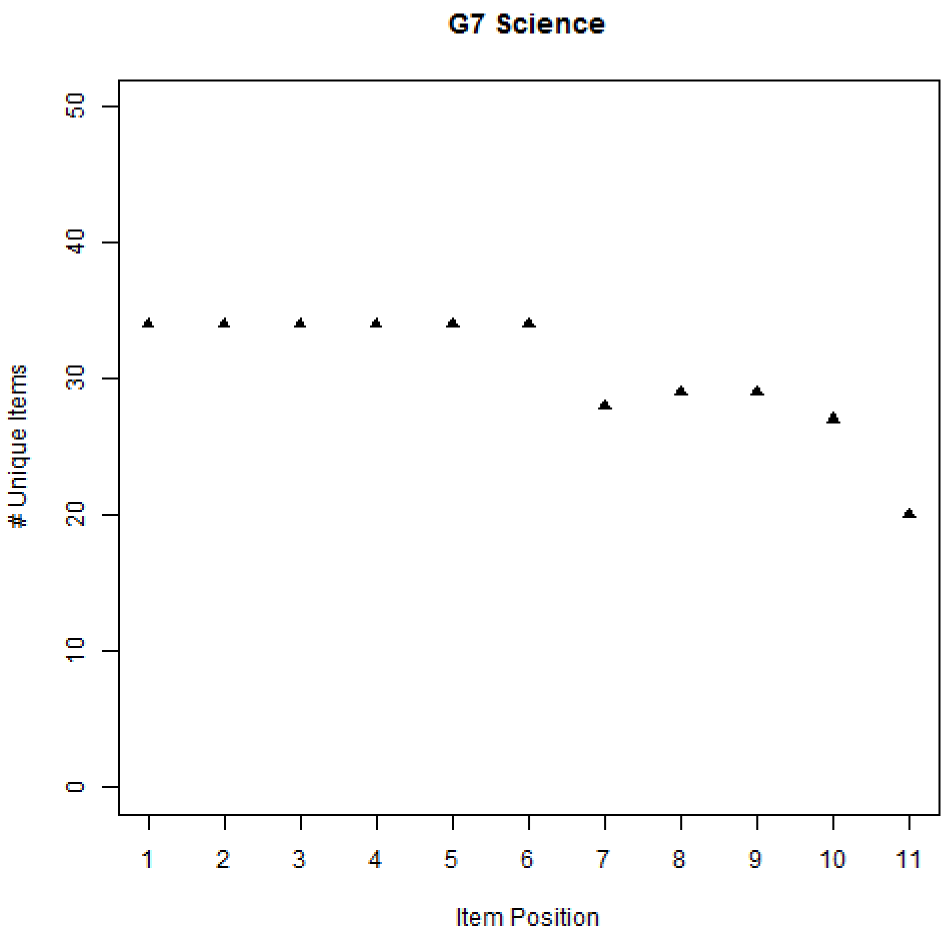
20
30
40
50
1
2
3
4
5
6
7
8
9


G7 Science
Unique Items
Item Position
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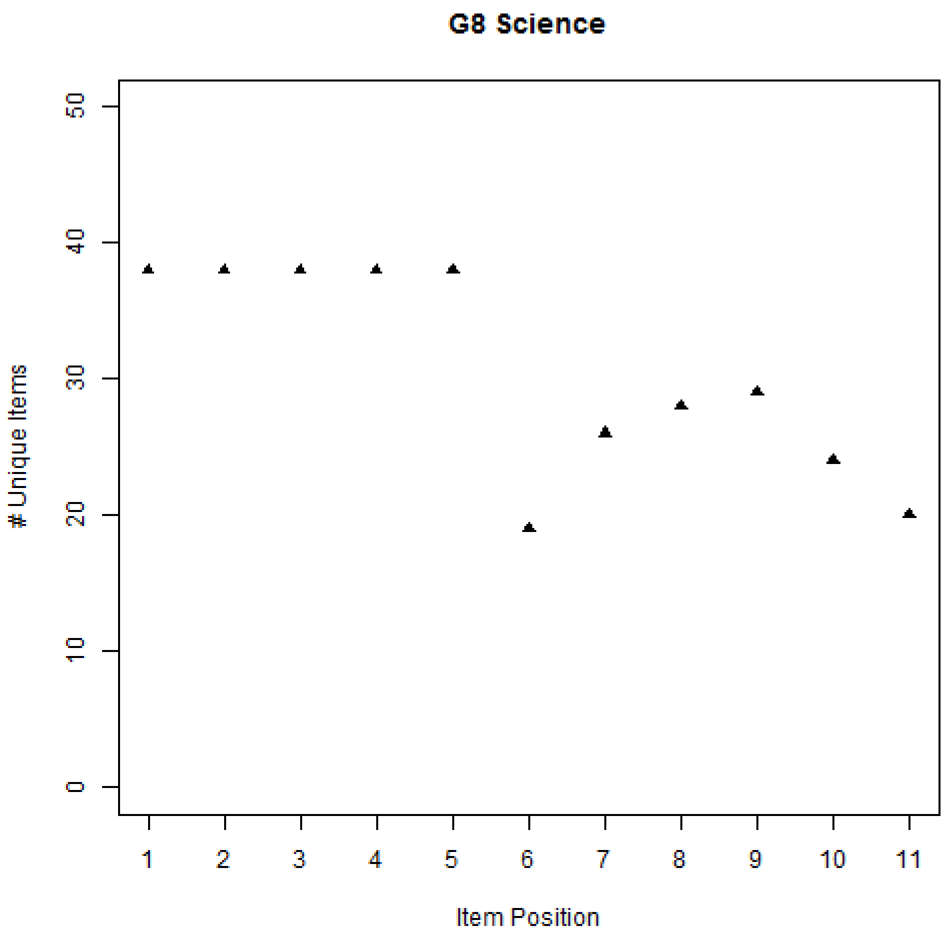
30
40
50
1
2
3
4
5
6
7
8
9
10
11


G8 Science
Unique Items
Item Position
0
10
20
30
40
50
1
2
3
4
5
6
7
8
9
10
11

APPENDIX 4-C

LANGUAGE ACCESSIBILITY, BIAS, AND SENSITIVITY (LABS) GUIDELINES AND CHECKLIST

Appendix 4-C
Exhibit A: Language Accessibility, Bias, and Sensitivity (LABS) Guidelines

1. STEREOTYPING

Testing materials should not present persons stereotyped according to the following characteristics:

- Age
- Disability
- Gender
- Race/Ethnicity
- Sexual orientation

2. SENSITIVE OR CONTROVERSIAL SUBJECTS

Controversial or potentially distressing subjects should be avoided or treated sensitively. For example, a passage discussing the historical importance of a battle is acceptable, whereas a graphic description of a battle would not be. Controversial subjects include the following:

- Death and Disease
- Gambling*
- Politics (Current)
- Race relations
- Religion
- Sexuality
- Superstition
- War

**References to gambling should be avoided in mathematics items related to probability.*

3. ADVICE

Testing materials should not advocate specific lifestyles or behaviors except in the most general or universally agreed-upon ways. For example, a recipe for a healthful fruit snack is acceptable but a passage recommending a specific diet is not. The following are categories of advice to be avoided completely:

- Religion
- Sexual preference

4. DANGEROUS ACTIVITIES

Care should be taken not to present dangerous activities in such a way as to make them seem appealing or acceptable.

5. POPULATION DIVERSITY, REPRESENTATIVENESS, AND ETHNOCENTRISM

Testing materials should:

- reflect the diversity of the testing population;

- use stimulus materials (such as works of literature) produced by members of minority communities;
- use personal names from different ethnic origin communities;
- use pictures of people from different ethnic origin communities; and
- avoid ethnocentrism (the attitude that all people should share a particular group's language, beliefs, culture, or religion).

6. DIFFERENTIAL FAMILIARITY: ELITISM AND DIF

Specialized concepts and terminology extraneous to the core content of test questions should be avoided. This caveat applies to terminology from the following fields:

- Construction
- Finance
- Sports
- Law
- Machinery
- Military topics
- Politics
- Science
- Technology
- Agriculture

7. LANGUAGE ACCESSIBILITY

Language should be as direct, clear, and inclusive as possible. The following should be avoided or used with care:

- Passive constructions
- Idioms
- Multiple subordinate clauses
- Pronouns with unclear antecedents
- Multiple-meaning words
- Nonstandard grammar
- Dialect
- Jargon

8. GRAPHICS

All of the relevant foregoing standards apply to graphics.

Appendix 4-C
Exhibit B: Language Accessibility, Bias, and Sensitivity (LABS) Checklist

STEREOTYPING CONSIDERATIONS

- ☐ Does the material negatively represent, or stereotype people based on gender or sexual preference?
- ☐ Does the material portray one or more people with disabilities in a negative or stereotypical manner?
- ☐ Does the material portray one or more religious groups as aggressive or violent?
- ☐ Does the material romanticize or demean people based on socioeconomic status?
- ☐ Does the material portray one or more ethnic groups or cultures participating in certain stereotypical activities or occupations?
- ☐ Does the material portray one or more age groups in a negative or stereotypical manner?

SENSITIVE/CONTROVERSIAL MATERIAL CONSIDERATIONS

- ☐ Does the material require a student to take a position that challenges authority?
- ☐ Does the material present war or violence in an overly graphic manner?
- ☐ Does the material present sensitive or highly controversial subjects, such as death, war, abortion, euthanasia, or natural disasters, except where they are needed to meet State Content Standards?
- ☐ Does the material require test takers to disclose values that they would rather hold confidential?
- ☐ Does the material present sexual innuendoes?
- ☐ Does the material trivialize significant or tragic human experiences?
- ☐ Does the material require the parent, teacher, or test taker to support a position that is contrary to their religious beliefs?

ADVICE CONSIDERATIONS

- ☐ Does the material contain advice pertaining to health and well-being about which there is not a universal agreement?

POPULATION DIVERSITY

- ☐ Is the material written by members of diverse groups?
- ☐ Does the material reflect the experiences of diverse groups?
- ☐ Does the material portray people in positive nontraditional roles?

- ☐ Does test material represent the racial and ethnic composition of the testing population?
- ☐ Does the material reflect ethnocentrism?
- ☐ Does the material refer to population subgroups accurately?
- ☐ Does test material reflect diversity through the use of names, cultural references, pictures, and roles?

DIFFERENTIAL FAMILIARITY/ELITISM

- ☐ Does the material contain phrases, concepts, and beliefs that are irrelevant to testing domain and are likely to be more familiar to specific groups that others?
- ☐ Does the material require knowledge of individuals, events, or groups that is not familiar to all groups of students?
- ☐ Does the material suggest that affluence is related to merit or intelligence?
- ☐ Does the material suggest that poverty is related to increased negative behaviors in society?
- ☐ Does the material use language, content, or context that is offensive to people of a particular economic status?
- ☐ Does success with the material assume that the test taker has experience with a certain type of family structure?
- ☐ Does the material favor one socioeconomic group over another?
- ☐ Does the material assume values not shared by all test takers?

LINGUISTIC FEATURES/LANGUAGE ACCESSIBILITY/GRAPHICS

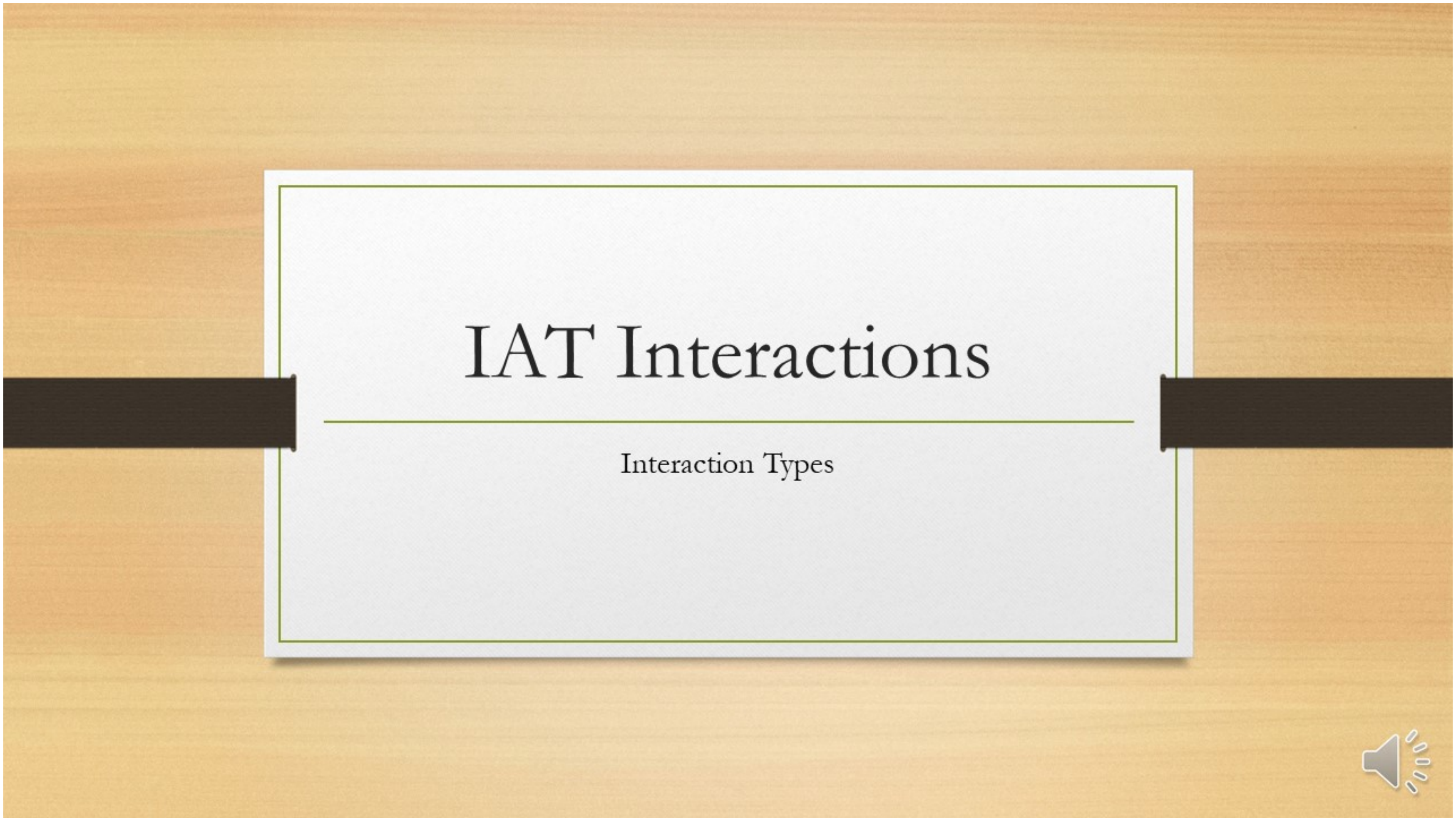
- ☐ Is grammar and vocabulary used in the items clear, concise, and appropriate for the intended grade level?
- ☐ Are passages at a difficulty level that is appropriate for the intended grade level?
- ☐ Do the illustrations and graphics embody all of the previously referenced LABS Guidelines?

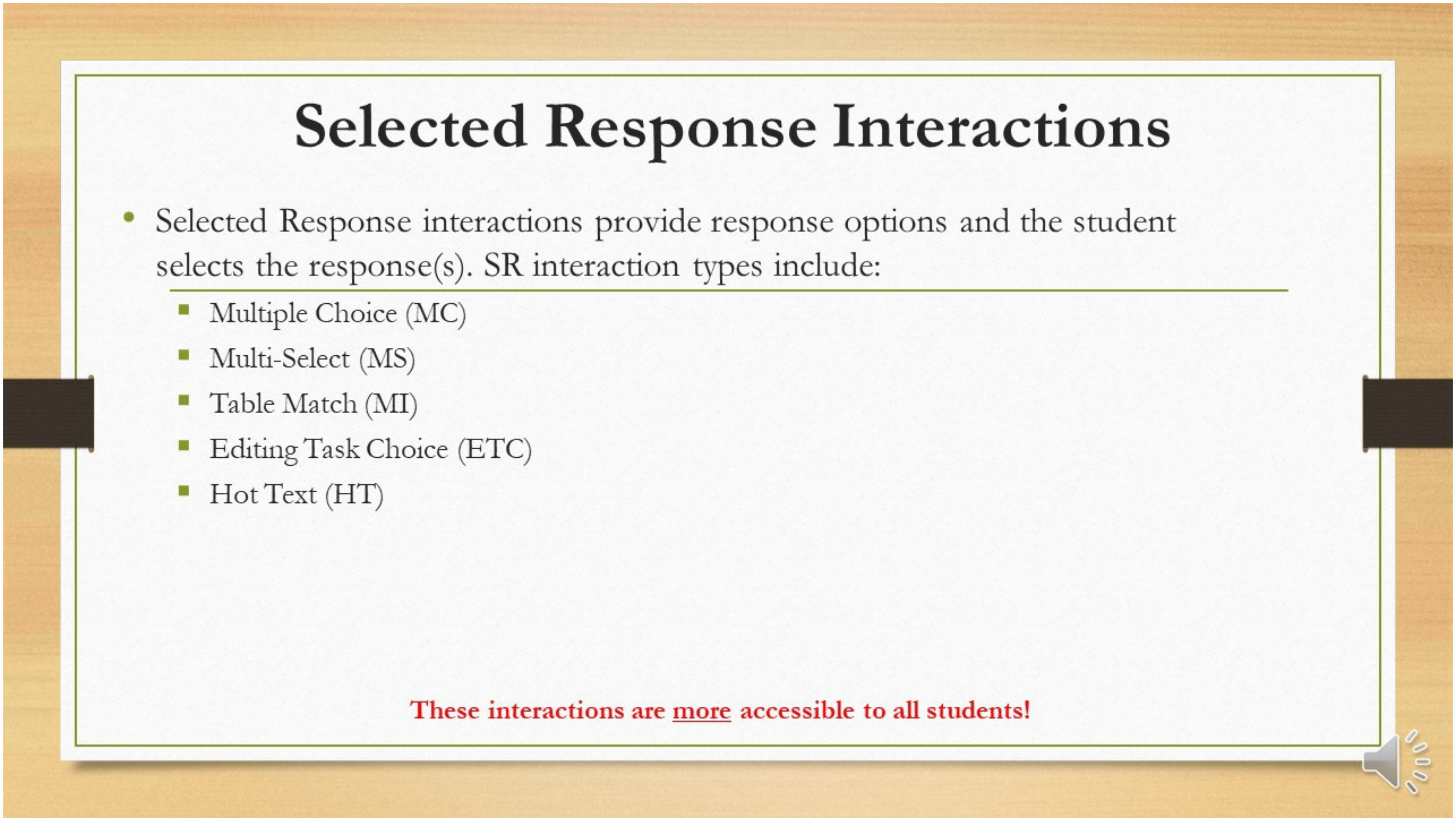
OTHER QUESTIONS TO CONSIDER

- ☐ Does the material favor one age group over others except in a context where experience or maturation is relevant?
- ☐ Does the material use language, content, or context that is not accessible to one or more of the age groups tested?
- ☐ Does the material contain language or content that contradicts values held by a certain culture?
- ☐ Does the material favor one racial or ethnic group over others?
- ☐ Does the material degrade people based on physical appearance or any physical, cognitive, or emotional challenge?
- ☐ Does the material focus only on a person’s disability rather than portraying the whole person?
- ☐ Does the material favor one religion and/or demean others?

APPENDIX 4-D

OVERVIEW OF INTERACTION TYPES


IAT Interactions
Interaction Types


Selected Response Interactions
Selected Response interactions provide response options and the student selects the response(s). SR interaction types include:
Multiple Choice (MC)
Multi-Select (MS)
Table Match (MI)
Editing Task Choice (ETC)
Hot Text (HT)
These interactions are more accessible to all students!

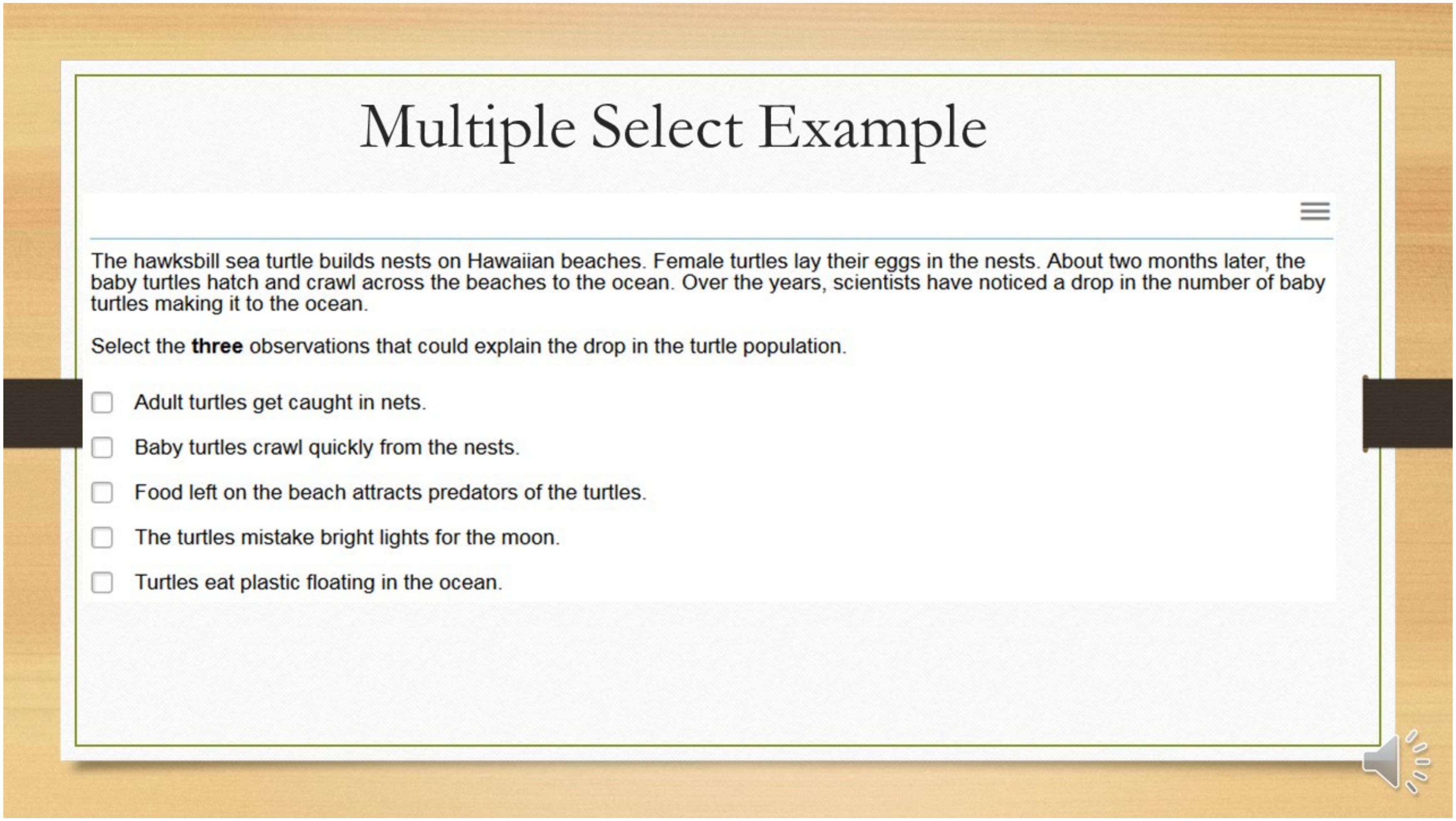
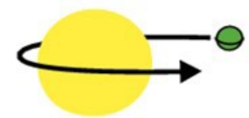

Multiple Select Example
The hawksbill sea turtle builds nests on Hawaiian beaches. Female turtles lay their eggs in the nests. About two months later, the baby turtles hatch and crawl across the beaches to the ocean. Over the years, scientists have noticed a drop in the number of baby turtles making it to the ocean.
Select the **three** observations that could explain the drop in the turtle population.
Adult turtles get caught in nets.
Baby turtles crawl quickly from the nests.
Food left on the beach attracts predators of the turtles.
The turtles mistake bright lights for the moon.
Turtles eat plastic floating in the ocean.

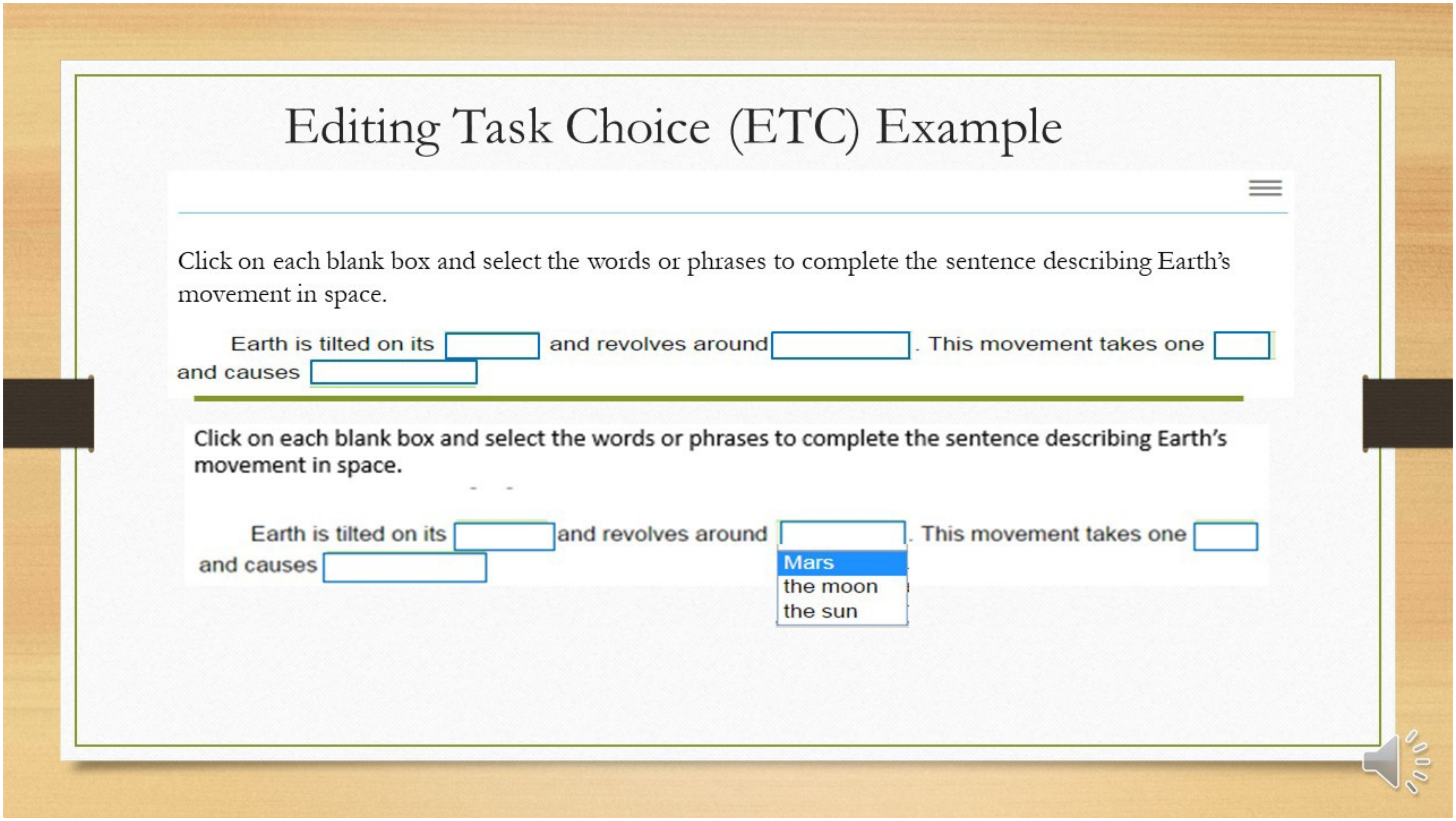
Table Match (MI) Example

Students use a large yellow ball and a small green ball to model the sun and Earth. They use the balls to explain the cause of day and night, to model the length of a year, and to explain the cause of the seasons.

Select **each** box to identify which movements of the balls are needed to explain each phenomenon.

- You can select more than one box for each statement.

	 **Large yellow ball is stationary, while small green ball spins.**	 **Large yellow ball is stationary, while small green ball is tilted.**	 **Large yellow ball is stationary, while small green ball moves around it.**
The cause of day and night	☐	☐	☐
The length of a year	☐	☐	☐
The cause of the seasons	☐	☐	☐


Editing Task Choice (ETC) Example
Click on each blank box and select the words or phrases to complete the sentence describing Earth's movement in space.
Earth is tilted on its
and revolves around
. This movement takes one
and causes
Click on each blank box and select the words or phrases to complete the sentence describing Earth's movement in space.
Earth is tilted on its
and revolves around
. This movement takes one
and causes
Mars
the moon
the sun

Hot Text (HT draggable) Example

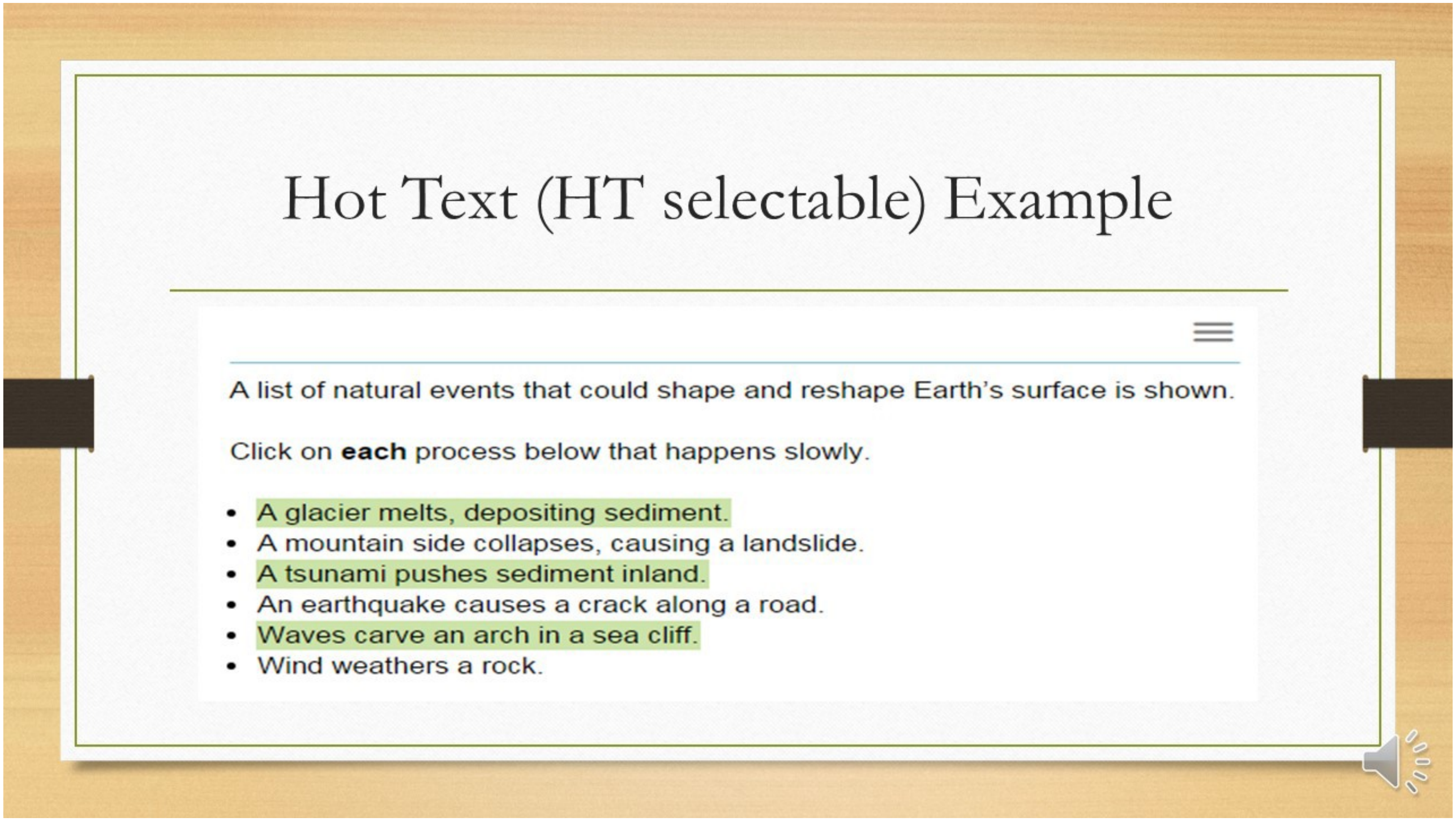
A list of natural events is shown.

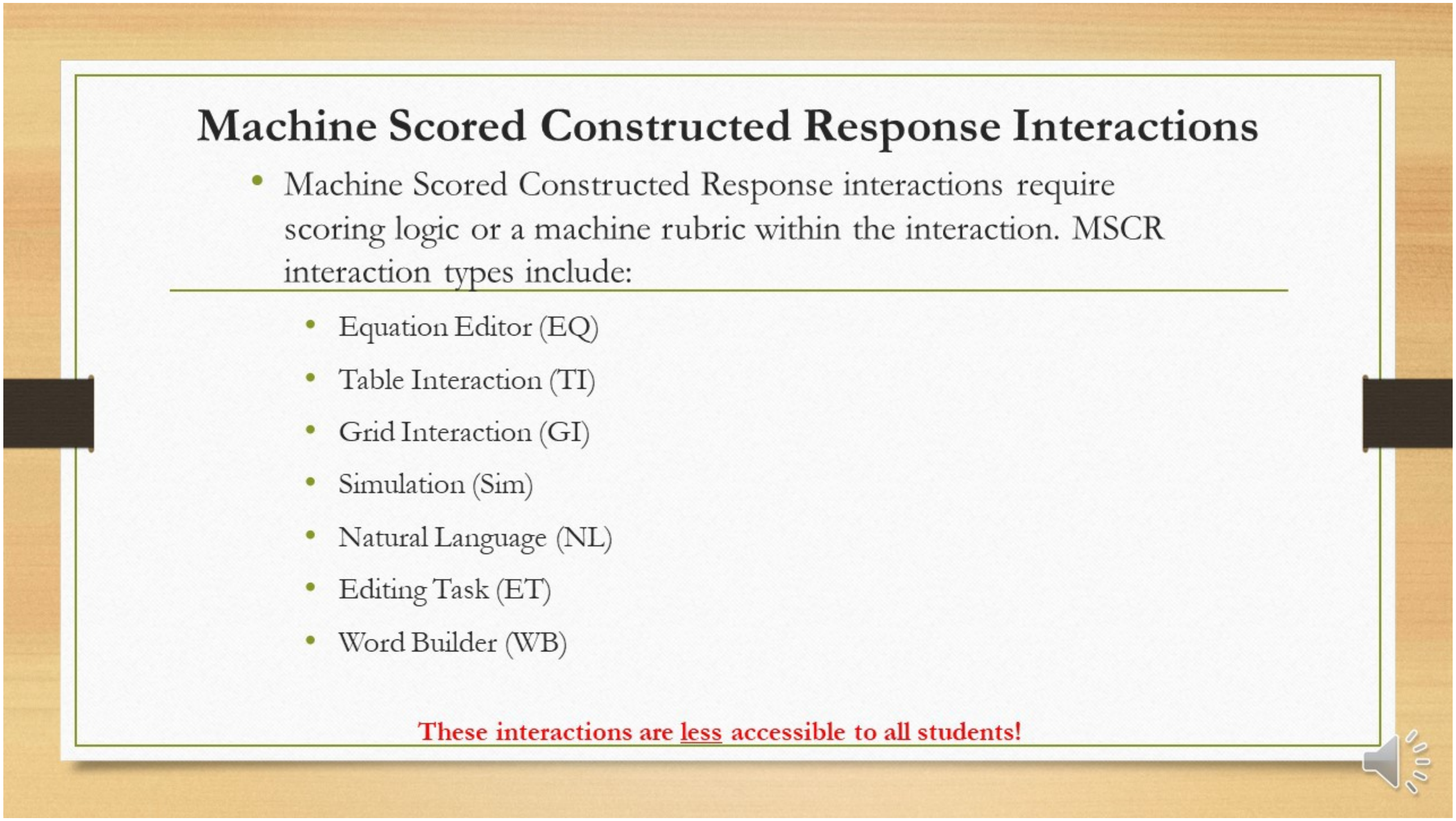
Click and drag the natural events to classify each natural event as either a fast or slow process that could shape and reshape Earth's surface.

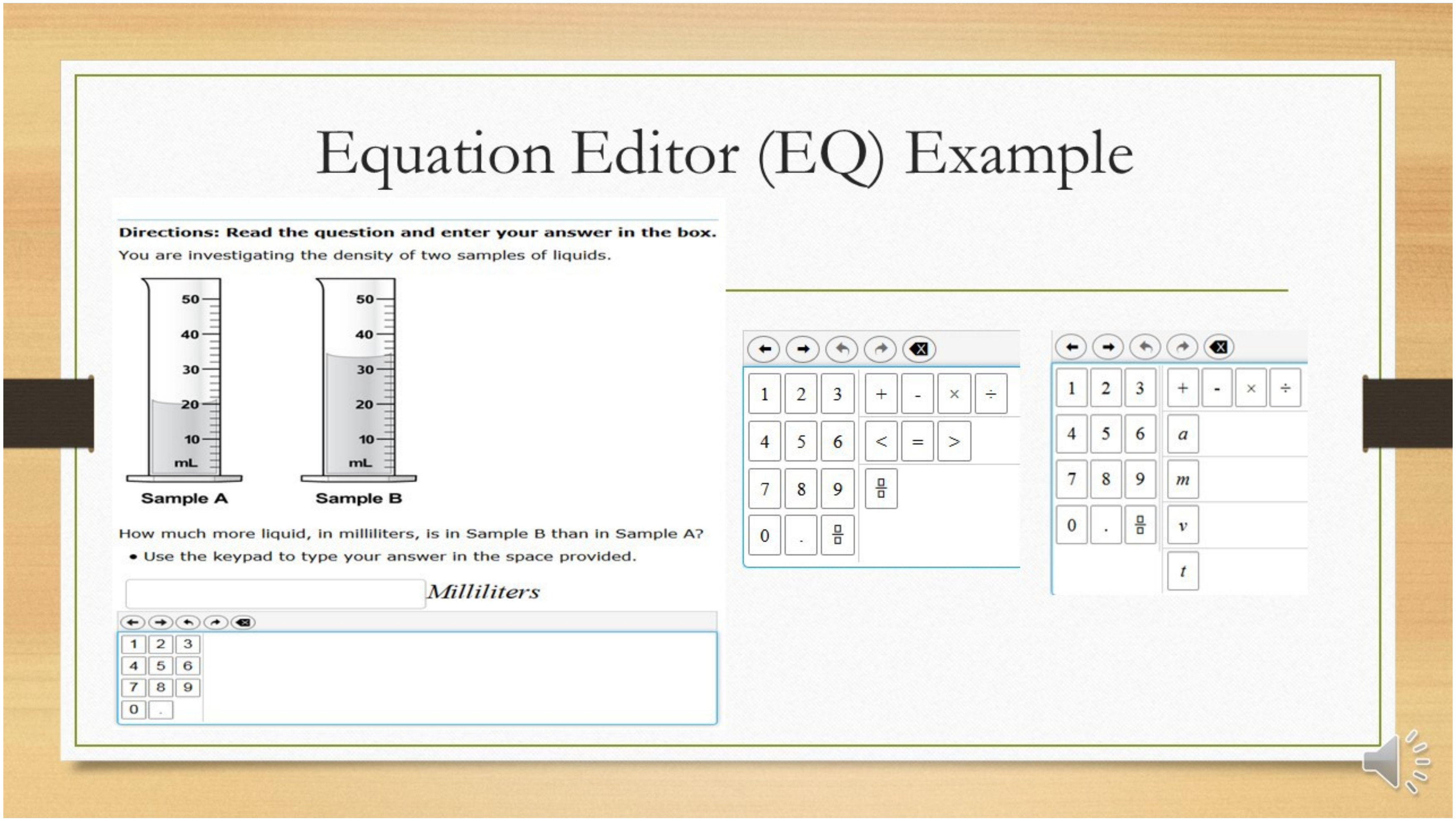
Fast and Slow Processes

Fast Process	Slow Process

1. A glacier melts, depositing sediment.
2. A mountain side collapses, causing a landslide.
3. A tsunami pushes sediment inland.
4. An earthquake causes a crack along a road.
5. Waves carve an arch in a sea cliff.
6. Wind weathers a rock.


Hot Text (HT selectable) Example
A list of natural events that could shape and reshape Earth's surface is shown.
Click on **each** process below that happens slowly.
A glacier melts, depositing sediment.
A mountain side collapses, causing a landslide.
A tsunami pushes sediment inland.
An earthquake causes a crack along a road.
Waves carve an arch in a sea cliff.
Wind weathers a rock.


Machine Scored Constructed Response Interactions
Machine Scored Constructed Response interactions require scoring logic or a machine rubric within the interaction. MSCR interaction types include:
Equation Editor (EQ)
Table Interaction (TI)
Grid Interaction (GI)
Simulation (Sim)
Natural Language (NL)
Editing Task (ET)
Word Builder (WB)
These interactions are less accessible to all students!


Equation Editor (EQ) Example
Directions: Read the question and enter your answer in the box.
You are investigating the density of two samples of liquids.
Sample A
Sample B
How much more liquid, in milliliters, is in Sample B than in Sample A?
• Use the keypad to type your answer in the space provided.
Milliliters

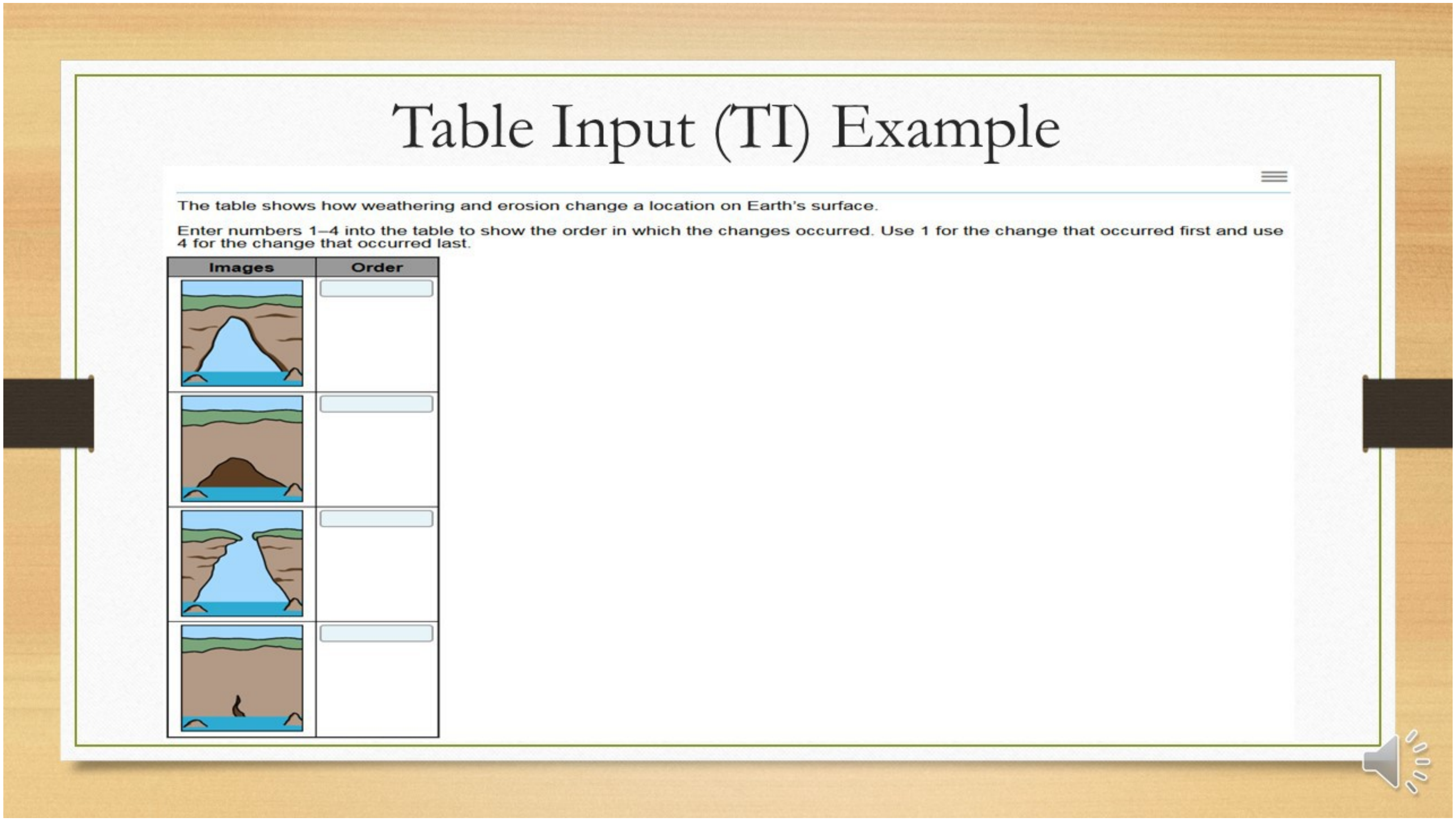
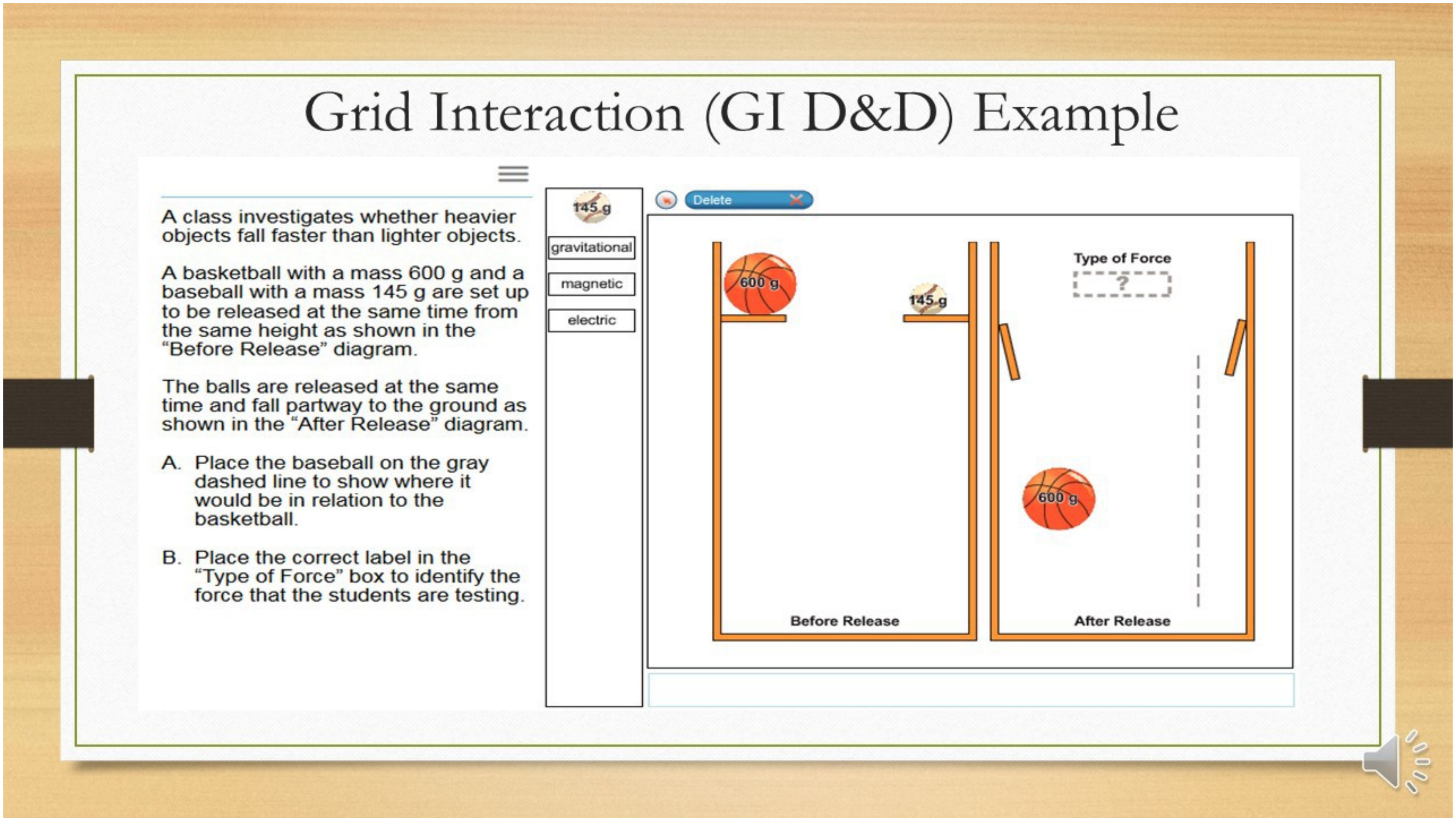
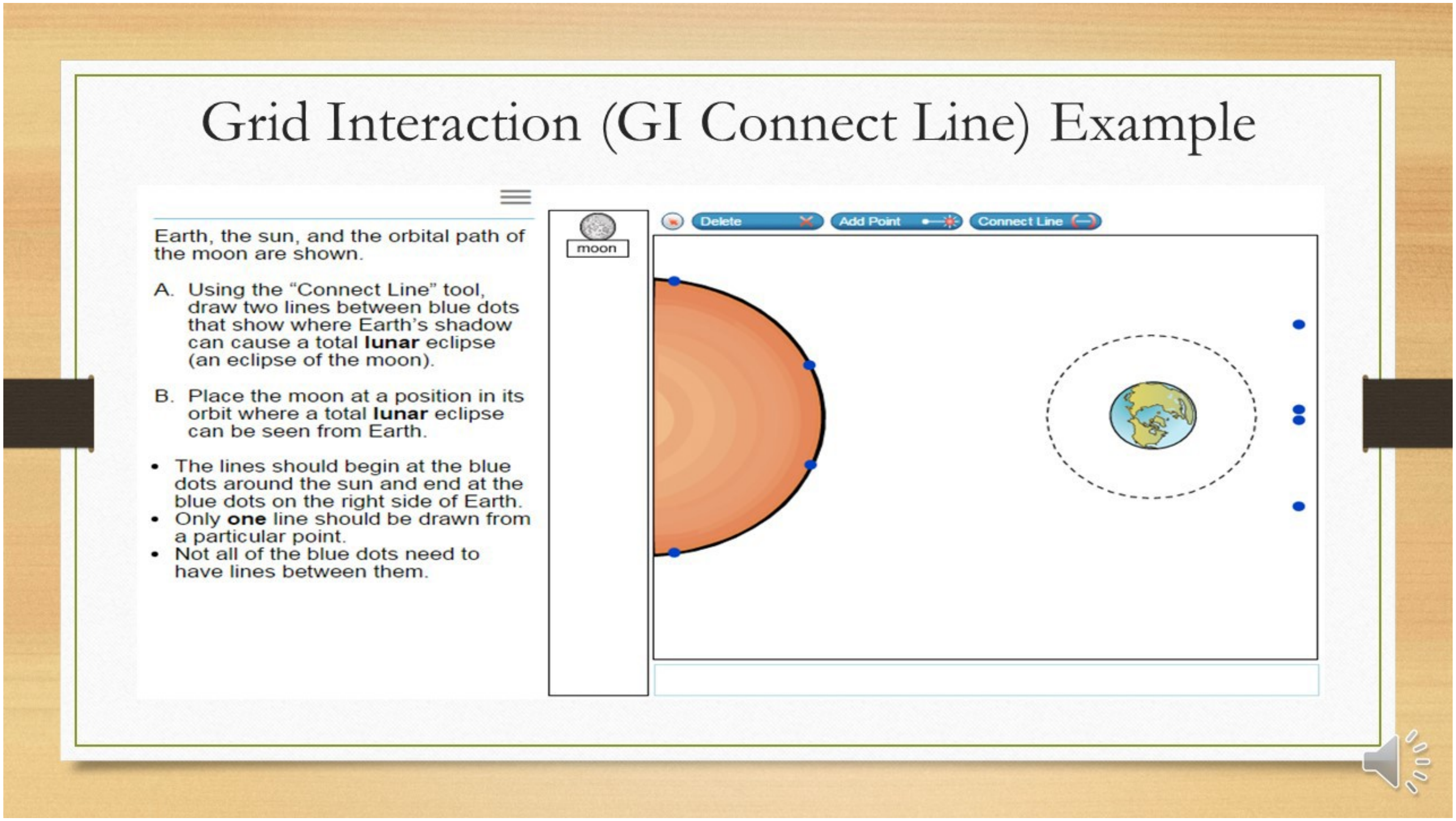
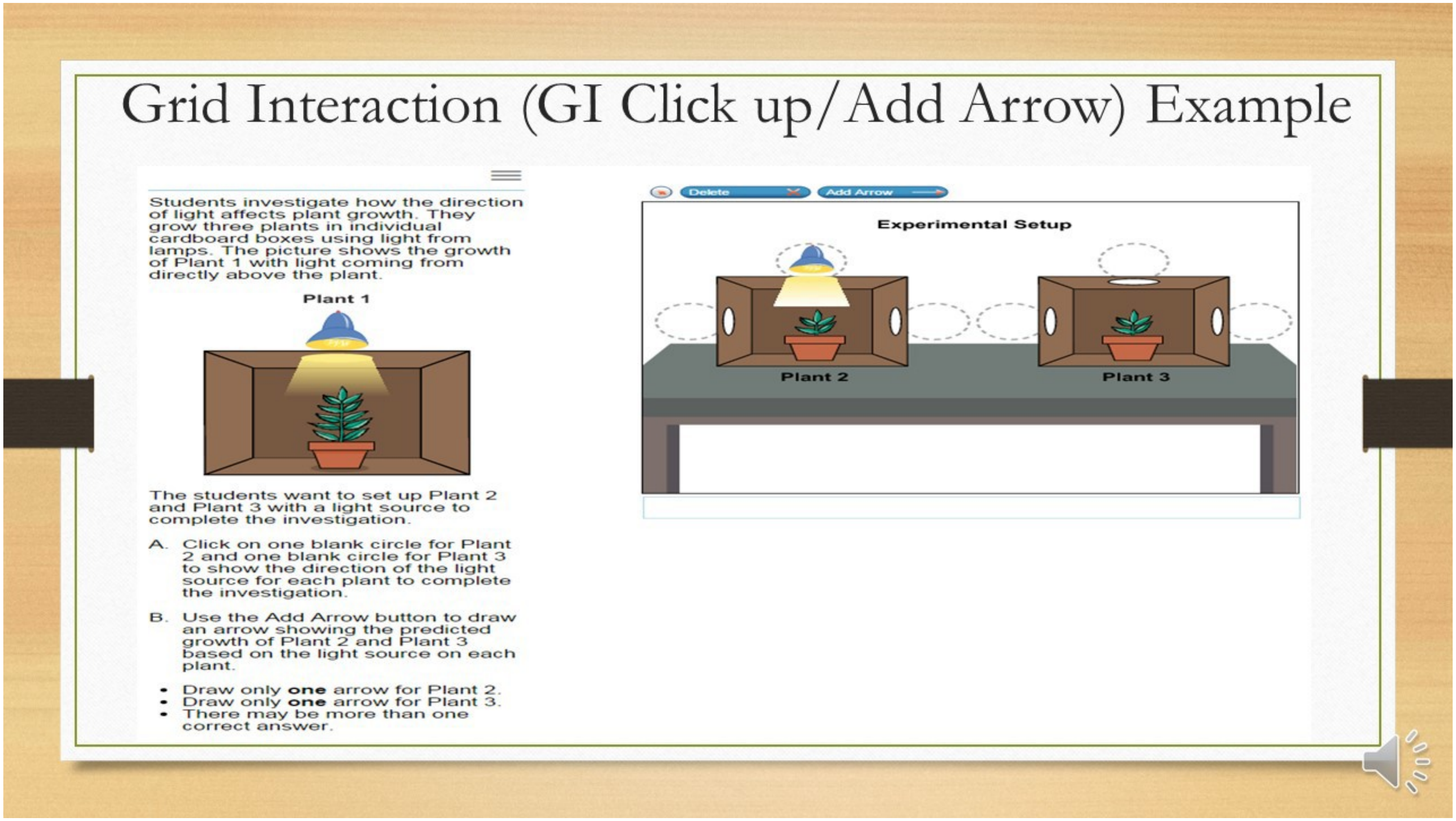
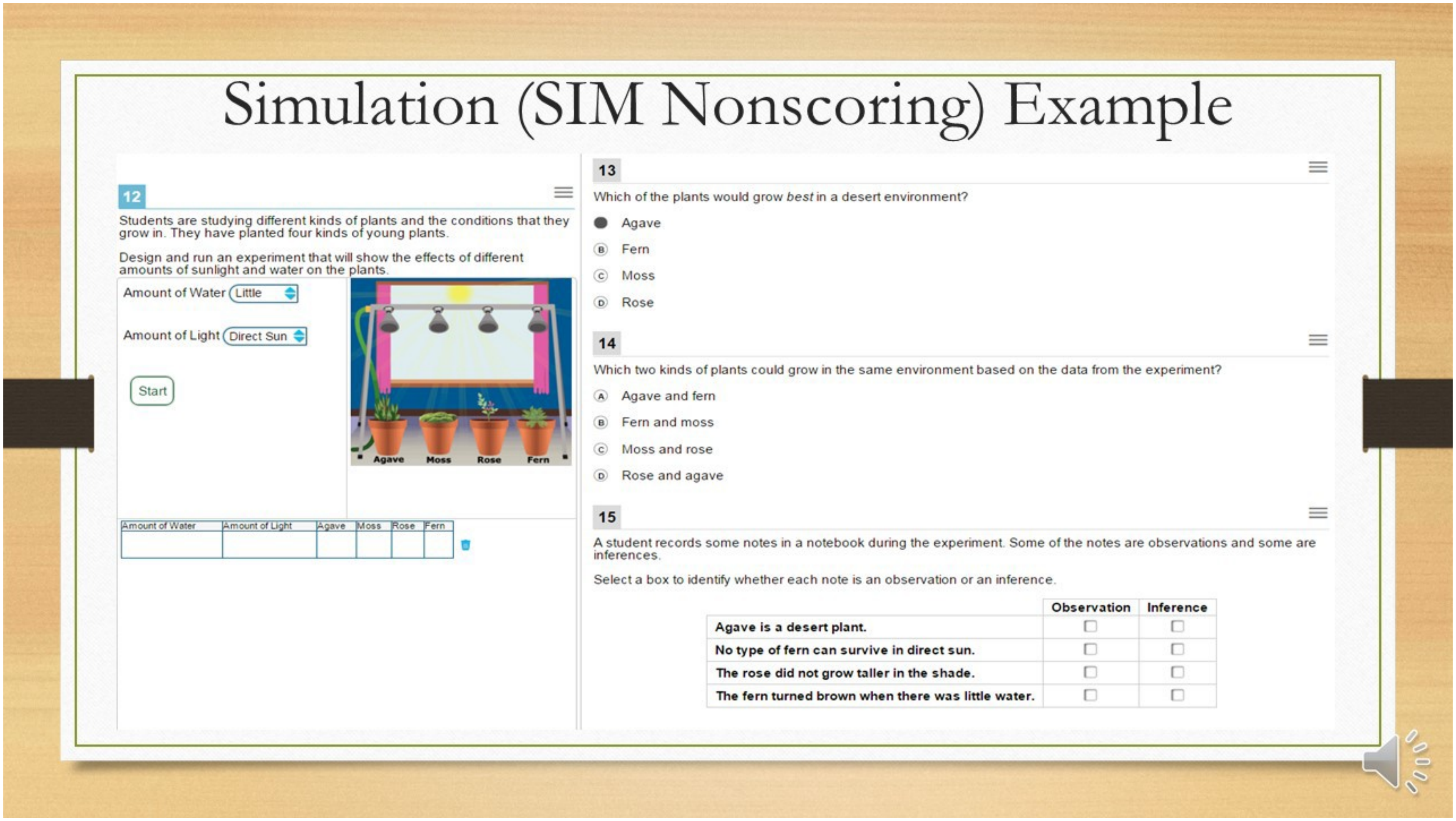


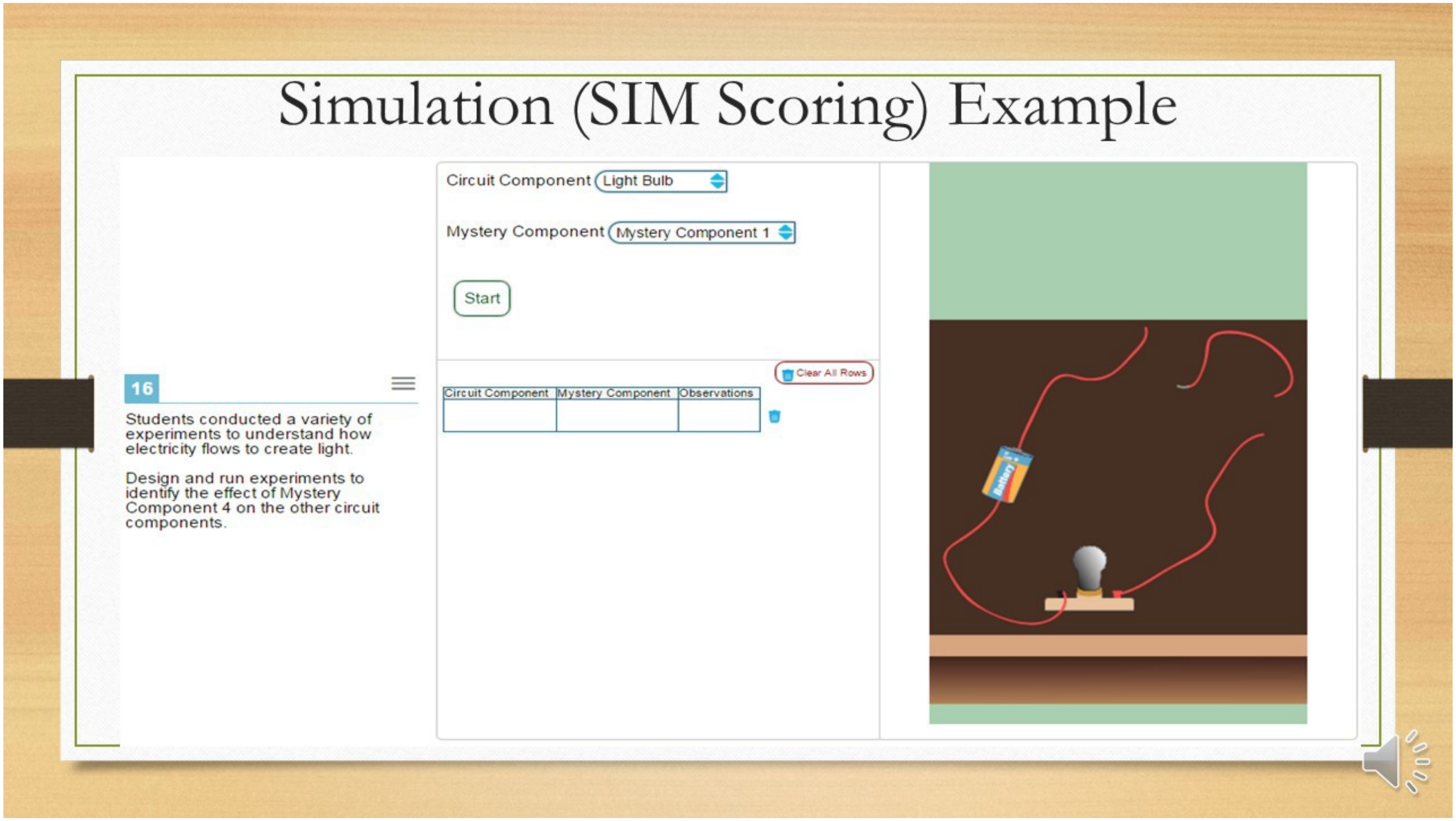
Table Input (TI) Example
The table shows how weathering and erosion change a location on Earth's surface.
Enter numbers 1–4 into the table to show the order in which the changes occurred. Use 1 for the change that occurred first and use 4 for the change that occurred last.
Images
Order

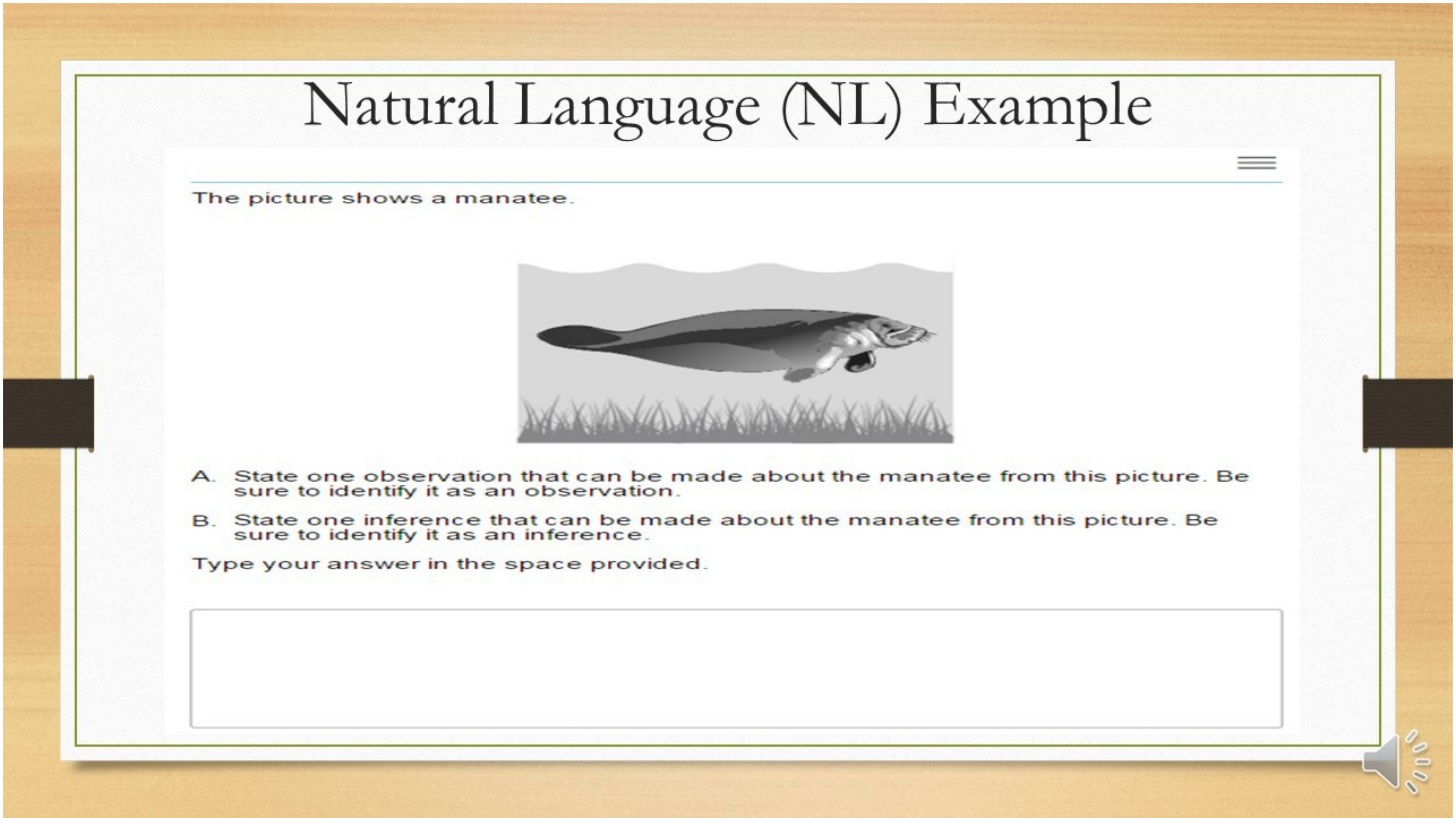

Grid Interaction (GI D&D) Example
A class investigates whether heavier objects fall faster than lighter objects.
A basketball with a mass 600 g and a baseball with a mass 145 g are set up to be released at the same time from the same height as shown in the "Before Release" diagram.
The balls are released at the same time and fall partway to the ground as shown in the "After Release" diagram.
A. Place the baseball on the gray dashed line to show where it would be in relation to the basketball.
B. Place the correct label in the "Type of Force" box to identify the force that the students are testing.
145 g
gravitational
magnetic
electric
Delete
600 g
145 g
Type of Force
?
600 g
Before Release
After Release


Grid Interaction (GI Connect Line) Example
Earth, the sun, and the orbital path of the moon are shown.
A. Using the "Connect Line" tool, draw two lines between blue dots that show where Earth's shadow can cause a total **lunar** eclipse (an eclipse of the moon).
B. Place the moon at a position in its orbit where a total **lunar** eclipse can be seen from Earth.
• The lines should begin at the blue dots around the sun and end at the blue dots on the right side of Earth.
• Only **one** line should be drawn from a particular point.
• Not all of the blue dots need to have lines between them.
moon
Delete
Add Point
Connect Line


Grid Interaction (GI Click up/Add Arrow) Example
Students investigate how the direction of light affects plant growth. They grow three plants in individual cardboard boxes using light from lamps. The picture shows the growth of Plant 1 with light coming from directly above the plant.
Plant 1
The students want to set up Plant 2 and Plant 3 with a light source to complete the investigation.
A. Click on one blank circle for Plant 2 and one blank circle for Plant 3 to show the direction of the light source for each plant to complete the investigation.
B. Use the Add Arrow button to draw an arrow showing the predicted growth of Plant 2 and Plant 3 based on the light source on each plant.
• Draw only one arrow for Plant 2.
• Draw only one arrow for Plant 3.
• There may be more than one correct answer.
Delete
Add Arrow
Experimental Setup
Plant 2
Plant 3


Simulation (SIM Nonscoring) Example
12
Students are studying different kinds of plants and the conditions that they grow in. They have planted four kinds of young plants.
Design and run an experiment that will show the effects of different amounts of sunlight and water on the plants.
Amount of Water Little
Amount of Light Direct Sun
Start
Agave Moss Rose Fern
Amount of Water | Amount of Light | Agave | Moss | Rose | Fern
13
Which of the plants would grow best in a desert environment?
Agave
Fern
Moss
Rose
14
Which two kinds of plants could grow in the same environment based on the data from the experiment?
Agave and fern
Fern and moss
Moss and rose
Rose and agave
15
A student records some notes in a notebook during the experiment. Some of the notes are observations and some are inferences.
Select a box to identify whether each note is an observation or an inference.
Observation | Inference
Agave is a desert plant.
No type of fern can survive in direct sun.
The rose did not grow taller in the shade.
The fern turned brown when there was little water.


Simulation (SIM Scoring) Example
16
Students conducted a variety of experiments to understand how electricity flows to create light.
Design and run experiments to identify the effect of Mystery Component 4 on the other circuit components.
Circuit Component
Light Bulb
Mystery Component
Mystery Component 1
Start
Clear All Rows
Circuit Component
Mystery Component
Observations


Natural Language (NL) Example
The picture shows a manatee.
A. State one observation that can be made about the manatee from this picture. Be sure to identify it as an observation.
B. State one inference that can be made about the manatee from this picture. Be sure to identify it as an inference.
Type your answer in the space provided.

Selected Response (SR) Interactions

Selected Response interactions provide response options and the student selects the response(s).

SR Interaction Type	Task Demands that can be Assessed
Multiple Choice (MC)	Identify, Choose, Select, Label
Multi Select (MS)	Identify, Choose, Select, Label
Table Match (MI)	Classify, Categorize, Organize, Rank, Sort, Sequence
Editing Task Choice (ETC)	Classify, Categorize, Organize, Sort, Sequence, Compare, Label, Construct an explanation/argument, Describe, Summarize, Complete
Hot Text Selectable (HT)	Highlight, Identify, Select, Choose

Machine Scored Constructed Response (MSCR) Interactions

Machine Scored Constructed Response interactions require scoring logic or a machine rubric within the interaction. MSCR interaction types include:

Machine Scored Constructed Response Interaction Type	Task Demands that can be Assessed
Equation Editor (EQ)	Calculate, Mathematically describe/represent/model, Identify
Table Input (TI)	Calculate, Sequence, Identify, Organize, Chart
Grid Interaction (GI)	Graph, Model, Represent, Show, Create
Simulation Interaction (Sim)	Investigate, Experiment, Observe, Gather/collect data, Model
Natural Language (NL)	Describe, Compare, Summarize, Explain
Editing Task (ET)	Correct
Word Builder (WB)	Identify

APPENDIX 4-E

SAMPLE ITEM REVIEW CRITERIA

Appendix 4-E
Exhibit A: Sample Item Review Checklists for ELA and Mathematics

I. General

1. **Does this item measure the stated Standard/Objective?** **Yes/No**
2. **Does this item measure the stated ILO/ILO Indicator** **Yes/No**
3. **Is this item appropriate for the stated grade level?** **Yes/No**
4. **Does the language of the question (including any graphics) clearly communicate the task?** **Yes/No**
5. **Does the assigned depth of knowledge accurately reflect what is being asked in this item?** **Yes/No**
6. **Is this item free from bias and sensitivity issues?** **Yes/No**

II. Selected Response (MC, MS, MI, EBSR, HT)

7. **Is there a clear, correct answer(s) to the item, and are all incorrect choices clearly incorrect?** **Yes/No**
8. **Are the rationales for each distractor and the explanation of the key(s) clear and concise?** **Yes/No**

III. Machine-Scored Constructed-Response (EQ, GI, NL, WB, TI)

9. **Does this item have a correct answer?** **Yes/No**
10. **Does this item appropriately measure the stated score point value (1, 2, 3, or 4 points)?** **Yes/No**

IV. Final Outcome

In conclusion, I recommend this item:

Appendix 4-E
Exhibit B: Sample Item Review Checklists for Science

Tier 1 – Sufficiency/Appropriateness of the Phenomenon to Assess the Performance Expectation

The elements in this tier are critical

- ☐ Is the phenomenon based on a specific real-world scenario and focused enough to get the student to investigate what the Performance Expectation (PE) intends for them to investigate (i.e., the students' application of the Practice in the context of the Disciplinary Core Idea [DCI] and Crosscutting Concepts [CCC] as intended by the PE is sufficient to make sense of the phenomena)?
- ☐ Is there an appropriate science-related activity that is puzzling and/or intriguing for students to engage in? Is the scenario focused on real-world observations that students can connect with or have direct experience with?
- ☐ Is the context and complexity of the phenomenon grade-appropriate?
- ☐ Cluster Task Statement: Does the "call to action" reflect the end goal of the interactions to be answered? Does the statement make sense? Is this an engaging and reasonable outcome to work towards?
- ☐ Is the phenomenon presented in way(s) that all students can access and comprehend it based on information provided (including text, graphics, data, images, animations, etc.)? Is the phenomenon free of cultural bias, insensitivity or depreciation of unsafe situations?

Tier 2 – Review of Specific Elements by Component

Stimulus

Reading Load/Readability/Style

- ☐ Is the reading load appropriate for the grade (i.e., the amount of text minimized to reduce cognitive load)?
- ☐ Is the language and vocabulary appropriate for the grade?
- ☐ Non-specific vocabulary should be one grade level lower than the tested grade.
- ☐ Science vocabulary should be part of the "Science Vocabulary Students Are Expected to Know" in the item specifications.
- ☐ Is all of the information in the stimulus necessary for the student to complete the item interactions?
- ☐ Is language consistent throughout the cluster (i.e., does not switch between steam and vapor)?
- ☐ Is everything in the active voice (i.e., avoids unnecessary and unclear passive construction)?

Measurement/Units

- ☐ Are the data in SI units? Check style guide for exceptions.

☐ Are units of measurement introduced or defined before they are used in graphs/tables?

☐ Are the dependent/independent variables on the correct axes or in the correct columns?

☐ Are the graphs/tables/pictures free of extraneous information and appropriate for the grade level?

☐ Is there information included in graphs/pictures/tables that is not necessary and can be removed?

☐ Do the graphs/tables/pictures depend on color? Is there another way to represent the difference in the data other than by color (e.g., using patterns)?

Data Source and Scientific Reference

☐ Is content both accurate and appropriate in its context?

☐ Are the data sources appropriate for the subject/grade and taken from reliable academic sources?

☐ Does the item use the most up-to-date explanation?

Formatting

☐ Is everything presented within the browser dimensions (1024x768) without horizontal scrolling?

☐ Are the tables/graphs/etc. laid out in a way that is easy to read?

☐ Are details and text in animations easy to see? Are labels in diagrams easy to read?

☐ Is the average file size appropriate for test delivery (approximately 100KB, 250KB maximum)?

Item

Interaction and Alignment to Specifications

☐ Does the item make sense if you are responding to the interactions as if you are the student in the intended grade-level?

☐ Does the interaction require the student to demonstrate the science practice and/or content that the PE is assessing them on?

☐ Are the interactions grade level/developmentally appropriate and do they follow a logical progression? Do the interactions use appropriate scaffolding to guide students in making sense of the phenomena?

☐ Do the interactions align with the task demands?

☐ Do the interactions avoid redundancy? Do the student interactions follow a coherent progression?

☐ Do the student interactions follow a coherent progression? Does the order of the interactions allow students to make sense of the phenomenon or problem?

☐ Is the item stem worded in a way that makes the intent of the interaction clear to the student?

☐ Is it clear to the student what they will be scored on in the interaction?

☐ Is the language (e.g., words, phrases) consistent throughout the stimulus and items?

Grade Appropriate

- ☐ Is the content within the item accurate and grade appropriate?
- ☐ Are the correct units used? Are the units grade appropriate? Where necessary, are the abbreviations of the units introduced?
- ☐ Is the number of item parts/scoring assertions appropriate for the grade level?
- ☐ Is the mathematics level appropriate for the grade being tested?

Formatting

- ☐ Is everything presented within the browser frame without horizontal scrolling?
- ☐ Are the tables/graphs/etc. easy to read? Are the images created in an appropriate color palette per the Style Guide?
- ☐ Are details and text in animations easy to see?

Tier 3 – Review of the Scoring and Assertion(s)

Scoring Accuracy

- ☐ Do the interactions/task provide clear guidance on how student responses will be scored/interpreted?
- ☐ Are scores assigned appropriately as correct or incorrect?
- ☐ Are the dependencies logical?
- ☐ Are any of the scoring assertions exclusive (i.e., the student can get only one assertion correct and not another at any given time)?
- ☐ Is the correct answer clear and distinct from the distractors?
- ☐ Does the scoring result in an appropriate distribution of points?

Scoring Assertions

- ☐ Is the appropriate wording used for each scoring assertion (e.g., <Feature of response> providing some evidence of <what we want to infer about the student>)?
- ☐ Does the inference follow from the data?
- ☐ Are the assertions specific to the individual interactions (i.e., does not just repeat the PE)?
- ☐ Are the scoring assertions in the same order as the interactions?
- ☐ Does the wording of the scoring assertion make it very clear which interaction and action it refers to?

Strategies for Editing Text to Produce Plain Language

- Reduce excessive length

- Use common words
- Avoid ambiguous words
- Limit irregularly spelled words
- Avoid inconsistent naming and graphic conventions
- Avoid multiple terms for the same concept
- Limit the use of embedded clauses and phrases
- Avoid the passive voice

APPENDIX 4-F

ITEM REVIEW PROCESSES

Appendix 4-F
Exhibit A: Item Review Processes for ELA, Mathematics, and Science

CAI's Internal Review Process

Once the feedback loop with teachers is complete and items are submitted for CAI review, they then become part of CAI's internal review process, which is among the most rigorous in the industry. Items go through no fewer than four levels of internal review at CAI where they are carefully examined by editors as well as test development content experts.

Items move through each review level via CAI's Item Tracking System (ITS), which ensures that each review step is complete before an item advances to the next level of review.

Preliminary Review Process

During the first level of review, called preliminary review, CAI's test developers review items typically as a group. CAI finds the group process beneficial because the exchange of ideas and open discussion generally yield items that are clearer, more precise, and better aligned to the academic standards. At every stage of the item review process, beginning with preliminary review, test developers analyze items to ensure they conform to the following best practices:

- The item aligns well with the Utah Core Standard.
- The item is an appropriate use of the item types and available technology.
- The item matches the item specification for the target being assessed.
- The item is based on a quality idea—assesses something worthwhile in a reasonable way.
- The item is properly aligned to a Depth of Knowledge level.
- The item is consistent with the Utah style guide.
- The vocabulary used in the item is appropriate for the grade/age; matches the subject matter; and adheres to language accessibility, bias, and sensitivity guidelines.
- The content is accurate and straightforward.
- The graphic and stimulus materials are actually necessary to answer the question.
- The stem is clear, concise, and succinct;
    - has enough information to know what is being asked;
    - is stated positively (and does not rely on negatives—such as no, not, none, never—unless absolutely necessary); and
    - ends with a question.
- For selected response items, the set of response options are
    - as succinct and short as possible (without repeating text);
    - parallel in structure, grammar, length, and content;
    - sufficiently distinct from one another;
    - all plausible (but with only correct option); and
    - ordered by length.
- There is no obvious or subtle cluing.
- The score points for constructed-response items are clearly defined.
- For machine-scored constructed-response items, the items score as intended at each score point in the rubric.

Once the content of the item is confirmed at the group review, CAI test developers create scoring logic for all machine-scored constructed response items. CAI has developed a vast array of item types that allow for machine-scored constructed response items. CAI's technology enables test developers—content experts, editors and graphic designers—to develop complex, machine-scored, true constructed-response items, including their scoring rubrics, without involvement of software developers. This allows CAI to keep item and rubric development costs comparable to paper-and-pencil items and rubrics. Secondly, it simplifies the development process, because CAI content experts can work directly with USBE content developers to revise items, without having to translate the content to a form that can be programmed by software developers. This allows us to keep the items close to subject matter experts who can ensure that both the content and the scoring of the item are sound.

When reviewing machine-scored constructed response items and performance-based assessments, test developers at CAI review these items in ITS web preview, which allows them to see the item as it will be rendered for students in the online testing environment. Test developers interact with each item to verify that it directs the student to a clear understanding of the task, allows the student to provide a coherent response, and contains scoring guidelines that adequately account for all logical responses. If the rubric requires an edit, the test developer makes the change both to the human-readable rubric as well as to the machine-scoring rubric and puts the item through the online web approval review once again to ensure accurate scoring. (We note that nearly half of the math items in current development will require the specialized machine rubrics that are developed by CAI staff.)

Based on this meticulous review of each item, the preliminary reviewers accept the item and classification as written or revise the item, attributes, or classification or all three. Another alternative is to reject the item because it is too problematic in content or does not align to any standard, or both. Whatever the recommendation, the review comments are noted in ITS and, if an item is revised, its previous version is automatically archived.

Content Review One

Content Review One is generally conducted by an individual test development specialist, rather than as a group review. The Content One reviewer carefully examines each item based on all the criteria above. In most cases, he or she plays a more senior role on the content team and brings more years of knowledge and experience to the review. This reviewer approaches the item both from the perspective of Utah's guidelines as well as his or her own experience in test development and knowledge of assessment best practices.

Content One is also where items are checked to ensure that the revisions made at the preliminary review step did not introduce errors or content inaccuracies. The Content One reviewer looks at all aspects of the item and reviews the comments saved in ITS from the preliminary review to verify that any issues noted there have been adequately addressed.

Reviewers use the following questions to guide their review:

- Is the item mathematically correct?
- Does the item align with the standard/benchmark/GLE/indicator?
- Is the language of the stem (and options) simple, clear and concise? Are all words appropriate for the grade level (or used in benchmark/GLE language)?
- Is the context plausible and appropriate for the grade level?
- Is the depth of knowledge level/complexity level appropriate?
- Is the key the only correct answer?
- Are the distractors plausible and do they represent common misconceptions? Are they mostly parallel in form and content/equal in length? Are they following a logical order (see style guide for each project)?
- Do the rationales clearly explain why the distractor is incorrect and are they in the correct format (The student may have…)?
- Does the rationale for the key explain why the key is correct and use the appropriate format (Key - …)?
- Does the format of the item match the style guide?
- Are all the equations in equation editor with the proper font/size/spacing?
- Are all the graphics in .eps format?
- Do the graphics match the style guide?
- Does the item description match the item?
- Do MSCR items have sufficient depth so that distinct score points are clearly defined? Is this clearly stated in the OO rubric?
- Does the MSCR item score properly (you should try a few different responses and put extra objects in the response space to try and find an error)?

- Is the exemplar in the OO rubric correct? Does it represent what the student is being asked to do in the question?
- Are the correct action buttons present for the MSCR (e.g., no delete with preplaced objects)?
- Does the item have a page layout and response type chosen?
- Does the item (including any graphics) appear properly in web preview?
- Do the graphics appear transparent when a color overlay is added in web preview?

Edit Review

CAI editors review every item for clarity, correctness, and appropriateness of language for the grade level assessed, and conformity with acceptable item-writing practices. Editors ensure clearly worded, understandable, and fair presentation of items, instructions, and administrative documents. The editorial process is related to, but separate from, the item development process so that editors can look at the items objectively.

Editors have numerous tasks. First, editors perform basic line editing for correct spelling, punctuation, grammar, and mathematical and scientific notation, ensuring consistency of style across the items. CAI editors have adopted standard reference resources, among which are *Merriam Webster's Collegiate Dictionary* (11th edition) and *Webster's Third International Dictionary, Unabridged* for spelling and capitalization; *Associated Press Stylebook and Briefing on Media Law* for usage; *Words into Type* for grammar; and the *Publication Manual of the American Psychological Association* for reference citations. Subject-specific reference sources include *Webster's New Biographical Dictionary* and *Webster's American Biographies*; *The Harvard Dictionary of Music*; *Janson's History of Art*; *Webster's New Geographical Dictionary*; *Dorland's Illustrated Medical Dictionary*; *Mathematics Dictionary* (James and James); *Scientific Style and Format: The CBE Manual for Authors, Editors, and Publishers* (Council of Biology *Editors); and The Macmillan Dictionary of Measurement.*

Additionally, CAI's editors also check that items adhere to the Utah style guide, which ensures a consistent presentation of items with each testing administration. Style guides synthesize frequently used assessment-relevant information that addresses such test-specific issues as numerals, abbreviations, symbols, and terminology. CAI editors become experts on the preferred format and style that is used across all SAGE items.

Editors also ensure that all items are accurate in content and will query the item developer when questions arise. The editors compare reading passages against the original publications and make sure that all information is internally consistent across stimulus materials and items, including names, facts, or cited lines of text that appear in the item. The editors ensure that the keys are correct and that all information in the item is acceptable and correct. For example, editors verify common facts (e.g., the diameter of Earth, the scientific name of the fruit fly, the formula for calculating the volume of a cube, the proper use of the semicolon, etc.). Mathematics assessments present a specific challenge because of the potential for transposing numerals and the difficulty of identifying computation errors by sight. Therefore, CAI's editors perform all calculations to ensure accuracy.

CAI's editors apply the principles of universal design by reviewing all material for fairness and language accessibility issues. Although external committees and the lead item developers look at all material, editors raise questions before the material reaches the committees and then recheck all material that undergoes any changes.

Finally, CAI's editors confirm that items reflect the accepted guidelines for good item construction. For example, in mathematics items, they ensure that options given with calculator-active items reflect errors in thinking, not errors in calculator use. In all items, they look for language that is simple, direct, and free of ambiguity with minimal verbal difficulty. Editors confirm that a problem or task and its stem are clearly defined and concisely worded with no unnecessary information. For multiple-choice items, editors check that options are parallel in structure and fit logically and grammatically with the stem and that the key accurately and correctly answers the question as posed, is not inappropriately obvious, and is the only correct answer to an item among the distractors. For constructed-response items, editors review the rubrics for appropriate style and grammar.

Senior Review

Because this is the last step in the internal review process before items go to USBE for review, CAI ensures that the senior review of an item is done by a senior member of the content team. This is typically a test developer who knows the client well, who has interacted with teachers in the state, and who is very familiar with the testing program. Senior team members also have many years of experience in both education and assessment, with a concentration in the subject matter they are reviewing.

By the time an item arrives at the senior review level in ITS, it has been thoroughly vetted by both content reviewers and editors. The senior reviewer looks back at the item's entire review history, making sure that all the issues identified in that item have been adequately addressed. For machine-scored constructed-response items, the senior reviewer carefully checks the rubric and scoring logic by responding to the task in ITS web preview just as the student would in the testing environment. He or she checks full credit, partial-credit and no-credit responses to verify that the scoring is working as intended. The senior reviewer verifies the overall content of each item, confirming its accuracy, alignment to the standard and consistency with USBE's expectations for the highest quality.

Client Review and Resolution

USBE review is a critical step in the overall quality and adequacy of the assessment. CAI's unique online Item Tracking System allows both test developers and USBE to review items securely from any location with access to the Internet. USBE can review items through ITS web preview, which allows users to view each item and passage exactly as it will be displayed to students in the online testing environment. Web preview gives us the opportunity to confirm the item layout and formatting, as well as scoring. For machine-scored constructed response items, USBE can test all possible student responses, both full and partial credit, to ensure that each item's rubric is appropriate and acceptable.

Typically, CAI and USBE meet to review and discuss items and make revisions if necessary. Once USBE approves an item, it moves on to a series of committee reviews, as evidenced in the flow chart in Exhibit A.

Committee Review

Just as Utah's teachers were an integral part of the item creation process, so are they an important step in confirming the appropriateness of each item once the review process is complete. Every item goes through multiple committee reviews including:

- Content Advisory Committee, made up of teachers representing each grade level
- Fairness and Sensitivity review, made up of educators and community members representing each of Utah's sub-populations, and
- Parent Review, in which each question is reviewed by a committee of Utah parents

Annotations and Translations

Once items have been vetted by Utah's committees and approved by USBE, they are eligible to move into the annotation phase of development. Here, items can have text-to-speech and text-to-braille features added, among others. CAI's team of TTS specialists put the items through a series of review steps to ensure the annotations are clear and precise. Once the annotations have been created and reviewed internally by CAI, USBE reviews the annotations and confirms them.

Rubric Validation

After items are field tested and CAI has collected a large sample of student responses, the rubrics of the machine-scored items are checked to ensure they are scoring as intended. CAI has developed a process, called rubric validation that efficiently reviews scoring rubrics for true rule-based scoring. This process is supported by CAI's REVISE software.

CAI typically recommends selection of 45 responses for each item for review by the committee. The item responses are selected to disproportionately represent anomalous responses. Specifically, the sampling algorithm identifies examinees who performed well on the multiple-choice items but scored poorly on the constructed-response item being studied, as well as those who did poorly on the multiple-choice and well on the studied constructed-response item. Given these guidelines, the selection is random, ensuring representation of all responses. The balance of the sample comprises those responses fitting neither of the other two categories. By selecting equal numbers of cases from these three strata, CAI over-represents anomalous responses, which helps to identify any potential problems in the rubric.

USBE typically convenes a committee of teachers to review these responses and their scores. The committee is able to see actual student responses, note observations about each response, designate a consensus score for each response, and select additional samples to review according to a variety of sampling schemes. The entire process is facilitated by CAI's REVISE software, which is a secure web-based application that selects and presents responses, gathers committee input, and updates the Item Tracking System with the results.

CAI test developers make the recommended changes to the items, and REVISE rescores all of the responses with the revised rubrics. Users can then review every changed response (or a sample of them) to evaluate whether the revision had any unintended consequences. The sample brought to the committee (or any other existing sample) can also be reviewed to evaluate the impact of the rubric changes on those responses.

Final revisions, along with sample responses and a report on the effectiveness of rubric revisions on the committee sample(s), are communicated to USBE for final determination of which changes to implement. The ITS preserves every version of the rubric, so it is always possible to revert to an earlier version.

Data Review

Despite conscientious item development, some items perform differently than expected when administered to students. Using the item statistics gathered in field testing to review item performance is an important step in constructing valid operational tests.

Classical item analyses ensure that items function as intended with respect to the underlying scales. Classical item statistics are designed to evaluate the item difficulty and the relationship of each item to the overall scale (item discrimination) and to identify items that may exhibit a bias across subgroups (differential item functioning analyses). These statistical data points allow us to review items and determine if they are measuring what we intended.

Items flagged for review based on their statistical performance have to pass a two-stage review to be included in the final item pool from which operational forms are created. In the first stage of this review, a team of psychometricians reviews all flagged items to ensure that the data are accurate and properly analyzed, response keys are correct and there are no other obvious problems with the items.

USBE then convenes content review and fairness and sensitivity committees to re-evaluate flagged field-test items in the context of each item's statistical performance. Based on their review of each item's performance, the content review and fairness and sensitivity committees could recommend that flagged items be rejected or deem the item eligible for inclusion in operational test administrations if it appears to be problematic (i.e. it is too difficult, it performed poorly among sub-groups, etc.).

Once an item passes this data review process, it is considered eligible for the operational pool.

Appendix 4-F
Exhibit B: Item Review Processes for Science Clusters

Internal Review

CAI's test development structure utilizes highly effective units organized around each content area. Unit directors oversee team leaders who work with team members to ensure item quality and adherence to best practices. All team members, including item writers, are content-area experts. Teams include senior content specialists who review items prior to client review and provide training and feedback for all content-area team members.

ICCR and MOU science items go through a rigorous, multiple-level internal review process before they are sent to external review. Staff members are trained to review items for both content and accessibility throughout the entire process. A sample item review checklist that our test developers use is included in Appendix 4-E. The ICCR and MOU science internal review cycle includes the following phases:

- Preliminary Review
- Scoring Entry and Review
- Content Review One
- Edit Review
- Content Review Two (Senior Review)

Preliminary Review

Preliminary Review is conducted by team leads or senior content staff. Sometimes Preliminary Review is conducted in a group setting, led by a senior test developer. During the process, team leads or senior content staff analyze items to ensure the following:

- The item aligns with the standard.
- The item matches the item specification for the skills being assessed.
- The item is based on a quality scientific phenomenon (i.e., it assesses something worthwhile in a reasonable way/it is a discrete observation that grounds a scenario, which allows for the assessment of something worthwhile in a meaningful way).
- The item is properly aligned to the task demands.
- The vocabulary used in the item is appropriate for the grade and subject matter.
- The item considers language accessibility, bias, and sensitivity.
- The content is accurate and straightforward.
- The graphic and stimulus materials are necessary to answer the question.
- The item follows the approved style guide.
- The stimulus is clear, concise, and succinct (i.e., it contains enough information to know what is being asked, it is stated positively, and it does not rely on negatives— such as *no, not, none, never*—unless necessary).

For selected-response item interactions, test developers also check to ensure that the set of response options are

- as succinct and short as possible (without repeating text);
- parallel in structure, grammar, length, and content;
- sufficiently distinct from one another;
- all plausible (but with only correct option); and
- free of obvious or subtle cuing.

Scoring Entry and Review

At Scoring Entry level, the item writer inputs the machine scoring so that it can be reviewed by the team lead or senior staff that is reviewing the item prior to Content Review One. This step is kept separate from Preliminary

Review so that the senior staff can suggest changes to the interaction at Preliminary Review without requiring the writer to overhaul scoring that they have already created. It also allows the senior staff to ensure that the scoring suggested by the writer at Preliminary Review is appropriate. This ensures the scoring is entered once, streamlining the process. At this level, the scoring is analyzed to ensure the following:

- The scoring works as it is intended (i.e., the student gets a point for ALL correct responses and no points for ALL incorrect responses).
- The student receives a point for every unique piece of information they reveal about their understanding through their responses.
- Dependent scoring between and within interactions is captured.
- The way in which the scoring is set up is unambiguous and matches the questions asked (i.e., if we tell the student they must round to a certain decimal place, we score them as such).

The senior staff approves the intent of the scoring at Preliminary Review. At Scoring Entry, the writer inputs this approved scoring, after which the senior staff checks the functionality of the scoring. Once the scoring is determined to be working correctly, the senior staff signs off on it and moves it to Content Review One.

Content Review One

Content Review One is conducted by a senior content specialist who was not part of the Preliminary Review. This reviewer carefully examines each item based on all the criteria identified for Preliminary Review. He or she also ensures that the revisions made during the Preliminary Review did not introduce errors or content inaccuracies. This reviewer approaches the item both from the perspective of potential clients as well as his or her own experience in test development.

Edit Review

1. During Edit Review, editors have four primary tasks:
2. Editors perform basic line editing for correct spelling, punctuation, grammar, and mathematical and scientific notation, ensuring consistency of style across the items.
3. Editors ensure that all items are accurate in content. Editors compare reading passages against the original publications to make sure that all information is internally consistent across stimulus materials and items, including names, facts, or cited lines of text that appear in the item. They ensure that the keys are correct and that all information in the item is correct. For items with mathematical tasks, editors perform all calculations to ensure accuracy.
4. Editors review all material for fairness and language accessibility issues.
5. Editors confirm that items reflect the accepted guidelines for good item construction. In all items, they look for language that is simple, direct, and free of ambiguity with minimal verbal difficulty. Editors confirm that a problem or task and its stem are clearly defined and concisely worded with no unnecessary information. For multiple-choice interactions, editors check that options are parallel in structure and fit logically and grammatically with the stem and that the key accurately and correctly answers the question as posed, is not inappropriately obvious, and is the only correct answer to an item among the distractors. For constructed-response interactions, editors review the rubrics for appropriate style and grammar.

Content Review Two (Senior Review)

By the time a science item arrives at Senior Review, it has been thoroughly vetted by both content reviewers and editors. Senior reviewers (in particular, senior content specialists) look back at the item’s entire review history, making sure that all the issues identified in that item have been adequately addressed. Senior reviewers verify the overall content of each item, confirming its accuracy, alignment to the standard, and consistency with the expectations for the highest quality. They check whether the scoring is working as intended and that the scoring assertions adequately address the evidence the student provides with each type of response.

Review by State Personnel and Stakeholder Committees

All science items have been through an exhaustive external review process. Items in the Shared Science Assessment Item Bank were reviewed by content experts in one or several states and reviewed and approved by multiple stakeholder committees to evaluate both content and bias/sensitivity.

State Review

After items have been developed for a state participating in the MOU, content experts from the state that owns the item review any eligible items prior to committee review. At this stage in the review process, clients can request edits, such as wording edits, scoring edits, alignment changes, or task demand updates. A science content liason reviews all client-requested edits considering the science item specifications to determine whether the requested edits will be made. At this stage, clients have the option to present these items to the committee (based on the edits made) or withhold them from committee review.

ICCR items are reviewed by at least one or two states. The states provide feedback on the ICCR items, and the CAI science leadership gathers suggestions and makes edits that improve the ICCR item. Not all suggestions are implemented, as these items are owned by CAI. Further, most MOU states accept or reject ICCR and MOU items (as they appear at the time), to be presented to their committees. Some clients skip this step and allow CAI to review all items with their committees before reviewing them.

Content Advisory Committee Reviews

During the Content Advisory Committee (CAC) reviews, items are reviewed for content validity, grade-level appropriateness, and alignment to the performance expectation. CAC members are typically grade-level and subject-matter experts. During this review, educators also ensure that the scoring assertions make clear what is being scored as correct and give credit where they should. Before the CAC review begins, CAI provides a presentation on the three-dimensional science standards, the item development process, the CAI systems that will be used in the review, and how to review the items for content.

Items developed for each state under the MOU are reviewed by the state that owns the items. ICCR items are reviewed by the CAC of one or more states. In most cases, items are seen by multiple state committees prior to their field-test or operational use.

Language Accessibility, Bias, and Sensitivity Committee Reviews

During the bias and sensitivity reviews, stakeholders review items to check for issues that might unfairly impact students based on their background. For example, some states include representatives from student populations such as Special Education, low vision, and the hearing impaired. Further, diverse members of this committee represent students of various ethnic and economic backgrounds to ensure that all items are free of bias and sensitivity concerns. Before the bias and sensitivity review begins, CAI provides a presentation on the three-dimensional science standards, the item development process, the CAI systems that will be used in the review, and how to review the items for fairness.

Markup for Translation and Accessibility Features

After all approved state- and committee-recommended edits have been applied, the items are considered "locked" and ready for a portion of the accessibility tagging. TTS tagging is applied prior to field testing while braille translations are applied post-field test. Accessibility markup is embedded into each item as part of the item development process rather than as a post-hoc process applied to completed tests.

Accessibility markup, whether translations or for TTS, follow similar processes. One trained expert enters the markup, then a second expert reviews the work and recommends changes if necessary. If there is disagreement, a third expert is engaged to resolve the conflict.

Currently, science items are tagged with TTS. Spanish translations, including Spanish TTS and braille, are available for a subset of items.

Rubric Validation

The validation process of field-test items begins with rubric validation to verify and make any necessary revisions to the scoring rubrics. The rubric validation process occurs in two phases. During the first phase, CAI content experts work with the analysis team to prepare for the rubric validation meetings. The CAI content experts use the Rubric Evaluation and Verification for Items Scored Electronically (REVISE) system to generate student responses that are scientifically sampled to overrepresent responses most likely to have been mis-scored. Specifically, the sample overrepresents: (a) low-scored responses from otherwise high-scoring students, and (b) high-scored responses from otherwise low-scoring students. This process allows CAI to identify any potential scoring concerns before the rubric validation meeting, such as unanticipated (but accurate) responses, equivalent responses that were not originally considered, and responses that are getting credit but should not (based on the content and the item rubric). At this point, the rubrics may be adjusted and responses rescored.

The second phase of rubric validation involves committees of educators in each state. The committees review the response samples generated by CAI to make recommendations to change or to confirm the rubrics of each item. The committee recommendations are then discussed with the owning state to resolve any inconsistencies. The rubric is then edited or confirmed based on this resolution.

After the rubric validation meetings, CAI staff apply the approved revisions to the rubrics. ITS archives critical information regarding the scoring certification completed during the rubric validation process. This includes any rubric changes made during the scoring decision meetings and the sign-off completed by the senior content expert once the rubric has been changed, rescoring the entire sample, and the verification that the final rubric functioned as intended.

Following rubric validation, all items are subject to statistical checks, and flagged items are presented in data review committees.

Data Review

Following rubric validation, all items are rescored and classical item statistics are computed for the scoring assertions, including item difficulty and item discrimination statistics, testing time, and differential item functioning (DIF) statistics. The states established standards for the statistics, and any items violating these standards are flagged for a second educator review. Even though the scoring assertions were the basic units of analysis to compute classical item statistics, the business rules to flag items for additional educator review were established at the item level, because assertions cannot be reviewed in isolation. A common set of business rules was defined for all the states participating in the field test. The classical item statistics were computed on the data of the students testing in the state that owned the item. For ICCR items, the data from students testing in Connecticut, Idaho middle school, New Hampshire, Oregon, Rhode Island, Vermont, and West Virginia were combined (states that administered ICCR items and utilized either an independent or operational test).

The technical report describes in detail the statistical flags that send items to data review. The flags are designed to highlight potential content weaknesses, miskeys, or possible bias issues. Committee members are taught to interpret these flags and are given guidelines for examining the items for content or fairness issues.

For each of the states participating in the MOU, flagged items owned by the state were reviewed by a data review committee. The composition of the data review committees generally consisted of content experts from the state's department of education (DOE) or state educators (in this case, the state educators were science teachers) and were supported by CAI content experts. ICCR items were distributed over the data review committees of states participating in the MOU. In summer 2018, ICCR field-test items were reviewed in webinars with committee members from several states in each session. Outcomes were decided by CAI science content leadership. In summer 2019, ICCR field-test items were taken to Connecticut, Hawaii, and Idaho for committee review. Outcomes were decided by CAI science content leadership, taking the committees' recommendations into consideration.

At the start of each state-owned item data review meeting, CAI staff leads participants in a training session to familiarize them with the item development process, the purpose of data review, the meaning of the various flags, and the purpose of the data review committee. Committee members are taught to interpret the various flags and are given guidelines for examining the items for content or fairness issues. The training includes a group review of item cards, which detail specific item attributes (including grade level and alignment to the science performance expectations, the content and rubric of the item, and the various item statistics). A sample of the training materials used for these data review meetings appears in Appendix 4-G. Participants use an online environment via laptop computers to review the items in order to interact with them in a manner similar to that of students, and also to view all statistics associated with each item.

Items are then reviewed by participants who are most familiar with the particular grade (band) level and content domain of these items. CAI content specialists, who are also well versed in item statistics, facilitate the discussion in each room with CAI psychometricians available to answer questions as they arise. At the end of the meeting, CAI content specialists meet with the state content specialists to review the committee recommendations and decide whether to accept the item for inclusion in the operational pool or reject the item from the operational pool. Items that were rejected are potentially eligible for changes to the item and an additional field test.

APPENDIX 4-G

ITEM DATA REVIEW TRAINING POWERPOINTS

SAGE

Data Review

August 1-3, 2017

USBE Assessment Development Specialists

American Institutes for Research (AIR)

1

SAGE

Welcome

- Introductions
- Paperwork
- Housekeeping

2

SAGE

Topics

- Field Test Administration
- Item Card
- How to use the information
- Daily procedures

3

SAGE

Field Test Administration

- Identify items that do not perform as intended
- Items in pilot slots; all grades/content
- Students are not scored on these items

4

SAGE

Implications for Data Review

- High confidence in the total sample statistics
- Statistics for sub-samples are less reliable and should be used with extreme caution

5

SAGE

Item Card

- Content & Administration
- Item Image (use Web Preview)
- Classical Statistics
- Differential Item Functioning

6

Item Information (Math)

- Multiple Choice (MC) & Multi-Select (MS)
  - Question and answer options
- Machine Scored Constructed and Selected Response
  - Interaction Types Include:
    - Equation Response
    - Grid Items
    - Table Match (Matching Item)
    - Table Input
    - Hot Text
    - Embedded Text Entry
  - Rubrics included

7

Item Information (ELA)

- Multiple Choice (MC) & Multi-Select (MS)
  - Question and answer options
- Machine Scored Constructed and Selected Response
  - Interaction Types Include:
    - Editing Task
    - Editing Task Choice
    - Natural Language
    - Table Match (Matching Item)
    - Evidence Based Selected Response (EBSR)
    - Hot Text
  - Rubrics included

8

Multiple Choice Item Card: Statistics (ELA)

Item Card

Item Properties	
Subject	Reading
ITS ID	27653
Description	From Time Cat
Item Attributes	
Grade	3
DoK	2
IAT Answer Key	D
Interaction	HTML_multipleChoice
Max Score	1
Standard Alignments	
Domain # UT-ELA-v1:RL	Reading Standards for Literature
Cluster # UT-ELA-v1:3.B	Craft and Structure
Standard # UT-ELA-v1:RL.3.4	Determine the meaning of words and phrases as they are used in a text, distinguishing literal from nonliteral language.
FormID	G3-ELA::SP17::S15253
FormKey	3052
Analysis Data	650

Option	Percent	Correlation with Test
A	18.62%	-0.22
B	10.93%	-0.32
C	17.03%	-0.17
D	53.42%	0.41

Fairness Statistics

Label	Grade
Low Income / Non-Low	-A
Female / Male	-A
Hispanic / White	-A

9

Multiple Choice Item: Stem Online Preview (ELA)

23025

Which theme do these excerpts from Article I of the U.S. Constitution have in common with Passage 2?

"Section 1. All legislative Powers herein granted shall be vested in a Congress of the United States, which shall consist of a Senate and House of Representatives."

"Section 7. Every Bill which shall have passed the House of Representatives and the Senate, shall, before it become a Law, be presented to the President of the United States; if he approve he shall sign it, but if not he shall return it, with his Objections to that House in which it shall have originated, who shall proceed to reconsider it."

(A) Important decisions that affect the people should be decided by unanimous vote.

(B) The highest leader of the people should have the final vote on any important matter.

(C) Representatives of the people are most effective when chosen directly by the vote of the people.

(D) Major decisions that affect the people are too important to be entrusted to just one group or office.

10

Equation Item Card: Statistics (Math)

Item Card

Item Properties	
Subject	Mathematics
ITS ID	26788
Description	Sally's Book
Item Attributes	
Grade	3
DoK	2
Interaction	HTML_equation
Max Score	1
Standard Alignments	
Domain # UT-MA-v1:OA	Operations and Algebraic Thinking
Cluster # UT-MA-v1:3.A	Represent and solve problems involving multiplication and division.
Standard # UT-MA-v1:3.OA.3	Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, for example, by using drawings and equations with a symbol for the unknown number to represent the problem.
FormID	MATH3::FA16::OL
FormKey	1391
Analysis Data	641

Points	Percent in Category	Average Score of Students in Category
0	36.15%	-2.85
1	63.85%	-2.04
Percent Correct	63.85%	
Correlation with Test		0.74

Fairness Statistics

Label	Grade
LEP / Non-LEP	+A
Low Income / Non-Low	+A
Female / Male	-A
SPED / Non-SPED	-A
Hispanic / White	+A

11

Equation Item: Stem Online Preview (Math)

26788

Sally is reading a book with 72 pages. She reads 8 pages each day.

How many days will it take Sally to finish reading the book?

1 2 3
4 5 6
7 8 9
0 .

12

Equation Item: Rubric (Math)

Item Rubric Display

Selected Item: 26788

Human Readable Rubric

Score:
Exemplar:

- 9

Other Correct Responses:

- any equivalent value

For this item, a full-credit response includes

- the correct value (1 point).

Exemplar:

13

Statistical Review of Items

- Item Quality and Performance
  - Does the item behave the way it's supposed to behave?
- Item Difficulty
  - How hard is the item?
- Differential Item Functioning
  - Does the item behave differently across subgroups?

14

Item Quality

- Do highly skilled students perform better on the item than less skilled students?
- Correlation with Test – link between selecting a response option and doing well on the rest of the test
  - For key, + is good, - is bad
  - For distracters, - is good, + is bad

15

Item Quality: Good Item (ELA)

Option	Percent	Correlation with Test
A	5.52%	-0.54
B	3.99%	-0.63
C	4.26%	-0.61
D	**86.23%**	**0.77**

26043

Based on the information in the interview, why did Buffy Sainte-Marie become a musician?

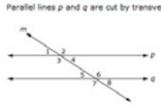
- (A) Her favorite activity was writing songs for children to sing.
- (B) Her parents encouraged her to learn rhythm while growing up.
- (C) She was determined to find an instrument that she could play well.
- (D) She discovered her passion after being introduced to piano as a young child.

16

Item Quality: Good Item (Math)

27423

Parallel lines p and q are cut by transversal m as shown.



The measure of $\angle 1$ is 25°.

What is the measure, in degrees, of $\angle 6$?

$m\angle 6 =$ °

Points	Percent in Category	Average Score of Students in Category
0	43.17%	-0.34
1	56.83%	1.57
Percent Correct	56.83%	
Correlation with Test		0.82

17

Item Quality: Problem Item (Math)

Option	Percent	Correlation with Test
A	44.56%*	0.03
B	**18.87%***	**-0.13***
C	8.06%	-0.35
D	28.52%	0.22*

26618

Which story can be represented by $24 \div \frac{1}{8}$?

- (A) Kima has 24 cupcakes that she gives to her friends. She gives $\frac{1}{8}$ of her cupcakes to each friend. How many friends can Kima give cupcakes to?
- (B) Kima has 24 chocolate cupcakes. The chocolate cupcakes are $\frac{1}{8}$ of all her cupcakes. How many total cupcakes does Kima have?
- (C) There are 24 people at a party, and 8 of the people at the party are wearing hats. What fraction of the people at the party are wearing hats?
- (D) There are 24 people at a party, and $\frac{1}{8}$ of the people are wearing hats. How many people are wearing hats?

18

SAGE

Item Quality: Problem Item (ELA)

Points	Percent in Category	Average Score of Students in Category
0	85.68%	-0.08
1	14.32%	-0.13*
Percent Correct	14.32%*	
Correlation with Test		-0.03*

28222

Select **two** quotations that support the passage's position about the importance of youth volunteering.

- ☐ ""They can come into an organization and look at how things are done and see 5,000 ways it could be done differently."" (paragraph 5)
- ☐ "Experience with community service looks good on college and employment applications." (paragraph 6)
- ☐ ""Younger kids look up to them; they're a role model, they relate well at that age."" (paragraph 13)
- ☐ ""We hope when they get home they'll find something to get passionate about."" (paragraph 18)
- ☐ "Each team has an adult adviser, but the kids lead the way—writing proposals, making phone calls, planning fundraisers." (paragraph 20)

19

SAGE

Item Quality: Borderline (ELA)

Points	Percent in Category	Average Score of Students in Category
0	86.05%	-1.24
1	13.95%	-0.98
Percent Correct	13.95%*	
Correlation with Test		0.18*

28246

Click in the table to match each action with the person who does it: Tay Vaughan in Passage 1, Jeanne Miller in Passage 2, or both.

	Tay Vaughan	Both	Jeanne Miller
considers details related to map layers	☐	☐	☐
thinks about where to construct a building	☐	☐	☐
discusses the purpose of different kinds of maps	☐	☐	☐

20

SAGE

Item Difficulty

- How hard is the item?
- What percent of students answer item correctly?
- MC items - % of students selecting each response option
- Non-MC items - % of students achieving each score point

21

SAGE

Option	Percent	Correlation with Test
A	3.27%	-0.56
B	3.59%	-0.55
C	**90.12%**	**0.63**
D	3.03%	-0.38

Option	Percent	Correlation with Test
A	11.33%	-0.62
B	8.39%	-0.52
C	**76.74%**	**0.73**
D	3.54%	-0.30

Option	Percent	Correlation with Test
A	7.37%	-0.51
B	18.86%	-0.39
C	14.03%	-0.32
D	**59.75%**	**0.64**

Option	Percent	Correlation with Test
A	17.07%	-0.27
B	20.37%	-0.10
C	25.93%	-0.29
D	**36.63%**	**0.51**

22

SAGE

Item Difficulty: Too hard? (Math)

26371

A rectangle with an area of 15 square units is shown.

What is the exact perimeter, in units, of the rectangle?

units

Points	Percent in Category	Average Score of Students in Category
0	96.62%*	0.76
1	3.38%	3.02
Percent Correct	3.38%*	
Correlation with Test		0.68

23

SAGE

Differential Item Functioning (DIF)

- Fair Items behave similarly across groups
- Probability of answering correctly is the same for all students of similar ability regardless of group membership

- Group comparisons
  - African American vs. White
  - Native American vs. White
  - Asian vs. White
  - Hispanic vs. White
  - Pacific Islander vs. White
  - Multi-racial vs. White
  - Female vs. Male
  - ELL vs. non-ELL
  - Low Income vs. Non-low income
  - Special Ed vs. Non-Special Ed

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DIF Classifications

- Direction of possible bias
  - "–" item favors reference groups
  - "+" item favors focal group
- Severity of possible bias
  - "A" No statistical evidence of DIF
  - "B" Evidence for potential mild DIF
  - "C" Evidence for potential severe DIF
- "C" indicates that the item is more difficult for one group and should be reviewed carefully for bias

25

DIF Classifications

Fairness Statistics

Label	Grade
LEP / Non-LEP	-B
Low Income / Non-Low	-A
Female / Male	-A
SPED / Non-SPED	-B
Asian / White	-A
African American / White	-A
Hispanic / White	-A
Pacific Islander / White	+A

26

Content Expert Judges

- Statistical information is important, but not a substitute for expert judges
- Items central to a learning standard may be difficult because a concept is not currently included in curriculum
- Items may show DIF because some concepts may be less likely to be covered in all area schools

27

Panel Procedures

Procedures

- Review blocks of items
- Turn name tents up to indicate when the discussion is ready to begin
- Discuss as needed
- Recommend approval or rejection of item for inclusion in the pool based on how it currently exists

28

Next Steps

- USBE will review committee recommendations and if necessary remove items from the pools or select them to be field tested again
- USBE will use the items that survive data review to add to the summative pools

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Security Considerations & Participant Guidelines

- Cell phone and personal tablet/laptop use is not permitted in the meeting rooms
- Please do not keep personal items on the working surface

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Security Considerations & Participant Guidelines

- If you would like to take notes, please do so only on your review log (all documentation will be gathered)
- Once you are finished reading, please refrain from conversation as other participants may still be working
- Do not remove any secure material from the meeting rooms

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Security Considerations & Participant Guidelines (cont'd)

- Please do not speak to other panelists about specific items outside of the meeting rooms
- If you have any questions about the review or procedures, feel free to talk to AIR or USBE staff during breaks or at lunch
- To limit disruptions, try to take breaks at designated break times

32

And finally...

- Please sign and turn in your Non-Disclosure Form before reviewing any items.

Thank you for your participation!

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APPENDIX 4-H

SUMMARY OF REJECTED FIELD-TEST ITEMS FROM SY2020-2021

Appendix 4-H
Summary of Rejected Field Test Items from SY2020-2021

Table 4-H-1. Rejected Field Test Items from ELA

Grade	ITS ID	Standard	Type	DOK	Rubric Validation Rejection	Item Data Review Rejection	Bias Review Rejection	Moved to Interim Pool
3Reading	30257	RI.3.7	MC	2		x		
3Reading	30920	RL.3.7	MC	2		x		
3Reading	30937	RL.3.2	MC	2		x		
3Reading	31153	RI.3.7	MSCR	1		x		
3Reading	31157	RI.3.8	MC	3		x		
3Reading	31230	L.3.5a	MC	1		x		
3Reading	32817	L.3.1g	MSCR	1		x		
3Reading	32818	L.3.2c	MSCR	1		x		
3Reading	32819	L.3.2e	MSCR	1		x		
3Reading	32862	SL.3.2	MSCR	3		x		
3Reading	33048	RL.3.9	MC	3		x		
4Reading	30286	SL.4.2	MC	2		x		
4Reading	30289	SL.4.2	MC	2		x		
4Reading	31456	RL.4.1	MSCR	2		x		
4Reading	31465	RL.4.5	MC	2		x		
4Reading	31469	RL.4.5	MC	2		x		
4Reading	31656	RI.4.5	MSCR	2		x		
4Reading	31657	RI.4.6	MC	2		x		
4Reading	33053	RL.4.1	MSCR	2		x		
4Reading	33054	RL.4.2	MSCR	2		x		
5Reading	31554	RI.5.6	MC	2		x		
5Reading	31586	SL.5.3	MC	2		x		
6Reading	29843	RL.6.9	MSCR	3		x		
6Reading	30777	L.6.4b	MC	1		x		
6Reading	30884	SL.6.2	MSCR	2		x		
6Reading	31335	RL.6.2	MSCR	2		x		
6Reading	31348	RL.6.9	MC	3		x		
6Reading	32460	RI.6.8	MC	2		x		
6Reading	32472	RI.6.9	MC	3		x		
7Reading	29778	RI.7.8	MC	2		x		
7Reading	30447	RI.7.1	MSCR	2		x		
7Reading	30929	SL.7.3	MC	2		x		
7Reading	30941	L.7.1c	MSCR	1		x		
7Reading	32234	L.7.2a	MSCR	1		x		
7Reading	32235	L.7.1a	MSCR	1		x		
7Reading	32236	L.7.1c	MSCR	1		x		

Grade	ITS ID	Standard	Type	DOK	Rubric Validation Rejection	Item Data Review Rejection	Bias Review Rejection	Moved to Interim Pool
7Reading	32237	L.7.1b	MSCR	1		x		
7Reading	32238	L.7.2b	MSCR	1		x		
7Reading	32239	L.7.1b	MSCR	1		x		
7Reading	32240	L.7.2a	MSCR	1		x		
7Reading	32872	SL.7.3	MSCR	2		x		
8Reading	30477	RI.8.8	MC	2		x		
8Reading	30794	RI.8.5	MC	2		x		
8Reading	31541	RL.8.2	MC	2		x		
8Reading	31556	RL.8.3	MC	2		x		
8Reading	31599	RI.8.2	MSCR	2		x		
8Reading	31601	RI.8.3	MSCR	2		x		
8Reading	31605	RI.8.7	MC	3		x		
8Reading	31606	RI.8.7	MC	3		x		
8Reading	32102	L.8.4a	MC	2		x		
8Reading	32241	L.8.1d	MSCR	1		x		
8Reading	32242	L.8.2c	MSCR	1		x		
8Reading	32243	L.8.2b	MSCR	2		x		
8Reading	32244	L.8.1c	MSCR	1		x		
8Reading	32537	L.8.4a	MC	2		x		
8Reading	32538	RI.8.4	MC	2		x		
8Reading	32543	RI.8.8	MC	2		x		

* Items accepted at data review, but because Standard 9 items were rejected, client agreed to move to the interim pool

Table 4-H-2. Rejected Field Test Items from Mathematics

Grade	ITS ID	Standard	Type	DOK	Rubric Validation Rejection	Item Data Review Rejection	Bias Review Rejection	Moved to Interim Pool
3Math	29753	3.NF.3c	MC	2		x		
3Math	31041	3.NBT.3	MSCR	2	x			
3Math	31626	3.MD.8	MSCR	3		x		
3Math	32889	3.OA.8c	MSCR	2		x		
4Math	31001	4.MD.2a	MC	3		x		
4Math	31090	4.NF.3d	MSCR	2	x			
4Math	31095	4.MD.3	MC	2		x		
5Math	28481	5.NBT.7	MSCR	3		x		
5Math	29883	5.OA.3	MC	1		x		
5Math	31625	5.NF.6	MC	3		x		
5Math	31763	5.MD.2	MC	2		x		
5Math	32990	5.OA.2b	MC	2		x		
6Math	29970	6.NS.6a	MC	1		x		
6Math	29975	6.RP.3c	MSCR	3		x		
6Math	30119	6.G.2	MC	1		x		
6Math	31259	6.EE.2b	MSCR	1		x		
6Math	32498	6.SP.5b	MC	2		x		
7Math	29983	7.EE.4b	MC	1		x		
7Math	30088	7.EE.3	MC	2		x		
7Math	30092	7.NS.1c	MC	2		x		
7Math	30148	7.EE.4b	MSCR	2	x			
7Math	30229	7.G.1	MSCR	2		x		
7Math	30968	7.NS.3	MC	2		x		
7Math	31114	7.G.6	MC	3		x		
7Math	31194	7.EE.2	MC	2		x		
7Math	31208	7.G.4	MC	2		x		
7Math	31870	7.SP.3	MC	2		x		
7Math	32898	7.RP.2c	MSCR	3		x		
8Math	30009	8.F.5	MSCR	1		x		
8Math	30124	8.EE.3	MC	2		x		
8Math	30125	8.EE.7c	MC	1		x		
8Math	31082	8.F.3	MC	2		x		
8Math	31867	8.EE.1	MC	2		x		
8Math	32916	8.G.8	MSCR	3		x		

Table 4-H-3. Rejected Field Test Items from Science

Grade	ITS ID	Standard	Rubric Validation Rejection	Item Data Review Rejection
4	32742	4.3.1	x	
4	32748	4.1.1		x
5	32735	5.3.4		x
5	32751	5.3.2	x	
5	32836	5.2.3		x
6	32610	6.1.3	x	
6	32613	6.1.1	x	
6	32628	6.2.4	x	
6	32697	6.3.3		x
6	33360	6.3.3		x
7	32611	7.4.4	x	
7	32658	7.5.1	x	
7	32712	7.1.3	x	
7	32715	7.4.3	x	
8	32636	8.4.5	x	
8	32638	8.2.2	x	
8	32698	8.3.2		x
8	33365	8.4.2		x

APPENDIX 4-I

FIELD-TEST ITEMS: CLASSICAL ITEM STATISTICS

Appendix I
Field-Test Items: Classical Item Statistics

Table 4-I–1. Field-Test Items: Classical Item Statistics Grade 3 ELA

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
30250	RL.3.2	MC	1	3,379	0.54	0.46		0.19	0.08	0.46	0.26	-0.41	-0.39		-0.16
30251	RL.3.4	MC	1	3,379	0.71	0.87		0.07	0.87	0.03	0.03	-0.62		-0.52	-0.59
30252	RL.3.1	MSCR	2	3,379	0.66	0.76	0.18	0.13	0.69			-2.32	-1.81	-1.03	
30253	L.3.4a	MC	1	3,379	0.63	0.63		0.19	0.13	0.06	0.63	-0.64	-0.12	-0.45	
30254	RL.3.9	MSCR	1	3,379	0.41	0.15	0.85	0.15				-1.46	-0.76		
30255	RL.3.4	MC	1	3,379	0.71	0.77		0.11	0.07	0.77	0.05	-0.56	-0.59		-0.42
30256	RI.3.1	MC	1	3,555	0.67	0.74		0.13	0.10	0.04	0.74	-0.51	-0.49	-0.45	
30257	RI.3.7	MC	1	3,555	0.21	0.15		0.15	0.34	0.45	0.06		-0.27	0.22	-0.30
30258	RI.3.7	MSCR	1	3,555	0.57	0.35	0.65	0.35				-1.64	-0.77		
30259	RI.3.4	MSCR	1	3,555	0.40	0.09	0.91	0.09				-1.40	-0.71		
30260	RI.3.6	MC	1	3,555	0.37	0.67		0.67	0.05	0.06	0.21		-0.46	-0.52	-0.06
30261	RI.3.1	MC	1	3,555	0.33	0.29		0.36	0.07	0.29	0.29	-0.08	-0.42	-0.07	
30262	L.3.5a	MC	1	3,555	0.58	0.64		0.12	0.64	0.10	0.14	-0.49		-0.23	-0.38
30358	RI.3.2	MSCR	1	3,576	0.27	0.07	0.93	0.07				-1.38	-0.87		
30361	RI.3.3	MSCR	1	3,576	0.75	0.35	0.65	0.35				-1.74	-0.59		
30366	RI.3.4	MC	1	3,576	0.50	0.48		0.18	0.23	0.12	0.48	-0.32	-0.11	-0.44	
30368	RI.3.5	MC	1	3,576	0.27	0.31		0.15	0.31	0.36	0.18	-0.31		-0.02	-0.08
30371	RI.3.6	MSCR	1	3,576	0.61	0.37	0.63	0.37				-1.69	-0.76		
30374	RI.3.7	MSCR	1	3,576	0.47	0.13	0.87	0.13				-1.45	-0.64		
30377	RI.3.1	MSCR	1	3,576	0.50	0.21	0.79	0.21				-1.51	-0.71		
30378	RI.3.8	MC	1	3,576	0.28	0.40		0.26	0.40	0.18	0.16	-0.20		-0.16	0.00
30383	RI.3.9	MSCR	1	3,576	0.31	0.15	0.85	0.15				-1.42	-0.90		
30386	RI.3.9	MSCR	1	3,576	0.49	0.17	0.83	0.17				-1.48	-0.67		

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
30389	L.3.5a	MSCR	1	3,576	0.52	0.35	0.65	0.35				-1.62	-0.83		
30648	RL.3.2	MSCR	1	3,379	0.46	0.26	0.74	0.26				-1.54	-0.83		
30651	RL.3.6	MC	1	3,379	0.64	0.69		0.05	0.24	0.03	0.69	-0.57	-0.51	-0.36	
30654	RL.3.9	MSCR	1	3,379	0.59	0.12	0.88	0.12				-1.48	-0.48		
30657	RL.3.3	MC	1	3,379	0.65	0.58		0.24	0.10	0.08	0.58	-0.37	-0.45	-0.50	
30658	RI.3.2	MSCR	1	3,555	0.45	0.48	0.52	0.48				-1.66	-0.98		
30662	RI.3.4	MC	1	3,555	0.59	0.72		0.14	0.72	0.06	0.08	-0.51		-0.40	-0.30
30665	RI.3.3	MSCR	1	3,555	0.46	0.22	0.78	0.22				-1.50	-0.78		
30907	RL.3.3	MC	1	3,403	0.46	0.51		0.26	0.08	0.16	0.51	-0.33	-0.39	-0.09	
30909	RL.3.2	MSCR	1	3,403	0.54	0.22	0.78	0.22				-1.52	-0.67		
30910	RL.3.2	MSCR	2	3,403	0.56	0.56	0.33	0.22	0.45			-1.85	-1.59	-0.82	
30911	RL.3.1	MSCR	1	3,403	0.48	0.34	0.66	0.34				-1.58	-0.84		
30912	RL.3.3	MSCR	1	3,403	0.37	0.24	0.76	0.24				-1.47	-0.88		
30914	L.3.5a	MC	1	3,403	0.40	0.51		0.13	0.22	0.51	0.13	-0.46	-0.11		-0.13
30915	RL.3.4	MC	1	3,403	0.63	0.62		0.62	0.14	0.06	0.18		-0.48	-0.58	-0.29
30916	RL.3.5	MC	1	3,403	0.60	0.72		0.72	0.15	0.09	0.04		-0.39	-0.51	-0.40
30918	RL.3.6	MC	1	3,403	0.49	0.37		0.28	0.24	0.37	0.10	-0.26	-0.29		-0.08
30919	RL.3.6	MSCR	2	3,403	0.50	0.52	0.37	0.22	0.41			-1.74	-1.59	-0.81	
30920	RL.3.7	MC	1	3,403	0.11	0.21		0.33	0.21	0.21	0.25	-0.04		-0.07	-0.01
30930	RL.3.1	MC	1	3,379	0.52	0.66		0.66	0.14	0.14	0.07		-0.34	-0.33	-0.42
30932	RL.3.1	MSCR	1	3,362	0.65	0.43	0.57	0.43				-1.78	-0.79		
30933	RL.3.2	MSCR	2	3,362	0.36	0.19	0.72	0.19	0.09			-1.48	-1.36	-0.34	
30937	RL.3.2	MC	1	3,480	0.11	0.48		0.48	0.36	0.10	0.07		0.14	-0.36	-0.25
31035	RI.3.1	MSCR	1	3,430	0.57	0.19	0.81	0.19				-1.54	-0.62		
31111	RL.3.1	MSCR	1	3,480	0.58	0.31	0.69	0.31				-1.65	-0.75		
31116	RL.3.3	MC	1	3,362	0.53	0.67		0.12	0.15	0.67	0.06	-0.25	-0.49		-0.29
31144	RI.3.2	MSCR	1	3,430	0.27	0.28	0.72	0.28				-1.48	-1.06		
31148	RI.3.3	MSCR	1	3,430	0.61	0.24	0.76	0.24				-1.59	-0.65		
31149	RI.3.4	MC	1	3,430	0.54	0.70		0.70	0.08	0.09	0.13		-0.32	-0.29	-0.46

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
31152	RI.3.6	MC	1	3,430	0.30	0.51		0.51	0.11	0.31	0.07		-0.46	0.02	-0.30
31153	RI.3.7	MSCR	1	3,430	0.23	0.37	0.63	0.37				-1.49	-1.14		
31154	RI.3.7	MSCR	1	3,430	0.51	0.26	0.74	0.26				-1.57	-0.77		
31157	RI.3.8	MC	1	3,430	0.29	0.37		0.12	0.27	0.24	0.37	-0.24	0.08	-0.29	
31160	L.3.4b	MC	1	3,430	0.59	0.61		0.24	0.10	0.61	0.05	-0.36	-0.48		-0.40
31161	L.3.4a	MSCR	1	3,430	0.55	0.57	0.43	0.57				-1.84	-1.00		
31162	L.3.5a	MC	1	3,430	0.59	0.59		0.12	0.13	0.59	0.16	-0.48	-0.35		-0.29
31192	RL.3.3	MSCR	1	3,480	0.57	0.34	0.66	0.34				-1.67	-0.79		
31207	RL.3.4	MC	1	3,362	0.63	0.72		0.72	0.08	0.14	0.06		-0.52	-0.41	-0.43
31215	RL.3.4	MSCR	1	3,480	0.29	0.26	0.74	0.26				-1.49	-1.02		
31217	RL.3.5	MC	1	3,362	0.58	0.55		0.20	0.10	0.15	0.55	-0.33	-0.49	-0.25	
31219	RL.3.6	MC	1	3,362	0.59	0.45		0.36	0.08	0.11	0.45	-0.29	-0.45	-0.32	
31222	RL.3.9	MC	1	3,480	0.66	0.72		0.15	0.09	0.72	0.03	-0.49	-0.50		-0.45
31223	RL.3.9	MC	1	3,362	0.35	0.68		0.17	0.68	0.05	0.09	-0.23		-0.54	-0.07
31225	RL.3.9	MSCR	2	3,480	0.57	0.36	0.54	0.20	0.26			-1.74	-1.38	-0.60	
31227	RL.3.9	MSCR	1	3,362	0.65	0.33	0.67	0.33				-1.68	-0.70		
31228	L.3.4a	MC	1	3,480	0.56	0.51		0.12	0.24	0.51	0.13	-0.47	-0.22		-0.32
31230	L.3.5a	MC	1	3,362	0.17	0.42		0.12	0.42	0.40	0.07	-0.39		0.18	-0.41
31231	L.3.5b	MC	1	3,480	0.73	0.69		0.10	0.12	0.09	0.69	-0.49	-0.54	-0.47	
31314	RL.3.1	MC	1	3,500	0.51	0.64		0.11	0.64	0.08	0.17	-0.38		-0.38	-0.26
31315	RL.3.2	MSCR	1	3,554	0.50	0.30	0.70	0.30				-1.57	-0.80		
31317	RL.3.2	MC	1	3,500	0.66	0.72		0.72	0.12	0.06	0.10		-0.42	-0.51	-0.50
31318	RL.3.3	MSCR	2	3,554	0.62	0.59	0.18	0.45	0.37			-2.15	-1.55	-0.69	
31319	RL.3.3	MC	1	3,500	0.52	0.65		0.19	0.09	0.65	0.08	-0.19	-0.52		-0.47
31322	RL.3.4	MC	1	3,554	0.71	0.80		0.05	0.80	0.09	0.05	-0.60		-0.59	-0.43
31323	RL.3.5	MSCR	1	3,500	0.66	0.66	0.34	0.66				-2.06	-0.99		
31324	RL.3.6	MC	1	3,554	0.55	0.56		0.20	0.10	0.56	0.14	-0.26	-0.42		-0.37
31325	RL.3.6	MC	1	3,500	0.46	0.51		0.11	0.27	0.51	0.11	-0.17	-0.22		-0.43
31326	L.3.4a	MC	1	3,554	0.62	0.62		0.06	0.10	0.62	0.22	-0.58	-0.42		-0.34

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
31327	L.3.4b	MC	1	3,500	0.45	0.50		0.23	0.15	0.50	0.13	-0.20	-0.37		-0.17
31328	L.3.5a	MC	1	3,554	0.73	0.73		0.08	0.11	0.08	0.73	-0.53	-0.55	-0.47	
32762	L.3.4a	MC	1	3,616	0.46	0.58		0.12	0.22	0.58	0.08	-0.37	-0.28		-0.16
32764	RI.3.8	MC	1	3,616	0.25	0.44		0.21	0.44	0.19	0.15	-0.20		-0.13	-0.02
32766	L.3.5a	MC	1	3,616	0.53	0.60		0.24	0.60	0.06	0.10	-0.34		-0.48	-0.30
32770	RI.3.7	MC	1	3,616	0.47	0.53		0.18	0.53	0.18	0.11	-0.31		-0.16	-0.38
32778	RI.3.3	MC	1	3,616	0.58	0.53		0.27	0.13	0.07	0.53	-0.13	-0.58	-0.56	
32780	RI.3.5	MC	1	3,616	0.46	0.44		0.20	0.15	0.21	0.44	-0.34	-0.29	-0.08	
32789	RI.3.1	MC	1	3,616	0.54	0.50		0.19	0.21	0.50	0.10	-0.34	-0.35		-0.20
32792	RI.3.2	MC	1	3,616	0.52	0.66		0.18	0.08	0.07	0.66	-0.25	-0.53	-0.37	
32797	RI.3.5	MC	1	3,616	0.47	0.55		0.20	0.55	0.12	0.12	-0.26		-0.31	-0.27
32811	RI.3.6	MC	1	3,616	0.47	0.43		0.38	0.10	0.10	0.43	-0.13	-0.35	-0.42	
32812	L.3.2e	MSCR	1	10,783	0.45	0.80	0.20	0.80				-1.94	-1.19		
32813	L.3.2d	MSCR	1	10,783	0.32	0.42	0.58	0.42				-1.54	-1.06		
32815	L.3.1f	MSCR	2	10,783	0.60	0.69	0.10	0.42	0.48			-2.22	-1.69	-0.84	
32816	L.3.2f	MSCR	1	10,783	0.39	0.54	0.46	0.54				-1.66	-1.07		
32817	L.3.1g	MSCR	1	10,165	0.09	0.62	0.38	0.62				-1.46	-1.32		
32818	L.3.2c	MSCR	2	10,165	0.35	0.30	0.52	0.35	0.12			-1.63	-1.17	-0.84	
32819	L.3.2e	MSCR	2	10,165	0.53	0.72	0.09	0.38	0.53			-2.27	-1.71	-0.98	
32861	SL.3.2	MSCR	1	3,365	0.28	0.15	0.85	0.15				-1.43	-0.94		
32862	SL.3.2	MSCR	1	3,365	0.22	0.07	0.93	0.07				-1.38	-0.97		
32865	SL.3.2	MSCR	1	3,365	0.44	0.22	0.78	0.22				-1.51	-0.81		
32866	SL.3.2	MC	1	3,365	0.59	0.77		0.77	0.07	0.08	0.09		-0.50	-0.44	-0.35
32867	SL.3.3	MC	1	3,365	0.52	0.49		0.49	0.19	0.10	0.22		-0.34	-0.40	-0.17
32868	SL.3.3	MSCR	1	3,365	0.60	0.25	0.75	0.25				-1.58	-0.68		
32869	SL.3.2	MSCR	1	3,365	0.45	0.16	0.84	0.16				-1.47	-0.73		
32993	L.3.4a	MC	1	3,660	0.57	0.63		0.11	0.16	0.63	0.10	-0.56	-0.45		-0.06
32997	RL.3.4	MC	1	3,660	0.28	0.38		0.30	0.09	0.38	0.23	-0.03	-0.52		-0.06
33000	RL.3.1	MC	1	3,389	0.47	0.46		0.11	0.17	0.46	0.25	-0.41	-0.38		-0.05

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
33004	RL.3.2	MSCR	1	3,389	0.50	0.07	0.93	0.07				-1.42	-0.43		
33008	RL.3.2	MSCR	2	3,660	0.40	0.39	0.53	0.15	0.32			-1.61	-1.52	-0.87	
33016	RL.3.3	MSCR	1	3,660	0.59	0.45	0.55	0.45				-1.76	-0.86		
33017	RL.3.3	MC	1	3,389	0.46	0.60		0.11	0.17	0.12	0.60	-0.26	-0.22	-0.38	
33032	L.3.4a	MC	1	3,389	0.36	0.71		0.06	0.19	0.71	0.04	-0.54	-0.09		-0.47
33044	RL.3.6	MC	1	3,389	0.36	0.52		0.24	0.52	0.16	0.07	-0.24		-0.16	-0.22
33045	RL.3.9	MSCR	2	3,660	0.27	0.15	0.73	0.24	0.03			-1.45	-1.23	-0.14	
33048	RL.3.9	MC	1	3,389	0.00	0.26		0.22	0.26	0.15	0.37	-0.30		-0.20	0.36
33103	RL.3.5	MC	1	3,389	0.41	0.55		0.18	0.55	0.10	0.17	-0.23		-0.33	-0.18
33104	RL.3.5	MC	1	3,660	0.38	0.43		0.22	0.18	0.43	0.17	-0.28	-0.19		-0.09

Table 4-I–2. Field-Test Items: Classical Item Statistics Grade 4 ELA

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
30026	RL.4.3	MSCR	1	4,699	0.50	0.53	0.47	0.53				-1.40	-0.58		
30027	RL.4.2	MSCR	2	4,699	0.66	0.60	0.34	0.13	0.53			-1.74	-1.11	-0.45	
30028	RL.4.1	MSCR	1	4,699	0.60	0.40	0.60	0.40				-1.36	-0.38		
30034	RL.4.1	MC	1	4,699	0.43	0.59		0.59	0.12	0.18	0.11		-0.43	-0.22	-0.13
30045	RL.4.4	MC	1	4,699	0.64	0.84		0.07	0.06	0.84	0.03	-0.50	-0.49		-0.54
30080	RL.4.3	MC	1	4,699	0.46	0.55		0.55	0.19	0.13	0.13		-0.20	-0.40	-0.23
30081	RL.4.3	MC	1	4,699	0.61	0.79		0.06	0.79	0.06	0.10	-0.57		-0.53	-0.34
30082	RL.4.7	MC	1	4,699	0.45	0.47		0.16	0.47	0.31	0.06	-0.27		-0.17	-0.46
30083	L.4.5a	MC	1	4,699	0.63	0.68		0.15	0.05	0.12	0.68	-0.37	-0.51	-0.45	
30084	L.4.4a	MC	1	4,699	0.55	0.76		0.04	0.08	0.13	0.76	-0.57	-0.52	-0.27	
30085	L.4.5a	MC	1	4,699	0.58	0.67		0.08	0.67	0.13	0.13	-0.39		-0.48	-0.29
30280	RL.4.3	MC	1	4,222	0.58	0.88		0.88	0.04	0.05	0.02		-0.57	-0.36	-0.56
30281	RL.4.2	MSCR	1	4,222	0.62	0.49	0.51	0.49				-1.46	-0.42		
30283	L.4.5b	MC	1	4,222	0.58	0.74		0.05	0.13	0.74	0.08	-0.58	-0.54		-0.15
30284	RL.4.4	MC	1	4,222	0.61	0.77		0.10	0.08	0.05	0.77	-0.43	-0.41	-0.55	
30285	L.4.5c	MC	1	4,222	0.69	0.73		0.07	0.06	0.14	0.73	-0.60	-0.62	-0.37	
30286	SL.4.2	MC	1	5,591	0.23	0.30		0.26	0.21	0.30	0.22	-0.19	-0.14		0.07
30287	SL.4.2	MC	1	5,591	0.53	0.70		0.10	0.06	0.70	0.14	-0.33	-0.48		-0.33
30288	SL.4.2	MSCR	1	5,540	0.47	0.23	0.77	0.23				-1.17	-0.36		
30289	SL.4.2	MC	1	5,591	0.05	0.29		0.20	0.29	0.31	0.19	-0.13		-0.03	0.10
30290	SL.4.3	MC	1	5,591	0.45	0.72		0.72	0.19	0.05	0.04		-0.30	-0.42	-0.34
30359	RI.4.1	MSCR	1	4,775	0.69	0.39	0.61	0.39				-1.39	-0.26		
30364	RI.4.2	MSCR	2	4,775	0.44	0.36	0.52	0.24	0.24			-1.25	-0.91	-0.29	
30369	RI.4.1	MC	1	4,775	0.30	0.50		0.12	0.50	0.15	0.23	-0.39		-0.30	0.08
30380	RI.4.3	MSCR	2	4,775	0.21	0.37	0.47	0.31	0.21			-1.09	-0.95	-0.59	
30384	RI.4.3	MC	1	4,775	0.52	0.52		0.25	0.10	0.13	0.52	-0.19	-0.41	-0.37	

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
30388	RI.4.4	MC	1	4,775	0.46	0.43		0.20	0.21	0.16	0.43	-0.16	-0.20	-0.34	
30391	RI.4.4	MC	1	4,775	0.64	0.64		0.15	0.06	0.64	0.15	-0.44	-0.39		-0.44
30393	RI.4.5	MC	1	4,775	0.51	0.45		0.15	0.21	0.20	0.45	-0.15	-0.39	-0.21	
30397	RI.4.7	MC	1	4,775	0.32	0.39		0.27	0.24	0.39	0.10	-0.11	-0.10		-0.33
30399	RI.4.7	MSCR	1	4,775	0.29	0.17	0.83	0.17				-1.04	-0.50		
30402	L.4.4a	MC	1	4,775	0.72	0.88		0.04	0.88	0.06	0.02	-0.58		-0.64	-0.49
30690	RL.4.3	MSCR	1	4,222	0.54	0.29	0.71	0.29				-1.22	-0.32		
30692	RL.4.4	MC	1	4,222	0.58	0.70		0.70	0.16	0.06	0.08		-0.45	-0.59	-0.20
30693	RL.4.2	MSCR	1	4,222	0.68	0.73	0.27	0.73				-1.88	-0.61		
30694	RL.4.3	MC	1	4,222	0.65	0.54		0.20	0.08	0.17	0.54	-0.42	-0.39	-0.34	
30695	RL.4.1	MSCR	1	4,222	0.34	0.59	0.41	0.59				-1.29	-0.71		
30697	SL.4.2	MSCR	1	5,540	0.53	0.40	0.60	0.40				-1.33	-0.46		
30698	SL.4.3	MSCR	1	5,540	0.65	0.59	0.41	0.59				-1.63	-0.54		
30699	SL.4.2	MSCR	1	5,540	0.55	0.15	0.85	0.15				-1.13	-0.16		
30700	SL.4.2	MSCR	1	5,591	0.32	0.11	0.89	0.11				-1.02	-0.40		
31454	RL.4.9	MSCR	2	2,184	0.60	0.50	0.30	0.40	0.30			-1.67	-0.93	-0.26	
31455	RL.4.2	MC	1	4,817	0.56	0.70		0.06	0.70	0.09	0.15	-0.50		-0.41	-0.32
31456	RL.4.1	MSCR	1	4,817	0.36	0.04	0.96	0.04				-0.97	-0.24		
31459	RL.4.1	MC	1	2,184	0.60	0.47		0.30	0.13	0.10	0.47	-0.22	-0.50	-0.35	
31461	RL.4.1	MC	1	4,817	0.52	0.58		0.28	0.09	0.58	0.04	-0.26	-0.48		-0.42
31463	RL.4.4	MC	1	2,184	0.55	0.58		0.15	0.19	0.58	0.09	-0.46	-0.25		-0.31
31465	RL.4.5	MC	1	4,817	0.07	0.49		0.10	0.30	0.49	0.11	-0.10	0.14		-0.30
31467	RL.4.5	MSCR	2	2,184	0.58	0.56	0.17	0.54	0.29			-1.73	-1.11	-0.20	
31469	RL.4.5	MC	1	4,817	0.01	0.23		0.23	0.30	0.14	0.33		0.25	-0.22	-0.12
31472	RL.4.9	MSCR	1	4,817	0.64	0.31	0.69	0.31				-1.26	-0.23		
31477	RL.4.1	MC	1	2,184	0.59	0.57		0.15	0.19	0.57	0.08	-0.48	-0.37		-0.14
31480	L.4.4a	MSCR	2	2,184	0.69	0.67	0.28	0.11	0.62			-1.81	-1.35	-0.50	
31481	L.4.4a	MC	1	2,184	0.54	0.63		0.19	0.63	0.07	0.12	-0.31		-0.43	-0.36

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
31482	L.4.5b	MC	1	2,184	0.64	0.81		0.81	0.06	0.06	0.07		-0.61	-0.35	-0.48
31483	L.4.4a	MC	1	4,817	0.34	0.55		0.23	0.06	0.16	0.55	-0.03	-0.31	-0.35	
31646	RI.4.1	MSCR	1	4,697	0.61	0.37	0.63	0.37				-1.36	-0.34		
31650	RI.4.2	MC	1	4,729	0.49	0.60		0.60	0.10	0.11	0.19		-0.35	-0.37	-0.22
31653	RI.4.3	MC	1	4,660	0.59	0.70		0.11	0.07	0.70	0.11	-0.39	-0.59		-0.30
31654	RI.4.4	MSCR	1	4,729	0.46	0.17	0.83	0.17				-1.10	-0.32		
31655	RI.4.5	MC	1	4,697	0.49	0.62		0.62	0.12	0.05	0.20		-0.52	-0.46	-0.13
31656	RI.4.5	MSCR	2	4,729	0.23	0.29	0.56	0.30	0.14			-1.12	-0.88	-0.54	
31657	RI.4.6	MC	1	4,729	-0.14	0.43		0.43	0.24	0.08	0.26		-0.09	-0.14	0.33
31659	RI.4.7	MC	1	4,697	0.38	0.52		0.21	0.52	0.13	0.14	-0.04		-0.37	-0.28
31660	RI.4.8	MSCR	1	4,660	0.58	0.44	0.56	0.44				-1.38	-0.42		
31661	RI.4.8	MC	1	4,697	0.61	0.64		0.08	0.18	0.11	0.64	-0.46	-0.37	-0.41	
31662	RI.4.9	MC	1	4,697	0.37	0.41		0.41	0.28	0.15	0.16		-0.15	-0.25	-0.16
31663	RI.4.9	MSCR	1	4,660	0.50	0.32	0.68	0.32				-1.22	-0.39		
31675	RI.4.9	MSCR	2	4,729	0.54	0.44	0.30	0.51	0.18			-1.60	-0.88	-0.18	
31676	RI.4.9	MC	1	4,660	0.55	0.56		0.24	0.08	0.12	0.56	-0.31	-0.44	-0.33	
31678	L.4.4a	MC	1	4,729	0.63	0.78		0.04	0.13	0.05	0.78	-0.56	-0.48	-0.42	
31679	L.4.4a	MC	1	4,660	0.43	0.48		0.12	0.25	0.48	0.15	-0.41	-0.06		-0.31
31680	L.4.5c	MC	1	4,697	0.50	0.50		0.14	0.11	0.25	0.50	-0.24	-0.29	-0.30	
31681	L.4.4a	MC	1	4,660	0.65	0.71		0.71	0.10	0.15	0.05		-0.46	-0.47	-0.43
32126	L.4.1i	MSCR	1	5,796	0.65	0.67	0.33	0.67				-1.70	-0.59		
32127	L.4.1h	MSCR	2	5,796	0.43	0.53	0.27	0.40	0.33			-1.50	-0.98	-0.49	
32128	L.4.2c	MSCR	1	5,796	0.32	0.62	0.38	0.62				-1.29	-0.75		
32129	L.4.2d	MSCR	1	5,796	0.59	0.92	0.08	0.92				-2.12	-0.86		
32130	L.4.2a	MSCR	1	5,626	0.31	0.55	0.45	0.55				-1.25	-0.74		
32131	L.4.2b	MSCR	1	5,626	0.18	0.33	0.67	0.33				-1.07	-0.76		
32132	L.4.2d	MSCR	1	5,626	0.21	0.45	0.55	0.45				-1.12	-0.78		
32133	L.4.1c	MSCR	2	5,626	0.32	0.50	0.26	0.49	0.25			-1.40	-0.94	-0.58	

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
32969	L.4.1h	MSCR	1	4,164	0.33	0.49	0.51	0.49				-1.22	-0.68		
32971	L.4.1i	MSCR	2	4,164	0.46	0.72	0.10	0.37	0.54			-1.72	-1.28	-0.60	
32972	L.4.2d	MSCR	2	4,164	0.58	0.77	0.11	0.24	0.65			-2.07	-1.39	-0.62	
33013	L.4.1i	MSCR	1	4,169	0.54	0.59	0.41	0.59				-1.49	-0.60		
33014	L.4.2d , L.4.2c	MSCR	2	4,169	0.46	0.57	0.18	0.49	0.33			-1.59	-1.10	-0.42	
33015	L.4.1e , L.4.1g	MSCR	2	4,169	0.48	0.67	0.11	0.44	0.45			-1.79	-1.22	-0.54	
33047	RL.4.4	MC	1	4,835	0.41	0.43		0.26	0.43	0.22	0.09	-0.15		-0.26	-0.25
33049	RL.4.4	MC	1	4,651	0.53	0.51		0.10	0.33	0.06	0.51	-0.26	-0.35	-0.37	
33051	L.4.5b	MC	1	4,651	0.71	0.77		0.05	0.06	0.77	0.13	-0.63	-0.59		-0.46
33053	RL.4.1	MSCR	1	4,651	0.08	0.29	0.71	0.29				-1.00	-0.87		
33054	RL.4.2	MSCR	1	4,651	-0.08	0.07	0.93	0.07				-0.95	-1.12		
33055	RL.4.3	MC	1	4,835	0.40	0.45		0.16	0.25	0.14	0.45	-0.40	-0.03	-0.25	
33056	RL.4.3	MC	1	4,651	0.58	0.52		0.18	0.52	0.12	0.19	-0.42		-0.47	-0.14
33057	L.4.4a	MC	1	4,835	0.63	0.82		0.82	0.06	0.05	0.07		-0.51	-0.57	-0.38
33058	RL.4.1	MSCR	1	4,835	0.31	0.61	0.39	0.61				-1.28	-0.77		
33059	RL.4.9	MC	1	4,835	0.21	0.30		0.29	0.22	0.18	0.30	-0.03	0.01	-0.25	
33060	RL.4.6	MC	1	4,651	0.27	0.41		0.18	0.41	0.14	0.27	-0.29		-0.22	0.06
33061	RL.4.9	MSCR	1	4,651	0.14	0.22	0.78	0.22				-1.02	-0.78		
33062	RL.4.9	MC	1	4,835	0.51	0.48		0.25	0.19	0.08	0.48	-0.11	-0.38	-0.47	
33135	RL.4.6	MSCR	2	4,835	0.50	0.41	0.49	0.20	0.30			-1.38	-0.91	-0.34	

Table 4-I–3. Field-Test Items: Classical Item Statistics Grade 5 ELA

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
30291	RL.5.3	MC	1	3,744	0.50	0.62		0.18	0.62	0.14	0.06	-0.24		-0.35	-0.43
30292	RL.5.3	MC	1	3,934	0.59	0.69		0.12	0.69	0.08	0.11	-0.29		-0.53	-0.40
30293	RL.5.4	MC	1	3,744	0.45	0.74		0.03	0.74	0.09	0.14	-0.54		-0.43	-0.17
30294	L.5.5a	MC	1	3,934	0.66	0.78		0.78	0.07	0.12	0.03		-0.54	-0.48	-0.48
30295	RL.5.1	MC	1	3,744	0.50	0.61		0.13	0.10	0.61	0.16	-0.39	-0.45		-0.11
30296	RL.5.6	MC	1	3,934	0.61	0.76		0.08	0.06	0.09	0.76	-0.35	-0.61	-0.40	
30297	RL.5.6	MC	1	3,744	0.45	0.58		0.18	0.58	0.17	0.06	-0.23		-0.26	-0.37
30311	SL.5.3	MC	1	6,223	0.32	0.45		0.13	0.19	0.45	0.24	-0.22	-0.38		0.08
30312	SL.5.2	MC	1	6,223	0.28	0.69		0.03	0.69	0.05	0.23	-0.43		-0.40	-0.08
30313	SL.5.3	MC	1	6,223	0.32	0.62		0.11	0.62	0.10	0.17	-0.10		-0.33	-0.17
30314	SL.5.3	MSCR	1	7,867	0.57	0.45	0.55	0.45				-0.91	0.04		
30315	SL.5.2	MC	1	7,867	0.25	0.60		0.60	0.10	0.07	0.23		-0.35	-0.29	0.04
30360	RI.5.2	MSCR	1	3,985	0.45	0.28	0.72	0.28				-0.70	0.07		
30362	RI.5.2	MSCR	1	4,083	0.19	0.12	0.88	0.12				-0.52	-0.17		
30365	RI.5.3	MC	1	3,985	0.31	0.41		0.41	0.21	0.13	0.25		-0.16	-0.22	-0.09
30367	RI.5.3	MC	1	4,083	0.57	0.78		0.08	0.78	0.09	0.06	-0.40		-0.47	-0.35
30370	RI.5.4	MSCR	2	3,985	0.60	0.68	0.18	0.28	0.54			-1.60	-0.64	-0.04	
30375	RI.5.4	MC	1	4,083	0.58	0.78		0.11	0.05	0.78	0.06	-0.36	-0.47		-0.50
30376	RI.5.4	MC	1	3,985	0.52	0.81		0.10	0.81	0.07	0.03	-0.38		-0.42	-0.38
30382	RI.5.5	MC	1	4,083	0.47	0.51		0.22	0.51	0.17	0.10	-0.30		-0.26	-0.21
30385	RI.5.6	MSCR	2	3,985	0.56	0.40	0.47	0.25	0.28			-0.91	-0.64	0.38	
30390	RI.5.8	MSCR	1	4,083	0.51	0.28	0.72	0.28				-0.72	0.14		
30394	RI.5.9	MC	1	3,985	0.32	0.64		0.64	0.17	0.15	0.04		-0.14	-0.21	-0.41
30396	RI.5.3	MC	1	3,985	0.53	0.59		0.11	0.18	0.59	0.12	-0.50	-0.43		0.02
30398	RI.5.3	MSCR	1	4,083	0.61	0.33	0.67	0.33				-0.80	0.19		
30400	L.5.4a	MC	1	4,083	0.34	0.44		0.28	0.22	0.06	0.44	-0.08	-0.12	-0.56	

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
30408	RL.5.2	MSCR	2	4,003	0.67	0.76	0.20	0.08	0.72			-1.44	-1.39	-0.09	
30412	RL.5.2	MSCR	1	3,835	0.49	0.21	0.79	0.21				-0.68	0.16		
30415	RL.5.3	MSCR	1	3,835	0.42	0.54	0.46	0.54				-0.89	-0.18		
30416	RL.5.3	MC	1	4,003	0.49	0.77		0.08	0.06	0.09	0.77	-0.42	-0.41	-0.24	
30420	RL.5.1	MC	1	4,003	0.58	0.77		0.13	0.06	0.77	0.04	-0.34	-0.60		-0.47
30422	RL.5.1	MC	1	3,835	0.69	0.85		0.03	0.07	0.05	0.85	-0.58	-0.53	-0.57	
30425	RL.5.2	MSCR	1	4,003	0.44	0.35	0.65	0.35				-0.72	0.00		
30428	RL.5.5	MC	1	3,835	0.58	0.70		0.14	0.08	0.09	0.70	-0.29	-0.47	-0.45	
30432	RL.5.6	MSCR	2	4,003	0.35	0.54	0.33	0.26	0.41			-0.86	-0.52	-0.12	
30434	RL.5.5	MC	1	4,003	0.56	0.82		0.08	0.82	0.05	0.06	-0.48		-0.43	-0.35
30436	RL.5.6	MSCR	2	3,835	0.47	0.52	0.30	0.36	0.34			-1.13	-0.44	-0.01	
30439	RL.5.5	MC	1	3,835	0.12	0.45		0.45	0.12	0.28	0.15		-0.25	0.05	-0.06
30442	L.5.5a	MC	1	3,835	0.69	0.91		0.03	0.91	0.04	0.02	-0.63		-0.60	-0.47
30443	L.5.4a	MC	1	4,003	0.59	0.77		0.77	0.05	0.09	0.09		-0.57	-0.43	-0.35
30618	RL.5.1	MSCR	2	3,934	0.62	0.79	0.11	0.20	0.69			-1.66	-1.06	-0.12	
30619	RL.5.2	MSCR	2	3,744	0.29	0.39	0.36	0.50	0.14			-0.85	-0.22	-0.22	
30623	RL.5.2	MSCR	1	3,934	0.59	0.62	0.38	0.62				-1.11	-0.08		
30627	RL.5.9	MSCR	1	3,934	0.45	0.24	0.76	0.24				-0.65	0.11		
30634	RL.5.9	MSCR	1	3,744	0.65	0.58	0.42	0.58				-1.10	0.03		
30661	SL.5.2	MSCR	1	6,223	0.61	0.42	0.58	0.42				-0.91	0.09		
30663	SL.5.3	MSCR	2	7,867	0.34	0.40	0.51	0.18	0.31			-0.73	-0.51	-0.03	
30666	SL.5.2	MSCR	1	6,223	0.41	0.09	0.91	0.09				-0.56	0.19		
30668	SL.5.2	MSCR	1	7,867	0.64	0.45	0.55	0.45				-0.95	0.10		
31520	RL.5.1	MC	1	3,952	0.47	0.67		0.67	0.12	0.14	0.07		-0.39	-0.31	-0.18
31521	RL.5.2	MSCR	2	3,952	0.63	0.74	0.21	0.11	0.68			-1.42	-1.10	-0.13	
31525	RL.5.3	MSCR	1	3,952	0.73	0.60	0.40	0.60				-1.27	0.01		
31526	RL.5.4	MC	1	3,952	0.64	0.78		0.05	0.78	0.12	0.05	-0.55		-0.51	-0.36
31528	RL.5.5	MC	1	3,952	0.55	0.80		0.08	0.80	0.07	0.05	-0.45		-0.31	-0.46

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
31529	RL.5.5	MSCR	1	3,952	0.54	0.54	0.46	0.54				-1.00	-0.09		
31530	RL.5.6	MC	1	3,952	0.56	0.83		0.09	0.03	0.83	0.05	-0.42	-0.61		-0.36
31531	RL.5.7	MC	1	3,952	0.67	0.72		0.05	0.72	0.09	0.13	-0.41		-0.47	-0.52
31532	RL.5.7	MC	1	3,952	0.66	0.73		0.11	0.73	0.09	0.08	-0.57		-0.47	-0.32
31533	L.5.4a	MC	1	3,952	0.33	0.58		0.58	0.11	0.05	0.25		-0.38	-0.42	-0.02
31536	L.5.5c	MC	1	3,952	0.38	0.33		0.20	0.11	0.35	0.33	-0.11	-0.62	0.07	
31537	RI.5.1	MSCR	1	3,845	0.49	0.19	0.81	0.19				-0.62	0.21		
31543	RI.5.5	MSCR	2	3,845	0.58	0.51	0.26	0.46	0.28			-1.26	-0.44	0.22	
31546	RI.5.2	MSCR	1	4,055	0.35	0.27	0.73	0.27				-0.65	-0.04		
31548	RI.5.3	MSCR	1	3,845	0.45	0.45	0.55	0.45				-0.80	-0.06		
31550	RI.5.4	MC	1	4,055	0.38	0.50		0.34	0.07	0.50	0.09	-0.11	-0.50		-0.25
31551	RI.5.4	MC	1	3,845	0.53	0.82		0.04	0.82	0.11	0.03	-0.50		-0.34	-0.53
31552	RI.5.5	MSCR	2	4,055	0.51	0.55	0.36	0.19	0.45			-1.02	-0.73	0.05	
31554	RI.5.6	MC	1	3,845	0.01	0.52		0.52	0.17	0.08	0.22		0.06	-0.32	0.10
31555	RI.5.4	MC	1	4,055	0.55	0.71		0.12	0.71	0.09	0.08	-0.37		-0.38	-0.39
31558	RI.5.8	MSCR	1	4,055	0.58	0.46	0.54	0.46				-0.94	0.05		
31561	RI.5.8	MC	1	3,845	0.67	0.67		0.15	0.11	0.07	0.67	-0.40	-0.51	-0.43	
31563	RI.5.9	MSCR	2	4,055	0.39	0.47	0.44	0.19	0.37			-0.84	-0.55	-0.02	
31565	RI.5.9	MC	1	3,845	0.27	0.42		0.42	0.15	0.17	0.26		-0.16	-0.20	-0.05
31567	RI.5.9	MSCR	2	4,055	0.50	0.40	0.44	0.33	0.23			-1.01	-0.21	0.12	
31568	L.5.4a	MC	1	3,845	0.38	0.39		0.08	0.32	0.21	0.39	-0.22	-0.12	-0.23	
31570	L.5.5c	MC	1	4,055	0.50	0.57		0.12	0.22	0.57	0.08	-0.46	-0.21		-0.27
31572	SL.5.2	MC	1	6,295	0.36	0.63		0.26	0.05	0.63	0.06	-0.14	-0.53		-0.25
31573	SL.5.2	MC	1	6,211	0.58	0.60		0.09	0.17	0.14	0.60	-0.28	-0.44	-0.32	
31574	SL.5.2	MSCR	1	6,295	0.43	0.47	0.53	0.47				-0.82	-0.11		
31576	SL.5.2	MC	1	6,295	0.61	0.76		0.76	0.11	0.06	0.06		-0.47	-0.49	-0.33
31578	SL.5.2	MC	1	6,211	0.65	0.78		0.09	0.08	0.78	0.05	-0.52	-0.51		-0.39
31581	SL.5.2	MC	1	6,211	0.47	0.63		0.07	0.19	0.63	0.11	-0.47	-0.25		-0.25

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
31584	SL.5.3	MSCR	1	6,295	0.51	0.26	0.74	0.26				-0.70	0.12		
31585	SL.5.3	MC	1	6,211	0.58	0.75		0.75	0.07	0.06	0.11		-0.48	-0.51	-0.30
31586	SL.5.3	MC	1	6,295	0.35	0.31		0.43	0.14	0.12	0.31	-0.14	-0.05	-0.24	
31587	SL.5.3	MC	1	6,211	0.39	0.61		0.12	0.18	0.61	0.09	-0.19	-0.25		-0.29
31704	RI.5.1	MC	1	3,852	0.48	0.56		0.19	0.08	0.56	0.17	-0.16	-0.39		-0.35
31705	RI.5.2	MSCR	1	3,771	0.42	0.18	0.82	0.18				-0.64	0.10		
31717	RI.5.4	MSCR	2	3,852	0.56	0.65	0.29	0.12	0.59			-1.16	-0.86	-0.08	
31719	RI.5.5	MSCR	1	3,852	0.49	0.31	0.69	0.31				-0.74	0.07		
31720	RI.5.6	MSCR	1	3,852	0.46	0.23	0.77	0.23				-0.66	0.10		
31721	RI.5.5	MSCR	2	3,771	0.49	0.36	0.55	0.16	0.28			-0.83	-0.52	0.16	
31722	RI.5.4	MC	1	3,771	0.47	0.73		0.73	0.17	0.07	0.03		-0.34	-0.29	-0.50
31723	RI.5.8	MC	1	3,771	0.61	0.75		0.75	0.09	0.07	0.10		-0.51	-0.46	-0.33
31724	RI.5.8	MSCR	1	3,852	0.34	0.21	0.79	0.21				-0.61	-0.02		
31725	L.5.4a	MC	1	3852	0.30	0.58		0.13	0.07	0.58	0.21	-0.34	-0.40		0.05
31727	L.5.5a	MC	1	3771	0.35	0.71		0.04	0.18	0.07	0.71	-0.49	-0.05	-0.42	
31728	RL.5.4	MC	1	3771	0.69	0.81		0.07	0.06	0.06	0.81	-0.38	-0.64	-0.58	
32983	L.5.1d	MSCR	1	7821	0.39	0.74	0.26	0.74				-1.02	-0.31		
32984	L.5.2e	MSCR	2	7821	0.28	0.50	0.26	0.47	0.27			-0.88	-0.48	-0.15	
32985	L.5.2a	MSCR	1	7821	0.37	0.61	0.39	0.61				-0.89	-0.24		
33019	L.5.1c	MSCR	1	8623	0.44	0.63	0.37	0.63				-0.96	-0.18		
33020	L.5.2b	MSCR	2	8623	0.55	0.66	0.13	0.42	0.45			-1.34	-0.80	0.08	
33022	L.5.1f , L.5.1e	MSCR	2	8623	0.48	0.55	0.20	0.50	0.30			-1.06	-0.64	0.20	
33077	SL.5.3	MC	1	3933	0.70	0.82		0.07	0.07	0.04	0.82	-0.54	-0.51	-0.59	
33078	SL.5.2	MSCR	1	3933	0.38	0.23	0.77	0.23				-0.64	0.00		
33079	SL.5.3	MC	1	3933	0.60	0.81		0.06	0.03	0.81	0.09	-0.48	-0.56		-0.41
33080	SL.5.2	MSCR	1	3933	0.49	0.40	0.60	0.40				-0.82	0.00		
33100	SL.5.2	MSCR	2	3933	0.30	0.23	0.65	0.23	0.12			-0.63	-0.52	0.34	

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
33101	SL.5.2	MSCR	1	3933	0.55	0.48	0.52	0.48				-0.93	0.00		
33142	L.5.2b	MSCR	1	7821	0.58	0.71	0.29	0.71				-1.25	-0.18		

Table 4-I–4. Field-Test Items: Classical Item Statistics Grade 6 ELA

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
29711	RI.6.1	MSCR	2	3,150	0.36	0.53	0.33	0.29	0.39			-0.54	-0.27	0.22	
29712	RI.6.2	MSCR	2	3,150	0.35	0.33	0.54	0.25	0.20			-0.43	0.03	0.28	
29713	RI.6.3	MSCR	1	3,150	0.62	0.62	0.38	0.62				-0.83	0.24		
29714	RI.6.3	MSCR	2	3,150	0.51	0.59	0.29	0.24	0.47			-0.74	-0.46	0.34	
29716	RI.6.5	MC	1	3,150	0.46	0.46		0.19	0.24	0.11	0.46	-0.22	-0.17	-0.36	
29719	RI.6.7	MSCR	1	3,150	0.56	0.17	0.83	0.17				-0.33	0.62		
29720	RI.6.7	MC	1	3,150	0.57	0.61		0.10	0.61	0.17	0.13	-0.26		-0.52	-0.21
29721	RI.6.8	MC	1	3,150	0.61	0.66		0.19	0.07	0.09	0.66	-0.35	-0.61	-0.32	
29722	RI.6.8	MSCR	1	3,150	0.34	0.16	0.84	0.16				-0.27	0.36		
29723	L.6.4a	MSCR	1	3,150	0.52	0.24	0.76	0.24				-0.38	0.49		
29724	L.6.4b	MC	1	3,150	0.56	0.46		0.07	0.38	0.09	0.46	-0.36	-0.30	-0.29	
29832	RL.6.1	MSCR	1	3,357	0.53	0.52	0.48	0.52				-0.61	0.29		
29833	RL.6.2	MC	1	3,357	0.59	0.75		0.75	0.13	0.07	0.05		-0.43	-0.48	-0.36
29834	RL.6.1	MC	1	3,269	0.25	0.43		0.43	0.16	0.15	0.26		-0.20	-0.27	0.05
29835	RL.6.3	MC	1	3,269	0.55	0.72		0.10	0.08	0.72	0.09	-0.44	-0.46		-0.21
29837	RL.6.4	MSCR	2	3,357	0.63	0.59	0.22	0.39	0.40			-1.07	-0.31	0.54	
29838	RL.6.4	MC	1	3,269	0.58	0.66		0.11	0.16	0.06	0.66	-0.47	-0.26	-0.48	
29839	RL.6.5	MC	1	3,357	0.37	0.54		0.07	0.13	0.54	0.26	-0.35	-0.22		-0.17
29840	RL.6.5	MSCR	2	3,269	0.55	0.45	0.38	0.34	0.28			-0.69	-0.16	0.61	
29841	RL.6.6	MSCR	1	3,357	0.38	0.31	0.69	0.31				-0.34	0.31		
29842	RL.6.9	MC	1	3,269	0.29	0.67		0.08	0.67	0.13	0.11	-0.35		-0.17	-0.07
29843	RL.6.9	MSCR	1	3,357	0.15	0.08	0.92	0.08				-0.17	0.16		
29844	RL.6.9	MSCR	1	3,269	0.36	0.27	0.73	0.27				-0.31	0.31		
29846	L.6.5a	MC	1	3,357	0.43	0.42		0.11	0.27	0.42	0.20	-0.32	-0.20		-0.15
30674	SL.6.2	MSCR	1	3,416	0.46	0.70	0.30	0.70				-0.75	0.10		
30753	RI.6.2	MSCR	2	3,309	0.56	0.55	0.35	0.21	0.45			-0.78	-0.25	0.37	

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
30755	RI.6.3	MC	1	3,309	0.40	0.47		0.22	0.26	0.47	0.04	-0.30	-0.13		-0.26
30757	RI.6.2	MSCR	1	3,343	0.44	0.33	0.67	0.33				-0.38	0.35		
30758	RI.6.1	MC	1	3,343	0.22	0.37		0.11	0.29	0.37	0.22	-0.29	-0.10		0.04
30760	RI.6.4	MSCR	2	3,343	0.59	0.44	0.39	0.33	0.28			-0.75	-0.06	0.61	
30763	RI.6.5	MC	1	3,309	0.41	0.44		0.44	0.16	0.09	0.31		-0.37	-0.31	-0.06
30764	RI.6.5	MC	1	3,343	0.48	0.57		0.57	0.20	0.16	0.07		-0.41	-0.18	-0.20
30768	RI.6.8	MC	1	3,343	0.39	0.42		0.16	0.20	0.21	0.42	-0.27	-0.27	-0.02	
30769	RI.6.7	MC	1	3,343	0.48	0.53		0.23	0.16	0.53	0.08	-0.12	-0.43		-0.30
30771	RI.6.5	MC	1	3,309	0.53	0.57		0.21	0.12	0.57	0.10	-0.30	-0.40		-0.24
30772	RI.6.7	MSCR	1	3,309	0.25	0.16	0.84	0.16				-0.23	0.23		
30775	L.6.4a	MC	1	3,343	0.66	0.67		0.05	0.09	0.18	0.67	-0.51	-0.52	-0.35	
30777	L.6.4b	MC	1	3,309	-0.02	0.36		0.36	0.06	0.55	0.03		-0.51	0.21	-0.18
30881	SL.6.3	MC	1	3,416	0.49	0.75		0.75	0.11	0.10	0.05		-0.46	-0.35	-0.11
30883	SL.6.2	MC	1	3,416	0.52	0.76		0.14	0.06	0.76	0.04	-0.29	-0.56		-0.39
30884	SL.6.2	MSCR	1	3,416	0.66	0.43	0.57	0.43				-0.62	0.46		
30885	SL.6.3	MC	1	3,416	0.61	0.70		0.11	0.70	0.10	0.09	-0.47		-0.35	-0.40
30886	SL.6.3	MC	1	3,416	0.54	0.74		0.04	0.05	0.17	0.74	-0.48	-0.46	-0.35	
30887	SL.6.3	MSCR	1	3,416	0.64	0.62	0.38	0.62				-0.86	0.26		
30939	L.6.1d	MSCR	1	11,306	0.25	0.41	0.59	0.41				-0.33	0.09		
31330	RL.6.1	MSCR	1	3,367	0.57	0.56	0.44	0.56				-0.72	0.25		
31332	RL.6.1	MC	1	3,592	0.51	0.60		0.16	0.10	0.15	0.60	-0.26	-0.44	-0.25	
31333	RL.6.2	MSCR	2	3,367	0.29	0.33	0.52	0.30	0.17			-0.35	-0.23	0.46	
31334	RL.6.2	MC	1	3,592	0.44	0.43		0.12	0.24	0.21	0.43	-0.32	-0.20	-0.15	
31335	RL.6.2	MSCR	1	3,592	0.14	0.10	0.90	0.10				-0.19	0.08		
31336	RL.6.3	MSCR	2	3,367	0.46	0.43	0.50	0.15	0.35			-0.55	-0.17	0.35	
31337	RL.6.3	MC	1	3,592	0.60	0.60		0.06	0.18	0.15	0.60	-0.44	-0.41	-0.29	
31340	RL.6.4	MC	1	3,367	0.43	0.56		0.15	0.16	0.56	0.12	-0.30	-0.30		-0.13
31343	RL.6.5	MC	1	3,592	0.22	0.52		0.52	0.07	0.28	0.13		-0.54	0.06	-0.14

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
31345	RL.6.6	MSCR	1	3,367	0.60	0.40	0.60	0.40				-0.56	0.42		
31347	RL.6.9	MSCR	2	3,592	0.38	0.46	0.28	0.52	0.20			-0.79	0.05	0.16	
31348	RL.6.9	MC	1	3,367	-0.01	0.34		0.13	0.34	0.24	0.28	-0.30		-0.08	0.29
31349	RL.6.9	MC	1	3,592	0.58	0.68		0.12	0.14	0.68	0.06	-0.30	-0.43		-0.46
31350	RL.6.9	MSCR	2	3,367	0.51	0.70	0.10	0.41	0.50			-0.91	-0.59	0.30	
31352	L.6.4a	MC	1	3,592	0.39	0.42		0.13	0.36	0.09	0.42	-0.21	-0.05	-0.52	
31357	RL.6.2	MC	1	3,580	0.74	0.83		0.06	0.07	0.83	0.03	-0.62	-0.54		-0.57
31358	RL.6.2	MSCR	2	3,580	0.43	0.63	0.09	0.57	0.34			-0.87	-0.37	0.37	
31362	RL.6.4	MSCR	1	3,580	0.53	0.51	0.49	0.51				-0.62	0.28		
31363	RL.6.5	MC	1	3,580	0.46	0.73		0.05	0.73	0.15	0.08	-0.41		-0.33	-0.24
31365	RL.6.6	MSCR	2	3,580	0.54	0.52	0.34	0.27	0.38			-0.77	-0.23	0.44	
31366	RL.6.5	MC	1	3,580	0.41	0.47		0.30	0.12	0.11	0.47	-0.15	-0.21	-0.33	
31367	RL.6.1	MC	1	3,580	0.64	0.82		0.09	0.06	0.82	0.03	-0.53	-0.42		-0.50
31368	L.6.4b	MC	1	3,580	0.57	0.82		0.10	0.82	0.05	0.03	-0.48		-0.37	-0.42
31369	L.6.4a	MSCR	1	3,580	0.25	0.48	0.52	0.48				-0.37	0.06		
31370	L.6.5a	MC	1	3,580	0.24	0.34		0.34	0.28	0.29	0.10		-0.15	-0.05	-0.12
31374	SL.6.2	MSCR	1	3,488	0.68	0.71	0.29	0.71				-1.03	0.24		
31375	SL.6.2	MC	1	3,488	0.63	0.77		0.07	0.11	0.77	0.06	-0.46	-0.50		-0.38
31376	SL.6.3	MC	1	3,488	0.35	0.57		0.15	0.11	0.57	0.17	-0.24	-0.10		-0.25
31377	SL.6.3	MC	1	3,488	0.51	0.71		0.10	0.11	0.08	0.71	-0.25	-0.28	-0.53	
31378	SL.6.3	MC	1	3,488	0.54	0.47		0.11	0.38	0.04	0.47	-0.56	-0.19	-0.39	
31379	SL.6.3	MC	1	3,488	0.51	0.52		0.31	0.07	0.11	0.52	-0.30	-0.47	-0.16	
31380	SL.6.3	MSCR	1	3,488	0.34	0.31	0.69	0.31				-0.31	0.26		
31381	SL.6.3	MSCR	1	3,488	0.57	0.59	0.41	0.59				-0.71	0.28		
32072	RI.6.1	MC	1	3,458	0.42	0.48		0.23	0.19	0.10	0.48	-0.15	-0.22	-0.32	
32081	RI.6.2	MC	1	3,516	0.46	0.59		0.13	0.25	0.59	0.02	-0.39	-0.25		-0.26
32082	RI.6.2	MC	1	3,458	0.53	0.37		0.23	0.16	0.23	0.37	-0.26	-0.17	-0.25	
32083	RI.6.2	MSCR	1	3,516	0.37	0.20	0.80	0.20				-0.25	0.39		

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
32084	RI.6.3	MC	1	3,458	0.53	0.51		0.13	0.21	0.15	0.51	-0.24	-0.21	-0.42	
32085	RI.6.3	MSCR	1	3,516	0.33	0.27	0.73	0.27				-0.28	0.29		
32086	RI.6.3	MSCR	1	3,458	0.69	0.38	0.62	0.38				-0.57	0.58		
32091	RI.6.5	MC	1	3,516	0.51	0.43		0.43	0.14	0.22	0.20		-0.42	-0.19	-0.17
32182	L.6.1a	MSCR	2	11,306	0.49	0.69	0.10	0.41	0.49			-0.87	-0.55	0.32	
32183	L.6.2a	MSCR	1	11,306	0.40	0.46	0.54	0.46				-0.47	0.21		
32184	L.6.2b	MSCR	1	11,306	0.41	0.67	0.33	0.67				-0.65	0.08		
32460	RI.6.8	MC	1	3,458	-0.06	0.29		0.38	0.29	0.17	0.16	0.33		-0.36	-0.06
32463	RI.6.8	MC	1	3,516	0.41	0.58		0.58	0.12	0.15	0.15		-0.41	-0.17	-0.16
32469	RI.6.9	MC	1	3,458	0.47	0.61		0.07	0.09	0.23	0.61	-0.44	-0.52	-0.12	
32472	RI.6.9	MC	1	3,516	0.05	0.29		0.16	0.18	0.29	0.37	-0.25	-0.22		0.28
32478	RI.6.9	MSCR	1	3,458	0.65	0.16	0.84	0.16				-0.31	0.80		
32482	L.6.4a	MC	1	3,516	0.63	0.84		0.06	0.84	0.07	0.03	-0.53		-0.44	-0.52
32489	L.6.5b	MC	1	3,458	0.42	0.76		0.07	0.76	0.12	0.05	-0.44		-0.19	-0.33
32491	L.6.5c	MSCR	1	3,516	0.46	0.20	0.80	0.20				-0.28	0.52		
32763	RL.6.3	MSCR	2	3,611	0.37	0.49	0.35	0.32	0.33			-0.66	0.00	0.16	
32765	RL.6.4	MSCR	2	3,611	0.40	0.51	0.40	0.17	0.43			-0.54	-0.42	0.26	
32768	L.6.5a	MC	1	3,611	0.34	0.62		0.62	0.11	0.09	0.19		-0.36	-0.25	-0.07
32769	RL.6.4	MC	1	3,611	0.45	0.60		0.26	0.09	0.60	0.05	-0.15	-0.55		-0.29
32771	RL.6.1	MSCR	1	3,611	0.71	0.58	0.42	0.58				-0.89	0.33		
32772	RL.6.6	MC	1	3,611	0.28	0.48		0.27	0.15	0.48	0.10	-0.03	-0.33		-0.13
32773	RL.6.2	MSCR	1	3,611	0.61	0.50	0.50	0.50				-0.68	0.33		
32774	L.6.4a	MC	1	3,611	0.53	0.56		0.25	0.15	0.05	0.56	-0.23	-0.37	-0.48	
32775	RL.6.5	MC	1	3,611	0.43	0.43		0.17	0.19	0.21	0.43	-0.29	-0.22	-0.12	
32776	RL.6.1	MC	1	3,611	0.56	0.62		0.13	0.14	0.62	0.12	-0.35	-0.37		-0.32
32796	L.6.2b	MSCR	1	11,371	0.38	0.69	0.31	0.69				-0.60	0.07		
32799	L.6.2b	MSCR	2	11,371	0.52	0.80	0.07	0.25	0.68			-1.52	-0.50	0.14	
32802	L.6.1c	MSCR	2	11,371	0.35	0.57	0.16	0.54	0.30			-0.79	-0.14	0.23	

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
32957	L.6.1a	MSCR	1	11,438	0.47	0.86	0.14	0.86				-0.96	-0.01		
32958	L.6.2a	MSCR	2	11,438	0.46	0.49	0.29	0.44	0.27			-0.69	-0.19	0.49	
32959	L.6.1d	MSCR	2	11,438	0.64	0.81	0.09	0.20	0.71			-1.55	-0.72	0.20	
33028	RL.6.1	MSCR	1	3,238	0.52	0.13	0.87	0.13				-0.26	0.67		
33029	RL.6.1	MC	1	3,238	0.73	0.83		0.83	0.07	0.04	0.05		-0.58	-0.60	-0.50
33030	RL.6.2	MSCR	2	3,238	0.43	0.60	0.23	0.36	0.42			-0.76	-0.25	0.28	
33033	RL.6.6	MC	1	3,238	0.42	0.51		0.13	0.51	0.08	0.28	-0.28		-0.42	-0.13
33037	L.6.4a	MC	1	3,238	0.42	0.30		0.29	0.26	0.14	0.30	-0.18	-0.04	-0.29	
33038	RL.6.5	MSCR	1	3,238	0.65	0.51	0.49	0.51				-0.69	0.39		
33039	RL.6.2	MSCR	1	3,238	0.39	0.32	0.68	0.32				-0.35	0.31		
33040	RL.6.4	MC	1	3,238	0.53	0.73		0.73	0.16	0.08	0.03		-0.34	-0.47	-0.37
33046	L.6.5b	MC	1	3,238	0.42	0.68		0.16	0.08	0.68	0.08	-0.17	-0.48		-0.25

Table 4-I–5. Field-Test Items: Classical Item Statistics Grade 7 ELA

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
29768	RI.7.1	MSCR	1	5,147	0.45	0.20	0.80	0.20				-0.17	0.60		
29769	RI.7.2	MC	1	5,223	0.55	0.75		0.12	0.75	0.08	0.04	-0.51		-0.32	-0.27
29771	RI.7.3	MSCR	1	5,147	0.64	0.65	0.35	0.65				-0.72	0.36		
29772	RI.7.3	MC	1	5,223	0.55	0.63		0.14	0.15	0.63	0.08	-0.33	-0.35		-0.41
29773	RI.7.4	MSCR	2	5,147	0.53	0.52	0.28	0.40	0.32			-0.74	0.07	0.53	
29774	RI.7.5	MC	1	5,223	0.43	0.49		0.06	0.36	0.09	0.49	-0.57	-0.06	-0.48	
29776	RI.7.5	MSCR	2	5,147	0.60	0.43	0.32	0.51	0.18			-0.81	0.26	0.64	
29777	RI.7.6	MC	1	5,223	0.58	0.71		0.10	0.71	0.15	0.04	-0.50		-0.33	-0.50
29778	RI.7.8	MC	1	5,147	0.12	0.39		0.39	0.21	0.29	0.11		-0.10	0.09	-0.28
29779	RI.7.8	MC	1	5,223	0.58	0.70		0.12	0.07	0.70	0.11	-0.41	-0.58		-0.25
29780	L.7.4a	MC	1	5,147	0.70	0.78		0.06	0.09	0.78	0.07	-0.50	-0.57		-0.47
29781	L.7.4b	MC	1	5,223	0.65	0.70		0.70	0.13	0.09	0.09		-0.45	-0.50	-0.40
30446	RL.7.1	MSCR	1	5,316	0.37	0.44	0.56	0.44				-0.27	0.33		
30447	RI.7.1	MSCR	1	5,405	0.16	0.36	0.64	0.36				-0.11	0.16		
30450	RI.7.1	MSCR	1	5,174	0.64	0.55	0.45	0.55				-0.59	0.47		
30451	RL.7.2	MC	1	5,316	0.61	0.56		0.21	0.09	0.14	0.56	-0.40	-0.47	-0.26	
30453	RI.7.2	MSCR	1	5,405	0.40	0.31	0.69	0.31				-0.22	0.44		
30455	RL.7.2	MSCR	2	5,316	0.46	0.45	0.41	0.28	0.31			-0.38	-0.17	0.62	
30456	RI.7.3	MSCR	1	5,174	0.55	0.37	0.63	0.37				-0.34	0.56		
30457	RI.7.3	MC	1	5,405	0.37	0.42		0.33	0.07	0.42	0.18	-0.02	-0.50		-0.26
30459	RL.7.2	MSCR	1	5,316	0.57	0.47	0.53	0.47				-0.44	0.48		
30461	RL.7.3	MC	1	5,316	0.05	0.32		0.18	0.22	0.32	0.29	-0.17	-0.15		0.20
30462	RI.7.4	MSCR	1	5,174	0.52	0.50	0.50	0.50				-0.42	0.42		
30464	RL.7.4	MC	1	5,316	0.39	0.61		0.22	0.06	0.12	0.61	-0.13	-0.53	-0.28	
30466	RL.7.5	MC	1	5,316	0.24	0.34		0.34	0.20	0.39	0.07		-0.27	0.10	-0.38
30467	RI.7.5	MC	1	5,405	0.52	0.63		0.12	0.10	0.63	0.14	-0.32	-0.47		-0.23

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
30468	RL.7.6	MC	1	5,316	0.47	0.59		0.59	0.26	0.10	0.05		-0.18	-0.48	-0.40
30470	RI.7.6	MSCR	2	5,174	0.39	0.43	0.40	0.32	0.27			-0.29	-0.17	0.63	
30471	RL.7.6	MC	1	5,316	0.40	0.65		0.25	0.65	0.05	0.06	-0.19		-0.59	-0.30
30473	L.7.5a	MC	1	5,316	0.26	0.29		0.28	0.25	0.29	0.19	-0.21	0.03		-0.13
30474	L.7.4a	MSCR	1	5,316	0.31	0.37	0.63	0.37				-0.19	0.31		
30476	RI.7.6	MC	1	5,405	0.51	0.52		0.20	0.52	0.21	0.07	-0.27		-0.29	-0.38
30478	RI.7.8	MSCR	1	5,174	0.41	0.43	0.57	0.43				-0.29	0.38		
30481	RI.7.8	MC	1	5,405	0.66	0.64		0.13	0.12	0.12	0.64	-0.37	-0.55	-0.36	
30482	L.7.4a	MC	1	5,405	0.51	0.68		0.07	0.68	0.21	0.04	-0.44		-0.31	-0.45
30483	L.7.4a	MC	1	5,174	0.41	0.63		0.63	0.11	0.20	0.06		-0.37	-0.24	-0.15
30858	SL.7.2	MC	1	5,951	0.52	0.56		0.56	0.13	0.23	0.08		-0.43	-0.27	-0.25
30863	SL.7.2	MSCR	1	6,106	0.60	0.66	0.34	0.66				-0.67	0.34		
30867	SL.7.2	MSCR	1	5,951	0.48	0.35	0.65	0.35				-0.30	0.49		
30869	SL.7.2	MSCR	2	6,106	0.64	0.55	0.40	0.11	0.49			-0.61	-0.31	0.56	
30871	SL.7.2	MC	1	5,951	0.34	0.46		0.14	0.19	0.46	0.20	-0.31	-0.31		0.05
30872	SL.7.3	MSCR	1	6,106	0.54	0.25	0.75	0.25				-0.23	0.67		
30873	SL.7.3	MC	1	5,951	0.72	0.68		0.10	0.12	0.10	0.68	-0.53	-0.42	-0.54	
30874	SL.7.3	MC	1	6,106	0.34	0.53		0.20	0.22	0.05	0.53	-0.32	0.05	-0.63	
30929	SL.7.3	MC	1	5,951	-0.08	0.16		0.12	0.26	0.47	0.16	-0.18	-0.12	0.23	
30941	L.7.1c	MSCR	1	5,983	0.42	0.65	0.35	0.65				-0.48	0.22		
32226	L.7.1b	MSCR	1	6,070	0.54	0.82	0.18	0.82				-0.83	0.21		
32227	L.7.1b	MSCR	2	6,070	0.44	0.56	0.22	0.44	0.34			-0.55	-0.11	0.54	
32228	L.7.2b	MSCR	1	6,070	0.40	0.67	0.33	0.67				-0.44	0.23		
32229	L.7.2a	MSCR	1	6,070	0.41	0.59	0.41	0.59				-0.39	0.29		
32230	L.7.1c	MSCR	1	6,061	0.53	0.62	0.38	0.62				-0.57	0.31		
32231	7.UD1.1	MSCR	2	6,061	0.49	0.59	0.17	0.47	0.36			-0.88	-0.07	0.45	
32232	7.UD1.1	MSCR	1	6,061	0.56	0.50	0.50	0.50				-0.48	0.44		
32233	L.7.2a	MSCR	1	6,061	0.31	0.52	0.48	0.52				-0.28	0.22		

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
32234	L.7.2a	MSCR	1	5,898	0.36	0.52	0.48	0.52				-0.30	0.27		
32235	L.7.1a	MSCR	2	5,898	0.41	0.66	0.06	0.56	0.38			-1.18	-0.11	0.35	
32236	L.7.1c	MSCR	1	5,898	0.20	0.55	0.45	0.55				-0.18	0.14		
32237	L.7.1b	MSCR	1	5,898	0.40	0.83	0.17	0.83				-0.59	0.12		
32238	L.7.2b	MSCR	2	5,983	0.56	0.82	0.05	0.26	0.69			-1.29	-0.58	0.28	
32239	L.7.1b	MSCR	1	5,983	0.20	0.63	0.37	0.63				-0.23	0.10		
32240	L.7.2a	MSCR	1	5,983	0.11	0.38	0.62	0.38				-0.09	0.08		
32503	RL.7.1	MC	1	5,232	0.50	0.61		0.09	0.25	0.04	0.61	-0.60	-0.17	-0.46	
32505	RL.7.2	MSCR	1	5,220	0.48	0.45	0.55	0.45				-0.37	0.43		
32506	RI.7.2	MSCR	1	5,220	0.57	0.16	0.84	0.16				-0.17	0.84		
32507	RI.7.2	MSCR	1	5,189	0.47	0.16	0.84	0.16				-0.16	0.65		
32508	RI.7.3	MC	1	5,232	0.25	0.55		0.11	0.23	0.55	0.11	-0.28	-0.08		-0.12
32509	RL.7.3	MSCR	1	5,189	0.53	0.19	0.81	0.19				-0.21	0.70		
32510	RL.7.3	MSCR	2	5,232	0.46	0.56	0.22	0.44	0.33			-0.51	-0.21	0.57	
32511	RL.7.4	MC	1	5,232	0.62	0.46		0.18	0.22	0.14	0.46	-0.27	-0.30	-0.42	
32512	RL.7.4	MC	1	5,220	0.43	0.59		0.11	0.23	0.59	0.08	-0.38	-0.22		-0.23
32513	RL.7.3	MC	1	5,220	0.62	0.67		0.08	0.15	0.11	0.67	-0.45	-0.32	-0.51	
32514	RI.7.5	MSCR	2	5,220	0.54	0.34	0.47	0.38	0.15			-0.49	0.26	0.83	
32515	RL.7.3	MC	1	5,189	0.34	0.56		0.12	0.21	0.56	0.11	-0.19	-0.27		-0.10
32516	RI.7.6	MC	1	5,189	0.31	0.55		0.09	0.25	0.55	0.11	-0.48	-0.14		0.01
32517	RL.7.6	MSCR	1	5,189	0.62	0.60	0.40	0.60				-0.66	0.39		
32518	RL.7.9	MC	1	5,232	0.19	0.46		0.07	0.34	0.46	0.13	-0.43	0.04		-0.15
32521	RL.7.9	MC	1	5,220	0.33	0.39		0.17	0.24	0.39	0.19	0.00	-0.30		-0.13
32522	RL.7.9	MSCR	2	5,189	0.21	0.62	0.06	0.64	0.30			-0.73	-0.05	0.16	
32523	RL.7.9	MSCR	2	5,232	0.56	0.52	0.31	0.34	0.35			-0.60	-0.16	0.65	
32870	SL.7.2	MSCR	1	5,038	0.58	0.44	0.56	0.44				-0.40	0.52		
32871	SL.7.2	MC	1	5,038	0.52	0.80		0.06	0.07	0.80	0.07	-0.43	-0.49		-0.25
32872	SL.7.3	MSCR	1	5,038	0.16	0.40	0.60	0.40				-0.10	0.16		

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
32873	SL.7.3	MSCR	1	5,038	0.65	0.61	0.39	0.61				-0.65	0.43		
32875	SL.7.2	MC	1	5,038	0.34	0.37		0.13	0.20	0.37	0.30	-0.26	-0.33		0.05
32876	SL.7.3	MC	1	5,038	0.47	0.50		0.14	0.14	0.50	0.21	-0.50	-0.47		0.10
32960	L.7.1c	MSCR	1	5,953	0.31	0.42	0.58	0.42				-0.23	0.28		
32961	L.7.2a	MSCR	1	5,953	0.53	0.65	0.35	0.65				-0.61	0.30		
32962	L.7.2a	MSCR	1	5,953	0.39	0.50	0.50	0.50				-0.33	0.30		
32963	L.7.2b	MSCR	2	5,953	0.57	0.72	0.13	0.29	0.58			-1.10	-0.28	0.37	

Table 4-I–6. Field-Test Items: Classical Item Statistics Grade 8 ELA

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
30445	RI.8.1	MSCR	1	3,549	0.68	0.55	0.45	0.55				-0.42	0.79		
30449	RI.8.1	MSCR	2	3,451	0.69	0.76	0.21	0.05	0.74			-0.83	-0.77	0.64	
30452	RI.8.2	MC	1	3,549	0.63	0.87		0.05	0.05	0.87	0.03	-0.56	-0.59		-0.30
30454	RI.8.3	MSCR	2	3,451	0.49	0.33	0.56	0.23	0.21			-0.08	0.28	1.13	
30458	RI.8.3	MC	1	3,549	0.53	0.56		0.14	0.06	0.56	0.24	-0.33	-0.36		-0.29
30460	RI.8.5	MSCR	1	3,549	0.32	0.39	0.61	0.39				0.03	0.59		
30463	RI.8.4	MC	1	3,451	0.66	0.87		0.06	0.87	0.03	0.03	-0.49		-0.70	-0.44
30465	RI.8.5	MC	1	3,451	0.55	0.60		0.06	0.21	0.13	0.60	-0.39	-0.36	-0.28	
30469	L.8.4a	MC	1	3,451	0.71	0.84		0.07	0.04	0.84	0.05	-0.51	-0.66		-0.53
30472	RI.8.6	MC	1	3,549	0.55	0.64		0.12	0.16	0.64	0.08	-0.40	-0.36		-0.27
30475	RI.8.8	MSCR	1	3,451	0.58	0.46	0.54	0.46				-0.20	0.81		
30477	RI.8.8	MC	1	3,549	-0.10	0.10		0.10	0.06	0.04	0.80		-0.52	-0.64	0.47
30479	L.8.5a	MC	1	3,451	0.67	0.79		0.79	0.05	0.12	0.04		-0.63	-0.47	-0.44
30480	L.8.4a	MC	1	3,549	0.57	0.76		0.08	0.13	0.03	0.76	-0.33	-0.41	-0.58	
30493	RI.8.3	MSCR	1	3,528	0.61	0.48	0.52	0.48				-0.31	0.77		
30497	RI.8.4	MC	1	3,528	0.62	0.82		0.82	0.10	0.04	0.04		-0.49	-0.54	-0.39
30500	RI.8.4	MC	1	3,528	0.62	0.77		0.12	0.07	0.05	0.77	-0.31	-0.55	-0.64	
30502	RI.8.2	MC	1	3,528	0.49	0.54		0.04	0.37	0.05	0.54	-0.53	-0.25	-0.55	
30505	RI.8.5	MSCR	1	3,528	0.36	0.20	0.80	0.20				0.08	0.72		
30514	RI.8.6	MSCR	1	3,528	0.52	0.35	0.65	0.35				-0.12	0.80		
30516	RI.8.6	MC	1	3,528	0.47	0.56		0.56	0.34	0.07	0.03		-0.25	-0.48	-0.40
30523	RI.8.8	MSCR	1	3,528	0.42	0.12	0.88	0.12				0.11	0.94		
30525	RI.8.8	MC	1	3,528	0.32	0.45		0.42	0.45	0.04	0.08	-0.21		-0.42	-0.03
30526	L.8.5a	MC	1	3,528	0.51	0.65		0.13	0.65	0.16	0.06	-0.18		-0.50	-0.25
30527	L.8.5c	MC	1	3,528	0.57	0.79		0.79	0.10	0.06	0.06		-0.48	-0.50	-0.23
30782	RI.8.1	MC	1	3,426	0.47	0.49		0.23	0.15	0.49	0.13	-0.38	-0.38		0.12

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
30784	RI.8.2	MSCR	1	3,447	0.41	0.26	0.74	0.26				0.04	0.79		
30787	RI.8.8	MSCR	2	3,447	0.57	0.41	0.41	0.35	0.24			-0.46	0.61	0.90	
30788	RI.8.4	MSCR	2	3,426	0.59	0.54	0.34	0.25	0.41			-0.53	0.13	0.82	
30791	RI.8.4	MC	1	3,447	0.29	0.48		0.48	0.29	0.07	0.16		-0.01	-0.57	-0.13
30794	RI.8.5	MC	1	3,426	0.24	0.32		0.32	0.12	0.51	0.05		-0.54	0.17	-0.36
30796	RI.8.6	MSCR	1	3,447	0.58	0.21	0.79	0.21				0.01	1.07		
30799	RI.8.6	MC	1	3,426	0.58	0.70		0.05	0.10	0.15	0.70	-0.37	-0.39	-0.41	
30800	RI.8.8	MSCR	1	3,426	0.50	0.23	0.77	0.23				-0.02	0.89		
30802	RI.8.8	MC	1	3,447	0.43	0.37		0.24	0.19	0.21	0.37	-0.10	-0.29	-0.18	
30804	RI.8.8	MSCR	2	3,426	0.62	0.44	0.46	0.20	0.34			-0.42	0.35	0.94	
30805	RI.8.9	MC	1	3,447	0.53	0.56		0.56	0.23	0.11	0.10		-0.33	-0.35	-0.23
30807	RI.8.9	MSCR	1	3,426	0.44	0.29	0.71	0.29				-0.04	0.77		
30810	RI.8.4	MC	1	3,447	0.44	0.48		0.14	0.21	0.17	0.48	-0.30	-0.13	-0.27	
31538	RL.8.1	MC	1	3,576	0.43	0.59		0.59	0.29	0.09	0.03		-0.14	-0.52	-0.58
31539	RL.8.1	MC	1	3,717	0.36	0.47		0.47	0.21	0.14	0.18		-0.26	-0.17	-0.12
31541	RL.8.2	MC	1	3,664	0.33	0.53		0.53	0.11	0.21	0.15		-0.43	0.13	-0.36
31542	RL.8.2	MC	1	3,576	0.57	0.70		0.70	0.13	0.10	0.07		-0.51	-0.37	-0.21
31544	RL.8.2	MSCR	2	3,717	0.56	0.58	0.27	0.29	0.43			-0.61	0.09	0.80	
31556	RL.8.3	MC	1	3,717	-0.12	0.15		0.53	0.13	0.15	0.19	0.14	-0.25		0.12
31559	RL.8.3	MSCR	1	3,576	0.26	0.57	0.43	0.57				-0.04	0.44		
31560	L.8.4a	MC	1	3,664	0.41	0.62		0.10	0.10	0.62	0.17	-0.20	-0.56		-0.05
31562	RL.8.4	MC	1	3,664	0.54	0.85		0.03	0.06	0.85	0.05	-0.62	-0.47		-0.24
31575	RL.8.4	MSCR	1	3,576	0.55	0.38	0.62	0.38				-0.14	0.84		
31577	RL.8.3	MSCR	2	3,664	0.46	0.29	0.61	0.21	0.18			-0.08	0.29	1.09	
31580	RL.8.5	MSCR	1	3,717	0.64	0.20	0.80	0.20				-0.02	1.16		
31582	RL.8.6	MSCR	1	3,717	0.62	0.74	0.26	0.74				-0.72	0.53		
31588	RI.8.9	MC	1	3,717	0.55	0.71		0.15	0.71	0.04	0.10	-0.35		-0.58	-0.34
31589	RL.8.5	MC	1	3,664	0.32	0.52		0.12	0.52	0.25	0.10	-0.24		-0.17	-0.14

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
31590	RL.8.9	MC	1	3,576	0.30	0.50		0.17	0.26	0.50	0.07	-0.11	-0.18		-0.23
31592	RL.8.9	MC	1	3,576	0.55	0.61		0.20	0.14	0.05	0.61	-0.19	-0.48	-0.49	
31593	L.8.4a	MC	1	3,664	0.49	0.72		0.07	0.72	0.13	0.07	-0.42		-0.46	-0.08
31597	RI.8.1	MC	1	3,644	0.69	0.86		0.86	0.06	0.04	0.03		-0.65	-0.59	-0.34
31598	RI.8.2	MC	1	3,644	0.51	0.66		0.16	0.66	0.06	0.12	-0.31		-0.55	-0.26
31599	RI.8.2	MSCR	1	3,644	0.34	0.20	0.80	0.20				0.09	0.70		
31600	RI.8.3	MC	1	3,644	0.54	0.61		0.24	0.61	0.07	0.08	-0.32		-0.55	-0.24
31601	RI.8.3	MSCR	2	3,644	0.46	0.55	0.14	0.62	0.23			-0.53	0.12	0.91	
31602	RI.8.4	MC	1	3,644	0.48	0.72		0.17	0.72	0.08	0.03	-0.29		-0.43	-0.41
31603	RI.8.5	MC	1	3,644	0.39	0.54		0.03	0.34	0.09	0.54	-0.34	-0.09	-0.59	
31604	RI.8.6	MC	1	3,644	0.46	0.75		0.10	0.75	0.04	0.12	-0.41		-0.57	-0.17
31605	RI.8.7	MC	1	3,644	0.32	0.61		0.08	0.61	0.10	0.22	-0.48		-0.49	0.13
31606	RI.8.7	MC	1	3,644	0.15	0.38		0.15	0.22	0.38	0.25	-0.16	-0.12		0.05
31611	L.8.5a	MSCR	1	3,644	0.53	0.35	0.65	0.35				-0.11	0.82		
31708	RL.8.1	MSCR	1	3,342	0.42	0.35	0.65	0.35				-0.01	0.70		
31709	RL.8.1	MC	1	3,342	0.39	0.56		0.26	0.56	0.09	0.10	-0.19		-0.41	-0.16
31710	RL.8.3	MSCR	1	3,342	0.37	0.19	0.81	0.19				0.11	0.79		
31711	RL.8.1	MSCR	1	3,342	0.60	0.61	0.39	0.61				-0.42	0.65		
31712	RL.8.2	MSCR	2	3,342	0.60	0.74	0.15	0.23	0.62			-0.85	-0.20	0.66	
31713	RL.8.2	MC	1	3,342	0.41	0.63		0.23	0.05	0.63	0.09	-0.26	-0.63		-0.08
31715	RL.8.3	MC	1	3,342	0.62	0.76		0.76	0.11	0.09	0.04		-0.50	-0.40	-0.45
31730	L.8.4a	MC	1	3,342	0.67	0.61		0.21	0.11	0.08	0.61	-0.36	-0.54	-0.39	
31748	RL.8.3	MC	1	3,342	0.66	0.75		0.12	0.04	0.09	0.75	-0.39	-0.56	-0.53	
32100	RI.8.9	MSCR	1	3,866	0.31	0.08	0.92	0.08				0.16	0.80		
32102	L.8.4a	MC	1	3,866	0.34	0.41		0.12	0.41	0.24	0.23	-0.40		-0.22	0.06
32103	L.8.4a	MSCR	1	3,463	0.56	0.25	0.75	0.25				-0.02	0.97		
32241	L.8.1d	MSCR	1	11,869	0.23	0.50	0.50	0.50				0.03	0.43		
32242	L.8.2c	MSCR	1	11,869	0.50	0.84	0.16	0.84				-0.68	0.40		

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
32243	L.8.2b	MSCR	1	11,869	0.03	0.14	0.86	0.14				0.23	0.28		
32244	L.8.1c	MSCR	2	11,869	0.61	0.68	0.16	0.33	0.51			-1.00	0.04	0.74	
32531	RI.8.2	MC	1	3,866	0.44	0.44		0.13	0.16	0.28	0.44	-0.19	-0.12	-0.31	
32533	RI.8.2	MSCR	1	3,463	0.39	0.25	0.75	0.25				0.05	0.75		
32535	RI.8.3	MC	1	3,866	0.64	0.69		0.12	0.11	0.08	0.69	-0.25	-0.53	-0.54	
32536	RI.8.3	MSCR	1	3,463	0.62	0.53	0.47	0.53				-0.37	0.75		
32537	L.8.4a	MC	1	3,866	0.17	0.16		0.25	0.37	0.16	0.22	-0.09	-0.17		0.16
32538	RI.8.4	MC	1	3,866	0.11	0.29		0.13	0.55	0.29	0.03	-0.35	0.16		-0.39
32540	RI.8.6	MC	1	3,463	0.54	0.81		0.04	0.09	0.81	0.07	-0.47	-0.50		-0.25
32541	RI.8.6	MSCR	1	3,866	0.50	0.48	0.52	0.48				-0.21	0.67		
32542	RI.8.8	MC	1	3,463	0.51	0.50		0.20	0.16	0.50	0.14	-0.16	-0.45		-0.24
32543	RI.8.8	MC	1	3,866	0.15	0.32		0.32	0.09	0.17	0.42		-0.47	-0.33	0.30
32544	RI.8.8	MSCR	1	3,463	0.70	0.39	0.61	0.39				-0.25	0.98		
32547	RI.8.9	MC	1	3,463	0.70	0.54		0.12	0.17	0.17	0.54	-0.29	-0.47	-0.39	
32965	L.8.1a	MSCR	1	12,000	0.59	0.86	0.14	0.86				-0.88	0.42		
32966	L.8.2a	MSCR	2	12,000	0.24	0.56	0.21	0.46	0.33			-0.31	0.36	0.42	
32967	L.8.1b	MSCR	2	12,000	0.57	0.72	0.11	0.35	0.54			-0.94	-0.12	0.70	
32998	L.8.1a	MSCR	1	11,879	0.59	0.84	0.16	0.84				-0.88	0.43		
33001	L.8.2a , L.8.2c	MSCR	2	11,879	0.27	0.40	0.37	0.45	0.18			-0.09	0.31	0.65	
33006	L.8.1c	MSCR	2	11,879	0.57	0.81	0.08	0.23	0.69			-1.15	-0.35	0.56	
33084	SL.8.3	MC	1	3,589	0.57	0.73		0.11	0.05	0.11	0.73	-0.29	-0.60	-0.41	
33085	SL.8.3	MC	1	3,589	0.35	0.40		0.14	0.40	0.34	0.12	-0.28		-0.01	-0.34
33086	SL.8.2	MC	1	3,589	0.27	0.41		0.13	0.17	0.29	0.41	-0.25	-0.15	-0.03	
33087	SL.8.2	MSCR	1	3,589	0.49	0.48	0.52	0.48				-0.16	0.71		
33112	SL.8.2	MSCR	1	3,589	0.40	0.39	0.61	0.39				-0.01	0.69		
33113	SL.8.3	MC	1	3,589	0.29	0.34		0.19	0.20	0.27	0.34	-0.07	-0.21	-0.09	

Table 4-I–7. Field-Test Items: Classical Item Statistics Grade 3 Mathematics

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
29699	3.NBT.3	MSCR	1	3,567	0.75	0.49	0.51	0.49				-2.89	-2.03		
29732	3.OA.4	MSCR	1	3,642	0.75	0.75	0.25	0.75				-3.22	-2.21		
29734	3.NBT.1	MC	1	3,604	0.63	0.76		0.08	0.11	0.04	0.76	-0.51	-0.43	-0.42	
29735	3.NBT.1	MC	1	3,534	0.61	0.51		0.09	0.26	0.51	0.13	-0.37	-0.31		-0.35
29736	3.NBT.2	MSCR	1	3,652	0.65	0.71	0.29	0.71				-3.09	-2.24		
29737	3.NBT.2	MSCR	2	3,726	0.56	0.46	0.35	0.38	0.27			-2.91	-2.48	-1.95	
29738	3.NF.3a	MC	1	3,564	0.58	0.24		0.24	0.29	0.22	0.24	-0.15	-0.21	-0.24	
29740	3.G.1	MC	1	3,597	0.58	0.64		0.12	0.09	0.64	0.15	-0.49	-0.43		-0.22
29741	3.G.2	MC	1	3,557	0.57	0.57		0.34	0.57	0.06	0.03	-0.38		-0.41	-0.50
29745	3.OA.6	MSCR	2	3,520	0.67	0.61	0.24	0.29	0.47			-3.14	-2.65	-2.03	
29746	3.OA.4	MSCR	1	3,510	0.76	0.65	0.35	0.65				-3.06	-2.12		
29747	3.NBT.1	MC	1	3,492	0.60	0.72		0.08	0.72	0.12	0.08	-0.34		-0.51	-0.34
29748	3.NBT.2	MSCR	1	3,585	0.74	0.32	0.68	0.32				-2.76	-1.91		
29749	3.NBT.2	MC	1	3,567	0.53	0.68		0.18	0.06	0.07	0.68	-0.32	-0.50	-0.32	
29750	3.NBT.3	MC	1	3,622	0.60	0.57		0.17	0.03	0.23	0.57	-0.59	-0.30	-0.21	
29751	3.NBT.3	MSCR	1	3,776	0.69	0.28	0.72	0.28				-2.70	-1.88		
29752	3.NF.3a	MSCR	1	3,602	0.68	0.38	0.62	0.38				-2.75	-1.99		
29753	3.NF.3c	MC	1	3,551	0.07	0.12		0.72	0.13	0.12	0.03	0.27	-0.37		-0.40
29754	3.NF.2b	MC	1	3,574	0.56	0.66		0.19	0.66	0.10	0.06	-0.52		-0.21	-0.26
29756	3.NBT.1	MSCR	2	3,729	0.63	0.60	0.24	0.33	0.44			-3.04	-2.66	-2.00	
29758	3.NBT.3	MSCR	1	3,485	0.74	0.51	0.49	0.51				-2.94	-2.05		
29759	3.NF.3a	MSCR	1	3,620	0.73	0.24	0.76	0.24				-2.68	-1.84		
29762	3.NF.2b	MSCR	1	3,574	0.68	0.16	0.84	0.16				-2.60	-1.79		
29765	3.NF.1b	MC	1	3,670	0.56	0.70		0.17	0.10	0.70	0.03	-0.39	-0.43		-0.34
29800	3.NBT.3	MSCR	1	3,557	0.73	0.29	0.71	0.29				-2.71	-1.87		
29894	3.NBT.1	MC	1	3,511	0.62	0.66		0.11	0.18	0.05	0.66	-0.34	-0.44	-0.46	

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
29895	3.G.1	MSCR	1	3,620	0.47	0.68	0.32	0.68				-2.88	-2.30		
29896	3.G.2	MC	1	3,616	0.71	0.90		0.07	0.90	0.02	0.02	-0.63		-0.64	-0.48
29898	3.NBT.1	MC	1	3,677	0.53	0.75		0.05	0.75	0.11	0.08	-0.46		-0.35	-0.33
29899	3.NBT.1	MC	1	3,582	0.54	0.73		0.08	0.73	0.11	0.08	-0.41		-0.35	-0.36
29900	3.NBT.2	MC	1	3,504	0.57	0.34		0.35	0.13	0.17	0.34	-0.20	-0.36	-0.21	
29901	3.NBT.2	MSCR	1	3,604	0.68	0.25	0.75	0.25				-2.67	-1.86		
29902	3.NBT.3	MSCR	1	3,551	0.78	0.43	0.57	0.43				-2.88	-1.96		
29903	3.NBT.3	MSCR	1	3,642	0.73	0.36	0.64	0.36				-2.77	-1.93		
29904	3.NBT.3	MC	1	3,658	0.62	0.47		0.24	0.18	0.47	0.11	-0.47	-0.39		0.00
29905	3.NBT.3	MC	1	3,572	0.62	0.28		0.04	0.63	0.05	0.28	-0.20	-0.37	-0.33	
29906	3.NF.1a	MSCR	1	3,510	0.76	0.51	0.49	0.51				-2.93	-2.04		
29907	3.NF.1b	MC	1	3,508	0.70	0.79		0.11	0.04	0.79	0.06	-0.60	-0.53		-0.40
29910	3.NF.2a	MC	1	3,674	0.55	0.71		0.16	0.71	0.05	0.09	-0.51		-0.45	-0.14
29917	3.OA.1	MC	1	3,512	0.63	0.59		0.22	0.15	0.59	0.04	-0.48	-0.32		-0.40
30943	3.NBT.1	MSCR	1	3,542	0.76	0.54	0.46	0.54				-2.93	-2.05		
31007	3.NBT.1	MC	1	3,473	0.50	0.38		0.33	0.38	0.14	0.16	-0.18		-0.14	-0.39
31008	3.NBT.3	MSCR	1	3,515	0.76	0.30	0.70	0.30				-2.73	-1.84		
31009	3.NBT.2	MC	1	3,511	0.59	0.56		0.56	0.11	0.14	0.18		-0.31	-0.42	-0.32
31014	3.OA.5	MSCR	1	3,477	0.64	0.23	0.77	0.23				-2.64	-1.90		
31019	3.G.1	MSCR	1	3,478	0.55	0.84	0.16	0.84				-3.15	-2.35		
31023	3.OA.6	MSCR	1	3,590	0.66	0.48	0.52	0.48				-2.85	-2.07		
31024	3.OA.9	MC	1	3,637	0.48	0.46		0.19	0.24	0.46	0.11	-0.41	-0.21		-0.06
31026	3.OA.9	MSCR	1	3,703	0.70	0.35	0.65	0.35				-2.73	-1.94		
31027	3.G.2	MSCR	1	3,540	0.67	0.78	0.22	0.78				-3.19	-2.29		
31040	3.OA.8a	MSCR	2	3,645	0.69	0.68	0.19	0.26	0.55			-3.15	-2.76	-2.05	
31041	3.NBT.3	MSCR	2												
31209	3.OA.1	MC	1	3,514	0.59	0.67		0.02	0.67	0.27	0.03	-0.55		-0.44	-0.54
31210	3.OA.2	MC	1	3,608	0.59	0.71		0.71	0.18	0.07	0.03		-0.37	-0.57	-0.42

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
31211	3.OA.3	MC	1	3,539	0.69	0.73		0.06	0.73	0.09	0.13	-0.36		-0.54	-0.51
31213	3.OA.4	MC	1	3,570	0.70	0.66		0.02	0.66	0.12	0.20	-0.49		-0.44	-0.55
31253	3.NF.1a	MC	1	3,549	0.59	0.90		0.08	0.90	0.01	0.01	-0.55		-0.45	-0.47
31254	3.NF.1b	MC	1	3,545	0.69	0.78		0.07	0.10	0.78	0.05	-0.60	-0.54		-0.29
31255	3.NF.3d	MSCR	1	3,606	0.62	0.22	0.78	0.22				-2.63	-1.87		
31309	3.MD.5b	MC	1	3,595	0.47	0.84		0.05	0.84	0.03	0.08	-0.55		-0.38	-0.24
31310	3.MD.7b	MSCR	1	3,661	0.75	0.30	0.70	0.30				-2.74	-1.88		
31311	3.MD.1	MC	1	3,560	0.61	0.81		0.05	0.05	0.81	0.09	-0.52	-0.47		-0.41
31312	3.MD.2	MC	1	3,546	0.59	0.86		0.10	0.86	0.03	0.01	-0.52		-0.44	-0.40
31624	3.MD.6	MC	1	3,608	0.37	0.83		0.03	0.05	0.83	0.10	-0.41	-0.39		-0.16
31626	3.MD.8	MSCR	1	3,589	0.72	0.23	0.77	0.23				-2.67	-1.83		
31629	3.NF.3b	MSCR	1	3,509	0.72	0.21	0.79	0.21				-2.67	-1.79		
31761	3.NBT.3	MC	1	3,541	0.74	0.67		0.04	0.09	0.20	0.67	-0.41	-0.64	-0.47	
31762	3.MD.3	MC	1	3,725	0.53	0.53		0.33	0.53	0.09	0.05	-0.31		-0.42	-0.33
31766	3.NBT.1	MC	1	3,524	0.62	0.55		0.07	0.55	0.24	0.14	-0.52		-0.26	-0.44
31767	3.NF.2a	MC	1	3,563	0.54	0.68		0.05	0.18	0.68	0.09	-0.56	-0.31		-0.32
31770	3.NF.2b	MC	1	3,621	0.43	0.29		0.36	0.30	0.29	0.06	-0.38	0.02		-0.07
31771	3.NF.3a	MC	1	3,672	0.47	0.53		0.19	0.53	0.20	0.08	-0.28		-0.26	-0.28
31772	3.OA.7a	MC	1	3,623	0.62	0.65		0.09	0.22	0.05	0.65	-0.53	-0.33	-0.49	
31773	3.NF.3d	MSCR	1	3,556	0.75	0.39	0.61	0.39				-2.79	-1.94		
31776	3.NF.3a	MSCR	1	3,570	0.69	0.39	0.61	0.39				-2.79	-1.99		
31793	3.NF.3a	MSCR	1	3,600	0.83	0.31	0.69	0.31				-2.78	-1.81		
31796	3.OA.8a	MC	1	3,616	0.55	0.53		0.53	0.19	0.21	0.07		-0.26	-0.27	-0.56
31797	3.NF.3c	MSCR	1	3,511	0.77	0.29	0.71	0.29				-2.74	-1.84		
31802	3.OA.8b	MC	1	3,582	0.68	0.62		0.19	0.08	0.10	0.62	-0.39	-0.42	-0.51	
31817	3.OA.5	MC	1	3,484	0.51	0.59		0.16	0.12	0.59	0.13	-0.24	-0.46		-0.22
31824	3.NBT.2	MC	1	3,473	0.63	0.81		0.10	0.04	0.05	0.81	-0.45	-0.62	-0.39	
31836	3.NBT.1	MSCR	2	3,597	0.57	0.63	0.23	0.29	0.48			-2.99	-2.67	-2.09	

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
31837	3.NF.3c	MSCR	1	3,543	0.82	0.20	0.80	0.20				-2.68	-1.70		
31841	3.NBT.2	MC	1	3,532	0.53	0.74		0.12	0.09	0.74	0.05	-0.30	-0.49		-0.32
31844	3.OA.6	MSCR	1	3,543	0.70	0.41	0.59	0.41				-2.80	-2.01		
31855	3.OA.8b	MC	1	3,467	0.57	0.66		0.66	0.16	0.08	0.10		-0.39	-0.42	-0.30
31864	3.NBT.1	MSCR	1	3,456	0.57	0.14	0.86	0.14				-2.57	-1.84		
31886	3.G.1	MSCR	2	3,539	0.66	0.35	0.37	0.56	0.07			-2.98	-2.26	-1.63	
32003	3.OA.7b	MSCR	1	3,478	0.71	0.55	0.45	0.55				-2.92	-2.10		
32779	3.G.2	MSCR	1	3,629	0.64	0.81	0.19	0.81				-3.18	-2.28		
32787	3.MD.1	MSCR	1	3,528	0.70	0.22	0.78	0.22				-2.64	-1.83		
32790	3.MD.2	MSCR	1	3,632	0.56	0.64	0.36	0.64				-2.90	-2.22		
32793	3.MD.1	MC	1	3,538	0.36	0.49		0.49	0.14	0.27	0.10		-0.27	-0.10	-0.28
32794	3.MD.1	MC	1	3,708	0.56	0.64		0.14	0.10	0.64	0.12	-0.35	-0.48		-0.25
32795	3.MD.4	MC	1	3,569	0.65	0.54		0.22	0.16	0.54	0.08	-0.31	-0.45		-0.39
32798	3.NBT.1	MSCR	1	3,572	0.74	0.50	0.50	0.50				-2.89	-2.04		
32800	3.MD.2	MSCR	1	3,539	0.78	0.32	0.68	0.32				-2.76	-1.87		
32803	3.MD.3	MC	1	3,514	0.65	0.58		0.20	0.05	0.58	0.17	-0.25	-0.32		-0.60
32805	3.MD.3	MSCR	1	3,624	0.76	0.61	0.39	0.61				-3.03	-2.10		
32807	3.NBT.2	MSCR	1	3,539	0.69	0.72	0.28	0.72				-3.11	-2.21		
32809	3.NF.1a	MC	1	3,608	0.61	0.90		0.90	0.05	0.04	0.01		-0.52	-0.46	-0.53
32823	3.MD.3	MSCR	1	3,682	0.74	0.57	0.43	0.57				-2.97	-2.07		
32824	3.MD.4	MSCR	1	3,573	0.77	0.22	0.78	0.22				-2.65	-1.78		
32825	3.NF.3c	MC	1	3,599	0.47	0.29		0.24	0.04	0.29	0.43	-0.42	-0.35		0.01
32826	3.OA.1	MSCR	1	4,949	0.70	0.82	0.18	0.82				-3.30	-2.27		
32830	3.OA.1	MC	1	3,521	0.57	0.82		0.82	0.09	0.04	0.05		-0.56	-0.34	-0.31
32831	3.OA.2	MC	1	3,572	0.57	0.53		0.06	0.26	0.15	0.53	-0.48	-0.51	0.00	
32832	3.OA.3	MC	1	3,483	0.58	0.76		0.76	0.09	0.11	0.04		-0.43	-0.45	-0.33
32833	3.OA.2	MC	1	3,443	0.66	0.57		0.19	0.18	0.06	0.57	-0.30	-0.42	-0.59	
32835	3.OA.2	MC	1	3,595	0.38	0.69		0.69	0.16	0.08	0.07		-0.15	-0.39	-0.31

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
32846	3.OA.3	MSCR	1	3,653	0.67	0.25	0.75	0.25				-2.67	-1.89		
32854	3.OA.7a	MSCR	1	3,460	0.65	0.73	0.27	0.73				-3.07	-2.23		
32877	3.OA.4	MSCR	1	3,625	0.72	0.67	0.33	0.67				-3.05	-2.17		
32878	3.OA.6	MC	1	3,611	0.57	0.68		0.13	0.68	0.07	0.11	-0.35		-0.33	-0.46
32881	3.OA.6	MC	1	3,580	0.37	0.65		0.65	0.14	0.13	0.08		-0.39	-0.13	-0.14
32883	3.OA.8c	MC	1	3,421	0.29	0.44		0.18	0.20	0.44	0.18	-0.24	0.05		-0.26
32884	3.OA.6	MC	1	3,644	0.59	0.61		0.25	0.06	0.61	0.08	-0.46	-0.44		-0.17
32885	3.MD.4	MSCR	1	3,567	0.73	0.38	0.62	0.38				-2.79	-1.96		
32886	3.OA.3	MSCR	1	3,586	0.79	0.57	0.43	0.57				-3.00	-2.06		
32887	3.OA.4	MSCR	1	3,610	0.70	0.73	0.27	0.73				-3.18	-2.24		
32888	3.OA.5	MC	1	3,524	0.63	0.58		0.05	0.09	0.28	0.58	-0.53	-0.48	-0.32	
32889	3.OA.8c	MSCR	1	3,581	0.07	0.17	0.83	0.17				-2.48	-2.39		
32891	3.OA.9	MSCR	1	3,603	0.66	0.45	0.55	0.45				-2.81	-2.05		
32894	3.OA.6	MSCR	1	3,614	0.48	0.09	0.91	0.09				-2.53	-1.88		
32933	3.OA.8a	MC	1	3,516	0.71	0.70		0.15	0.12	0.70	0.02	-0.58	-0.47		-0.34
32934	3.NF.2a	MSCR	1	3,532	0.53	0.73	0.27	0.73				-2.97	-2.29		

Table 4-I–8. Field-Test Items: Classical Item Statistics Grade 4 Mathematics

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
29801	4.OA.1	MC	1	4,090	0.66	0.89		0.06	0.89	0.02	0.03	-0.60		-0.58	-0.38
29802	4.OA.4	MC	1	4,100	0.61	0.64		0.09	0.17	0.64	0.10	-0.50	-0.42		-0.24
29803	4.OA.4	MSCR	1	4,097	0.78	0.72	0.28	0.72				-2.81	-1.55		
29804	4.OA.5	MSCR	2	3,958	0.67	0.35	0.48	0.34	0.18			-2.44	-1.73	-1.08	
29805	4.NBT.1	MSCR	1	4,204	0.75	0.40	0.60	0.40				-2.31	-1.28		
29806	4.NBT.1	MSCR	1	4,114	0.75	0.27	0.73	0.27				-2.18	-1.15		
29807	4.NF.2	MSCR	1	4,070	0.82	0.49	0.51	0.49				-2.49	-1.33		
29808	4.NF.5	MC	1	4,174	0.65	0.48		0.07	0.41	0.04	0.48	-0.46	-0.45	-0.24	
29809	4.G.1	MSCR	1	4,098	0.65	0.38	0.62	0.38				-2.26	-1.35		
29810	4.G.1	MC	1	3,936	0.50	0.54		0.11	0.19	0.54	0.15	-0.46	-0.34		-0.08
29813	4.OA.1	MC	1	4,067	0.64	0.91		0.04	0.91	0.02	0.03	-0.48		-0.54	-0.59
29814	4.OA.2	MC	1	4,026	0.59	0.51		0.05	0.51	0.19	0.25	-0.12		-0.33	-0.41
29815	4.OA.2	MSCR	1	4,133	0.75	0.41	0.59	0.41				-2.35	-1.31		
29816	4.OA.3b	MSCR	1	4,157	0.58	0.27	0.73	0.27				-2.12	-1.32		
29817	4.NF.5	MC	1	4,127	0.62	0.46		0.07	0.43	0.46	0.04	-0.36	-0.42		-0.38
29818	4.NF.1	MC	1	4,171	0.50	0.48		0.26	0.15	0.48	0.12	-0.21	-0.43		-0.14
29819	4.G.3	MSCR	1	4,009	0.52	0.16	0.84	0.16				-2.00	-1.26		
29820	4.OA.1	MC	1	4,130	0.54	0.86		0.04	0.86	0.02	0.08	-0.62		-0.61	-0.26
29822	4.OA.2	MC	1	4,179	0.71	0.83		0.06	0.83	0.05	0.06	-0.56		-0.47	-0.57
29823	4.OA.2	MSCR	1	4,100	0.78	0.29	0.71	0.29				-2.21	-1.18		
29825	4.NBT.3	MSCR	1	4,150	0.70	0.41	0.59	0.41				-2.32	-1.34		
29826	4.NBT.6	MC	1	4,082	0.57	0.68		0.03	0.13	0.16	0.68	-0.36	-0.36	-0.43	
29827	4.NF.2	MSCR	1	4,017	0.72	0.40	0.60	0.40				-2.32	-1.32		
29828	4.G.1	MSCR	1	4,142	0.67	0.46	0.54	0.46				-2.32	-1.40		
29829	4.MD.3	MSCR	1	4,144	0.78	0.17	0.83	0.17				-2.12	-1.03		
29830	4.MD.5b	MC	1	4,072	0.66	0.63		0.13	0.12	0.12	0.63	-0.47	-0.49	-0.27	

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
29878	4.NBT.3	MSCR	1	4,078	0.72	0.34	0.66	0.34				-2.24	-1.25		
29920	4.G.1	MSCR	1	4,123	0.70	0.22	0.78	0.22				-2.10	-1.12		
29921	4.MD.1	MC	1	4,074	0.55	0.41		0.29	0.14	0.16	0.41	-0.28	-0.37	-0.14	
29922	4.NBT.1	MC	1	3,981	0.48	0.86		0.03	0.86	0.05	0.06	-0.47		-0.44	-0.27
29923	4.NBT.3	MC	1	4,155	0.60	0.74		0.08	0.09	0.08	0.74	-0.44	-0.41	-0.40	
29924	4.NBT.6	MSCR	1	4,047	0.47	0.36	0.64	0.36				-2.15	-1.50		
29925	4.NF.1	MC	1	4,112	0.52	0.61		0.61	0.27	0.08	0.04		-0.37	-0.38	-0.25
29926	4.NF.5	MC	1	4,088	0.61	0.58		0.58	0.36	0.05	0.01		-0.48	-0.50	-0.37
29927	4.NF.7	MSCR	1	4,089	0.53	0.61	0.39	0.61				-2.37	-1.59		
29928	4.OA.1	MC	1	4,116	0.65	0.63		0.63	0.24	0.08	0.06		-0.35	-0.69	-0.31
29929	4.OA.1	MC	1	4,210	0.55	0.57		0.16	0.18	0.57	0.10	-0.43	-0.27		-0.26
29930	4.OA.2	MC	1	4,240	0.61	0.55		0.55	0.08	0.08	0.29		-0.46	-0.68	-0.19
29931	4.OA.2	MSCR	1	4,038	0.64	0.29	0.71	0.29				-2.15	-1.26		
29934	4.OA.4	MSCR	1	4,124	0.78	0.69	0.31	0.69				-2.75	-1.54		
30063	4.OA.5	MSCR	1	4,012	0.70	0.43	0.57	0.43				-2.30	-1.34		
30995	4.G.1	MC	1	3,977	0.53	0.80		0.13	0.80	0.07	0.01	-0.39		-0.45	-0.49
30997	4.G.2	MSCR	1	4,118	0.71	0.68	0.32	0.68				-2.63	-1.55		
31000	4.MD.1	MSCR	1	4,107	0.77	0.49	0.51	0.49				-2.44	-1.35		
31001	4.MD.2a	MC	1	3,996	0.02	0.32		0.26	0.32	0.28	0.14	-0.13		0.12	-0.03
31005	4.MD.6	MSCR	1	4,054	0.67	0.72	0.28	0.72				-2.67	-1.62		
31030	4.NBT.3	MSCR	2	4,094	0.52	0.49	0.26	0.51	0.23			-2.48	-1.89	-1.30	
31088	4.NF.3a	MSCR	1	4,082	0.68	0.46	0.54	0.46				-2.34	-1.40		
31089	4.NF.3b	MSCR	1	4,086	0.66	0.35	0.65	0.35				-2.23	-1.32		
31090	4.NF.3d	MSCR	2												
31091	4.OA.1	MSCR	1	4,034	0.72	0.35	0.65	0.35				-2.25	-1.26		
31092	4.OA.3a	MC	1	4,157	0.46	0.60		0.14	0.16	0.60	0.10	-0.29	-0.32		-0.21
31093	4.OA.4	MSCR	1	4,069	0.65	0.57	0.43	0.57				-2.42	-1.50		
31094	4.OA.5	MSCR	1	4,111	0.71	0.38	0.62	0.38				-2.27	-1.28		

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
31095	4.MD.3	MC	1	3,990	0.00	0.25		0.32	0.25	0.22	0.21	0.15		-0.13	-0.04
31096	4.NF.1	MSCR	1	4,133	0.76	0.32	0.68	0.32				-2.26	-1.18		
31303	4.NBT.4	MC	1	4,019	0.57	0.83		0.83	0.08	0.06	0.03		-0.41	-0.47	-0.43
31304	4.NBT.5	MC	1	4,057	0.55	0.53		0.23	0.11	0.53	0.13	-0.26	-0.41		-0.29
31306	4.NF.1	MSCR	1	4,125	0.80	0.25	0.75	0.25				-2.19	-1.08		
31313	4.MD.6	MC	1	4,057	0.47	0.56		0.56	0.13	0.24	0.08		-0.24	-0.27	-0.34
31331	4.MD.2b	MC	1	4,193	0.40	0.29		0.39	0.17	0.15	0.29	0.02	-0.38	-0.18	
31398	4.MD.2b	MC	1	4,035	0.58	0.69		0.69	0.15	0.06	0.10		-0.35	-0.54	-0.34
31523	4.G.3	MSCR	1	4,044	0.63	0.14	0.86	0.14				-2.04	-1.10		
31633	4.MD.1	MC	1	4,146	0.33	0.52		0.14	0.20	0.52	0.14	-0.24	-0.16		-0.13
31634	4.MD.6	MC	1	4,121	0.34	0.74		0.10	0.11	0.74	0.05	-0.08	-0.32		-0.33
31635	4.NBT.1	MC	1	4,035	0.62	0.42		0.04	0.42	0.09	0.45	-0.23		-0.54	-0.33
31636	4.NBT.2	MSCR	1	4,077	0.68	0.75	0.25	0.75				-2.75	-1.63		
31637	4.NBT.3	MSCR	1	4,028	0.71	0.48	0.52	0.48				-2.36	-1.36		
31640	4.NBT.5	MSCR	1	4,140	0.42	0.11	0.89	0.11				-1.99	-1.32		
31641	4.NBT.1	MSCR	2	4,101	0.57	0.47	0.34	0.39	0.27			-2.42	-1.95	-1.22	
31764	4.NBT.1	MC	1	4,056	0.48	0.47		0.04	0.39	0.47	0.11	-0.15	-0.28		-0.38
31768	4.NBT.2	MC	1	4,135	0.60	0.73		0.16	0.05	0.07	0.73	-0.38	-0.57	-0.38	
31777	4.NBT.3	MC	1	4,117	0.52	0.66		0.06	0.09	0.20	0.66	-0.36	-0.30	-0.36	
31778	4.NBT.4	MC	1	4,148	0.56	0.66		0.66	0.13	0.14	0.07		-0.26	-0.54	-0.21
31779	4.NBT.6	MC	1	4,104	0.56	0.56		0.17	0.56	0.14	0.14	-0.17		-0.37	-0.45
31800	4.NBT.5	MC	1	4,075	0.33	0.28		0.19	0.25	0.28	0.28	-0.25	-0.30	0.17	
31804	4.NF.2	MC	1	4,107	0.26	0.60		0.08	0.15	0.60	0.17	-0.35	-0.20		0.01
31829	4.NF.3a	MC	1	4,109	0.48	0.77		0.13	0.77	0.02	0.08	-0.30		-0.50	-0.38
31834	4.NF.3b	MSCR	1	4,126	0.77	0.54	0.46	0.54				-2.47	-1.36		
31843	4.NF.3c	MC	1	4,096	0.68	0.83		0.06	0.04	0.83	0.07	-0.60	-0.62		-0.37
31850	4.NF.3d	MC	1	4,131	0.57	0.75		0.12	0.75	0.08	0.05	-0.47		-0.37	-0.31
31863	4.NF.3c	MSCR	1	4,067	0.75	0.26	0.74	0.26				-2.19	-1.10		

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
31880	4.OA.2	MC	1	4,018	0.63	0.59		0.59	0.28	0.09	0.05		-0.31	-0.62	-0.35
31881	4.NF.3d	MC	1	4,114	0.59	0.86		0.86	0.11	0.02	0.01		-0.46	-0.59	-0.55
31882	4.NF.4a	MC	1	4,040	0.46	0.79		0.11	0.79	0.05	0.05	-0.38		-0.42	-0.18
31892	4.NBT.5	MC	1	4,058	0.67	0.69		0.10	0.11	0.10	0.69	-0.54	-0.41	-0.37	
31895	4.NF.4b	MC	1	4,099	0.57	0.67		0.17	0.67	0.06	0.10	-0.53		-0.46	-0.12
31957	4.OA.5	MC	1	4,103	0.60	0.60		0.09	0.24	0.60	0.07	-0.39	-0.51		-0.05
31981	4.OA.3b	MC	1	4,154	0.57	0.59		0.23	0.59	0.11	0.06	-0.45		-0.26	-0.27
31989	4.OA.4	MC	1	4,121	0.41	0.26		0.06	0.61	0.07	0.26	-0.14	-0.22	-0.21	
31993	4.OA.4	MC	1	4,104	0.57	0.64		0.19	0.64	0.11	0.06	-0.38		-0.41	-0.29
31996	4.OA.5	MC	1	4,084	0.50	0.57		0.13	0.19	0.57	0.12	-0.28	-0.41		-0.13
32001	4.NBT.6	MSCR	1	4,213	0.65	0.31	0.69	0.31				-2.19	-1.30		
32004	4.NBT.3	MSCR	1	4,128	0.67	0.68	0.32	0.68				-2.61	-1.57		
32018	4.NF.3b	MC	1	4,232	0.65	0.90		0.02	0.03	0.90	0.05	-0.67	-0.53		-0.47
32034	4.OA.3a	MC	1	4,132	0.37	0.17		0.17	0.08	0.15	0.60		-0.31	-0.23	0.02
32047	4.OA.5	MSCR	1	4,121	0.76	0.78	0.22	0.78				-2.91	-1.63		
32896	4.MD.1	MSCR	2	4,125	0.65	0.39	0.56	0.10	0.34			-2.29	-2.11	-1.26	
32897	4.MD.1	MSCR	1	4,152	0.69	0.31	0.69	0.31				-2.20	-1.23		
32899	4.MD.2a	MSCR	1	3,974	0.76	0.65	0.35	0.65				-2.67	-1.52		
32904	4.NF.3a	MSCR	1	4,006	0.66	0.61	0.39	0.61				-2.47	-1.51		
32906	4.NF.6	MSCR	1	4,031	0.71	0.68	0.32	0.68				-2.62	-1.54		
32907	4.OA.3a	MC	1	4,257	0.66	0.75		0.75	0.13	0.08	0.05		-0.49	-0.55	-0.35
32911	4.OA.3a	MSCR	1	4,077	0.61	0.15	0.85	0.15				-2.04	-1.17		
32914	4.NF.3c	MSCR	1	4,064	0.70	0.27	0.73	0.27				-2.15	-1.18		
32918	4.OA.5	MSCR	1	4,086	0.60	0.21	0.79	0.21				-2.07	-1.22		
32921	4.OA.3b	MSCR	1	4,036	0.77	0.61	0.39	0.61				-2.57	-1.45		
32927	4.OA.5	MSCR	1	4,073	0.62	0.78	0.22	0.78				-2.71	-1.67		
32928	4.OA.3b	MSCR	1	4,071	0.60	0.47	0.53	0.47				-2.31	-1.47		
32929	4.OA.3b	MSCR	1	4,040	0.70	0.53	0.47	0.53				-2.41	-1.43		

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
32938	4.MD.2a	MSCR	1	4,139	0.63	0.45	0.55	0.45				-2.27	-1.41		
32939	4.NF.6	MC	1	4,012	0.46	0.63		0.21	0.63	0.09	0.07	-0.21		-0.48	-0.23
32943	4.OA.5	MC	1	4,005	0.72	0.92		0.03	0.92	0.02	0.03	-0.53		-0.61	-0.71

Table 4-I–9. Field-Test Items: Classical Item Statistics Grade 5 Mathematics

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
28481	5.NBT.7	MSCR	1	4,572	0.31	0.02	0.98	0.02				-1.33	-0.56		
29831	5.OA.2b	MC	1	4,619	0.33	0.19		0.23	0.51	0.07	0.19	-0.15	0.07	-0.49	
29861	5.OA.2a	MSCR	1	4,578	0.67	0.17	0.83	0.17				-1.51	-0.42		
29862	5.OA.2b	MC	1	4,603	0.59	0.42		0.09	0.10	0.39	0.42	-0.45	-0.42	-0.20	
29863	5.OA.1	MC	1	4,418	0.55	0.88		0.02	0.88	0.04	0.06	-0.40		-0.68	-0.26
29864	5.OA.1	MC	1	4,585	0.57	0.84		0.06	0.84	0.06	0.03	-0.37		-0.49	-0.45
29865	5.NBT.7	MC	1	4,450	0.28	0.42		0.31	0.42	0.20	0.07	-0.01		-0.30	-0.17
29868	5.NF.1	MSCR	1	4,548	0.81	0.41	0.59	0.41				-1.89	-0.55		
29869	5.NF.1	MSCR	2	4,627	0.70	0.31	0.54	0.29	0.17			-1.86	-0.98	-0.27	
29870	5.NF.2	MC	1	4,470	0.58	0.47		0.32	0.17	0.47	0.04	-0.23	-0.49		-0.29
29871	5.OA.2b	MC	1	4,453	0.72	0.76		0.07	0.09	0.08	0.76	-0.49	-0.53	-0.49	
29872	5.OA.2a	MC	1	4,552	0.59	0.64		0.23	0.09	0.05	0.64	-0.28	-0.49	-0.58	
29873	5.OA.3	MSCR	2	4,489	0.47	0.46	0.17	0.73	0.10			-2.08	-1.29	-0.54	
29876	5.NBT.3a	MSCR	1	4,591	0.77	0.30	0.70	0.30				-1.70	-0.49		
29877	5.NBT.4	MSCR	1	4,512	0.77	0.47	0.53	0.47				-1.93	-0.65		
29879	5.NF.3	MSCR	1	4,459	0.69	0.39	0.61	0.39				-1.74	-0.64		
29880	5.NF.4a	MSCR	1	4,464	0.74	0.18	0.82	0.18				-1.58	-0.33		
29881	5.NF.4b	MC	1	4,570	0.52	0.43		0.34	0.43	0.15	0.08	-0.31		-0.43	0.06
29883	5.OA.3	MC	1	4,676	0.18	0.22		0.45	0.28	0.22	0.06	0.12	-0.24		-0.17
29884	5.OA.3	MC	1	4,640	0.62	0.71		0.16	0.71	0.09	0.05	-0.43		-0.40	-0.48
29885	5.OA.1	MC	1	4,507	0.71	0.71		0.10	0.11	0.08	0.71	-0.61	-0.39	-0.46	
29886	5.OA.1	MC	1	4,531	0.58	0.63		0.02	0.13	0.22	0.63	-0.35	-0.27	-0.49	
29887	5.OA.1	MSCR	1	4,557	0.54	0.24	0.76	0.24				-1.56	-0.68		
29889	5.NBT.3b	MSCR	1	4,542	0.67	0.67	0.33	0.67				-2.10	-0.93		
29890	5.NBT.5	MSCR	1	4,475	0.60	0.48	0.52	0.48				-1.82	-0.83		
29891	5.NF.5a	MC	1	4,585	0.45	0.34		0.13	0.48	0.34	0.05	-0.24	-0.28		-0.04

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
29892	5.NF.7c	MC	1	4,651	0.52	0.41		0.33	0.15	0.10	0.41	0.07	-0.50	-0.56	
29893	5.NF.7a	MC	1	4,471	0.50	0.65		0.65	0.15	0.15	0.04		-0.33	-0.32	-0.36
29938	5.NBT.3a	MSCR	1	4,471	0.66	0.37	0.63	0.37				-1.73	-0.66		
29939	5.NBT.4	MC	1	4,369	0.27	0.42		0.13	0.42	0.29	0.16	-0.34		-0.06	-0.05
29940	5.NBT.7	MC	1	4,593	0.50	0.59		0.18	0.16	0.59	0.08	-0.19	-0.35		-0.41
29941	5.NBT.4	MC	1	4,504	0.45	0.38		0.26	0.23	0.38	0.13	-0.28	-0.21		-0.09
29942	5.NBT.5	MC	1	4,500	0.62	0.76		0.09	0.08	0.76	0.07	-0.45	-0.46		-0.39
29945	5.NF.1	MSCR	1	4,574	0.75	0.36	0.64	0.36				-1.78	-0.57		
29946	5.NF.2	MC	1	4,512	0.62	0.53		0.15	0.23	0.53	0.09	-0.45	-0.43		-0.07
29947	5.NF.5b	MC	1	4,438	0.47	0.55		0.25	0.55	0.08	0.11	-0.32		-0.37	-0.17
29958	5.OA.3	MC	1	4,510	0.54	0.40		0.31	0.10	0.19	0.40	-0.22	-0.35	-0.22	
30067	5.NBT.5	MSCR	1	4,549	0.60	0.54	0.46	0.54				-1.88	-0.89		
30942	5.NF.5b	MSCR	1	4,555	0.67	0.37	0.63	0.37				-1.76	-0.65		
30969	5.G.3	MSCR	1	4,542	0.61	0.12	0.88	0.12				-1.47	-0.43		
30971	5.MD.1	MC	1	4,439	0.51	0.60		0.04	0.07	0.60	0.28	-0.29	-0.51		-0.28
30973	5.MD.3a	MSCR	1	4,465	0.49	0.18	0.82	0.18				-1.51	-0.66		
30974	5.MD.3b	MSCR	1	4,583	0.60	0.20	0.80	0.20				-1.52	-0.54		
30975	5.MD.5a	MSCR	1	4,543	0.68	0.46	0.54	0.46				-1.87	-0.76		
30987	5.MD.5b	MSCR	1	4,404	0.71	0.56	0.44	0.56				-2.01	-0.83		
30989	5.NBT.1	MC	1	4,544	0.56	0.55		0.26	0.14	0.55	0.05	-0.28	-0.47		-0.25
30991	5.NBT.3b	MSCR	2	4,526	0.61	0.49	0.20	0.62	0.18			-2.20	-1.31	-0.45	
31101	5.NBT.4	MSCR	1	4,525	0.69	0.25	0.75	0.25				-1.62	-0.48		
31103	5.NF.1	MC	1	4,467	0.58	0.50		0.13	0.50	0.29	0.08	-0.33		-0.38	-0.29
31104	5.NF.7a	MC	1	4,537	0.43	0.24		0.17	0.25	0.34	0.24	-0.16	-0.03	-0.22	
31106	5.NF.7b	MC	1	4,539	0.46	0.35		0.14	0.27	0.24	0.35	-0.19	-0.38	0.02	
31108	5.NF.7c	MC	1	4,459	0.55	0.48		0.20	0.16	0.17	0.48	-0.05	-0.37	-0.44	
31258	5.NBT.3a	MC	1	4,488	0.55	0.42		0.12	0.13	0.33	0.42	-0.39	-0.35	-0.15	
31262	5.NBT.3b	MC	1	4,493	0.51	0.66		0.66	0.07	0.17	0.10		-0.47	-0.28	-0.32

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
31263	5.NF.6	MC	1	4,714	0.36	0.53		0.53	0.20	0.17	0.10		-0.41	-0.03	-0.10
31264	5.NF.4b	MC	1	4,542	0.30	0.56		0.56	0.15	0.27	0.03		-0.57	0.09	-0.12
31265	5.OA.2a	MC	1	4,481	0.48	0.56		0.56	0.32	0.05	0.06		-0.30	-0.46	-0.22
31625	5.NF.6	MC	1	4,563	0.08	0.27		0.17	0.40	0.27	0.16	-0.16	-0.01		0.08
31628	5.OA.1	MC	1	4,563	0.47	0.64		0.21	0.64	0.11	0.04	-0.25		-0.39	-0.38
31644	5.OA.2a	MC	1	4,530	0.66	0.76		0.04	0.12	0.08	0.76	-0.56	-0.43	-0.49	
31763	5.MD.2	MC	1	4,463	0.17	0.30		0.30	0.34	0.19	0.17		0.00	-0.04	-0.19
31765	5.MD.5a	MC	1	4,618	0.65	0.75		0.12	0.06	0.06	0.75	-0.46	-0.51	-0.43	
31769	5.MD.1	MC	1	4,454	0.56	0.57		0.57	0.21	0.15	0.08		-0.36	-0.47	-0.09
31774	5.G.2	MC	1	4,387	0.54	0.67		0.10	0.67	0.08	0.15	-0.38		-0.48	-0.24
31780	5.NBT.5	MC	1	4,424	0.62	0.71		0.07	0.07	0.15	0.71	-0.44	-0.43	-0.41	
31792	5.NBT.7	MC	1	4,455	0.44	0.50		0.17	0.22	0.50	0.11	-0.25	-0.23		-0.25
31794	5.NBT.3a	MC	1	4,555	0.36	0.42		0.17	0.36	0.42	0.05	-0.17	-0.17		-0.31
31798	5.NBT.2	MC	1	4,641	0.56	0.51		0.13	0.22	0.51	0.14	-0.31	-0.43		-0.16
31799	5.NF.3	MC	1	4,508	0.60	0.28		0.34	0.15	0.23	0.28	-0.38	-0.41	0.15	
31801	5.NBT.3b	MC	1	4,512	0.57	0.51		0.19	0.18	0.51	0.12	-0.28	-0.41		-0.24
31820	5.NF.1	MSCR	1	4,569	0.68	0.27	0.73	0.27				-1.62	-0.47		
31821	5.OA.1	MC	1	4,613	0.57	0.73		0.73	0.14	0.10	0.03		-0.39	-0.43	-0.42
31842	5.NF.6	MC	1	4,554	0.60	0.22		0.07	0.46	0.26	0.22	-0.42	-0.27	0.00	
31848	5.NF.2	MC	1	4,508	0.48	0.45		0.45	0.26	0.23	0.06		-0.21	-0.33	-0.22
31856	5.OA.2a	MC	1	4,521	0.64	0.87		0.06	0.87	0.06	0.01	-0.57		-0.49	-0.39
31887	5.NBT.6	MC	1	4,554	0.22	0.41		0.18	0.41	0.14	0.26	-0.15		-0.12	-0.06
31890	5.G.4	MSCR	1	4,462	0.69	0.25	0.75	0.25				-1.61	-0.47		
31914	5.NF.4a	MSCR	2	4,565	0.62	0.32	0.51	0.33	0.16			-1.82	-1.06	-0.39	
31949	5.OA.2b	MC	1	4,570	0.33	0.54		0.54	0.41	0.02	0.02		-0.21	-0.57	-0.28
31972	5.NBT.2	MSCR	1	4,419	0.78	0.14	0.86	0.14				-1.50	-0.23		
31974	5.OA.1	MC	1	4,429	0.56	0.77		0.09	0.77	0.08	0.06	-0.37		-0.49	-0.31
32054	5.NF.5a	MC	1	4,590	0.45	0.40		0.40	0.25	0.23	0.12		-0.23	-0.29	-0.09

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
32476	5.NF.1	MC	1	4,588	0.70	0.49		0.28	0.10	0.14	0.49	-0.44	-0.44	-0.25	
32693	5.OA.3	MC	1	4,552	0.68	0.81		0.05	0.06	0.09	0.81	-0.56	-0.59	-0.42	
32874	5.G.1b	MSCR	1	4,464	0.57	0.75	0.25	0.75				-2.13	-1.07		
32890	5.NF.3	MSCR	1	4,514	0.72	0.38	0.62	0.38				-1.80	-0.64		
32920	5.G.1b	MSCR	1	4,563	0.59	0.64	0.36	0.64				-1.98	-0.97		
32923	5.NF.2	MSCR	1	4,511	0.82	0.37	0.63	0.37				-1.81	-0.48		
32932	5.NF.7b	MSCR	1	4,636	0.64	0.38	0.62	0.38				-1.72	-0.70		
32946	5.G.1a	MSCR	1	4,463	0.51	0.79	0.21	0.79				-2.09	-1.13		
32947	5.NF.2	MSCR	1	4,556	0.81	0.47	0.53	0.47				-1.94	-0.61		
32951	5.NF.6	MSCR	1	4,578	0.53	0.09	0.91	0.09				-1.43	-0.43		
32986	5.NF.6	MSCR	1	4,451	0.72	0.18	0.82	0.18				-1.55	-0.37		
32987	5.NF.7b	MC	1	4,536	0.49	0.74		0.19	0.74	0.04	0.03	-0.35		-0.44	-0.30
32988	5.NF.7b	MSCR	1	4,501	0.76	0.31	0.69	0.31				-1.69	-0.49		
32989	5.OA.2b	MC	1	4,507	0.42	0.48		0.23	0.48	0.16	0.13	-0.31		-0.33	0.05
32990	5.OA.2b	MC	1	4,522	0.12	0.35		0.13	0.20	0.35	0.32	-0.19	-0.33		0.27
32991	5.OA.2a	MC	1	4,464	0.70	0.68		0.08	0.09	0.15	0.68	-0.43	-0.54	-0.42	
32994	5.OA.2b	MC	1	4,490	0.54	0.61		0.24	0.13	0.61	0.02	-0.34	-0.37		-0.42
33018	5.OA.3	MSCR	1	4,550	0.60	0.33	0.67	0.33				-1.66	-0.71		
33021	5.NF.3	MSCR	1	4,567	0.59	0.26	0.74	0.26				-1.59	-0.63		
33025	5.OA.3	MSCR	2	4,433	0.64	0.46	0.25	0.57	0.18			-2.24	-1.20	-0.52	
33287	5.OA.1	MC	1	4,476	0.63	0.79		0.12	0.06	0.79	0.03	-0.39	-0.67		-0.39

Table 4-I–10. Field-Test Items: Classical Item Statistics Grade 6 Mathematics

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
27007	6.EE.9	MSCR	1	3,632	0.85	0.27	0.73	0.27				-1.13	0.41		
29962	6.EE.1	MSCR	1	3,639	0.69	0.33	0.67	0.33				-1.15	0.14		
29963	6.EE.4	MC	1	3,713	0.57	0.38		0.44	0.15	0.38	0.03	-0.33	-0.30		-0.26
29964	6.EE.7	MC	1	3,668	0.44	0.76		0.76	0.08	0.04	0.12		-0.38	-0.61	-0.11
29965	6.EE.8	MSCR	1	3,613	0.57	0.39	0.61	0.39				-1.13	-0.10		
29966	6.EE.9	MC	1	3,686	0.48	0.40		0.37	0.15	0.40	0.07	-0.13	-0.41		-0.30
29967	6.NS.3	MSCR	1	3,554	0.69	0.38	0.62	0.38				-1.21	0.04		
29968	6.NS.4	MC	1	3,661	0.59	0.50		0.07	0.34	0.09	0.50	-0.47	-0.28	-0.41	
29969	6.NS.6a	MC	1	3,593	0.65	0.91		0.03	0.91	0.04	0.02	-0.58		-0.58	-0.34
29970	6.NS.6a	MC	1	3,671	0.14	0.36		0.36	0.47	0.09	0.07		0.18	-0.43	-0.36
29971	6.NS.6c	MSCR	1	3,651	0.62	0.40	0.60	0.40				-1.18	-0.02		
29972	6.NS.7c	MC	1	3,634	0.50	0.74		0.19	0.05	0.74	0.02	-0.35	-0.50		-0.33
29973	6.RP.2	MC	1	3,636	0.72	0.71		0.19	0.05	0.05	0.71	-0.60	-0.33	-0.47	
29974	6.RP.3a	MSCR	2	3,580	0.71	0.59	0.27	0.27	0.46			-1.70	-0.90	0.05	
29975	6.RP.3c	MSCR	1	3,598	0.50	0.05	0.95	0.05				-0.76	0.49		
29976	6.G.3	MC	1	5,307	0.40	0.57		0.18	0.57	0.11	0.13	-0.20		-0.33	-0.19
29977	6.G.4	MC	1	5,366	0.36	0.50		0.13	0.25	0.50	0.12	-0.22	-0.15		-0.23
30104	6.EE.2c	MSCR	1	3,580	0.65	0.42	0.58	0.42				-1.23	-0.02		
30106	6.EE.5	MSCR	1	3,542	0.77	0.41	0.59	0.41				-1.32	0.09		
30110	6.NS.1c	MC	1	3,532	0.54	0.47		0.26	0.15	0.12	0.47	-0.18	-0.37	-0.36	
30111	6.NS.1c	MC	1	3,630	0.69	0.66		0.66	0.12	0.17	0.05		-0.39	-0.54	-0.40
30112	6.NS.6b	MSCR	1	3,639	0.76	0.62	0.38	0.62				-1.65	-0.16		
30113	6.NS.7a	MC	1	3,673	0.45	0.48		0.18	0.19	0.15	0.48	-0.02	-0.47	-0.19	
30114	6.NS.7b	MSCR	1	3,657	0.75	0.66	0.34	0.66				-1.67	-0.19		
30115	6.NS.7c	MC	1	3,656	0.37	0.33		0.33	0.20	0.33	0.13		-0.08	-0.14	-0.30
30116	6.NS.8	MC	1	3,648	0.68	0.85		0.85	0.08	0.04	0.03		-0.56	-0.57	-0.38

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
30117	6.RP.1	MC	1	3,687	0.32	0.45		0.09	0.23	0.45	0.23	-0.39	-0.26		0.06
30118	6.G.1	MC	1	5,245	0.33	0.41		0.31	0.41	0.18	0.10	0.08		-0.42	-0.25
30119	6.G.2	MC	1	5,297	0.03	0.32		0.33	0.32	0.29	0.06	0.04		-0.02	-0.15
30120	6.SP.5b	MC	1	5,185	0.76	0.81		0.04	0.10	0.05	0.81	-0.54	-0.60	-0.55	
30121	6.SP.5a	MC	1	5,223	0.26	0.63		0.10	0.15	0.12	0.63	-0.11	-0.08	-0.29	
30122	6.SP.5d	MC	1	5,147	0.24	0.55		0.18	0.13	0.55	0.14	-0.08	-0.30		-0.03
30146	6.EE.6	MSCR	1	3,779	0.76	0.27	0.73	0.27				-1.11	0.26		
30149	6.EE.2a	MC	1	3,597	0.50	0.53		0.21	0.13	0.53	0.14	-0.19	-0.50		-0.18
30168	6.NS.1a	MSCR	1	3,577	0.67	0.32	0.68	0.32				-1.13	0.13		
30191	6.NS.8	MSCR	2	3,619	0.75	0.50	0.39	0.23	0.38			-1.62	-0.52	0.11	
30197	6.G.1	MSCR	2	5,102	0.42	0.19	0.70	0.22	0.08			-0.95	-0.67	0.77	
30198	6.G.2	MSCR	1	5,291	0.71	0.02	0.98	0.02				-0.77	1.00		
30200	6.SP.5c	MSCR	2	5,224	0.68	0.47	0.38	0.29	0.33			-1.49	-0.68	0.18	
30204	6.SP.5d	MSCR	1	5,278	0.64	0.29	0.71	0.29				-1.08	0.09		
30947	6.EE.1	MC	1	3,569	0.73	0.66		0.13	0.66	0.17	0.03	-0.43		-0.50	-0.71
30966	6.EE.1	MSCR	1	3,631	0.72	0.51	0.49	0.51				-1.40	-0.05		
30976	6.EE.2a	MC	1	3,575	0.63	0.71		0.14	0.71	0.08	0.07	-0.51		-0.34	-0.40
30978	6.EE.6	MC	1	3,582	0.57	0.70		0.16	0.70	0.11	0.03	-0.32		-0.48	-0.46
30980	6.G.4	MC	1	5,291	0.40	0.42		0.21	0.04	0.42	0.33	-0.31	-0.41		-0.09
30982	6.NS.3	MC	1	3,649	0.35	0.56		0.05	0.16	0.56	0.24	-0.50	-0.31		-0.03
30983	6.NS.2	MC	1	3,533	0.47	0.62		0.16	0.62	0.14	0.07	-0.27		-0.37	-0.24
31002	6.NS.6c	MC	1	3,640	0.44	0.52		0.21	0.52	0.16	0.12	-0.14		-0.43	-0.17
31004	6.SP.1	MC	1	5,187	0.43	0.56		0.09	0.17	0.18	0.56	-0.32	-0.31	-0.14	
31029	6.EE.4	MC	1	3,649	0.19	0.35		0.17	0.35	0.39	0.08	-0.03		-0.02	-0.35
31032	6.NS.1a	MC	1	3,719	0.29	0.49		0.19	0.20	0.49	0.11	-0.03	-0.22		-0.24
31033	6.NS.4	MSCR	1	3,558	0.69	0.26	0.74	0.26				-1.06	0.21		
31068	6.RP.3a	MC	1	3,719	0.71	0.45		0.02	0.11	0.42	0.45	-0.41	-0.33	-0.48	
31069	6.RP.3b	MC	1	3,693	0.53	0.51		0.07	0.51	0.12	0.30	-0.29		-0.39	-0.28

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
31070	6.SP.4	MC	1	5,225	0.53	0.79		0.07	0.79	0.11	0.02	-0.45		-0.35	-0.38
31117	6.EE.8	MSCR	2	3,609	0.66	0.40	0.36	0.47	0.17			-1.56	-0.48	0.33	
31122	6.SP.3	MSCR	1	5,245	0.67	0.11	0.89	0.11				-0.86	0.49		
31124	6.SP.5c	MC	1	5,137	0.49	0.51		0.24	0.21	0.51	0.04	-0.33	-0.24		-0.31
31259	6.EE.2b	MSCR	1	3,657	0.10	0.00	1.00	0.00				-0.69	-0.34		
31266	6.NS.7a	MC	1	3,682	0.70	0.73		0.08	0.12	0.07	0.73	-0.44	-0.48	-0.52	
31267	6.NS.7b	MC	1	3,726	0.52	0.46		0.46	0.24	0.19	0.11		-0.25	-0.37	-0.18
31281	6.G.2	MC	1	5,325	0.47	0.22		0.20	0.28	0.30	0.22	-0.25	-0.32	0.13	
31282	6.SP.5c	MC	1	5,415	0.43	0.49		0.26	0.49	0.15	0.10	-0.18		-0.31	-0.26
31781	6.NS.2	MC	1	3,659	0.51	0.54		0.06	0.33	0.54	0.07	-0.40	-0.34		-0.24
31787	6.RP.3a	MC	1	3,607	0.55	0.64		0.01	0.64	0.28	0.06	-0.44		-0.46	-0.28
31789	6.RP.1	MSCR	1	3,508	0.61	0.72	0.28	0.72				-1.58	-0.36		
31791	6.EE.7	MC	1	3,712	0.55	0.69		0.10	0.69	0.15	0.06	-0.38		-0.34	-0.39
31795	6.RP.3b	MC	1	3,612	0.35	0.50		0.13	0.26	0.50	0.11	-0.34	0.03		-0.39
31803	6.RP.3a	MSCR	1	3,748	0.61	0.27	0.73	0.27				-1.04	0.10		
31805	6.RP.3b	MC	1	3,650	0.59	0.72		0.05	0.72	0.16	0.07	-0.34		-0.46	-0.40
31807	6.NS.8	MC	1	3,680	0.65	0.74		0.06	0.09	0.11	0.74	-0.53	-0.48	-0.38	
31819	6.RP.2	MC	1	3,636	0.68	0.66		0.21	0.66	0.07	0.07	-0.62		-0.26	-0.31
31822	6.EE.8	MC	1	3,620	0.43	0.58		0.13	0.05	0.58	0.25	-0.08	-0.49		-0.32
31823	6.EE.2c	MC	1	3,658	0.44	0.23		0.16	0.48	0.13	0.23	-0.23	0.00	-0.35	
31831	6.G.1	MC	1	5,097	0.44	0.39		0.07	0.31	0.39	0.23	-0.35	-0.41		0.10
31833	6.EE.2b	MSCR	1	3,644	0.65	0.38	0.62	0.38				-1.18	0.01		
31839	6.SP.5a	MC	1	5,215	0.62	0.83		0.83	0.04	0.08	0.05		-0.50	-0.46	-0.45
31846	6.RP.3c	MC	1	3,580	0.51	0.81		0.09	0.05	0.81	0.04	-0.26	-0.48		-0.47
31860	6.EE.3	MC	1	3,652	0.53	0.38		0.24	0.08	0.30	0.38	-0.16	-0.45	-0.23	
31866	6.G.3	MC	1	5,278	0.66	0.68		0.07	0.10	0.15	0.68	-0.52	-0.55	-0.30	
31868	6.EE.2a	MC	1	3,714	0.64	0.84		0.03	0.11	0.02	0.84	-0.63	-0.45	-0.66	
31900	6.SP.3	MC	1	5,143	0.40	0.28		0.07	0.42	0.22	0.28	-0.12	-0.20	-0.12	

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
31908	6.RP.3c	MSCR	1	3,592	0.48	0.21	0.79	0.21				-0.93	0.03		
31912	6.RP.3d	MC	1	3,593	0.54	0.72		0.03	0.05	0.72	0.20	-0.34	-0.58		-0.34
31923	6.NS.5	MSCR	1	3,601	0.48	0.85	0.15	0.85				-1.65	-0.57		
31954	6.SP.5c	MSCR	1	5,374	0.71	0.35	0.65	0.35				-1.18	0.13		
32012	6.EE.2c	MSCR	2	3,597	0.65	0.64	0.19	0.33	0.48			-1.78	-1.16	-0.03	
32033	6.NS.7c	MSCR	2	3,700	0.57	0.57	0.28	0.30	0.42			-1.34	-1.21	0.06	
32088	6.NS.3	MSCR	1	3,634	0.50	0.37	0.63	0.37				-1.06	-0.13		
32498	6.SP.5b	MC	1	5,244	0.18	0.57		0.05	0.57	0.25	0.13	-0.49		-0.12	0.08
32777	6.EE.8	MSCR	1	3,587	0.77	0.15	0.85	0.15				-0.92	0.54		
32781	6.EE.9	MSCR	1	3,628	0.75	0.39	0.61	0.39				-1.25	0.13		
32782	6.EE.9	MC	1	3,646	0.55	0.44		0.44	0.34	0.12	0.10		-0.19	-0.47	-0.27
32783	6.EE.9	MSCR	1	3,574	0.67	0.81	0.19	0.81				-1.94	-0.45		
32784	6.NS.2	MC	1	3,654	0.64	0.64		0.10	0.16	0.64	0.10	-0.41	-0.46		-0.34
32785	6.NS.2	MSCR	1	3,597	0.74	0.65	0.35	0.65				-1.69	-0.24		
32786	6.RP.1	MC	1	3,659	0.66	0.68		0.68	0.23	0.05	0.04		-0.51	-0.39	-0.49
32788	6.RP.1	MC	1	3,583	0.72	0.62		0.62	0.16	0.06	0.16		-0.41	-0.44	-0.50
32801	6.RP.1	MSCR	1	3,581	0.56	0.63	0.37	0.63				-1.40	-0.31		
32804	6.RP.1	MC	1	3,636	0.36	0.27		0.45	0.10	0.27	0.18	-0.15	-0.35		-0.01
32806	6.RP.2	MSCR	1	3,673	0.71	0.35	0.65	0.35				-1.13	0.14		
32808	6.RP.2	MSCR	1	3,679	0.77	0.65	0.35	0.65				-1.70	-0.19		
32821	6.RP.3a	MSCR	1	3,558	0.74	0.55	0.45	0.55				-1.50	-0.11		
32822	6.RP.3a	MSCR	1	3,613	0.79	0.47	0.53	0.47				-1.38	0.08		
32828	6.RP.3b	MSCR	2	3,674	0.75	0.58	0.20	0.44	0.36			-2.16	-0.72	0.12	
32829	6.RP.3c	MSCR	1	3,591	0.80	0.16	0.84	0.16				-0.98	0.56		
32834	6.RP.3c	MSCR	1	3,698	0.72	0.21	0.79	0.21				-1.02	0.33		
32837	6.RP.3c	MSCR	1	3,641	0.76	0.19	0.81	0.19				-1.02	0.40		
32838	6.SP.1	MC	1	5,316	0.44	0.53		0.18	0.10	0.53	0.19	-0.26	-0.35		-0.17
32839	6.SP.1	MC	1	5,240	0.45	0.63		0.07	0.07	0.63	0.22	-0.33	-0.46		-0.20

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
32840	6.SP.1	MSCR	1	5,308	0.55	0.45	0.55	0.45				-1.16	-0.17		
32995	6.EE.6	MSCR	1	3,727	0.62	0.09	0.91	0.09				-0.86	0.45		
33003	6.EE.5	MSCR	1	3,591	0.37	0.39	0.61	0.39				-0.97	-0.28		
33005	6.EE.5	MSCR	1	3,731	0.75	0.40	0.60	0.40				-1.27	0.11		
33007	6.EE.6	MSCR	1	3,464	0.70	0.39	0.61	0.39				-1.21	0.05		
33009	6.EE.7	MC	1	3,576	0.73	0.85		0.06	0.85	0.07	0.02	-0.51		-0.64	-0.57
33010	6.EE.7	MSCR	1	3,740	0.58	0.84	0.16	0.84				-1.87	-0.51		
33011	6.EE.8	MSCR	1	3,611	0.49	0.55	0.45	0.55				-1.26	-0.34		

Table 4-I–11. Field-Test Items: Classical Item Statistics Grade 7 Mathematics

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
29982	7.EE.4b	MC	1	3,856	0.63	0.55		0.12	0.23	0.10	0.55	-0.22	-0.37	-0.50	
29983	7.EE.4b	MC	1	3,967	0.09	0.45		0.27	0.45	0.20	0.08	0.18		-0.31	-0.06
29984	7.G.5	MC	1	3,812	0.43	0.48		0.13	0.48	0.25	0.14	-0.39		-0.25	-0.03
29985	7.G.3	MC	1	3,944	0.25	0.68		0.12	0.07	0.13	0.68	-0.11	-0.18	-0.20	
29987	7.G.5	MC	1	4,003	0.56	0.53		0.53	0.25	0.16	0.06		-0.36	-0.31	-0.29
29992	7.RP.2a	MSCR	1	3,989	0.38	0.38	0.62	0.38				-0.49	0.26		
29995	7.RP.2c	MC	1	4,008	0.55	0.47		0.47	0.09	0.11	0.32		-0.31	-0.46	-0.21
29997	7.RP.2d	MC	1	3,885	0.63	0.89		0.03	0.89	0.06	0.02	-0.53		-0.58	-0.34
30087	7.EE.2	MSCR	1	3,815	0.35	0.13	0.87	0.13				-0.30	0.55		
30088	7.EE.3	MC	1	3,809	0.17	0.24		0.15	0.24	0.42	0.19	-0.27		0.09	-0.10
30089	7.EE.4a	MSCR	1	3,919	0.73	0.37	0.63	0.37				-0.70	0.66		
30090	7.G.1	MC	1	3,874	0.47	0.57		0.29	0.10	0.57	0.04	-0.21	-0.54		-0.17
30091	7.G.6	MC	1	3,958	0.22	0.42		0.23	0.42	0.26	0.09	-0.17		-0.04	-0.14
30092	7.NS.1c	MC	1	3,926	0.21	0.24		0.32	0.18	0.24	0.27	-0.25	-0.12		0.17
30093	7.NS.2a	MSCR	1	3,829	0.54	0.27	0.73	0.27				-0.51	0.54		
30094	7.NS.2b	MC	1	3,938	0.51	0.43		0.36	0.43	0.07	0.14	-0.28		-0.14	-0.34
30095	7.NS.3	MC	1	4,002	0.48	0.63		0.06	0.22	0.63	0.08	-0.37	-0.27		-0.36
30096	7.SP.1	MC	1	3,908	0.23	0.29		0.47	0.16	0.29	0.08	-0.02	-0.24		-0.06
30097	7.SP.2	MC	1	4,039	0.61	0.32		0.22	0.22	0.24	0.32	-0.22	-0.34	-0.15	
30099	7.SP.8a	MC	1	3,887	0.64	0.59		0.13	0.14	0.14	0.59	-0.41	-0.44	-0.29	
30100	7.SP.7b	MC	1	3,906	0.60	0.37		0.14	0.27	0.22	0.37	-0.30	-0.31	-0.18	
30148	7.EE.4b	MSCR	2												
30166	7.G.5	MSCR	1	3,869	0.82	0.09	0.91	0.09				-0.33	1.36		
30170	7.G.6	MSCR	1	3,866	0.79	0.33	0.67	0.33				-0.67	0.84		
30175	7.NS.1a	MSCR	1	3,834	0.59	0.56	0.44	0.56				-0.86	0.30		
30183	7.RP.2a	MC	1	3,808	0.26	0.29		0.34	0.29	0.12	0.25	0.00		-0.14	-0.19

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
30185	7.RP.2b	MSCR	1	4,003	0.59	0.28	0.72	0.28				-0.54	0.61		
30188	7.RP.2b	MSCR	1	3,983	0.56	0.57	0.43	0.57				-0.87	0.25		
30205	7.EE.1	MSCR	1	3,901	0.66	0.22	0.78	0.22				-0.48	0.81		
30207	7.EE.2	MSCR	1	3,917	0.75	0.38	0.62	0.38				-0.76	0.67		
30209	7.EE.2	MSCR	1	3,920	0.67	0.03	0.97	0.03				-0.27	1.29		
30216	7.EE.3	MSCR	2	3,955	0.68	0.24	0.61	0.29	0.10			-0.69	0.28	1.28	
30220	7.EE.4a	MSCR	1	3,905	0.77	0.10	0.90	0.10				-0.37	1.16		
30226	7.EE.3	MSCR	1	3,926	0.71	0.23	0.77	0.23				-0.50	0.88		
30229	7.G.1	MSCR	1	3,898	0.64	0.05	0.95	0.05				-0.25	1.12		
30331	7.NS.3	MSCR	1	3,911	0.80	0.22	0.78	0.22				-0.58	0.94		
30337	7.SP.2	MSCR	2	3,939	0.68	0.17	0.76	0.14	0.11			-0.54	0.35	1.33	
30348	7.SP.6	MSCR	1	3,887	0.65	0.37	0.63	0.37				-0.63	0.59		
30968	7.NS.3	MC	1	3,779	0.35	0.35		0.15	0.32	0.35	0.18	-0.28	-0.31		0.19
30985	7.RP.3	MC	1	3,858	0.18	0.20		0.20	0.55	0.20	0.06	-0.30	0.15		-0.28
30986	7.SP.6	MC	1	3,925	0.49	0.90		0.03	0.90	0.06	0.01	-0.46		-0.39	-0.37
31097	7.G.1	MC	1	3,912	0.26	0.30		0.26	0.32	0.30	0.13	-0.15	-0.19		0.13
31100	7.NS.2c	MC	1	3,843	0.46	0.59		0.07	0.59	0.19	0.16	-0.39		-0.24	-0.26
31105	7.SP.7a	MC	1	3,895	0.51	0.60		0.11	0.17	0.60	0.13	-0.35	-0.40		-0.16
31107	7.RP.2c	MC	1	3,861	0.23	0.53		0.09	0.53	0.28	0.10	-0.22		-0.08	-0.18
31110	7.G.2	MSCR	1	3,906	0.58	0.33	0.67	0.33				-0.58	0.54		
31113	7.G.4	MC	1	3,885	0.36	0.16		0.10	0.66	0.09	0.16	-0.03	-0.04	-0.37	
31114	7.G.6	MC	1	3,843	0.39	0.11		0.58	0.17	0.14	0.11	0.27	-0.44	-0.26	
31191	7.NS.1b	MC	1	3,837	0.63	0.73		0.17	0.04	0.06	0.73	-0.37	-0.57	-0.55	
31193	7.EE.1	MSCR	1	3,832	0.53	0.18	0.82	0.18				-0.42	0.64		
31194	7.EE.2	MC	1	3,955	-0.30	0.12		0.21	0.54	0.12	0.13	-0.01	0.06		0.21
31197	7.EE.3	MC	1	3,922	0.27	0.46		0.46	0.25	0.14	0.16		-0.30	-0.24	0.18
31198	7.EE.4a	MC	1	3,943	0.19	0.48		0.37	0.48	0.13	0.02	0.03		-0.31	-0.28
31199	7.EE.4b	MSCR	1	3,878	0.52	0.17	0.83	0.17				-0.38	0.69		

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
31200	7.G.2	MSCR	1	4,033	0.79	0.20	0.80	0.20				-0.49	1.01		
31201	7.G.5	MSCR	1	3,899	0.72	0.27	0.73	0.27				-0.57	0.78		
31202	7.NS.2b	MSCR	2	3,971	0.54	0.32	0.50	0.37	0.13			-0.73	0.04	0.95	
31203	7.RP.1	MC	1	3,922	0.47	0.33		0.08	0.14	0.45	0.33	-0.26	-0.43	-0.07	
31205	7.RP.2b	MC	1	3,869	0.51	0.61		0.25	0.12	0.61	0.02	-0.24	-0.48		-0.36
31208	7.G.4	MC	1	3,936	0.17	0.14		0.14	0.59	0.16	0.11		0.04	-0.22	0.01
31212	7.NS.2a	MC	1	3,887	0.43	0.21		0.26	0.23	0.30	0.21	0.04	-0.27	-0.16	
31214	7.NS.1a	MC	1	3,859	0.53	0.30		0.18	0.19	0.33	0.30	-0.30	-0.38	0.01	
31216	7.RP.2a	MSCR	1	3,900	0.69	0.44	0.56	0.44				-0.83	0.53		
31249	7.NS.2d	MSCR	1	3,852	0.69	0.45	0.55	0.45				-0.82	0.53		
31280	7.EE.4a	MC	1	3,765	0.54	0.57		0.57	0.17	0.14	0.12		-0.42	-0.40	-0.07
31674	7.SP.2	MSCR	1	3,916	0.59	0.48	0.52	0.48				-0.77	0.37		
31783	7.EE.4b	MC	1	3,961	0.49	0.56		0.15	0.56	0.17	0.11	-0.32		-0.38	-0.13
31786	7.G.6	MC	1	3,933	0.38	0.65		0.16	0.65	0.16	0.03	-0.10		-0.40	-0.25
31790	7.EE.1	MC	1	3,922	0.46	0.58		0.58	0.18	0.17	0.07		-0.31	-0.23	-0.28
31812	7.EE.4a	MC	1	3,887	0.63	0.73		0.10	0.13	0.73	0.05	-0.47	-0.48		-0.31
31815	7.G.3	MSCR	1	4,053	0.29	0.16	0.84	0.16				-0.31	0.32		
31818	7.G.6	MC	1	3,925	0.21	0.23		0.58	0.23	0.15	0.03	-0.17		0.01	-0.03
31825	7.G.5	MC	1	3,973	0.73	0.49		0.17	0.21	0.13	0.49	-0.44	-0.39	-0.33	
31832	7.EE.2	MSCR	1	3,888	0.54	0.22	0.78	0.22				-0.45	0.70		
31840	7.NS.1c	MSCR	1	3,886	0.66	0.51	0.49	0.51				-0.85	0.44		
31849	7.NS.1d	MC	1	3,913	0.58	0.53		0.53	0.23	0.12	0.13		-0.33	-0.30	-0.33
31857	7.NS.3	MSCR	1	3,812	0.71	0.36	0.64	0.36				-0.67	0.67		
31869	7.RP.2d	MC	1	3,801	0.66	0.80		0.05	0.13	0.80	0.02	-0.55	-0.52		-0.44
31870	7.SP.3	MC	1	3,842	0.28	0.16		0.47	0.16	0.22	0.16	0.16	-0.30	-0.19	
31985	7.SP.4	MC	1	3,946	0.58	0.41		0.16	0.23	0.20	0.41	-0.28	-0.35	-0.17	
32056	7.RP.1	MC	1	3,944	0.70	0.66		0.08	0.13	0.13	0.66	-0.41	-0.54	-0.39	
32067	7.RP.3	MC	1	3,949	0.33	0.52		0.52	0.22	0.13	0.13		-0.21	-0.36	0.05

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
32076	7.RP.2a	MSCR	1	3,944	0.52	0.16	0.84	0.16				-0.36	0.72		
32107	7.SP.5	MC	1	3,855	0.49	0.81		0.10	0.81	0.08	0.02	-0.21		-0.52	-0.50
32145	7.SP.8c	MC	1	3,926	0.29	0.35		0.23	0.20	0.22	0.35	-0.13	-0.25	0.02	
32462	7.SP.8b	MC	1	3,871	0.57	0.14		0.10	0.35	0.40	0.14	-0.24	-0.24	0.01	
32466	7.NS.2a	MSCR	1	3,941	0.58	0.52	0.48	0.52				-0.82	0.33		
32471	7.SP.8a	MC	1	3,916	0.53	0.34		0.34	0.38	0.24	0.04		-0.39	-0.06	-0.29
32487	7.SP.7b	MSCR	2	4,032	0.55	0.35	0.45	0.39	0.16			-0.74	-0.01	0.95	
32490	7.RP.2b	MC	1	3,935	0.50	0.57		0.12	0.57	0.18	0.13	-0.34		-0.41	-0.09
32842	7.NS.1a	MC	1	3,879	0.70	0.76		0.05	0.76	0.11	0.08	-0.60		-0.54	-0.41
32843	7.NS.1d	MSCR	1	3,915	0.51	0.74	0.26	0.74				-1.02	0.11		
32844	7.NS.1d	MSCR	1	3,924	0.45	0.54	0.46	0.54				-0.66	0.22		
32845	7.NS.2d	MC	1	3,861	0.37	0.43		0.12	0.43	0.37	0.08	-0.50		-0.03	-0.18
32848	7.NS.1d	MSCR	1	3,934	0.64	0.59	0.41	0.59				-1.01	0.31		
32849	7.NS.3	MSCR	1	3,879	0.70	0.25	0.75	0.25				-0.55	0.80		
32850	7.NS.3	MC	1	3,926	0.50	0.63		0.63	0.22	0.09	0.07		-0.31	-0.38	-0.28
32852	7.RP.3	MSCR	1	3,834	0.32	0.26	0.74	0.26				-0.38	0.28		
32853	7.NS.3	MSCR	1	3,785	0.68	0.56	0.44	0.56				-0.96	0.42		
32855	7.NS.3	MSCR	2	4,046	0.77	0.16	0.73	0.22	0.05			-0.59	0.76	1.26	
32856	7.RP.1	MSCR	1	3,951	0.79	0.40	0.60	0.40				-0.82	0.70		
32857	7.RP.1	MC	1	3,754	0.53	0.33		0.20	0.31	0.15	0.33	-0.14	-0.17	-0.36	
32858	7.RP.1	MSCR	1	3,853	0.63	0.32	0.68	0.32				-0.57	0.64		
32859	7.RP.1	MSCR	1	4,064	0.73	0.41	0.59	0.41				-0.79	0.61		
32860	7.RP.1	MSCR	1	3,888	0.81	0.11	0.89	0.11				-0.42	1.19		
32863	7.RP.1	MSCR	1	3,916	0.77	0.20	0.80	0.20				-0.51	0.95		
32864	7.RP.1	MSCR	1	3,920	0.60	0.14	0.86	0.14				-0.38	0.86		
32880	7.RP.1	MSCR	1	3,919	0.77	0.44	0.56	0.44				-0.85	0.63		
32882	7.RP.2a	MSCR	1	4,000	0.66	0.67	0.33	0.67				-1.15	0.26		
32893	7.RP.2a	MC	1	3,970	0.33	0.31		0.16	0.31	0.30	0.23	-0.28		-0.07	-0.07

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
32895	7.RP.2c	MSCR	1	3,913	0.83	0.06	0.94	0.06				-0.33	1.42		
32898	7.RP.2c	MSCR	1	3,890	0.79	0.02	0.98	0.02				-0.27	1.48		
32903	7.RP.2d	MSCR	1	3,948	0.74	0.31	0.69	0.31				-0.63	0.75		
32905	7.RP.2d	MSCR	1	3,765	0.80	0.23	0.77	0.23				-0.55	0.95		

Table 4-I–12. Field-Test Items: Classical Item Statistics Grade 8 Mathematics

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
30004	8.F.2	MSCR	1	4,358	0.48	0.16	0.84	0.16				0.30	1.53		
30007	8.F.5	MC	1	4,407	0.59	0.43		0.07	0.42	0.08	0.43	-0.43	-0.24	-0.50	
30008	8.F.5	MC	1	4,357	0.57	0.55		0.55	0.22	0.14	0.09		-0.26	-0.48	-0.28
30009	8.F.5	MSCR	1	4,342	0.18	0.12	0.88	0.12				0.50	0.96		
30012	8.F.2	MSCR	1	4,567	0.72	0.45	0.55	0.45				-0.19	1.43		
30016	8.G.1b	MSCR	1	4,458	0.69	0.56	0.44	0.56				-0.34	1.30		
30020	8.G.8	MC	1	4,423	0.44	0.35		0.34	0.27	0.35	0.04	-0.30	-0.15		-0.08
30021	8.SP.2	MC	1	4,414	0.47	0.57		0.14	0.18	0.57	0.11	-0.26	-0.41		-0.13
30022	8.SP.2	MSCR	1	4,387	0.30	0.21	0.79	0.21				0.36	1.12		
30024	8.G.1a	MSCR	1	4,383	0.54	0.71	0.29	0.71				-0.45	0.90		
30123	8.F.3	MC	1	4,479	0.47	0.33		0.33	0.24	0.39	0.05		-0.23	-0.19	-0.26
30124	8.EE.3	MC	1	4,445	0.24	0.39		0.39	0.22	0.25	0.15		-0.24	-0.21	0.22
30125	8.EE.7c	MC	1	4,420	0.08	0.41		0.33	0.20	0.41	0.06	0.15	-0.20		-0.27
30129	8.G.2	MC	1	4,473	0.55	0.58		0.16	0.21	0.58	0.04	-0.34	-0.41		-0.19
30130	8.G.4	MC	1	4,428	0.62	0.49		0.10	0.21	0.20	0.49	-0.38	-0.35	-0.26	
30131	8.G.6	MC	1	4,371	0.61	0.71		0.71	0.14	0.07	0.08		-0.52	-0.49	-0.21
30132	8.NS.3	MC	1	4,479	0.52	0.47		0.47	0.14	0.29	0.09		-0.27	-0.35	-0.12
30133	8.SP.1	MC	1	4,491	0.58	0.67		0.11	0.12	0.67	0.11	-0.29	-0.55		-0.28
30134	8.F.2	MC	1	4,449	0.25	0.37		0.16	0.17	0.37	0.30	-0.21	-0.26		0.07
30135	8.F.5	MC	1	4,448	0.58	0.66		0.09	0.14	0.66	0.11	-0.49	-0.27		-0.41
30136	8.EE.7c	MC	1	4,440	0.33	0.39		0.17	0.39	0.21	0.23	-0.35		-0.18	0.03
30137	8.EE.8b	MSCR	1	4,504	0.53	0.18	0.82	0.18				0.30	1.58		
30138	8.G.1a	MC	1	4,448	0.58	0.70		0.14	0.70	0.09	0.06	-0.51		-0.25	-0.38
30139	8.G.1c	MC	1	4,435	0.37	0.33		0.37	0.33	0.15	0.15	-0.09		-0.24	-0.17
30140	8.G.3	MC	1	4,445	0.44	0.50		0.50	0.14	0.20	0.16		-0.19	-0.40	-0.10
30141	8.NS.1	MC	1	4,422	0.48	0.33		0.08	0.12	0.33	0.48	-0.35	-0.47		-0.06

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
30142	8.NS.3	MC	1	4,363	0.37	0.42		0.21	0.24	0.13	0.42	0.01	-0.20	-0.37	
30144	8.SP.4	MC	1	4,352	0.38	0.54		0.54	0.24	0.17	0.06		-0.27	-0.17	-0.18
30214	8.F.5	MSCR	1	4,403	0.67	0.56	0.44	0.56				-0.38	1.20		
30219	8.G.1b	MSCR	1	4,454	0.59	0.57	0.43	0.57				-0.26	1.12		
30221	8.G.8	MSCR	1	4,393	0.81	0.24	0.76	0.24				0.09	1.93		
30225	8.SP.3	MSCR	2	4,443	0.69	0.69	0.19	0.23	0.57			-0.99	-0.07	1.25	
30318	8.G.1b	MSCR	1	4,484	0.65	0.57	0.43	0.57				-0.35	1.17		
30325	8.G.7	MSCR	1	4,404	0.56	0.05	0.95	0.05				0.45	2.08		
30346	8.EE.8c	MSCR	1	4,442	0.66	0.55	0.45	0.55				-0.32	1.25		
30347	8.G.1a	MSCR	1	4,433	0.71	0.65	0.35	0.65				-0.61	1.13		
30349	8.G.1c	MC	1	4,312	0.49	0.46		0.10	0.29	0.16	0.46	-0.27	-0.23	-0.28	
30351	8.G.1c	MSCR	1	4,387	0.40	0.35	0.65	0.35				0.20	1.14		
30352	8.G.3	MC	1	4,409	0.23	0.37		0.37	0.22	0.22	0.19		-0.12	-0.16	-0.01
30353	8.G.4	MC	1	4,353	0.45	0.51		0.13	0.28	0.51	0.08	-0.36	-0.24		-0.14
30944	8.EE.1	MC	1	4,478	0.50	0.56		0.05	0.56	0.21	0.18	-0.18		-0.31	-0.34
30946	8.EE.7a	MC	1	4,442	0.49	0.35		0.35	0.16	0.20	0.30		-0.28	-0.11	-0.23
30948	8.EE.7b	MSCR	1	4,321	0.36	0.28	0.72	0.28				0.31	1.15		
30950	8.F.2	MSCR	1	4,490	0.69	0.21	0.79	0.21				0.20	1.81		
30951	8.G.1a	MC	1	4,562	0.25	0.32		0.17	0.25	0.32	0.26	-0.30	-0.21		0.18
30953	8.G.2	MSCR	1	4,455	0.58	0.33	0.67	0.33				0.11	1.40		
30955	8.SP.2	MC	1	4,401	0.47	0.53		0.17	0.15	0.53	0.15	-0.22	-0.48		-0.08
30956	8.SP.3	MC	1	4,440	0.16	0.47		0.28	0.47	0.17	0.08	0.00		-0.20	-0.08
30957	8.SP.4	MC	1	4,485	0.28	0.41		0.27	0.41	0.14	0.19	-0.29		-0.23	0.16
30958	8.EE.3	MC	1	4,430	0.29	0.52		0.09	0.21	0.52	0.18	-0.22	-0.27		0.01
30961	8.G.9	MSCR	1	4,346	0.39	0.20	0.80	0.20				0.32	1.31		
30964	8.G.3	MSCR	2	4,470	0.55	0.48	0.30	0.43	0.26			-0.40	0.55	1.50	
30965	8.SP.4	MSCR	2	4,536	0.23	0.19	0.65	0.30	0.04			0.42	0.57	2.42	
31065	8.F.1	MSCR	1	4,422	0.36	0.23	0.77	0.23				0.31	1.17		

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
31066	8.F.1	MSCR	1	4,446	0.48	0.18	0.82	0.18				0.25	1.43		
31082	8.F.3	MC	1	4,408	0.15	0.36		0.15	0.24	0.36	0.25	-0.27	-0.16		0.17
31084	8.G.3	MC	1	4,395	0.42	0.55		0.12	0.55	0.23	0.11	-0.23		-0.31	-0.16
31087	8.NS.1	MSCR	1	4,477	0.39	0.34	0.66	0.34				0.27	1.14		
31233	8.G.9	MC	1	4,462	0.43	0.35		0.20	0.39	0.35	0.06	-0.13	-0.36		0.11
31235	8.G.8	MC	1	4,397	0.44	0.36		0.17	0.15	0.36	0.32	-0.18	-0.34		-0.12
31236	8.G.1b	MSCR	1	4,376	0.67	0.44	0.56	0.44				-0.22	1.34		
31248	8.SP.1	MSCR	2	4,424	0.59	0.64	0.17	0.39	0.45			-0.81	0.05	1.26	
31784	8.NS.2	MC	1	4,400	0.57	0.76		0.09	0.76	0.11	0.03	-0.43		-0.43	-0.39
31785	8.NS.3	MC	1	4,506	0.25	0.65		0.13	0.65	0.10	0.13	-0.10		-0.34	-0.07
31806	8.F.3	MC	1	4,385	0.60	0.66		0.66	0.19	0.11	0.05		-0.42	-0.38	-0.38
31808	8.G.3	MC	1	4,481	0.59	0.44		0.17	0.20	0.18	0.44	-0.21	-0.39	-0.24	
31809	8.NS.2	MC	1	4,284	0.62	0.77		0.13	0.77	0.07	0.03	-0.48		-0.44	-0.45
31810	8.NS.1	MSCR	1	4,422	0.57	0.39	0.61	0.39				0.01	1.34		
31816	8.NS.2	MC	1	4,397	0.63	0.78		0.09	0.78	0.09	0.04	-0.49		-0.48	-0.38
31828	8.F.5	MSCR	1	4,386	0.50	0.61	0.39	0.61				-0.20	0.99		
31838	8.SP.4	MC	1	4,492	0.27	0.26		0.26	0.26	0.35	0.14		-0.36	0.07	0.02
31845	8.SP.1	MC	1	4,376	0.54	0.82		0.03	0.12	0.82	0.02	-0.47	-0.43		-0.41
31847	8.EE.8a	MC	1	4,353	0.57	0.77		0.05	0.77	0.15	0.03	-0.45		-0.42	-0.49
31865	8.EE.8a	MSCR	1	4,320	0.47	0.30	0.70	0.30				0.21	1.32		
31867	8.EE.1	MC	1	4,401	-0.01	0.50		0.17	0.17	0.50	0.16	0.20	-0.12		-0.06
31901	8.SP.3	MC	1	4,397	0.25	0.56		0.08	0.08	0.56	0.29	-0.50	-0.47		0.15
31940	8.NS.2	MSCR	1	4,449	0.58	0.51	0.49	0.51				-0.16	1.18		
32002	8.EE.1	MSCR	1	4,339	0.58	0.36	0.64	0.36				0.04	1.37		
32910	8.G.6	MSCR	1	4,491	0.47	0.50	0.50	0.50				-0.01	1.09		
32916	8.G.8	MSCR	1	4,353	0.31	0.06	0.94	0.06				0.46	1.43		
32917	8.G.8	MSCR	1	4,391	0.84	0.11	0.89	0.11				0.30	2.29		
32919	8.NS.1	MC	1	4,471	0.54	0.74		0.14	0.74	0.10	0.03	-0.39		-0.40	-0.38

ITS ID	Standard	MC vs. MSCR	Points	N	Adjusted Polyserial/ Biserial	Average Score	Proportion by Score Point in CR and Response Option in MC					Distractor Adjusted Biserial for MC/Mean Score for CR			
							0	A/1	B/2	C/3	D/4	A/0	B/1	C/2	D/3
32922	8.NS.1	MSCR	1	4,397	0.64	0.26	0.74	0.26				0.13	1.61		
32924	8.NS.2	MC	1	4,330	0.40	0.57		0.14	0.57	0.15	0.14	-0.15		-0.40	-0.13
32930	8.NS.1	MSCR	1	4,522	0.67	0.66	0.34	0.66				-0.54	1.10		
32931	8.NS.1	MSCR	1	4,348	0.64	0.26	0.74	0.26				0.20	1.63		
32952	8.NS.2	MSCR	1	4,462	0.64	0.46	0.54	0.46				-0.14	1.32		
32953	8.NS.2	MSCR	1	4,419	0.71	0.51	0.49	0.51				-0.32	1.32		
32956	8.SP.1	MSCR	2	4,411	0.73	0.56	0.30	0.29	0.41			-0.80	0.59	1.48	
32964	8.SP.2	MC	1	4,427	0.60	0.85		0.08	0.85	0.02	0.04	-0.49		-0.51	-0.42
32968	8.SP.2	MC	1	4,519	0.58	0.89		0.89	0.03	0.05	0.02		-0.48	-0.48	-0.45
32970	8.SP.2	MC	1	4,417	0.62	0.37		0.19	0.19	0.25	0.37	-0.27	-0.34	-0.21	
32973	8.SP.2	MSCR	1	4,304	0.57	0.77	0.23	0.77				-0.58	0.88		
32974	8.SP.2	MC	1	4,516	0.67	0.91		0.03	0.04	0.02	0.91	-0.60	-0.59	-0.40	
32975	8.SP.4	MC	1	4,414	0.54	0.67		0.10	0.17	0.67	0.06	-0.36	-0.35		-0.37
32976	8.SP.4	MSCR	1	4,524	0.54	0.80	0.20	0.80				-0.69	0.82		
32977	8.SP.4	MSCR	2	4,418	0.43	0.51	0.18	0.63	0.19			-0.21	0.37	1.55	
32978	8.SP.4	MSCR	1	4,477	0.72	0.35	0.65	0.35				-0.08	1.57		
32979	8.SP.4	MC	1	4,359	0.55	0.72		0.72	0.11	0.12	0.05		-0.45	-0.41	-0.18
32980	8.SP.4	MSCR	1	4,464	0.55	0.81	0.19	0.81				-0.68	0.81		

Table A–13a. Field-Test Items: Classical Item Statistics Grade 4 Science (Clusters)

ITS ID	Standard	Number of Assertions	N	Adjusted Polyserial/ Biserial				Average Score				Percentile 80	Number of Assertions per Minute
				Avg	Var	Min	Max	Avg	Var	Min	Max		
32748*	4.1.1	8	1,731	0.31	0.00	0.25	0.37	0.28	0.04	0.04	0.49	9.30	0.86
32820	4.1.1	8	1,764	0.50	0.03	0.23	0.72	0.41	0.03	0.13	0.60	11.90	0.67
33041	4.1.1	8	1,707	0.45	0.01	0.32	0.59	0.41	0.06	0.14	0.78	10.30	0.78
32760	4.1.2	7	1,655	0.38	0.02	0.24	0.62	0.29	0.04	0.02	0.58	9.20	0.76
32981	4.1.2	7	1,760	0.59	0.00	0.53	0.67	0.23	0.01	0.11	0.40	7.60	0.92
33102	4.1.2	7	1,773	0.36	0.03	0.03	0.50	0.50	0.03	0.32	0.66	6.80	1.03
32982	4.1.3	7	1,708	0.46	0.02	0.19	0.67	0.46	0.05	0.12	0.79	9.40	0.74
33098	4.1.3	9	1,786	0.46	0.03	0.18	0.73	0.45	0.05	0.09	0.76	12.50	0.72
32738	4.1.4	8	1,751	0.49	0.01	0.38	0.70	0.40	0.02	0.09	0.50	9.00	0.89
33096	4.1.4	6	1,664	0.64	0.01	0.50	0.75	0.57	0.02	0.40	0.73	9.90	0.61
32750	4.2.1	7	1,702	0.61	0.00	0.54	0.68	0.53	0.03	0.33	0.74	14.80	0.47
33026	4.2.1	7	1,704	0.54	0.01	0.45	0.67	0.43	0.00	0.36	0.55	9.70	0.72
33063	4.2.2	5	1,724	0.43	0.03	0.25	0.65	0.51	0.01	0.36	0.61	5.80	0.86
33097	4.2.2	9	1,650	0.42	0.03	0.16	0.71	0.51	0.05	0.11	0.79	7.70	1.17
32915	4.2.3	9	1,768	0.52	0.01	0.38	0.63	0.33	0.01	0.21	0.62	10.40	0.87
33034	4.2.4	11	1,743	0.45	0.03	0.13	0.67	0.43	0.02	0.25	0.63	10.70	1.03
33091	4.2.4	10	1,694	0.53	0.02	0.25	0.65	0.40	0.03	0.13	0.64	11.00	0.91
33107	4.3.1	8	1,689	0.43	0.01	0.30	0.63	0.42	0.01	0.31	0.61	10.60	0.75
33052	4.3.2	7	1,684	0.33	0.01	0.20	0.43	0.25	0.01	0.15	0.34	7.90	0.89
33089	4.3.2	7	1,728	0.26	0.01	0.10	0.46	0.27	0.06	0.06	0.61	8.10	0.86
32900	4.3.3	8	1,742	0.46	0.00	0.36	0.55	0.41	0.06	0.10	0.64	9.80	0.82
33140	4.3.3	6	1,714	0.37	0.01	0.25	0.57	0.38	0.02	0.25	0.59	8.80	0.68
33092	4.4.1	6	1,751	0.52	0.01	0.43	0.69	0.38	0.02	0.16	0.55	11.90	0.50
33133	4.4.1	6	1,747	0.32	0.02	0.12	0.46	0.60	0.01	0.43	0.77	7.20	0.83
33076	4.4.2	6	1,740	0.40	0.02	0.25	0.65	0.58	0.04	0.28	0.75	6.00	1.00
33132	4.4.2	6	1,715	0.48	0.02	0.19	0.64	0.38	0.01	0.23	0.52	10.70	0.56

*Rejected at Item Data Review

Table A–13b. Field-Test Items: Classical Item Statistics Grade 4 Science (Assertions)

ITS ID	Standard	Number of Assertions	Assertion Order	N	Adjusted Polyserial/ Biserial	Average Score
32748*	4.1.1	8	0	1,731	0.30	0.20
32748*	4.1.1	8	1	1,731	0.34	0.04
32748*	4.1.1	8	2	1,731	0.25	0.43
32748*	4.1.1	8	3	1,731	0.30	0.42
32748*	4.1.1	8	4	1,731	0.32	0.17
32748*	4.1.1	8	5	1,731	0.36	0.04
32748*	4.1.1	8	6	1,731	0.37	0.49
32748*	4.1.1	8	7	1,731	0.25	0.48
32820	4.1.1	8	0	1,764	0.23	0.47
32820	4.1.1	8	1	1,764	0.38	0.13
32820	4.1.1	8	2	1,764	0.37	0.47
32820	4.1.1	8	3	1,764	0.67	0.47
32820	4.1.1	8	4	1,764	0.65	0.37
32820	4.1.1	8	5	1,764	0.72	0.60
32820	4.1.1	8	6	1,764	0.55	0.57
32820	4.1.1	8	7	1,764	0.42	0.21
33041	4.1.1	8	0	1,707	0.32	0.23
33041	4.1.1	8	1	1,707	0.51	0.14
33041	4.1.1	8	2	1,707	0.59	0.14
33041	4.1.1	8	3	1,707	0.50	0.37
33041	4.1.1	8	4	1,707	0.53	0.39
33041	4.1.1	8	5	1,707	0.36	0.68
33041	4.1.1	8	6	1,707	0.47	0.78
33041	4.1.1	8	7	1,707	0.32	0.57
32760	4.1.2	7	0	1,655	0.29	0.31
32760	4.1.2	7	1	1,655	0.28	0.31
32760	4.1.2	7	2	1,655	0.34	0.32
32760	4.1.2	7	3	1,655	0.55	0.04
32760	4.1.2	7	4	1,655	0.62	0.02
32760	4.1.2	7	5	1,655	0.24	0.58
32760	4.1.2	7	6	1,655	0.33	0.45
32981	4.1.2	7	1	1,760	0.65	0.26
32981	4.1.2	7	2	1,760	0.54	0.24
32981	4.1.2	7	3	1,760	0.60	0.29
32981	4.1.2	7	4	1,760	0.53	0.11
32981	4.1.2	7	5	1,760	0.55	0.18
32981	4.1.2	7	6	1,760	0.67	0.11
32981	4.1.2	7	7	1,760	0.62	0.40
33102	4.1.2	7	0	1,773	0.33	0.32

ITS ID	Standard	Number of Assertions	Assertion Order	N	Adjusted Polyserial/ Biserial	Average Score
33102	4.1.2	7	1	1,773	0.24	0.32
33102	4.1.2	7	2	1,773	0.50	0.33
33102	4.1.2	7	3	1,773	0.03	0.57
33102	4.1.2	7	5	1,773	0.47	0.66
33102	4.1.2	7	6	1,773	0.46	0.62
33102	4.1.2	7	7	1,773	0.47	0.66
32982	4.1.3	7	0	1,708	0.67	0.62
32982	4.1.3	7	1	1,708	0.54	0.79
32982	4.1.3	7	2	1,708	0.42	0.30
32982	4.1.3	7	3	1,708	0.36	0.12
32982	4.1.3	7	4	1,708	0.48	0.57
32982	4.1.3	7	5	1,708	0.56	0.29
32982	4.1.3	7	6	1,708	0.19	0.57
33098	4.1.3	9	0	1,786	0.52	0.18
33098	4.1.3	9	1	1,786	0.34	0.09
33098	4.1.3	9	2	1,786	0.72	0.76
33098	4.1.3	9	3	1,786	0.38	0.55
33098	4.1.3	9	4	1,786	0.31	0.38
33098	4.1.3	9	5	1,786	0.47	0.49
33098	4.1.3	9	6	1,786	0.18	0.32
33098	4.1.3	9	7	1,786	0.53	0.56
33098	4.1.3	9	8	1,786	0.73	0.72
32738	4.1.4	8	0	1,751	0.53	0.46
32738	4.1.4	8	1	1,751	0.70	0.50
32738	4.1.4	8	2	1,751	0.54	0.49
32738	4.1.4	8	3	1,751	0.38	0.36
32738	4.1.4	8	4	1,751	0.38	0.47
32738	4.1.4	8	5	1,751	0.44	0.36
32738	4.1.4	8	6	1,751	0.52	0.49
32738	4.1.4	8	7	1,751	0.43	0.09
33096	4.1.4	6	0	1,664	0.75	0.73
33096	4.1.4	6	1	1,664	0.71	0.66
33096	4.1.4	6	2	1,664	0.67	0.61
33096	4.1.4	6	3	1,664	0.64	0.40
33096	4.1.4	6	4	1,664	0.50	0.41
33096	4.1.4	6	5	1,664	0.60	0.63
32750	4.2.1	7	0	1,702	0.68	0.33
32750	4.2.1	7	1	1,702	0.63	0.36
32750	4.2.1	7	2	1,702	0.54	0.66
32750	4.2.1	7	3	1,702	0.62	0.59

ITS ID	Standard	Number of Assertions	Assertion Order	N	Adjusted Polyserial/ Biserial	Average Score
32750	4.2.1	7	4	1,702	0.57	0.66
32750	4.2.1	7	5	1,702	0.61	0.35
32750	4.2.1	7	6	1,702	0.61	0.74
33026	4.2.1	7	0	1,704	0.67	0.55
33026	4.2.1	7	1	1,704	0.66	0.36
33026	4.2.1	7	3	1,704	0.50	0.41
33026	4.2.1	7	4	1,704	0.54	0.36
33026	4.2.1	7	5	1,704	0.50	0.42
33026	4.2.1	7	6	1,704	0.45	0.46
33026	4.2.1	7	7	1,704	0.47	0.46
33063	4.2.2	5	0	1,724	0.38	0.61
33063	4.2.2	5	1	1,724	0.25	0.56
33063	4.2.2	5	2	1,724	0.55	0.60
33063	4.2.2	5	3	1,724	0.31	0.36
33063	4.2.2	5	5	1,724	0.65	0.42
33097	4.2.2	9	0	1,650	0.51	0.79
33097	4.2.2	9	1	1,650	0.40	0.62
33097	4.2.2	9	2	1,650	0.71	0.56
33097	4.2.2	9	3	1,650	0.63	0.32
33097	4.2.2	9	4	1,650	0.41	0.43
33097	4.2.2	9	5	1,650	0.16	0.11
33097	4.2.2	9	6	1,650	0.34	0.69
33097	4.2.2	9	7	1,650	0.48	0.69
33097	4.2.2	9	8	1,650	0.19	0.39
32915	4.2.3	9	0	1,768	0.46	0.21
32915	4.2.3	9	1	1,768	0.47	0.31
32915	4.2.3	9	2	1,768	0.42	0.35
32915	4.2.3	9	3	1,768	0.53	0.31
32915	4.2.3	9	4	1,768	0.56	0.31
32915	4.2.3	9	5	1,768	0.61	0.29
32915	4.2.3	9	6	1,768	0.60	0.29
32915	4.2.3	9	7	1,768	0.63	0.25
32915	4.2.3	9	8	1,768	0.38	0.62
33034	4.2.4	11	0	1,743	0.13	0.35
33034	4.2.4	11	1	1,743	0.18	0.33
33034	4.2.4	11	2	1,743	0.31	0.41
33034	4.2.4	11	3	1,743	0.55	0.25
33034	4.2.4	11	4	1,743	0.59	0.34
33034	4.2.4	11	5	1,743	0.58	0.31
33034	4.2.4	11	6	1,743	0.50	0.59

ITS ID	Standard	Number of Assertions	Assertion Order	N	Adjusted Polyserial/ Biserial	Average Score
33034	4.2.4	11	7	1,743	0.45	0.59
33034	4.2.4	11	8	1,743	0.41	0.43
33034	4.2.4	11	9	1,743	0.54	0.63
33034	4.2.4	11	10	1,743	0.67	0.51
33091	4.2.4	10	0	1,694	0.40	0.13
33091	4.2.4	10	1	1,694	0.25	0.16
33091	4.2.4	10	2	1,694	0.54	0.36
33091	4.2.4	10	3	1,694	0.65	0.35
33091	4.2.4	10	4	1,694	0.64	0.34
33091	4.2.4	10	5	1,694	0.63	0.45
33091	4.2.4	10	6	1,694	0.57	0.64
33091	4.2.4	10	7	1,694	0.60	0.59
33091	4.2.4	10	8	1,694	0.44	0.58
33091	4.2.4	10	9	1,694	0.54	0.42
33107	4.3.1	8	0	1,689	0.63	0.42
33107	4.3.1	8	1	1,689	0.45	0.36
33107	4.3.1	8	2	1,689	0.41	0.57
33107	4.3.1	8	3	1,689	0.39	0.61
33107	4.3.1	8	4	1,689	0.51	0.38
33107	4.3.1	8	5	1,689	0.30	0.31
33107	4.3.1	8	6	1,689	0.45	0.39
33107	4.3.1	8	7	1,689	0.34	0.31
33052	4.3.2	7	0	1,684	0.25	0.19
33052	4.3.2	7	1	1,684	0.28	0.20
33052	4.3.2	7	2	1,684	0.20	0.31
33052	4.3.2	7	3	1,684	0.41	0.34
33052	4.3.2	7	4	1,684	0.43	0.25
33052	4.3.2	7	5	1,684	0.38	0.15
33052	4.3.2	7	6	1,684	0.36	0.30
33089	4.3.2	7	0	1,728	0.10	0.12
33089	4.3.2	7	1	1,728	0.19	0.06
33089	4.3.2	7	2	1,728	0.46	0.37
33089	4.3.2	7	3	1,728	0.34	0.61
33089	4.3.2	7	4	1,728	0.31	0.57
33089	4.3.2	7	5	1,728	0.16	0.08
33089	4.3.2	7	6	1,728	0.25	0.06
32900	4.3.3	8	0	1,742	0.45	0.63
32900	4.3.3	8	1	1,742	0.36	0.13
32900	4.3.3	8	2	1,742	0.50	0.10
32900	4.3.3	8	3	1,742	0.48	0.14

ITS ID	Standard	Number of Assertions	Assertion Order	N	Adjusted Polyserial/ Biserial	Average Score
32900	4.3.3	8	4	1,742	0.55	0.60
32900	4.3.3	8	5	1,742	0.47	0.64
32900	4.3.3	8	6	1,742	0.37	0.46
32900	4.3.3	8	7	1,742	0.47	0.56
33140	4.3.3	6	0	1,714	0.57	0.25
33140	4.3.3	6	1	1,714	0.33	0.42
33140	4.3.3	6	2	1,714	0.42	0.59
33140	4.3.3	6	3	1,714	0.31	0.44
33140	4.3.3	6	4	1,714	0.34	0.31
33140	4.3.3	6	5	1,714	0.25	0.28
33092	4.4.1	6	0	1,751	0.57	0.47
33092	4.4.1	6	1	1,751	0.45	0.31
33092	4.4.1	6	2	1,751	0.47	0.55
33092	4.4.1	6	3	1,751	0.53	0.28
33092	4.4.1	6	5	1,751	0.43	0.50
33092	4.4.1	6	6	1,751	0.69	0.16
33133	4.4.1	6	0	1,747	0.34	0.77
33133	4.4.1	6	1	1,747	0.41	0.68
33133	4.4.1	6	2	1,747	0.46	0.50
33133	4.4.1	6	3	1,747	0.25	0.63
33133	4.4.1	6	4	1,747	0.12	0.43
33133	4.4.1	6	5	1,747	0.38	0.58
33076	4.4.2	6	0	1,740	0.35	0.61
33076	4.4.2	6	1	1,740	0.31	0.69
33076	4.4.2	6	2	1,740	0.48	0.75
33076	4.4.2	6	3	1,740	0.65	0.73
33076	4.4.2	6	4	1,740	0.34	0.42
33076	4.4.2	6	5	1,740	0.25	0.28
33132	4.4.2	6	0	1,715	0.64	0.34
33132	4.4.2	6	1	1,715	0.47	0.23
33132	4.4.2	6	2	1,715	0.49	0.42
33132	4.4.2	6	3	1,715	0.56	0.52
33132	4.4.2	6	4	1,715	0.19	0.32
33132	4.4.2	6	5	1,715	0.56	0.46

*Rejected at Item Data Review

Table A–14a. Field-Test Items: Classical Item Statistics Grade 5 Science (Clusters)

ITS ID	Standard	Number of Assertions	N	Adjusted Polyserial/ Biserial				Average Score				Percentile 80	Number of Assertions per Minute
				Avg	Var	Min	Max	Avg	Var	Min	Max		
32926	5.1.1	6	1,754	0.54	0.01	0.44	0.65	0.73	0.01	0.61	0.82	9.40	0.64
33012	5.1.1	6	1,761	0.58	0.01	0.44	0.66	0.51	0.04	0.19	0.69	10.80	0.56
32950	5.1.2	7	1,734	0.38	0.01	0.29	0.57	0.41	0.03	0.11	0.56	12.80	0.55
33139	5.1.2	10	1,703	0.34	0.03	0.08	0.57	0.37	0.04	0.09	0.66	17.50	0.57
32736	5.1.3	9	1,677	0.43	0.02	0.15	0.60	0.54	0.02	0.28	0.71	9.10	0.99
33131	5.1.3	8	1,761	0.41	0.01	0.19	0.50	0.41	0.04	0.11	0.70	9.80	0.82
32743	5.1.4	8	1,744	0.39	0.01	0.26	0.53	0.48	0.03	0.10	0.63	9.40	0.85
33042	5.1.4	8	1,867	0.45	0.02	0.20	0.65	0.37	0.06	0.10	0.75	11.70	0.68
33106	5.1.5	7	1,743	0.46	0.01	0.33	0.60	0.62	0.03	0.32	0.83	8.30	0.84
32909	5.2.1	7	1,738	0.40	0.01	0.27	0.53	0.60	0.02	0.37	0.81	6.70	1.04
33035	5.2.1	7	1,642	0.44	0.01	0.34	0.55	0.46	0.07	0.10	0.86	8.30	0.84
32749	5.2.2	6	1,803	0.38	0.01	0.19	0.52	0.46	0.03	0.23	0.62	9.10	0.66
33090	5.2.2	9	1,727	0.50	0.03	0.18	0.71	0.43	0.05	0.09	0.88	13.80	0.65
32836*	5.2.3	6	1,684	0.31	0.05	-0.01	0.62	0.49	0.03	0.29	0.72	8.60	0.70
33043	5.2.3	8	1,717	0.37	0.02	0.17	0.50	0.22	0.01	0.11	0.40	11.60	0.69
32996	5.2.4	7	1,741	0.46	0.02	0.21	0.64	0.50	0.02	0.36	0.77	11.30	0.62
33024	5.2.4	7	1,716	0.51	0.01	0.38	0.62	0.35	0.01	0.25	0.50	9.20	0.76
32944	5.3.1	7	1,696	0.53	0.04	0.24	0.75	0.54	0.03	0.25	0.74	13.60	0.51
33231	5.3.1	6	1,788	0.49	0.02	0.28	0.70	0.49	0.02	0.26	0.65	9.70	0.62
33027	5.3.2	5	1,772	0.53	0.04	0.20	0.67	0.51	0.02	0.38	0.73	8.70	0.57
32761	5.3.3	9	1,767	0.34	0.01	0.15	0.52	0.40	0.02	0.23	0.69	8.10	1.11
33072	5.3.3	8	1,707	0.48	0.00	0.40	0.59	0.45	0.01	0.28	0.62	6.90	1.16
33129	5.3.3	8	1,787	0.42	0.01	0.28	0.60	0.39	0.02	0.16	0.61	11.50	0.70
32735*	5.3.4	5	1,772	0.37	0.09	-0.08	0.69	0.33	0.02	0.18	0.55	11.50	0.43
32756	5.3.4	8	1,720	0.38	0.05	0.07	0.59	0.35	0.05	0.18	0.87	10.30	0.78
32827	5.3.4	7	1,763	0.44	0.01	0.22	0.57	0.41	0.04	0.17	0.71	9.70	0.72

*Rejected at Item Data Review

Table A–14b. Field-Test Items: Classical Item Statistics Grade 5 Science (Assertions)

ITS ID	Standard	Number of Assertions	Assertion Order	N	Adjusted Polyserial/ Biserial	Average Score
32926	5.1.1	6	0	1,754	0.50	0.68
32926	5.1.1	6	1	1,754	0.44	0.74
32926	5.1.1	6	2	1,754	0.47	0.61
32926	5.1.1	6	3	1,754	0.65	0.75
32926	5.1.1	6	4	1,754	0.59	0.82
32926	5.1.1	6	5	1,754	0.61	0.77
33012	5.1.1	6	0	1,761	0.52	0.69
33012	5.1.1	6	1	1,761	0.61	0.58
33012	5.1.1	6	2	1,761	0.66	0.39
33012	5.1.1	6	3	1,761	0.63	0.65
33012	5.1.1	6	4	1,761	0.44	0.59
33012	5.1.1	6	5	1,761	0.65	0.19
32950	5.1.2	7	0	1,734	0.29	0.11
32950	5.1.2	7	1	1,734	0.57	0.36
32950	5.1.2	7	2	1,734	0.41	0.40
32950	5.1.2	7	3	1,734	0.34	0.55
32950	5.1.2	7	4	1,734	0.33	0.56
32950	5.1.2	7	5	1,734	0.29	0.31
32950	5.1.2	7	6	1,734	0.41	0.56
33139	5.1.2	10	0	1,703	0.21	0.09
33139	5.1.2	10	1	1,703	0.40	0.49
33139	5.1.2	10	2	1,703	0.54	0.20
33139	5.1.2	10	3	1,703	0.57	0.52
33139	5.1.2	10	4	1,703	0.09	0.28
33139	5.1.2	10	5	1,703	0.45	0.66
33139	5.1.2	10	6	1,703	0.30	0.53
33139	5.1.2	10	7	1,703	0.43	0.55
33139	5.1.2	10	8	1,703	0.31	0.28
33139	5.1.2	10	9	1,703	0.08	0.11
32736	5.1.3	9	0	1,677	0.49	0.55
32736	5.1.3	9	1	1,677	0.48	0.52
32736	5.1.3	9	2	1,677	0.43	0.71
32736	5.1.3	9	3	1,677	0.60	0.28
32736	5.1.3	9	4	1,677	0.53	0.63
32736	5.1.3	9	5	1,677	0.42	0.65
32736	5.1.3	9	6	1,677	0.15	0.39
32736	5.1.3	9	7	1,677	0.47	0.60
32736	5.1.3	9	8	1,677	0.27	0.51
33131	5.1.3	8	0	1,761	0.49	0.47
33131	5.1.3	8	1	1,761	0.50	0.46
33131	5.1.3	8	2	1,761	0.44	0.42

ITS ID	Standard	Number of Assertions	Assertion Order	N	Adjusted Polyserial/ Biserial	Average Score
33131	5.1.3	8	3	1,761	0.43	0.12
33131	5.1.3	8	4	1,761	0.39	0.11
33131	5.1.3	8	5	1,761	0.19	0.39
33131	5.1.3	8	6	1,761	0.42	0.70
33131	5.1.3	8	7	1,761	0.39	0.58
32743	5.1.4	8	0	1,744	0.35	0.59
32743	5.1.4	8	1	1,744	0.39	0.63
32743	5.1.4	8	2	1,744	0.40	0.61
32743	5.1.4	8	3	1,744	0.53	0.63
32743	5.1.4	8	4	1,744	0.39	0.48
32743	5.1.4	8	5	1,744	0.37	0.39
32743	5.1.4	8	6	1,744	0.26	0.45
32743	5.1.4	8	7	1,744	0.42	0.10
33042	5.1.4	8	0	1,867	0.46	0.75
33042	5.1.4	8	1	1,867	0.42	0.74
33042	5.1.4	8	2	1,867	0.50	0.29
33042	5.1.4	8	3	1,867	0.47	0.24
33042	5.1.4	8	4	1,867	0.52	0.25
33042	5.1.4	8	5	1,867	0.42	0.10
33042	5.1.4	8	6	1,867	0.65	0.45
33042	5.1.4	8	7	1,867	0.20	0.18
33106	5.1.5	7	0	1,743	0.45	0.67
33106	5.1.5	7	1	1,743	0.48	0.67
33106	5.1.5	7	2	1,743	0.33	0.51
33106	5.1.5	7	3	1,743	0.50	0.76
33106	5.1.5	7	4	1,743	0.60	0.83
33106	5.1.5	7	5	1,743	0.35	0.32
33106	5.1.5	7	6	1,743	0.49	0.55
32909	5.2.1	7	0	1,738	0.53	0.37
32909	5.2.1	7	1	1,738	0.53	0.55
32909	5.2.1	7	2	1,738	0.46	0.72
32909	5.2.1	7	3	1,738	0.32	0.66
32909	5.2.1	7	4	1,738	0.27	0.81
32909	5.2.1	7	5	1,738	0.35	0.47
32909	5.2.1	7	6	1,738	0.37	0.66
33035	5.2.1	7	0	1,642	0.49	0.86
33035	5.2.1	7	1	1,642	0.55	0.18
33035	5.2.1	7	2	1,642	0.55	0.10
33035	5.2.1	7	3	1,642	0.34	0.62
33035	5.2.1	7	4	1,642	0.38	0.66
33035	5.2.1	7	5	1,642	0.46	0.46
33035	5.2.1	7	6	1,642	0.34	0.34
32749	5.2.2	6	0	1,803	0.30	0.44

ITS ID	Standard	Number of Assertions	Assertion Order	N	Adjusted Polyserial/ Biserial	Average Score
32749	5.2.2	6	1	1,803	0.52	0.23
32749	5.2.2	6	2	1,803	0.44	0.62
32749	5.2.2	6	3	1,803	0.19	0.27
32749	5.2.2	6	4	1,803	0.38	0.60
32749	5.2.2	6	5	1,803	0.44	0.59
33090	5.2.2	9	0	1,727	0.18	0.49
33090	5.2.2	9	1	1,727	0.36	0.52
33090	5.2.2	9	2	1,727	0.57	0.88
33090	5.2.2	9	3	1,727	0.55	0.54
33090	5.2.2	9	4	1,727	0.57	0.27
33090	5.2.2	9	5	1,727	0.63	0.29
33090	5.2.2	9	6	1,727	0.60	0.09
33090	5.2.2	9	7	1,727	0.71	0.34
33090	5.2.2	9	8	1,727	0.34	0.47
32836*	5.2.3	6	0	1,684	0.62	0.72
32836*	5.2.3	6	1	1,684	0.44	0.58
32836*	5.2.3	6	2	1,684	-0.01	0.58
32836*	5.2.3	6	3	1,684	0.21	0.30
32836*	5.2.3	6	4	1,684	0.25	0.29
32836*	5.2.3	6	5	1,684	0.38	0.49
33043	5.2.3	8	0	1,717	0.45	0.28
33043	5.2.3	8	1	1,717	0.42	0.28
33043	5.2.3	8	2	1,717	0.50	0.32
33043	5.2.3	8	3	1,717	0.31	0.11
33043	5.2.3	8	4	1,717	0.17	0.13
33043	5.2.3	8	5	1,717	0.21	0.40
33043	5.2.3	8	6	1,717	0.45	0.13
33043	5.2.3	8	7	1,717	0.47	0.12
32996	5.2.4	7	0	1,741	0.48	0.47
32996	5.2.4	7	1	1,741	0.57	0.50
32996	5.2.4	7	2	1,741	0.64	0.41
32996	5.2.4	7	3	1,741	0.21	0.36
32996	5.2.4	7	4	1,741	0.56	0.77
32996	5.2.4	7	5	1,741	0.46	0.40
32996	5.2.4	7	6	1,741	0.33	0.59
33024	5.2.4	7	0	1,716	0.62	0.37
33024	5.2.4	7	1	1,716	0.57	0.25
33024	5.2.4	7	2	1,716	0.56	0.28
33024	5.2.4	7	3	1,716	0.53	0.45
33024	5.2.4	7	4	1,716	0.49	0.27
33024	5.2.4	7	5	1,716	0.38	0.35
33024	5.2.4	7	6	1,716	0.41	0.50
32944	5.3.1	7	0	1,696	0.75	0.42

ITS ID	Standard	Number of Assertions	Assertion Order	N	Adjusted Polyserial/ Biserial	Average Score
32944	5.3.1	7	1	1,696	0.65	0.25
32944	5.3.1	7	2	1,696	0.65	0.74
32944	5.3.1	7	3	1,696	0.67	0.70
32944	5.3.1	7	4	1,696	0.49	0.51
32944	5.3.1	7	5	1,696	0.24	0.63
32944	5.3.1	7	6	1,696	0.24	0.50
33231	5.3.1	6	0	1,788	0.52	0.60
33231	5.3.1	6	1	1,788	0.46	0.65
33231	5.3.1	6	2	1,788	0.41	0.55
33231	5.3.1	6	3	1,788	0.70	0.47
33231	5.3.1	6	4	1,788	0.57	0.42
33231	5.3.1	6	5	1,788	0.28	0.26
33027	5.3.2	5	0	1,772	0.67	0.38
33027	5.3.2	5	1	1,772	0.20	0.40
33027	5.3.2	5	2	1,772	0.54	0.58
33027	5.3.2	5	3	1,772	0.66	0.46
33027	5.3.2	5	4	1,772	0.58	0.73
32761	5.3.3	9	0	1,767	0.52	0.33
32761	5.3.3	9	1	1,767	0.44	0.41
32761	5.3.3	9	2	1,767	0.43	0.39
32761	5.3.3	9	3	1,767	0.38	0.47
32761	5.3.3	9	4	1,767	0.29	0.69
32761	5.3.3	9	5	1,767	0.15	0.23
32761	5.3.3	9	6	1,767	0.32	0.26
32761	5.3.3	9	7	1,767	0.29	0.50
32761	5.3.3	9	8	1,767	0.28	0.36
33072	5.3.3	8	0	1,707	0.46	0.47
33072	5.3.3	8	1	1,707	0.40	0.41
33072	5.3.3	8	2	1,707	0.49	0.47
33072	5.3.3	8	3	1,707	0.41	0.39
33072	5.3.3	8	4	1,707	0.47	0.62
33072	5.3.3	8	5	1,707	0.54	0.50
33072	5.3.3	8	6	1,707	0.59	0.44
33072	5.3.3	8	7	1,707	0.46	0.28
33129	5.3.3	8	0	1,787	0.47	0.54
33129	5.3.3	8	1	1,787	0.60	0.61
33129	5.3.3	8	2	1,787	0.56	0.47
33129	5.3.3	8	3	1,787	0.37	0.29
33129	5.3.3	8	4	1,787	0.47	0.16
33129	5.3.3	8	6	1,787	0.31	0.41
33129	5.3.3	8	7	1,787	0.28	0.38
33129	5.3.3	8	8	1,787	0.30	0.29
32735*	5.3.4	5	0	1,772	0.61	0.55

ITS ID	Standard	Number of Assertions	Assertion Order	N	Adjusted Polyserial/ Biserial	Average Score
32735*	5.3.4	5	1	1,772	0.69	0.33
32735*	5.3.4	5	2	1,772	0.25	0.19
32735*	5.3.4	5	3	1,772	0.37	0.37
32735*	5.3.4	5	4	1,772	-0.08	0.18
32756	5.3.4	8	0	1,720	0.55	0.31
32756	5.3.4	8	1	1,720	0.59	0.28
32756	5.3.4	8	2	1,720	0.07	0.33
32756	5.3.4	8	3	1,720	0.56	0.28
32756	5.3.4	8	4	1,720	0.45	0.23
32756	5.3.4	8	5	1,720	0.51	0.28
32756	5.3.4	8	6	1,720	0.26	0.87
32756	5.3.4	8	7	1,720	0.08	0.18
32827	5.3.4	7	0	1,763	0.57	0.34
32827	5.3.4	7	1	1,763	0.50	0.17
32827	5.3.4	7	2	1,763	0.22	0.42
32827	5.3.4	7	3	1,763	0.56	0.34
32827	5.3.4	7	4	1,763	0.43	0.63
32827	5.3.4	7	5	1,763	0.36	0.71
32827	5.3.4	7	6	1,763	0.42	0.27

*Rejected at Item Data Review

Table A–15a. Field-Test Items: Classical Item Statistics Grade 6 Science (Clusters)

ITS ID	Standard	Number of Assertions	N	Adjusted Polyserial/ Biserial				Average Score				Percentile 80	Number of Assertions per Minute
				Avg	Var	Min	Max	Avg	Var	Min	Max		
32631	6.1.2	11	4,414	0.35	0.02	0.14	0.59	0.36	0.03	0.08	0.59	12.20	0.90
32713	6.1.3	7	4,285	0.39	0.02	0.21	0.67	0.24	0.04	0.02	0.63	22.40	0.31
33330	6.3.2	8	4,334	0.37	0.01	0.23	0.57	0.15	0.01	0.08	0.32	10.60	0.75
32697*	6.3.3	9	4,382	0.21	0.05	-0.23	0.41	0.31	0.01	0.15	0.51	10.40	0.87
33360*	6.3.3	8	4,380	0.35	0.03	0.21	0.71	0.27	0.03	0.07	0.53	11.80	0.68
32655	6.4.1	8	4,288	0.50	0.01	0.29	0.59	0.39	0.03	0.13	0.66	13.70	0.58
32716	6.4.1	7	4,271	0.54	0.01	0.41	0.61	0.33	0.04	0.09	0.65	17.80	0.39
32623	6.4.5	8	4,411	0.32	0.02	0.07	0.46	0.40	0.01	0.30	0.55	13.10	0.61

*Rejected at Item Data Review

Table A–15b. Field-Test Items: Classical Item Statistics Grade 6 Science (Assertions)

ITS ID	Standard	Number of Assertions	Assertion Order	N	Adjusted Polyserial/ Biserial	Average Score
32631	6.1.2	11	0	4,414	0.46	0.17
32631	6.1.2	11	1	4,414	0.59	0.08
32631	6.1.2	11	2	4,414	0.14	0.59
32631	6.1.2	11	3	4,414	0.39	0.53
32631	6.1.2	11	4	4,414	0.26	0.54
32631	6.1.2	11	5	4,414	0.31	0.45
32631	6.1.2	11	6	4,414	0.36	0.38
32631	6.1.2	11	7	4,414	0.38	0.31
32631	6.1.2	11	8	4,414	0.35	0.37
32631	6.1.2	11	9	4,414	0.18	0.09
32631	6.1.2	11	10	4,414	0.47	0.45
32713	6.1.3	7	0	4,285	0.67	0.15
32713	6.1.3	7	1	4,285	0.39	0.09
32713	6.1.3	7	2	4,285	0.38	0.23
32713	6.1.3	7	3	4,285	0.42	0.36
32713	6.1.3	7	4	4,285	0.23	0.63
32713	6.1.3	7	5	4,285	0.45	0.18
32713	6.1.3	7	6	4,285	0.21	0.02
33330	6.3.2	8	0	4,334	0.43	0.32
33330	6.3.2	8	1	4,334	0.40	0.10
33330	6.3.2	8	2	4,334	0.23	0.10
33330	6.3.2	8	3	4,334	0.31	0.12
33330	6.3.2	8	4	4,334	0.57	0.30
33330	6.3.2	8	5	4,334	0.33	0.09
33330	6.3.2	8	6	4,334	0.36	0.09
33330	6.3.2	8	7	4,334	0.32	0.08
32697*	6.3.3	9	0	4,382	-0.06	0.42
32697*	6.3.3	9	1	4,382	0.09	0.41
32697*	6.3.3	9	2	4,382	-0.23	0.15
32697*	6.3.3	9	3	4,382	0.41	0.27
32697*	6.3.3	9	4	4,382	0.25	0.51
32697*	6.3.3	9	5	4,382	0.40	0.18
32697*	6.3.3	9	6	4,382	0.34	0.26
32697*	6.3.3	9	7	4,382	0.32	0.29
32697*	6.3.3	9	8	4,382	0.36	0.31
33360*	6.3.3	8	0	4,380	0.71	0.53
33360*	6.3.3	8	1	4,380	0.21	0.47
33360*	6.3.3	8	2	4,380	0.30	0.14
33360*	6.3.3	8	3	4,380	0.39	0.07
33360*	6.3.3	8	4	4,380	0.22	0.38
33360*	6.3.3	8	5	4,380	0.30	0.21

ITS ID	Standard	Number of Assertions	Assertion Order	N	Adjusted Polyserial/ Biserial	Average Score
33360*	6.3.3	8	6	4,380	0.42	0.20
33360*	6.3.3	8	7	4,380	0.22	0.17
32655	6.4.1	8	0	4,288	0.49	0.66
32655	6.4.1	8	1	4,288	0.57	0.45
32655	6.4.1	8	2	4,288	0.54	0.48
32655	6.4.1	8	3	4,288	0.29	0.13
32655	6.4.1	8	4	4,288	0.52	0.49
32655	6.4.1	8	5	4,288	0.45	0.47
32655	6.4.1	8	6	4,288	0.53	0.14
32655	6.4.1	8	7	4,288	0.59	0.32
32716	6.4.1	7	0	4,271	0.49	0.09
32716	6.4.1	7	1	4,271	0.60	0.65
32716	6.4.1	7	2	4,271	0.55	0.54
32716	6.4.1	7	3	4,271	0.60	0.25
32716	6.4.1	7	4	4,271	0.41	0.20
32716	6.4.1	7	5	4,271	0.61	0.27
32716	6.4.1	7	6	4,271	0.51	0.33
32623	6.4.5	8	0	4,411	0.40	0.30
32623	6.4.5	8	1	4,411	0.09	0.55
32623	6.4.5	8	2	4,411	0.46	0.42
32623	6.4.5	8	3	4,411	0.07	0.34
32623	6.4.5	8	4	4,411	0.45	0.39
32623	6.4.5	8	5	4,411	0.42	0.45
32623	6.4.5	8	6	4,411	0.29	0.33
32623	6.4.5	8	7	4,411	0.38	0.42

*Rejected at Item Data Review

Table A–16a. Field-Test Items: Classical Item Statistics Grade 7 Science (Clusters)

ITS ID	Standard	Number of Assertions	N	Adjusted Polyserial/ Biserial				Average Score				Percentile 80	Number of Assertions per Minute
				Avg	Var	Min	Max	Avg	Var	Min	Max		
33361	7.1.3	8	3,900	0.52	0.02	0.25	0.63	0.68	0.03	0.27	0.83	7.80	1.03
32627	7.1.5	8	3,982	0.53	0.01	0.41	0.63	0.59	0.02	0.33	0.75	7.70	1.04
32708	7.1.5	7	3,868	0.25	0.02	0.04	0.47	0.24	0.01	0.11	0.33	10.90	0.64
32705	7.2.6	9	3,978	0.50	0.04	0.12	0.70	0.28	0.04	0.02	0.60	14.40	0.63
32670	7.4.3	8	3,942	0.24	0.01	0.07	0.36	0.29	0.01	0.18	0.37	8.00	1.00
32717	7.5.2	11	3,906	0.57	0.01	0.34	0.71	0.44	0.04	0.15	0.82	11.50	0.96
32635	7.5.4	8	3,986	0.45	0.02	0.21	0.60	0.31	0.02	0.11	0.55	9.20	0.87
32744	7.5.4	10	4,067	0.44	0.02	0.22	0.64	0.54	0.00	0.44	0.66	8.60	1.16

Table A–16b. Field-Test Items: Classical Item Statistics Grade 7 Science (Assertions)

ITS ID	Standard	Points	Assertion Order	N	Adjusted Polyserial/ Biserial	Average Score
33361	7.1.3	8	0	3,900	0.48	0.66
33361	7.1.3	8	1	3,900	0.55	0.76
33361	7.1.3	8	2	3,900	0.50	0.73
33361	7.1.3	8	3	3,900	0.61	0.83
33361	7.1.3	8	4	3,900	0.62	0.78
33361	7.1.3	8	5	3,900	0.63	0.77
33361	7.1.3	8	6	3,900	0.25	0.27
33361	7.1.3	8	7	3,900	0.54	0.64
32627	7.1.5	8	0	3,982	0.63	0.75
32627	7.1.5	8	1	3,982	0.51	0.75
32627	7.1.5	8	2	3,982	0.41	0.68
32627	7.1.5	8	3	3,982	0.45	0.63
32627	7.1.5	8	4	3,982	0.54	0.59
32627	7.1.5	8	5	3,982	0.56	0.55
32627	7.1.5	8	6	3,982	0.61	0.48
32627	7.1.5	8	7	3,982	0.50	0.33
32708	7.1.5	7	0	3,868	0.21	0.32
32708	7.1.5	7	1	3,868	0.21	0.24
32708	7.1.5	7	2	3,868	0.11	0.31
32708	7.1.5	7	3	3,868	0.30	0.14
32708	7.1.5	7	4	3,868	0.04	0.26
32708	7.1.5	7	5	3,868	0.44	0.33
32708	7.1.5	7	6	3,868	0.47	0.11
32705	7.2.6	9	0	3,978	0.67	0.35
32705	7.2.6	9	1	3,978	0.68	0.43
32705	7.2.6	9	2	3,978	0.70	0.60
32705	7.2.6	9	3	3,978	0.12	0.37
32705	7.2.6	9	4	3,978	0.61	0.48
32705	7.2.6	9	5	3,978	0.33	0.02
32705	7.2.6	9	6	3,978	0.42	0.02
32705	7.2.6	9	7	3,978	0.55	0.14
32705	7.2.6	9	8	3,978	0.44	0.13
32670	7.4.3	8	0	3,942	0.28	0.22
32670	7.4.3	8	1	3,942	0.36	0.20
32670	7.4.3	8	2	3,942	0.21	0.18
32670	7.4.3	8	3	3,942	0.24	0.37
32670	7.4.3	8	4	3,942	0.25	0.26
32670	7.4.3	8	5	3,942	0.20	0.35

ITS ID	Standard	Points	Assertion Order	N	Adjusted Polyserial/ Biserial	Average Score
32670	7.4.3	8	6	3,942	0.28	0.37
32670	7.4.3	8	7	3,942	0.07	0.37
32717	7.5.2	11	0	3,906	0.65	0.60
32717	7.5.2	11	1	3,906	0.68	0.59
32717	7.5.2	11	2	3,906	0.71	0.82
32717	7.5.2	11	3	3,906	0.69	0.15
32717	7.5.2	11	4	3,906	0.56	0.27
32717	7.5.2	11	5	3,906	0.60	0.43
32717	7.5.2	11	6	3,906	0.52	0.29
32717	7.5.2	11	7	3,906	0.40	0.31
32717	7.5.2	11	8	3,906	0.59	0.41
32717	7.5.2	11	9	3,906	0.34	0.64
32717	7.5.2	11	10	3,906	0.51	0.33
32635	7.5.4	8	0	3,986	0.52	0.27
32635	7.5.4	8	1	3,986	0.56	0.30
32635	7.5.4	8	2	3,986	0.54	0.32
32635	7.5.4	8	3	3,986	0.60	0.40
32635	7.5.4	8	4	3,986	0.46	0.18
32635	7.5.4	8	5	3,986	0.43	0.34
32635	7.5.4	8	6	3,986	0.21	0.55
32635	7.5.4	8	7	3,986	0.30	0.11
32744	7.5.4	10	0	4,067	0.63	0.57
32744	7.5.4	10	1	4,067	0.64	0.59
32744	7.5.4	10	2	4,067	0.64	0.55
32744	7.5.4	10	3	4,067	0.47	0.49
32744	7.5.4	10	4	4,067	0.37	0.44
32744	7.5.4	10	5	4,067	0.42	0.53
32744	7.5.4	10	6	4,067	0.34	0.66
32744	7.5.4	10	7	4,067	0.26	0.60
32744	7.5.4	10	8	4,067	0.40	0.53
32744	7.5.4	10	9	4,067	0.22	0.44

Table A–17a. Field-Test Items: Classical Item Statistics Grade 8 Science (Clusters)

ITS ID	Standard	Number of Assertions	N	Adjusted Polyserial/ Biserial				Average Score				Percentile 80	Number of Assertions per Minute
				Avg	Var	Min	Max	Avg	Var	Min	Max		
32703	8.1.1	8	2,098	0.41	0.01	0.31	0.57	0.37	0.06	0.03	0.71	11.00	0.73
32621	8.1.4	9	2,081	0.53	0.01	0.38	0.67	0.53	0.03	0.28	0.72	11.30	0.80
32718	8.1.4	8	2,047	0.48	0.01	0.37	0.65	0.20	0.02	0.06	0.46	13.70	0.58
32633	8.1.6	8	2,186	0.57	0.02	0.35	0.71	0.24	0.03	0.06	0.53	13.20	0.61
32719	8.2.1	10	2,163	0.50	0.02	0.26	0.64	0.39	0.02	0.13	0.62	17.20	0.58
32711	8.2.2	10	2,104	0.43	0.04	0.17	0.70	0.53	0.01	0.39	0.73	7.90	1.27
33363	8.2.4	8	2,074	0.54	0.03	0.23	0.74	0.46	0.03	0.08	0.62	13.80	0.58
32720	8.2.5	9	2,163	0.51	0.02	0.23	0.67	0.26	0.01	0.10	0.45	9.30	0.97
32639	8.2.6	9	2,083	0.53	0.02	0.30	0.70	0.53	0.02	0.37	0.73	9.00	1.00
32637	8.3.2	7	2,146	0.49	0.02	0.33	0.66	0.40	0.08	0.03	0.78	6.90	1.01
32698*	8.3.2	9	2,121	0.42	0.04	0.09	0.67	0.35	0.03	0.17	0.66	6.40	1.41
33357	8.3.2	6	2,111	0.38	0.01	0.26	0.51	0.32	0.06	0.09	0.67	5.60	1.07
32630	8.3.3	10	2,084	0.43	0.05	0.13	0.75	0.47	0.03	0.21	0.73	10.80	0.93
32608	8.4.2	11	2,101	0.39	0.02	0.17	0.63	0.40	0.06	0.09	0.80	10.20	1.08
32714	8.4.2	6	2,071	0.50	0.01	0.40	0.66	0.42	0.06	0.13	0.70	8.60	0.70
33365*	8.4.2	8	2,167	0.43	0.03	0.06	0.61	0.52	0.03	0.25	0.76	7.60	1.05
33358	8.4.3	10	2,116	0.45	0.02	0.24	0.70	0.51	0.03	0.31	0.82	9.50	1.05
33364	8.4.3	7	2,135	0.55	0.04	0.27	0.73	0.62	0.02	0.46	0.85	9.90	0.71
33366	8.4.3	7	2,167	0.51	0.05	0.15	0.68	0.40	0.04	0.22	0.78	11.10	0.63
32700	8.4.4	7	2,139	0.57	0.03	0.29	0.76	0.31	0.03	0.16	0.57	9.60	0.73

*Rejected at Item Data Review

Table A–17b. Field-Test Items: Classical Item Statistics Grade 8 Science (Assertions)

ITS ID	Standard	Points	Assertion Order	N	Adjusted Polyserial/ Biserial	Average Score
32703	8.1.1	8	0	2,098	0.44	0.71
32703	8.1.1	8	2	2,098	0.48	0.56
32703	8.1.1	8	3	2,098	0.31	0.60
32703	8.1.1	8	4	2,098	0.33	0.11
32703	8.1.1	8	5	2,098	0.37	0.13
32703	8.1.1	8	6	2,098	0.36	0.03
32703	8.1.1	8	7	2,098	0.43	0.46
32703	8.1.1	8	8	2,098	0.57	0.38
32621	8.1.4	9	0	2,081	0.58	0.72
32621	8.1.4	9	1	2,081	0.67	0.68
32621	8.1.4	9	2	2,081	0.60	0.61
32621	8.1.4	9	3	2,081	0.51	0.50
32621	8.1.4	9	4	2,081	0.45	0.28
32621	8.1.4	9	5	2,081	0.56	0.35
32621	8.1.4	9	6	2,081	0.61	0.35
32621	8.1.4	9	7	2,081	0.44	0.66
32621	8.1.4	9	8	2,081	0.38	0.59
32718	8.1.4	8	0	2,047	0.54	0.06
32718	8.1.4	8	1	2,047	0.65	0.15
32718	8.1.4	8	2	2,047	0.41	0.31
32718	8.1.4	8	3	2,047	0.52	0.20
32718	8.1.4	8	4	2,047	0.39	0.14
32718	8.1.4	8	5	2,047	0.37	0.46
32718	8.1.4	8	7	2,047	0.40	0.22
32718	8.1.4	8	9	2,047	0.53	0.10
32633	8.1.6	8	0	2,186	0.70	0.41
32633	8.1.6	8	1	2,186	0.70	0.18
32633	8.1.6	8	2	2,186	0.71	0.09
32633	8.1.6	8	3	2,186	0.58	0.17
32633	8.1.6	8	4	2,186	0.35	0.06
32633	8.1.6	8	5	2,186	0.51	0.53
32633	8.1.6	8	6	2,186	0.60	0.34
32633	8.1.6	8	7	2,186	0.42	0.12
32719	8.2.1	10	0	2,163	0.56	0.42
32719	8.2.1	10	1	2,163	0.64	0.13
32719	8.2.1	10	2	2,163	0.56	0.40
32719	8.2.1	10	3	2,163	0.62	0.62
32719	8.2.1	10	4	2,163	0.32	0.52

ITS ID	Standard	Points	Assertion Order	N	Adjusted Polyserial/ Biserial	Average Score
32719	8.2.1	10	5	2,163	0.39	0.41
32719	8.2.1	10	6	2,163	0.61	0.25
32719	8.2.1	10	7	2,163	0.26	0.36
32719	8.2.1	10	8	2,163	0.50	0.28
32719	8.2.1	10	9	2,163	0.51	0.49
32711	8.2.2	10	0	2,104	0.70	0.73
32711	8.2.2	10	1	2,104	0.64	0.71
32711	8.2.2	10	2	2,104	0.54	0.57
32711	8.2.2	10	3	2,104	0.47	0.48
32711	8.2.2	10	4	2,104	0.24	0.45
32711	8.2.2	10	5	2,104	0.17	0.53
32711	8.2.2	10	6	2,104	0.32	0.43
32711	8.2.2	10	7	2,104	0.20	0.39
32711	8.2.2	10	8	2,104	0.45	0.47
32711	8.2.2	10	9	2,104	0.58	0.51
33363	8.2.4	8	0	2,074	0.60	0.41
33363	8.2.4	8	1	2,074	0.74	0.59
33363	8.2.4	8	2	2,074	0.62	0.49
33363	8.2.4	8	3	2,074	0.23	0.58
33363	8.2.4	8	4	2,074	0.44	0.62
33363	8.2.4	8	5	2,074	0.62	0.51
33363	8.2.4	8	6	2,074	0.44	0.39
33363	8.2.4	8	7	2,074	0.68	0.08
32720	8.2.5	9	0	2,163	0.64	0.22
32720	8.2.5	9	1	2,163	0.52	0.10
32720	8.2.5	9	2	2,163	0.56	0.30
32720	8.2.5	9	3	2,163	0.55	0.23
32720	8.2.5	9	4	2,163	0.62	0.18
32720	8.2.5	9	5	2,163	0.67	0.19
32720	8.2.5	9	6	2,163	0.30	0.31
32720	8.2.5	9	7	2,163	0.46	0.36
32720	8.2.5	9	8	2,163	0.23	0.45
32639	8.2.6	9	0	2,083	0.44	0.38
32639	8.2.6	9	1	2,083	0.54	0.73
32639	8.2.6	9	2	2,083	0.30	0.59
32639	8.2.6	9	3	2,083	0.53	0.59
32639	8.2.6	9	4	2,083	0.67	0.37
32639	8.2.6	9	5	2,083	0.70	0.45
32639	8.2.6	9	6	2,083	0.56	0.65
32639	8.2.6	9	7	2,083	0.47	0.57

ITS ID	Standard	Points	Assertion Order	N	Adjusted Polyserial/ Biserial	Average Score
32639	8.2.6	9	8	2,083	0.59	0.40
32637	8.3.2	7	0	2,146	0.66	0.68
32637	8.3.2	7	2	2,146	0.45	0.24
32637	8.3.2	7	3	2,146	0.37	0.22
32637	8.3.2	7	4	2,146	0.49	0.27
32637	8.3.2	7	5	2,146	0.66	0.78
32637	8.3.2	7	6	2,146	0.48	0.03
32637	8.3.2	7	7	2,146	0.33	0.58
32698*	8.3.2	9	0	2,121	0.41	0.59
32698*	8.3.2	9	1	2,121	0.09	0.22
32698*	8.3.2	9	2	2,121	0.35	0.37
32698*	8.3.2	9	3	2,121	0.53	0.46
32698*	8.3.2	9	4	2,121	0.49	0.31
32698*	8.3.2	9	5	2,121	0.37	0.17
32698*	8.3.2	9	6	2,121	0.21	0.19
32698*	8.3.2	9	7	2,121	0.66	0.24
32698*	8.3.2	9	8	2,121	0.67	0.66
33357	8.3.2	6	0	2,111	0.38	0.15
33357	8.3.2	6	1	2,111	0.46	0.09
33357	8.3.2	6	2	2,111	0.39	0.15
33357	8.3.2	6	3	2,111	0.26	0.25
33357	8.3.2	6	4	2,111	0.31	0.61
33357	8.3.2	6	6	2,111	0.51	0.67
32630	8.3.3	10	0	2,084	0.23	0.38
32630	8.3.3	10	1	2,084	0.13	0.22
32630	8.3.3	10	2	2,084	0.49	0.21
32630	8.3.3	10	3	2,084	0.34	0.48
32630	8.3.3	10	4	2,084	0.73	0.54
32630	8.3.3	10	5	2,084	0.75	0.58
32630	8.3.3	10	6	2,084	0.20	0.34
32630	8.3.3	10	7	2,084	0.55	0.56
32630	8.3.3	10	8	2,084	0.57	0.65
32630	8.3.3	10	9	2,084	0.27	0.73
32608	8.4.2	11	0	2,101	0.49	0.62
32608	8.4.2	11	1	2,101	0.36	0.21
32608	8.4.2	11	2	2,101	0.43	0.61
32608	8.4.2	11	3	2,101	0.37	0.35
32608	8.4.2	11	4	2,101	0.27	0.44
32608	8.4.2	11	5	2,101	0.63	0.80
32608	8.4.2	11	6	2,101	0.17	0.21

ITS ID	Standard	Points	Assertion Order	N	Adjusted Polyserial/ Biserial	Average Score
32608	8.4.2	11	7	2,101	0.24	0.17
32608	8.4.2	11	8	2,101	0.30	0.09
32608	8.4.2	11	9	2,101	0.55	0.68
32608	8.4.2	11	10	2,101	0.51	0.20
32714	8.4.2	6	0	2,071	0.59	0.17
32714	8.4.2	6	1	2,071	0.66	0.13
32714	8.4.2	6	3	2,071	0.40	0.35
32714	8.4.2	6	4	2,071	0.44	0.60
32714	8.4.2	6	5	2,071	0.42	0.70
32714	8.4.2	6	6	2,071	0.49	0.55
33365*	8.4.2	8	0	2,167	0.61	0.66
33365*	8.4.2	8	1	2,167	0.53	0.53
33365*	8.4.2	8	2	2,167	0.46	0.50
33365*	8.4.2	8	3	2,167	0.46	0.43
33365*	8.4.2	8	4	2,167	0.48	0.43
33365*	8.4.2	8	5	2,167	0.06	0.25
33365*	8.4.2	8	6	2,167	0.49	0.76
33365*	8.4.2	8	7	2,167	0.33	0.64
33358	8.4.3	10	0	2,116	0.48	0.63
33358	8.4.3	10	1	2,116	0.58	0.82
33358	8.4.3	10	2	2,116	0.70	0.45
33358	8.4.3	10	3	2,116	0.45	0.62
33358	8.4.3	10	4	2,116	0.54	0.50
33358	8.4.3	10	5	2,116	0.50	0.65
33358	8.4.3	10	6	2,116	0.30	0.39
33358	8.4.3	10	7	2,116	0.36	0.38
33358	8.4.3	10	8	2,116	0.31	0.39
33358	8.4.3	10	9	2,116	0.24	0.31
33364	8.4.3	7	0	2,135	0.67	0.85
33364	8.4.3	7	1	2,135	0.73	0.51
33364	8.4.3	7	2	2,135	0.39	0.77
33364	8.4.3	7	3	2,135	0.64	0.67
33364	8.4.3	7	4	2,135	0.27	0.55
33364	8.4.3	7	5	2,135	0.73	0.56
33364	8.4.3	7	6	2,135	0.43	0.46
33366	8.4.3	7	0	2,167	0.59	0.32
33366	8.4.3	7	1	2,167	0.60	0.22
33366	8.4.3	7	2	2,167	0.67	0.25
33366	8.4.3	7	3	2,167	0.22	0.44
33366	8.4.3	7	4	2,167	0.68	0.78

ITS ID	Standard	Points	Assertion Order	N	Adjusted Polyserial/ Biserial	Average Score
33366	8.4.3	7	5	2,167	0.62	0.53
33366	8.4.3	7	6	2,167	0.15	0.25
32700	8.4.4	7	0	2,139	0.65	0.57
32700	8.4.4	7	1	2,139	0.29	0.54
32700	8.4.4	7	2	2,139	0.76	0.26
32700	8.4.4	7	3	2,139	0.71	0.24
32700	8.4.4	7	4	2,139	0.53	0.16
32700	8.4.4	7	5	2,139	0.53	0.19
32700	8.4.4	7	6	2,139	0.49	0.18

*Rejected at Item Data Review

APPENDIX 4-J

FIELD-TEST ITEMS: ITEM PARAMETERS

APPENDIX 4-J

Field-Test Items: Item Parameters

Table 4–J–1. Field-Test MC Items: Item Parameters for Grade 3 ELA

ITS ID	Standard	MC vs. MSCR	Points	N	A Param	B Param	C Param
30250	RL.3.2	MC	1	3379	1.37555	-0.88067	0.16073
30251	RL.3.4	MC	1	3379	1.81175	-2.36072	0.13418
30253	L.3.4a	MC	1	3379	1.21678	-1.63217	0.03176
30255	RL.3.4	MC	1	3379	2.13817	-1.84319	0.20394
30256	RI.3.1	MC	1	3555	1.63646	-1.74484	0.18986
30260	RI.3.6	MC	1	3555	0.52037	-2.03343	0.07321
30261	RI.3.1	MC	1	3555	0.61016	0.08375	0.08209
30262	L.3.5a	MC	1	3555	1.18544	-1.47787	0.16162
30366	RI.3.4	MC	1	3576	0.96506	-0.92134	0.13014
30368	RI.3.5	MC	1	3576	1.66559	-0.05290	0.21975
30378	RI.3.8	MC	1	3576	1.29462	-0.13938	0.28225
30651	RL.3.6	MC	1	3379	1.20985	-1.83616	0.03634
30657	RL.3.3	MC	1	3379	1.53568	-1.35077	0.10879
30662	RI.3.4	MC	1	3555	1.35376	-1.64552	0.23050
30907	RL.3.3	MC	1	3403	0.68842	-1.21555	0.03470
30914	L.3.5a	MC	1	3403	0.57943	-1.20261	0.05353
30915	RL.3.4	MC	1	3403	1.51667	-1.35650	0.18397
30916	RL.3.5	MC	1	3403	1.14783	-1.86990	0.10179
30918	RL.3.6	MC	1	3403	1.28920	-0.56051	0.14032
30930	RL.3.1	MC	1	3379	1.07019	-1.47850	0.22254
31116	RL.3.3	MC	1	3362	1.22021	-1.43734	0.25540
31149	RI.3.4	MC	1	3430	0.93985	-1.85691	0.10011
31152	RI.3.6	MC	1	3430	0.44776	-0.96264	0.11971
31160	L.3.4b	MC	1	3430	1.73695	-1.23611	0.25180
31162	L.3.5a	MC	1	3430	1.29278	-1.32507	0.14918
31207	RL.3.4	MC	1	3362	1.51049	-1.66573	0.22604
31217	RL.3.5	MC	1	3362	1.25721	-1.21385	0.13272
31219	RL.3.6	MC	1	3362	1.24587	-0.94330	0.10506
31222	RL.3.9	MC	1	3480	1.52505	-1.75239	0.17470
31223	RL.3.9	MC	1	3362	0.49391	-2.14935	0.07073
31228	L.3.4a	MC	1	3480	1.07718	-1.12379	0.10986
31231	L.3.5b	MC	1	3480	1.89674	-1.66730	0.12952
31314	RL.3.1	MC	1	3500	0.86045	-1.65153	0.09906
31317	RL.3.2	MC	1	3500	1.70321	-1.66871	0.20391
31319	RL.3.3	MC	1	3500	0.86500	-1.75479	0.04312

ITS ID	Standard	MC vs. MSCR	Points	N	A Param	B Param	C Param
31322	RL.3.4	MC	1	3554	1.82283	-2.03863	0.14408
31324	RL.3.6	MC	1	3554	1.30211	-1.11514	0.21499
31325	RL.3.6	MC	1	3500	0.79173	-1.09742	0.09880
31326	L.3.4a	MC	1	3554	1.34796	-1.42211	0.14647
31327	L.3.4b	MC	1	3500	0.65818	-1.11975	0.06648
31328	L.3.5a	MC	1	3554	1.74016	-1.83694	0.09940
32762	L.3.4a	MC	1	3616	0.68916	-1.51331	0.06095
32764	RI.3.8	MC	1	3616	0.78356	0.00513	0.29797
32766	L.3.5a	MC	1	3616	1.49761	-1.09740	0.28929
32770	RI.3.7	MC	1	3616	1.21471	-0.89710	0.25391
32778	RI.3.3	MC	1	3616	1.01326	-1.29181	0.05849
32780	RI.3.5	MC	1	3616	0.80783	-0.82817	0.09862
32789	RI.3.1	MC	1	3616	1.83379	-0.89519	0.21830
32792	RI.3.2	MC	1	3616	0.86536	-1.79338	0.06223
32797	RI.3.5	MC	1	3616	1.40363	-0.85894	0.30148
32811	RI.3.6	MC	1	3616	0.95716	-0.69935	0.14019
32866	SL.3.2	MC	1	3365	1.29901	-1.87044	0.22372
32867	SL.3.3	MC	1	3365	1.46863	-0.88624	0.20560
32993	L.3.4a	MC	1	3660	0.97940	-1.65267	0.06221
32997	RL.3.4	MC	1	3660	0.68152	-0.01105	0.20348
33000	RL.3.1	MC	1	3389	0.83370	-0.89902	0.11465
33017	RL.3.3	MC	1	3389	0.73203	-1.47382	0.11780
33032	L.3.4a	MC	1	3389	0.52241	-2.27169	0.08542
33044	RL.3.6	MC	1	3389	0.75045	-0.73502	0.25167
33103	RL.3.5	MC	1	3389	0.97518	-0.83702	0.28743
33104	RL.3.5	MC	1	3660	1.27841	-0.43538	0.25844

Table 4–J–2. Field-Test MSCR Items: Item Parameters for Grade 3 ELA

ITS ID	Standard	MC vs. MSCR	Points	N	Param 0	Param 1	Param 2
30252	RL.3.1	MSCR	2	3379	0.87681	-1.73092	-2.46353
30254	RL.3.9	MSCR	1	3379	0.64970	0.54815	
30258	RI.3.7	MSCR	1	3555	0.91005	-0.72685	
30259	RI.3.4	MSCR	1	3555	0.63553	1.10010	
30358	RI.3.2	MSCR	1	3576	0.41883	2.52386	
30361	RI.3.3	MSCR	1	3576	1.56912	-0.84109	
30371	RI.3.6	MSCR	1	3576	0.96685	-0.82805	
30374	RI.3.7	MSCR	1	3576	0.79502	0.42493	
30377	RI.3.1	MSCR	1	3576	0.78619	-0.06691	
30383	RI.3.9	MSCR	1	3576	0.46234	1.16662	
30386	RI.3.9	MSCR	1	3576	0.80314	0.18485	
30389	L.3.5a	MSCR	1	3576	0.78223	-0.69769	
30648	RL.3.2	MSCR	1	3379	0.64565	-0.15919	
30654	RL.3.9	MSCR	1	3379	1.03330	0.23103	
30658	RI.3.2	MSCR	1	3555	0.63906	-1.16659	
30665	RI.3.3	MSCR	1	3555	0.68344	0.00924	
30909	RL.3.2	MSCR	1	3403	0.86440	-0.17075	
30910	RL.3.2	MSCR	2	3403	0.56885	-1.11844	-1.83322
30911	RL.3.1	MSCR	1	3403	0.70012	-0.56993	
30912	RL.3.3	MSCR	1	3403	0.51908	0.21968	
30919	RL.3.6	MSCR	2	3403	0.47335	-0.86957	-1.80118
30932	RL.3.1	MSCR	1	3362	1.15296	-1.05942	
30933	RL.3.2	MSCR	2	3362	0.43423	0.61224	0.16883
31035	RI.3.1	MSCR	1	3430	0.95873	-0.12844	
31111	RL.3.1	MSCR	1	3480	0.91260	-0.61059	
31144	RI.3.2	MSCR	1	3430	0.36151	0.33730	
31148	RI.3.3	MSCR	1	3430	1.02175	-0.38670	
31154	RI.3.7	MSCR	1	3430	0.79143	-0.30399	
31161	L.3.4a	MSCR	1	3430	0.85965	-1.53885	
31192	RL.3.3	MSCR	1	3480	0.90210	-0.70883	
31215	RL.3.4	MSCR	1	3480	0.38792	0.40458	
31225	RL.3.9	MSCR	2	3480	0.60428	-0.43546	-1.14983
31227	RL.3.9	MSCR	1	3362	1.14767	-0.75121	
31315	RL.3.2	MSCR	1	3554	0.71052	-0.42825	
31318	RL.3.3	MSCR	2	3554	0.92443	-2.36470	-0.91834
31323	RL.3.5	MSCR	1	3500	1.25084	-1.77118	
32812	L.3.2e	MSCR	1	10783	0.69434	-2.69154	
32813	L.3.2d	MSCR	1	10783	0.40789	-0.73952	
32815	L.3.1f	MSCR	2	10783	0.86455	-2.87112	-1.27607
32816	L.3.2f	MSCR	1	10783	0.50998	-1.47352	

ITS ID	Standard	MC vs. MSCR	Points	N	Param 0	Param 1	Param 2
32861	SL.3.2	MSCR	1	3365	0.44715	1.14072	
32865	SL.3.2	MSCR	1	3365	0.67744	0.00694	
32868	SL.3.3	MSCR	1	3365	0.99088	-0.40959	
32869	SL.3.2	MSCR	1	3365	0.72216	0.30979	
33004	RL.3.2	MSCR	1	3389	0.95413	0.78347	
33008	RL.3.2	MSCR	2	3660	0.32723	0.92540	-2.43572
33016	RL.3.3	MSCR	1	3660	0.92711	-1.10732	
33045	RL.3.9	MSCR	2	3660	0.32157	0.79234	3.01331

Table 4–J–3. Field-Test MC Items: Item Parameters for Grade 4 ELA

ITS ID	Standard	MC vs. MSCR	Points	N	A Param	B Param	C Param
30034	RL.4.1	MC	1	4699	1.09997	-0.44272	0.32194
30045	RL.4.4	MC	1	4699	1.56616	-1.62535	0.31260
30080	RL.4.3	MC	1	4699	0.94021	-0.56236	0.19974
30081	RL.4.3	MC	1	4699	1.22274	-1.63273	0.14116
30082	RL.4.7	MC	1	4699	1.34018	-0.22280	0.22681
30083	L.4.5a	MC	1	4699	1.14462	-1.29010	0.07000
30084	L.4.4a	MC	1	4699	0.89958	-1.72910	0.05742
30085	L.4.5a	MC	1	4699	1.36982	-0.96039	0.24919
30280	RL.4.3	MC	1	4222	1.12364	-2.13066	0.21445
30283	L.4.5b	MC	1	4222	1.00549	-1.57265	0.05753
30284	RL.4.4	MC	1	4222	1.10228	-1.68364	0.07160
30285	L.4.5c	MC	1	4222	1.43741	-1.40198	0.08589
30287	SL.4.2	MC	1	5591	0.82971	-1.48490	0.05588
30290	SL.4.3	MC	1	5591	0.84460	-1.11751	0.31003
30369	RI.4.1	MC	1	4775	0.42513	-0.51356	0.08501
30384	RI.4.3	MC	1	4775	1.14504	-0.47361	0.19183
30388	RI.4.4	MC	1	4775	0.86292	-0.21921	0.12134
30391	RI.4.4	MC	1	4775	1.38418	-1.01261	0.14587
30393	RI.4.5	MC	1	4775	1.06531	-0.29783	0.14299
30397	RI.4.7	MC	1	4775	0.76702	0.32559	0.19991
30402	L.4.4a	MC	1	4775	1.71396	-1.99488	0.11448
30692	RL.4.4	MC	1	4222	0.98205	-1.39834	0.08154
30694	RL.4.3	MC	1	4222	1.21259	-0.83976	0.05245
31455	RL.4.2	MC	1	4817	1.29303	-1.02508	0.28182
31459	RL.4.1	MC	1	2184	1.15094	-0.55212	0.07335
31461	RL.4.1	MC	1	4817	0.89600	-0.88653	0.10193
31463	RL.4.4	MC	1	2184	1.22258	-0.77994	0.17674
31477	RL.4.1	MC	1	2184	1.37370	-0.70031	0.19011
31481	L.4.4a	MC	1	2184	1.08801	-0.85384	0.22073
31482	L.4.5b	MC	1	2184	1.43125	-1.56723	0.23188
31483	L.4.4a	MC	1	4817	0.83495	-0.14217	0.32786
31650	RI.4.2	MC	1	4729	0.96784	-0.77510	0.21763
31653	RI.4.3	MC	1	4660	1.06549	-1.37793	0.09020
31655	RI.4.5	MC	1	4697	0.86173	-0.97814	0.17336
31659	RI.4.7	MC	1	4697	0.57427	-0.63627	0.11530
31661	RI.4.8	MC	1	4697	1.41475	-0.93754	0.20763
31662	RI.4.9	MC	1	4697	0.65827	-0.01536	0.12994
31676	RI.4.9	MC	1	4660	1.13576	-0.70489	0.17398
31678	L.4.4a	MC	1	4729	1.12161	-1.71946	0.06553
31679	L.4.4a	MC	1	4660	0.68399	-0.48479	0.09644

ITS ID	Standard	MC vs. MSCR	Points	N	A Param	B Param	C Param
31680	L.4.5c	MC	1	4697	1.25622	-0.33883	0.23721
31681	L.4.4a	MC	1	4660	1.36432	-1.23921	0.16634
33047	RL.4.4	MC	1	4835	1.33468	0.02187	0.25407
33049	RL.4.4	MC	1	4651	0.99597	-0.58157	0.13718
33051	L.4.5b	MC	1	4651	1.65717	-1.48349	0.12545
33055	RL.4.3	MC	1	4835	0.52942	-0.48028	0.02629
33056	RL.4.3	MC	1	4651	1.23716	-0.60341	0.14674
33057	L.4.4a	MC	1	4835	1.34668	-1.64943	0.22779
33059	RL.4.9	MC	1	4835	0.53348	1.25290	0.17288
33060	RL.4.6	MC	1	4651	0.96166	0.45170	0.27788
33062	RL.4.9	MC	1	4835	1.00924	-0.42532	0.14639

Table 4–J–4. Field-Test MSCR Items: Item Parameters for Grade 4 ELA

ITS ID	Standard	MC vs. MSCR	Points	N	Param 0	Param 1	Param 2
30026	RL.4.3	MSCR	1	4699	0.69347	-0.91747	
30027	RL.4.2	MSCR	2	4699	0.71462	-0.39222	-1.81109
30028	RL.4.1	MSCR	1	4699	0.93875	-0.43144	
30281	RL.4.2	MSCR	1	4222	0.98507	-0.74133	
30288	SL.4.2	MSCR	1	5540	0.69221	0.40075	
30359	RI.4.1	MSCR	1	4775	1.18067	-0.44988	
30364	RI.4.2	MSCR	2	4775	0.40355	0.24478	-0.41544
30380	RI.4.3	MSCR	2	4775	0.17836	0.52139	0.70444
30399	RI.4.7	MSCR	1	4775	0.41878	1.58837	
30690	RL.4.3	MSCR	1	4222	0.79638	0.03921	
30693	RL.4.2	MSCR	1	4222	1.30253	-1.52340	
30695	RL.4.1	MSCR	1	4222	0.43964	-1.29605	
30697	SL.4.2	MSCR	1	5540	0.78631	-0.41884	
30698	SL.4.3	MSCR	1	5540	1.12469	-1.11320	
30699	SL.4.2	MSCR	1	5540	0.88802	0.64065	
30700	SL.4.2	MSCR	1	5591	0.48258	1.98066	
31454	RL.4.9	MSCR	2	2184	0.77225	-1.33291	-0.21132
31467	RL.4.5	MSCR	2	2184	0.88194	-2.05498	-0.06620
31472	RL.4.9	MSCR	1	4817	1.05211	-0.13138	
31480	L.4.4a	MSCR	2	2184	0.75622	-0.58000	-2.14354
31646	RI.4.1	MSCR	1	4697	0.97887	-0.36266	
31654	RI.4.4	MSCR	1	4729	0.65892	0.84159	
31660	RI.4.8	MSCR	1	4660	0.90285	-0.57528	
31663	RI.4.9	MSCR	1	4660	0.72559	-0.02334	
31675	RI.4.9	MSCR	2	4729	0.69244	-1.49734	0.47563
32126	L.4.1i	MSCR	1	5796	1.11105	-1.34960	
32127	L.4.1h	MSCR	2	5796	0.42862	-1.61979	-0.33163
32128	L.4.2c	MSCR	1	5796	0.39912	-1.55896	
32129	L.4.2d	MSCR	1	5796	1.13044	-2.58618	
32130	L.4.2a	MSCR	1	5626	0.37724	-1.16198	
32131	L.4.2b	MSCR	1	5626	0.22442	1.07845	
32132	L.4.2d	MSCR	1	5626	0.24346	-0.33071	
32133	L.4.1c	MSCR	2	5626	0.31490	-2.20586	0.64037
32969	L.4.1h	MSCR	1	4164	0.40927	-0.72707	
32971	L.4.1i	MSCR	2	4164	0.53048	-2.77189	-1.17549
32972	L.4.2d	MSCR	2	4164	0.70790	-2.17045	-1.68056
33013	L.4.1i	MSCR	1	4169	0.80187	-1.12016	
33014	L.4.2d , L.4.2c	MSCR	2	4169	0.52280	-2.27027	-0.17970
33015	L.4.1e , L.4.1g	MSCR	2	4169	0.55367	-2.82258	-0.71920

ITS ID	Standard	MC vs. MSCR	Points	N	Param 0	Param 1	Param 2
33058	RL.4.1	MSCR	1	4835	0.38883	-1.55743	
33061	RL.4.9	MSCR	1	4651	0.18249	3.36542	
33135	RL.4.6	MSCR	2	4835	0.46269	0.17494	-0.99570

Table 4–J–5. Field-Test MC Items: Item Parameters for Grade 5 ELA

ITS ID	Standard	MC vs. MSCR	Points	N	A Param	B Param	C Param
30291	RL.5.3	MC	1	3744	0.94968	-0.41370	0.21954
30292	RL.5.3	MC	1	3934	1.14016	-0.79390	0.18698
30293	RL.5.4	MC	1	3744	0.60880	-1.39431	0.10363
30294	L.5.5a	MC	1	3934	1.37281	-1.12832	0.19528
30295	RL.5.1	MC	1	3744	0.83692	-0.46700	0.17731
30296	RL.5.6	MC	1	3934	1.01882	-1.33664	0.05259
30297	RL.5.6	MC	1	3744	0.78792	-0.27130	0.20086
30311	SL.5.3	MC	1	6223	0.48665	0.33860	0.13141
30312	SL.5.2	MC	1	6223	1.01577	0.22049	0.54448
30313	SL.5.3	MC	1	6223	0.49107	-0.39918	0.24972
30315	SL.5.2	MC	1	7867	0.28333	-1.01727	0.06351
30365	RI.5.3	MC	1	3985	1.71613	0.63502	0.28212
30367	RI.5.3	MC	1	4083	1.15638	-0.97296	0.31773
30375	RI.5.4	MC	1	4083	0.87342	-1.45531	0.09229
30376	RI.5.4	MC	1	3985	0.86479	-1.39372	0.25610
30382	RI.5.5	MC	1	4083	0.99851	0.01960	0.21397
30394	RI.5.9	MC	1	3985	0.38209	-1.18452	0.07975
30396	RI.5.3	MC	1	3985	0.80905	-0.60057	0.09441
30400	L.5.4a	MC	1	4083	0.47240	0.34150	0.11226
30416	RL.5.3	MC	1	4003	0.70386	-1.58114	0.07764
30420	RL.5.1	MC	1	4003	0.93321	-1.41322	0.07091
30422	RL.5.1	MC	1	3835	1.36959	-1.67393	0.10038
30428	RL.5.5	MC	1	3835	0.88710	-1.07171	0.08660
30434	RL.5.5	MC	1	4003	1.02669	-1.33739	0.27849
30439	RL.5.5	MC	1	3835	1.78322	1.35516	0.42346
30442	L.5.5a	MC	1	3835	1.55039	-1.87947	0.25339
30443	L.5.4a	MC	1	4003	1.02504	-1.18377	0.19430
31520	RL.5.1	MC	1	3952	0.74487	-0.82444	0.18763
31526	RL.5.4	MC	1	3952	1.35987	-1.11507	0.24172
31528	RL.5.5	MC	1	3952	1.02003	-1.29122	0.25099
31530	RL.5.6	MC	1	3952	0.97332	-1.57519	0.20838
31531	RL.5.7	MC	1	3952	1.57615	-0.88359	0.19198
31532	RL.5.7	MC	1	3952	1.44489	-0.96811	0.16879
31533	L.5.4a	MC	1	3952	0.44724	-0.53056	0.13908
31536	L.5.5c	MC	1	3952	0.53219	0.68731	0.05804
31550	RI.5.4	MC	1	4055	0.58849	0.05961	0.15734
31551	RI.5.4	MC	1	3845	0.81955	-1.69322	0.09876
31555	RI.5.4	MC	1	4055	0.96317	-0.88590	0.21748
31561	RI.5.8	MC	1	3845	1.30285	-0.78597	0.10706
31565	RI.5.9	MC	1	3845	1.29792	0.80138	0.31361
31568	L.5.4a	MC	1	3845	0.63822	0.54083	0.12453

ITS ID	Standard	MC vs. MSCR	Points	N	A Param	B Param	C Param
31570	L.5.5c	MC	1	4055	0.90249	-0.27586	0.19879
31572	SL.5.2	MC	1	6295	0.48368	-0.81349	0.12396
31573	SL.5.2	MC	1	6211	1.05388	-0.51670	0.12896
31576	SL.5.2	MC	1	6295	0.96658	-1.33115	0.06705
31578	SL.5.2	MC	1	6211	1.54047	-1.01876	0.26378
31581	SL.5.2	MC	1	6211	0.71786	-0.66684	0.15203
31585	SL.5.3	MC	1	6211	1.03021	-1.06995	0.20760
31587	SL.5.3	MC	1	6211	0.57015	-0.55563	0.16630
31704	RI.5.1	MC	1	3852	1.22351	-0.05375	0.27555
31722	RI.5.4	MC	1	3771	0.63288	-1.45149	0.06309
31723	RI.5.8	MC	1	3771	1.17410	-1.03602	0.19913
31725	L.5.4a	MC	1	3852	0.36786	-0.77437	0.07497
31727	L.5.5a	MC	1	3771	0.43180	-1.62163	0.05967
31728	RL.5.4	MC	1	3771	1.30078	-1.44923	0.07272
33077	SL.5.3	MC	1	3933	1.36733	-1.50877	0.06719
33079	SL.5.3	MC	1	3933	0.99168	-1.59301	0.09199

Table 4–J–6. Field-Test MSCR Items: Item Parameters for Grade 5 ELA

ITS ID	Standard	MC vs. MSCR	Points	N	Param 0	Param 1	Param 2
30314	SL.5.3	MSCR	1	7867	0.80157	-0.22003	
30360	RI.5.2	MSCR	1	3985	0.59195	0.70453	
30362	RI.5.2	MSCR	1	4083	0.23034	4.70248	
30370	RI.5.4	MSCR	2	3985	0.65514	-1.46698	-0.88787
30385	RI.5.6	MSCR	2	3985	0.55056	0.08488	-0.09902
30390	RI.5.8	MSCR	1	4083	0.68900	0.57147	
30398	RI.5.3	MSCR	1	4083	0.86879	0.26272	
30408	RL.5.2	MSCR	2	4003	0.66282	-0.29126	-2.36398
30412	RL.5.2	MSCR	1	3835	0.66685	1.00456	
30415	RL.5.3	MSCR	1	3835	0.49667	-0.64551	
30425	RL.5.2	MSCR	1	4003	0.54283	0.38996	
30432	RL.5.6	MSCR	2	4003	0.26114	-0.01062	-1.31713
30436	RL.5.6	MSCR	2	3835	0.42693	-0.96889	-0.07821
30618	RL.5.1	MSCR	2	3934	0.78336	-1.77645	-1.40246
30619	RL.5.2	MSCR	2	3744	0.27125	-1.16101	2.62838
30623	RL.5.2	MSCR	1	3934	0.87996	-0.84918	
30627	RL.5.9	MSCR	1	3934	0.62948	0.88879	
30634	RL.5.9	MSCR	1	3744	1.00941	-0.63985	
30661	SL.5.2	MSCR	1	6223	0.88312	-0.10187	
30663	SL.5.3	MSCR	2	7867	0.25248	1.92182	-1.41164
30666	SL.5.2	MSCR	1	6223	0.59671	2.14003	

ITS ID	Standard	MC vs. MSCR	Points	N	Param 0	Param 1	Param 2
30668	SL.5.2	MSCR	1	7867	0.96070	-0.21255	
31521	RL.5.2	MSCR	2	3952	0.57763	-0.38622	-2.29562
31525	RL.5.3	MSCR	1	3952	1.37202	-0.70688	
31529	RL.5.5	MSCR	1	3952	0.72797	-0.59609	
31537	RI.5.1	MSCR	1	3845	0.68710	1.13369	
31543	RI.5.5	MSCR	2	3845	0.67868	-1.25845	0.36186
31546	RI.5.2	MSCR	1	4055	0.41639	1.12290	
31548	RI.5.3	MSCR	1	3845	0.54963	-0.16632	
31552	RI.5.5	MSCR	2	4055	0.40711	0.20803	-1.45294
31558	RI.5.8	MSCR	1	4055	0.77359	-0.25806	
31563	RI.5.9	MSCR	2	4055	0.28479	1.13031	-1.55361
31567	RI.5.9	MSCR	2	4055	0.46657	-0.21818	0.45492
31574	SL.5.2	MSCR	1	6295	0.52818	-0.27760	
31584	SL.5.3	MSCR	1	6295	0.67821	0.67632	
31705	RI.5.2	MSCR	1	3771	0.58302	1.30274	
31717	RI.5.4	MSCR	2	3852	0.46317	0.25299	-2.29447
31719	RI.5.5	MSCR	1	3852	0.66439	0.44537	
31720	RI.5.6	MSCR	1	3852	0.62121	0.95260	
31721	RI.5.5	MSCR	2	3771	0.39991	1.26014	-0.86226
31724	RI.5.8	MSCR	1	3852	0.44735	1.51068	
32983	L.5.1d	MSCR	1	7821	0.45152	-1.95685	
32984	L.5.2e	MSCR	2	7821	0.24356	-2.00523	1.07906
32985	L.5.2a	MSCR	1	7821	0.43369	-1.11555	
33019	L.5.1c	MSCR	1	8623	0.53688	-1.08308	
33020	L.5.2b	MSCR	2	8623	0.61907	-2.11167	-0.35262
33022	L.5.1f , L.5.1e	MSCR	2	8623	0.51013	-1.85892	0.43209
33078	SL.5.2	MSCR	1	3933	0.46643	1.24073	
33080	SL.5.2	MSCR	1	3933	0.63471	0.03919	
33100	SL.5.2	MSCR	2	3933	0.28004	1.72883	1.43290
33101	SL.5.2	MSCR	1	3933	0.74780	-0.31439	
33142	L.5.2b	MSCR	1	7821	0.79982	-1.27560	

Table 4–J–7. Field-Test MC Items: Item Parameters for Grade 6 ELA

ITS ID	Standard	MC vs. MSCR	Points	N	A Param	B Param	C Param
29716	RI.6.5	MC	1	3150	0.65346	0.24704	0.05954
29720	RI.6.7	MC	1	3150	1.18798	-0.10183	0.20339
29721	RI.6.8	MC	1	3150	0.99201	-0.57220	0.06157
29724	L.6.4b	MC	1	3150	1.02272	0.29946	0.11372
29833	RL.6.2	MC	1	3357	1.05849	-0.76711	0.17747
29834	RL.6.1	MC	1	3269	0.96416	1.28865	0.31586
29835	RL.6.3	MC	1	3269	0.82718	-0.81511	0.12856
29838	RL.6.4	MC	1	3269	0.85499	-0.66348	0.03365
29839	RL.6.5	MC	1	3357	0.90648	0.57363	0.31473
29842	RL.6.9	MC	1	3269	0.34953	-1.08360	0.10423
29846	L.6.5a	MC	1	3357	1.12162	0.76423	0.21222
30755	RI.6.3	MC	1	3309	0.93202	0.64496	0.23658
30758	RI.6.1	MC	1	3343	0.37769	1.69095	0.14747
30763	RI.6.5	MC	1	3309	1.31604	0.73839	0.25193
30764	RI.6.5	MC	1	3343	0.84465	0.05651	0.19115
30768	RI.6.8	MC	1	3343	0.47883	0.43540	0.02681
30769	RI.6.7	MC	1	3343	0.95206	0.25925	0.19833
30771	RI.6.5	MC	1	3309	1.27399	0.13710	0.24242
30775	L.6.4a	MC	1	3343	1.06680	-0.62036	0.03797
30881	SL.6.3	MC	1	3416	0.70430	-1.11322	0.06619
30883	SL.6.2	MC	1	3416	0.81036	-1.01208	0.12541
30885	SL.6.3	MC	1	3416	1.31374	-0.40700	0.22207
30886	SL.6.3	MC	1	3416	0.98349	-0.64992	0.23708
31332	RL.6.1	MC	1	3592	0.70749	-0.44205	0.04393
31334	RL.6.2	MC	1	3592	0.64510	0.41543	0.07459
31337	RL.6.3	MC	1	3592	1.00216	-0.29905	0.09328
31340	RL.6.4	MC	1	3367	0.82981	0.18455	0.23764
31343	RL.6.5	MC	1	3592	0.26350	0.10787	0.07593
31349	RL.6.9	MC	1	3592	0.97087	-0.58966	0.11744
31352	L.6.4a	MC	1	3592	0.69211	0.70533	0.14818
31357	RL.6.2	MC	1	3580	1.98479	-0.99473	0.19984
31363	RL.6.5	MC	1	3580	0.80898	-0.49962	0.30954
31366	RL.6.5	MC	1	3580	0.51531	0.17040	0.03584
31367	RL.6.1	MC	1	3580	1.21730	-1.07218	0.17601
31368	L.6.4b	MC	1	3580	0.91855	-1.26906	0.16694
31370	L.6.5a	MC	1	3580	0.32387	1.71551	0.07721
31375	SL.6.2	MC	1	3488	1.17786	-0.82342	0.16022
31376	SL.6.3	MC	1	3488	0.67836	0.43590	0.29444
31377	SL.6.3	MC	1	3488	0.73734	-0.80513	0.10928
31378	SL.6.3	MC	1	3488	0.80854	0.15474	0.04689
31379	SL.6.3	MC	1	3488	0.70589	-0.02503	0.04759

ITS ID	Standard	MC vs. MSCR	Points	N	A Param	B Param	C Param
32072	RI.6.1	MC	1	3458	0.53216	0.17702	0.04450
32081	RI.6.2	MC	1	3516	0.73506	-0.09507	0.16510
32082	RI.6.2	MC	1	3458	0.87399	0.56212	0.05527
32084	RI.6.3	MC	1	3458	0.80611	0.04831	0.07244
32091	RI.6.5	MC	1	3516	1.16398	0.51636	0.15915
32463	RI.6.8	MC	1	3516	0.78198	0.20995	0.26476
32469	RI.6.9	MC	1	3458	0.64904	-0.45382	0.05758
32482	L.6.4a	MC	1	3516	1.45687	-0.91393	0.32471
32489	L.6.5b	MC	1	3458	0.54893	-1.36241	0.08441
32768	L.6.5a	MC	1	3611	0.50211	-0.22844	0.19533
32769	RL.6.4	MC	1	3611	0.66173	-0.28619	0.13263
32772	RL.6.6	MC	1	3611	0.52751	0.89098	0.24153
32774	L.6.4a	MC	1	3611	0.78581	-0.21188	0.06294
32775	RL.6.5	MC	1	3611	0.71324	0.52339	0.11981
32776	RL.6.1	MC	1	3611	1.45887	-0.01267	0.27292
33029	RL.6.1	MC	1	3238	1.64955	-1.09323	0.12767
33033	RL.6.6	MC	1	3238	0.98808	0.51763	0.26216
33037	L.6.4a	MC	1	3238	0.70034	1.06651	0.07226
33040	RL.6.4	MC	1	3238	0.77562	-0.97070	0.06188
33046	L.6.5b	MC	1	3238	0.56200	-0.84475	0.06886

Table 4–J–8. Field-Test MSCR Items: Item Parameters for Grade 6 ELA

ITS ID	Standard	MC vs. MSCR	Points	N	Param 0	Param 1	Param 2
29711	RI.6.1	MSCR	2	3150	0.27322	-0.03480	-0.57871
29712	RI.6.2	MSCR	2	3150	0.27414	1.46118	0.68840
29713	RI.6.3	MSCR	1	3150	0.92446	-0.51626	
29714	RI.6.3	MSCR	2	3150	0.46062	-0.21227	-0.77128
29719	RI.6.7	MSCR	1	3150	0.83317	1.37283	
29722	RI.6.8	MSCR	1	3150	0.48340	2.08519	
29723	L.6.4a	MSCR	1	3150	0.72774	1.07136	
29832	RL.6.1	MSCR	1	3357	0.66949	-0.16886	
29837	RL.6.4	MSCR	2	3357	0.76459	-1.05249	0.16195
29840	RL.6.5	MSCR	2	3269	0.53257	-0.17505	0.48360
29841	RL.6.6	MSCR	1	3357	0.44676	1.09721	
29844	RL.6.9	MSCR	1	3269	0.43476	1.43865	
30674	SL.6.2	MSCR	1	3416	0.61818	-1.04306	
30753	RI.6.2	MSCR	2	3309	0.48126	0.21789	-0.81504
30757	RI.6.2	MSCR	1	3343	0.54468	0.83191	
30760	RI.6.4	MSCR	2	3343	0.64367	-0.15347	0.50064
30772	RI.6.7	MSCR	1	3309	0.30476	3.23037	
30887	SL.6.3	MSCR	1	3416	0.98301	-0.51185	
30939	L.6.1d	MSCR	1	11306	0.30825	0.61017	
31330	RL.6.1	MSCR	1	3367	0.79081	-0.34075	
31333	RL.6.2	MSCR	2	3367	0.25220	1.10899	1.47787
31336	RL.6.3	MSCR	2	3367	0.36079	1.71221	-1.20848
31345	RL.6.6	MSCR	1	3367	0.84031	0.30073	
31347	RL.6.9	MSCR	2	3592	0.38617	-1.27775	1.64279
31350	RL.6.9	MSCR	2	3367	0.57943	-2.20002	-0.25019
31358	RL.6.2	MSCR	2	3580	0.49029	-2.79392	0.67069
31362	RL.6.4	MSCR	1	3580	0.69811	-0.14665	
31365	RL.6.6	MSCR	2	3580	0.51038	-0.13105	-0.20238
31369	L.6.4a	MSCR	1	3580	0.27493	0.11801	
31374	SL.6.2	MSCR	1	3488	1.13420	-0.77735	
31380	SL.6.3	MSCR	1	3488	0.39026	1.22667	
31381	SL.6.3	MSCR	1	3488	0.77835	-0.41409	
32083	RI.6.2	MSCR	1	3516	0.48489	1.82219	
32085	RI.6.3	MSCR	1	3516	0.40990	1.45899	
32086	RI.6.3	MSCR	1	3458	1.16761	0.33056	
32182	L.6.1a	MSCR	2	11306	0.54401	-2.17827	-0.21634
32183	L.6.2a	MSCR	1	11306	0.47977	0.16233	
32184	L.6.2b	MSCR	1	11306	0.49186	-1.06936	
32478	RI.6.9	MSCR	1	3458	1.04238	1.25973	
32491	L.6.5c	MSCR	1	3516	0.64345	1.46866	

ITS ID	Standard	MC vs. MSCR	Points	N	Param 0	Param 1	Param 2
32763	RL.6.3	MSCR	2	3611	0.30325	-0.13661	0.08153
32765	RL.6.4	MSCR	2	3611	0.29375	1.38125	-1.74294
32771	RL.6.1	MSCR	1	3611	1.25405	-0.35408	
32773	RL.6.2	MSCR	1	3611	0.88995	-0.08712	
32796	L.6.2b	MSCR	1	11371	0.46620	-1.21953	
32799	L.6.2b	MSCR	2	11371	0.58650	-2.14972	-1.14101
32802	L.6.1c	MSCR	2	11371	0.34061	-2.45053	1.11248
32957	L.6.1a	MSCR	1	11438	0.65215	-2.01991	
32958	L.6.2a	MSCR	2	11438	0.45639	-0.87874	0.80951
32959	L.6.1d	MSCR	2	11438	0.80808	-1.60077	-1.11398
33028	RL.6.1	MSCR	1	3238	0.77028	1.75041	
33030	RL.6.2	MSCR	2	3238	0.38977	-1.11503	-0.15811
33038	RL.6.5	MSCR	1	3238	0.99931	-0.08268	
33039	RL.6.2	MSCR	1	3238	0.48689	0.96160	

Table 4–J–9. Field-Test MC Items: Item Parameters for Grade 7 ELA

ITS ID	Standard	MC vs. MSCR	Points	N	A Param	B Param	C Param
29769	RI.7.2	MC	1	5223	1.32185	-0.25399	0.39074
29772	RI.7.3	MC	1	5223	1.24336	0.01993	0.25041
29774	RI.7.5	MC	1	5223	0.56583	0.20653	0.04802
29777	RI.7.6	MC	1	5223	1.20913	-0.31952	0.26039
29779	RI.7.8	MC	1	5223	1.03688	-0.43753	0.16901
29780	L.7.4a	MC	1	5147	1.59046	-0.66799	0.20056
29781	L.7.4b	MC	1	5223	1.47237	-0.30051	0.21601
30451	RL.7.2	MC	1	5316	1.07992	-0.04740	0.08154
30457	RI.7.3	MC	1	5405	0.99297	0.94445	0.22091
30461	RL.7.3	MC	1	5316	0.12551	7.82418	0.18890
30464	RL.7.4	MC	1	5316	0.50042	-0.43039	0.05085
30466	RL.7.5	MC	1	5316	0.43177	1.79970	0.13867
30467	RI.7.5	MC	1	5405	1.09150	0.01399	0.25960
30468	RL.7.6	MC	1	5316	0.76240	0.01648	0.17028
30471	RL.7.6	MC	1	5316	0.56523	-0.39931	0.14217
30473	L.7.5a	MC	1	5316	1.26785	1.47010	0.18887
30476	RI.7.6	MC	1	5405	1.11050	0.36852	0.20668
30481	RI.7.8	MC	1	5405	1.26410	-0.28969	0.09776
30482	L.7.4a	MC	1	5405	1.08492	-0.07045	0.30690
30483	L.7.4a	MC	1	5174	0.51117	-0.55426	0.06235
30858	SL.7.2	MC	1	5951	1.03099	0.20759	0.20766
30871	SL.7.2	MC	1	5951	0.73544	0.89594	0.23947
30873	SL.7.3	MC	1	5951	1.45149	-0.47823	0.06414
30874	SL.7.3	MC	1	6106	0.42137	-0.08124	0.03293
32508	RI.7.3	MC	1	5232	0.32744	0.20162	0.14240
32511	RL.7.4	MC	1	5232	1.11252	0.28038	0.06688
32512	RL.7.4	MC	1	5220	0.70622	0.11372	0.20493
32513	RL.7.3	MC	1	5220	0.97131	-0.53859	0.03790
32515	RL.7.3	MC	1	5189	0.42933	-0.17918	0.06772
32516	RI.7.6	MC	1	5189	0.38625	-0.03705	0.08231
32518	RL.7.9	MC	1	5232	0.22385	0.99113	0.08676
32521	RL.7.9	MC	1	5220	1.14703	1.13027	0.24169
32871	SL.7.2	MC	1	5038	0.84489	-1.02078	0.16826
32875	SL.7.2	MC	1	5038	0.75775	1.20456	0.17647
32876	SL.7.3	MC	1	5038	0.70040	0.23993	0.09324

Table 4–J–10. Field-Test MSCR Items: Item Parameters for Grade 7 ELA

ITS ID	Standard	MC vs. MSCR	Points	N	Param 0	Param 1	Param 2
29768	RI.7.1	MSCR	1	5147	0.60975	1.58101	
29771	RI.7.3	MSCR	1	5147	1.02140	-0.50606	
29773	RI.7.4	MSCR	2	5147	0.56922	-0.67385	0.53838
29776	RI.7.5	MSCR	2	5147	0.77466	-0.60432	1.30215
30450	RI.7.1	MSCR	1	5174	0.99213	-0.15141	
30453	RI.7.2	MSCR	1	5405	0.49465	1.08168	
30455	RL.7.2	MSCR	2	5316	0.40368	0.39879	0.14623
30456	RI.7.3	MSCR	1	5174	0.76308	0.54669	
30459	RL.7.2	MSCR	1	5316	0.80111	0.14267	
30462	RI.7.4	MSCR	1	5174	0.67853	0.05178	
30470	RI.7.6	MSCR	2	5174	0.34347	0.26080	0.58471
30474	L.7.4a	MSCR	1	5316	0.36037	0.99541	
30478	RI.7.8	MSCR	1	5174	0.49780	0.43473	
30863	SL.7.2	MSCR	1	6106	0.89610	-0.55597	
30867	SL.7.2	MSCR	1	5951	0.63415	0.71371	
30869	SL.7.2	MSCR	2	6106	0.59860	0.97455	-1.20174
30872	SL.7.3	MSCR	1	6106	0.78527	1.11040	
32226	L.7.1b	MSCR	1	6070	0.79371	-1.37928	
32227	L.7.1b	MSCR	2	6070	0.43388	-1.27592	0.60605
32228	L.7.2b	MSCR	1	6070	0.48758	-0.95053	
32229	L.7.2a	MSCR	1	6070	0.50635	-0.44044	
32230	L.7.1c	MSCR	1	6061	0.70510	-0.51320	
32231	7.UD1.1	MSCR	2	6061	0.52683	-1.55377	0.51866
32232	7.UD1.1	MSCR	1	6061	0.76383	0.03270	
32233	L.7.2a	MSCR	1	6061	0.34811	-0.12676	
32505	RL.7.2	MSCR	1	5220	0.61319	0.25440	
32506	RI.7.2	MSCR	1	5220	0.85156	1.54327	
32507	RI.7.2	MSCR	1	5189	0.64491	1.81606	
32509	RL.7.3	MSCR	1	5189	0.75424	1.41688	
32510	RL.7.3	MSCR	2	5232	0.45930	-1.21061	0.59994
32514	RI.7.5	MSCR	2	5220	0.61075	0.11985	1.50474
32517	RL.7.6	MSCR	1	5189	0.94286	-0.34719	
32522	RL.7.9	MSCR	2	5189	0.22580	-6.23992	2.06963
32523	RL.7.9	MSCR	2	5232	0.56234	-0.38918	0.25170
32870	SL.7.2	MSCR	1	5038	0.81083	0.27764	
32873	SL.7.3	MSCR	1	5038	1.02311	-0.32586	
32960	L.7.1c	MSCR	1	5953	0.34814	0.60664	
32961	L.7.2a	MSCR	1	5953	0.73984	-0.62563	
32962	L.7.2a	MSCR	1	5953	0.45155	0.00765	
32963	L.7.2b	MSCR	2	5953	0.62754	-1.36561	-0.59486

Table 4–J–11. Field-Test MC Items: Item Parameters for Grade 8 ELA

ITS ID	Standard	MC vs. MSCR	Points	N	A Param	B Param	C Param
30452	RI.8.2	MC	1	3549	1.10480	-1.17980	0.09321
30458	RI.8.3	MC	1	3549	1.44794	0.64476	0.25264
30463	RI.8.4	MC	1	3451	1.25294	-1.00254	0.20646
30465	RI.8.5	MC	1	3451	0.74134	-0.01680	0.03570
30469	L.8.4a	MC	1	3451	1.76329	-0.55424	0.28847
30472	RI.8.6	MC	1	3549	1.10573	0.21914	0.23262
30479	L.8.5a	MC	1	3451	1.14768	-0.64422	0.09168
30480	L.8.4a	MC	1	3549	0.81642	-0.73962	0.04757
30497	RI.8.4	MC	1	3528	1.03186	-0.84750	0.16732
30500	RI.8.4	MC	1	3528	1.05428	-0.52368	0.17669
30502	RI.8.2	MC	1	3528	0.89239	0.57995	0.20210
30516	RI.8.6	MC	1	3528	0.62452	0.21878	0.09233
30525	RI.8.8	MC	1	3528	0.92486	1.35762	0.28196
30526	L.8.5a	MC	1	3528	0.89326	0.15223	0.23529
30527	L.8.5c	MC	1	3528	0.94108	-0.57892	0.23109
30782	RI.8.1	MC	1	3426	0.71712	0.63815	0.12379
30791	RI.8.4	MC	1	3447	0.32571	0.77057	0.07346
30799	RI.8.6	MC	1	3426	0.87174	-0.33528	0.12678
30802	RI.8.8	MC	1	3447	0.77503	1.28893	0.12569
30805	RI.8.9	MC	1	3447	1.23614	0.64734	0.24823
30810	RI.8.4	MC	1	3447	0.52479	0.53750	0.04994
31538	RL.8.1	MC	1	3576	0.52194	0.00319	0.08185
31539	RL.8.1	MC	1	3717	0.81839	1.20465	0.26372
31542	RL.8.2	MC	1	3576	0.89745	-0.23347	0.17148
31560	L.8.4a	MC	1	3664	0.49890	-0.16115	0.10303
31562	RL.8.4	MC	1	3664	0.76514	-1.37005	0.10904
31588	RI.8.9	MC	1	3717	1.05466	0.00088	0.29335
31589	RL.8.5	MC	1	3664	0.86744	1.22022	0.34205
31590	RL.8.9	MC	1	3576	0.51251	1.21504	0.25132
31592	RL.8.9	MC	1	3576	0.81520	0.08150	0.11531
31593	L.8.4a	MC	1	3664	0.70570	-0.39224	0.20059
31597	RI.8.1	MC	1	3644	1.38487	-0.88574	0.22911
31598	RI.8.2	MC	1	3644	1.04518	0.21687	0.29195
31600	RI.8.3	MC	1	3644	1.34342	0.47018	0.28386
31602	RI.8.4	MC	1	3644	0.86284	-0.02652	0.33619
31603	RI.8.5	MC	1	3644	0.46936	0.22478	0.06753
31604	RI.8.6	MC	1	3644	0.99625	0.11427	0.43448
31709	RL.8.1	MC	1	3342	0.67144	0.61636	0.22338
31713	RL.8.2	MC	1	3342	0.53526	-0.21717	0.07392
31715	RL.8.3	MC	1	3342	1.05635	-0.52202	0.12250
31730	L.8.4a	MC	1	3342	1.22954	0.11628	0.09410

ITS ID	Standard	MC vs. MSCR	Points	N	A Param	B Param	C Param
31748	RL.8.3	MC	1	3342	1.18796	-0.45606	0.09181
32531	RI.8.2	MC	1	3866	0.87443	1.03368	0.18053
32535	RI.8.3	MC	1	3866	1.09838	-0.20794	0.13693
32540	RI.8.6	MC	1	3463	0.85314	-0.73394	0.23046
32542	RI.8.8	MC	1	3463	1.18159	0.77015	0.20420
32547	RI.8.9	MC	1	3463	1.17872	0.25147	0.03471
33084	SL.8.3	MC	1	3589	0.79242	-0.60583	0.03779
33085	SL.8.3	MC	1	3589	1.48285	1.42256	0.26637
33086	SL.8.2	MC	1	3589	0.30716	1.30533	0.05241
33113	SL.8.3	MC	1	3589	0.40630	1.85210	0.08517

Table 4–J–12. Field-Test MSCR Items: Item Parameters for Grade 8 ELA

ITS ID	Standard	MC vs. MSCR	Points	N	Param 0	Param 1	Param 2
30445	RI.8.1	MSCR	1	3549	1.07828	0.17424	
30449	RI.8.1	MSCR	2	3451	0.65531	0.85229	-2.13196
30454	RI.8.3	MSCR	2	3451	0.43207	1.49001	0.89977
30460	RI.8.5	MSCR	1	3549	0.36062	1.12327	
30475	RI.8.8	MSCR	1	3451	0.76764	0.50787	
30493	RI.8.3	MSCR	1	3528	0.82833	0.38136	
30505	RI.8.5	MSCR	1	3528	0.41201	2.43504	
30514	RI.8.6	MSCR	1	3528	0.65440	0.96363	
30523	RI.8.8	MSCR	1	3528	0.57348	2.67755	
30784	RI.8.2	MSCR	1	3447	0.49328	1.74785	
30787	RI.8.8	MSCR	2	3447	0.56482	0.27737	1.18778
30788	RI.8.4	MSCR	2	3426	0.52293	0.25530	0.00256
30796	RI.8.6	MSCR	1	3447	0.79811	1.60640	
30800	RI.8.8	MSCR	1	3426	0.63819	1.63503	
30804	RI.8.8	MSCR	2	3426	0.56434	0.92711	0.14415
30807	RI.8.9	MSCR	1	3426	0.53989	1.44340	
31544	RL.8.2	MSCR	2	3717	0.51667	-0.25586	0.08140
31559	RL.8.3	MSCR	1	3576	0.26007	-0.37769	
31575	RL.8.4	MSCR	1	3576	0.69958	0.84963	
31577	RL.8.3	MSCR	2	3664	0.37579	1.92270	0.99772
31580	RL.8.5	MSCR	1	3717	0.90054	1.57704	
31582	RL.8.6	MSCR	1	3717	0.84952	-0.74700	
31611	L.8.5a	MSCR	1	3644	0.66132	0.98947	
31708	RL.8.1	MSCR	1	3342	0.48871	1.17870	
31710	RL.8.3	MSCR	1	3342	0.47007	2.33465	
31711	RL.8.1	MSCR	1	3342	0.84992	-0.12677	
31712	RL.8.2	MSCR	2	3342	0.67522	-0.83433	-0.53257
32100	RI.8.9	MSCR	1	3866	0.39899	4.06513	
32103	L.8.4a	MSCR	1	3463	0.72899	1.45491	
32533	RI.8.2	MSCR	1	3463	0.45368	1.88130	
32536	RI.8.3	MSCR	1	3463	0.85159	0.19074	
32541	RI.8.6	MSCR	1	3866	0.59291	0.38793	
32544	RI.8.8	MSCR	1	3463	1.12350	0.70789	
32965	L.8.1a	MSCR	1	12000	0.85772	-1.37633	
32966	L.8.2a	MSCR	2	12000	0.19032	-2.26778	1.48887
32967	L.8.1b	MSCR	2	12000	0.60391	-1.54806	-0.06502
32998	L.8.1a	MSCR	1	11879	0.86344	-1.28111	
33001	L.8.2a , L.8.2c	MSCR	2	11879	0.22693	-0.34949	2.95747
33006	L.8.1c	MSCR	2	11879	0.62511	-1.69077	-0.85388

ITS ID	Standard	MC vs. MSCR	Points	N	Param 0	Param 1	Param 2
33087	SL.8.2	MSCR	1	3589	0.58609	0.44554	
33112	SL.8.2	MSCR	1	3589	0.44741	1.00336	

Table 4–J–13. Field-Test MC Items: Item Parameters for Grade 3 Math

ITS ID	Standard	MC vs. MSCR	Points	N	A Param	B Param	C Param
29734	3.NBT.1	MC	1	3604	1.42748	-3.06184	0.13956
29735	3.NBT.1	MC	1	3534	1.38784	-2.35048	0.08797
29738	3.NF.3a	MC	1	3564	2.74204	-1.72990	0.07662
29740	3.G.1	MC	1	3597	1.26044	-2.65572	0.15485
29741	3.G.2	MC	1	3557	1.20943	-2.48747	0.11706
29747	3.NBT.1	MC	1	3492	1.52447	-2.78620	0.22116
29749	3.NBT.2	MC	1	3567	1.02261	-2.89653	0.11822
29750	3.NBT.3	MC	1	3622	1.30787	-2.52870	0.08966
29765	3.NF.1b	MC	1	3670	1.14516	-2.90728	0.12410
29894	3.NBT.1	MC	1	3511	1.45079	-2.69965	0.15370
29896	3.G.2	MC	1	3616	1.68669	-3.69666	0.08761
29898	3.NBT.1	MC	1	3677	1.53479	-2.67319	0.39288
29899	3.NBT.1	MC	1	3582	1.32060	-2.76132	0.28949
29900	3.NBT.2	MC	1	3504	1.59674	-1.89949	0.08835
29904	3.NBT.3	MC	1	3658	1.55753	-2.25387	0.09306
29905	3.NBT.3	MC	1	3572	1.60665	-1.79456	0.04135
29907	3.NF.1b	MC	1	3508	1.78215	-3.12857	0.10606
29910	3.NF.2a	MC	1	3674	1.53123	-2.60121	0.32147
29917	3.OA.1	MC	1	3512	1.78971	-2.47762	0.15641
31007	3.NBT.1	MC	1	3473	1.55174	-1.89066	0.13542
31009	3.NBT.2	MC	1	3511	1.85373	-2.32106	0.19485
31024	3.OA.9	MC	1	3637	1.48098	-1.99920	0.21392
31209	3.OA.1	MC	1	3514	1.15491	-2.88449	0.07483
31210	3.OA.2	MC	1	3608	1.76739	-2.66812	0.29319
31211	3.OA.3	MC	1	3539	2.07947	-2.80079	0.19716
31213	3.OA.4	MC	1	3570	2.12615	-2.66507	0.15596
31253	3.NF.1a	MC	1	3549	1.25625	-3.80639	0.10211
31254	3.NF.1b	MC	1	3545	1.66777	-3.06404	0.11195
31309	3.MD.5b	MC	1	3595	0.87285	-3.66077	0.18463
31311	3.MD.1	MC	1	3560	1.53617	-3.06170	0.27709
31312	3.MD.2	MC	1	3546	1.30231	-3.41235	0.21752
31624	3.MD.6	MC	1	3608	0.61660	-3.96869	0.12554
31761	3.NBT.3	MC	1	3541	2.21886	-2.73607	0.11961
31762	3.MD.3	MC	1	3725	1.71284	-2.20504	0.21076
31766	3.NBT.1	MC	1	3524	2.18331	-2.29970	0.20243
31767	3.NF.2a	MC	1	3563	1.02261	-2.87191	0.12905
31771	3.NF.3a	MC	1	3672	1.41989	-2.13246	0.25715
31772	3.OA.7a	MC	1	3623	1.24006	-2.78824	0.06720
31796	3.OA.8a	MC	1	3616	1.77540	-2.23542	0.21257
31802	3.OA.8b	MC	1	3582	1.80534	-2.59372	0.11955
31817	3.OA.5	MC	1	3484	1.17938	-2.42173	0.20997

ITS ID	Standard	MC vs. MSCR	Points	N	A Param	B Param	C Param
31824	3.NBT.2	MC	1	3473	1.28427	-3.39261	0.04592
31841	3.NBT.2	MC	1	3532	0.96652	-3.21672	0.04054
31855	3.OA.8b	MC	1	3467	2.31690	-2.38248	0.34092
32793	3.MD.1	MC	1	3538	1.92251	-1.82234	0.33059
32794	3.MD.1	MC	1	3708	1.35705	-2.59513	0.19133
32795	3.MD.4	MC	1	3569	2.02685	-2.32048	0.16324
32803	3.MD.3	MC	1	3514	1.67608	-2.50439	0.10533
32809	3.NF.1a	MC	1	3608	1.39223	-3.63689	0.22184
32825	3.NF.3c	MC	1	3599	2.65373	-1.70406	0.13516
32830	3.OA.1	MC	1	3521	1.74242	-2.87759	0.42721
32831	3.OA.2	MC	1	3572	1.07034	-2.51690	0.04366
32832	3.OA.3	MC	1	3483	2.00753	-2.66005	0.38422
32833	3.OA.2	MC	1	3443	1.40806	-2.55467	0.05305
32835	3.OA.2	MC	1	3595	0.74350	-2.75619	0.25233
32878	3.OA.6	MC	1	3611	1.50814	-2.62448	0.25863
32881	3.OA.6	MC	1	3580	1.00842	-2.27173	0.37815
32883	3.OA.8c	MC	1	3421	1.00058	-1.54470	0.27239
32884	3.OA.6	MC	1	3644	1.32129	-2.57681	0.13123
32888	3.OA.5	MC	1	3524	1.60947	-2.48858	0.11472
32933	3.OA.8a	MC	1	3516	2.44290	-2.70512	0.20492

Table 4–J–14. Field-Test MSCR Items: Item Parameters for Grade 3 Math

ITS ID	Standard	MC vs. MSCR	Points	N	Param 0	Param 1	Param 2
29699	3.NBT.3	MSCR	1	3567	1.69044	-2.40938	
29732	3.OA.4	MSCR	1	3642	1.82991	-3.05268	
29736	3.NBT.2	MSCR	1	3652	1.25027	-3.07828	
29737	3.NBT.2	MSCR	2	3726	0.77940	-2.74916	-1.93890
29745	3.OA.6	MSCR	2	3520	1.00161	-2.96844	-2.59994
29746	3.OA.4	MSCR	1	3510	1.74477	-2.78020	
29748	3.NBT.2	MSCR	1	3585	1.67057	-2.03112	
29751	3.NBT.3	MSCR	1	3776	1.54784	-1.88885	
29752	3.NF.3a	MSCR	1	3602	1.37335	-2.12640	
29756	3.NBT.1	MSCR	2	3729	0.94621	-3.02892	-2.46317
29758	3.NBT.3	MSCR	1	3485	1.68787	-2.47034	
29759	3.NF.3a	MSCR	1	3620	1.59434	-1.79782	
29800	3.NBT.3	MSCR	1	3557	1.70559	-1.92308	
29895	3.G.1	MSCR	1	3620	0.76630	-3.14844	
29901	3.NBT.2	MSCR	1	3604	1.37824	-1.75206	
29902	3.NBT.3	MSCR	1	3551	1.92157	-2.28869	
29903	3.NBT.3	MSCR	1	3642	1.60866	-2.10716	
29906	3.NF.1a	MSCR	1	3510	1.71983	-2.47939	
30943	3.NBT.1	MSCR	1	3542	1.85198	-2.50923	
31008	3.NBT.3	MSCR	1	3515	1.81810	-1.95337	
31014	3.OA.5	MSCR	1	3477	1.22409	-1.67243	
31019	3.G.1	MSCR	1	3478	1.02903	-3.70859	
31023	3.OA.6	MSCR	1	3590	1.29908	-2.38259	
31026	3.OA.9	MSCR	1	3703	1.48924	-2.07101	
31027	3.G.2	MSCR	1	3540	1.39569	-3.26674	
31040	3.OA.8a	MSCR	2	3645	1.11350	-3.09981	-2.75380
31255	3.NF.3d	MSCR	1	3606	1.25255	-1.63501	
31310	3.MD.7b	MSCR	1	3661	1.74565	-1.98700	
31629	3.NF.3b	MSCR	1	3509	1.67753	-1.72636	
31773	3.NF.3d	MSCR	1	3556	1.72157	-2.16855	
31776	3.NF.3a	MSCR	1	3570	1.39906	-2.17523	
31793	3.NF.3a	MSCR	1	3600	2.31916	-2.03322	
31797	3.NF.3c	MSCR	1	3511	1.83437	-1.95692	
31836	3.NBT.1	MSCR	2	3597	0.74775	-3.01055	-2.73312
31837	3.NF.3c	MSCR	1	3543	2.19360	-1.74558	
31844	3.OA.6	MSCR	1	3543	1.47759	-2.21975	
31864	3.NBT.1	MSCR	1	3456	1.18813	-1.27980	
31886	3.G.1	MSCR	2	3539	1.23987	-2.80130	-0.99720
32003	3.OA.7b	MSCR	1	3478	1.48835	-2.56763	
32779	3.G.2	MSCR	1	3629	1.30561	-3.38454	

ITS ID	Standard	MC vs. MSCR	Points	N	Param 0	Param 1	Param 2
32787	3.MD.1	MSCR	1	3528	1.49926	-1.69369	
32790	3.MD.2	MSCR	1	3632	0.95830	-2.89179	
32798	3.NBT.1	MSCR	1	3572	1.67174	-2.43817	
32800	3.MD.2	MSCR	1	3539	1.86756	-2.02639	
32805	3.MD.3	MSCR	1	3624	1.80369	-2.67988	
32807	3.NBT.2	MSCR	1	3539	1.51616	-3.02155	
32823	3.MD.3	MSCR	1	3682	1.67115	-2.57994	
32824	3.MD.4	MSCR	1	3573	1.87599	-1.76494	
32826	3.OA.1	MSCR	1	4949	1.53194	-3.35258	
32846	3.OA.3	MSCR	1	3653	1.35172	-1.75536	
32854	3.OA.7a	MSCR	1	3460	1.28814	-3.08338	
32877	3.OA.4	MSCR	1	3625	1.56142	-2.85271	
32885	3.MD.4	MSCR	1	3567	1.57861	-2.14942	
32886	3.OA.3	MSCR	1	3586	1.95761	-2.58443	
32887	3.OA.4	MSCR	1	3610	1.47237	-3.08544	
32891	3.OA.9	MSCR	1	3603	1.27087	-2.31373	
32894	3.OA.6	MSCR	1	3614	1.02409	-0.86254	
32934	3.NF.2a	MSCR	1	3532	0.86830	-3.28674	

Table 4–J–15. Field-Test MC Items: Item Parameters for Grade 4 Math

ITS ID	Standard	MC vs. MSCR	Points	N	A Param	B Param	C Param
29802	4.OA.4	MC	1	4100	1.44592	-1.96991	0.19798
29808	4.NF.5	MC	1	4174	1.98272	-1.56882	0.15272
29814	4.OA.2	MC	1	4026	1.19404	-1.70183	0.10623
29817	4.NF.5	MC	1	4127	2.07927	-1.49138	0.16577
29818	4.NF.1	MC	1	4171	1.10869	-1.45273	0.16165
29822	4.OA.2	MC	1	4179	1.82763	-2.61159	0.22155
29826	4.NBT.6	MC	1	4082	1.51802	-1.91288	0.30995
29830	4.MD.5b	MC	1	4072	1.28828	-2.11474	0.08787
29921	4.MD.1	MC	1	4074	1.11999	-1.34506	0.10818
29922	4.NBT.1	MC	1	3981	0.93863	-2.86232	0.40327
29923	4.NBT.3	MC	1	4155	1.17859	-2.43383	0.16779
29925	4.NF.1	MC	1	4112	1.94150	-1.62161	0.34180
29926	4.NF.5	MC	1	4088	2.65450	-1.68629	0.26042
29930	4.OA.2	MC	1	4240	1.10804	-1.90721	0.06759
31092	4.OA.3a	MC	1	4157	1.25288	-1.56480	0.33056
31303	4.NBT.4	MC	1	4019	1.10061	-2.81855	0.25016
31304	4.NBT.5	MC	1	4057	1.47949	-1.56866	0.21753
31313	4.MD.6	MC	1	4057	0.99652	-1.63362	0.22282
31331	4.MD.2b	MC	1	4193	1.27435	-0.80913	0.13134
31398	4.MD.2b	MC	1	4035	1.36516	-2.06032	0.26251
31633	4.MD.1	MC	1	4146	0.71193	-1.20732	0.26638
31634	4.MD.6	MC	1	4121	0.66121	-2.09601	0.41069
31635	4.NBT.1	MC	1	4035	1.82404	-1.43002	0.11841
31764	4.NBT.1	MC	1	4056	1.67192	-1.36025	0.22428
31768	4.NBT.2	MC	1	4135	1.00401	-2.57998	0.07610
31777	4.NBT.3	MC	1	4117	0.93851	-2.13042	0.19094
31778	4.NBT.4	MC	1	4148	1.06558	-2.16463	0.15587
31779	4.NBT.6	MC	1	4104	1.32953	-1.71721	0.18981
31800	4.NBT.5	MC	1	4075	1.00390	-0.52569	0.14911
31804	4.NF.2	MC	1	4107	2.70605	-0.97194	0.51696
31829	4.NF.3a	MC	1	4109	0.91992	-2.42454	0.32160
31843	4.NF.3c	MC	1	4096	1.43359	-2.78691	0.15450
31850	4.NF.3d	MC	1	4131	1.31047	-2.24023	0.31794
31880	4.OA.2	MC	1	4018	1.20475	-1.99330	0.08568
31881	4.NF.3d	MC	1	4114	1.05048	-3.14376	0.11851
31882	4.NF.4a	MC	1	4040	0.96616	-2.30597	0.40236
31892	4.NBT.5	MC	1	4058	1.37457	-2.24489	0.11011
31895	4.NF.4b	MC	1	4099	1.33554	-2.01780	0.24557
31957	4.OA.5	MC	1	4103	1.18914	-1.94317	0.12610
31981	4.OA.3b	MC	1	4154	1.15645	-1.90494	0.14424
31989	4.OA.4	MC	1	4121	1.15952	-0.76402	0.10280

ITS ID	Standard	MC vs. MSCR	Points	N	A Param	B Param	C Param
31993	4.OA.4	MC	1	4104	2.13335	-1.73791	0.32539
31996	4.OA.5	MC	1	4084	0.92608	-1.77863	0.15952
32018	4.NF.3b	MC	1	4232	1.25795	-3.35350	0.07326
32034	4.OA.3a	MC	1	4132	2.07758	-0.64274	0.07535
32907	4.OA.3a	MC	1	4257	1.71269	-2.29043	0.24679
32939	4.NF.6	MC	1	4012	0.88483	-1.88585	0.25124
32943	4.OA.5	MC	1	4005	1.73613	-3.27845	0.17632

Table 4–J–16. Field-Test MSCR Items: Item Parameters for Grade 4 Math

ITS ID	Standard	MC vs. MSCR	Points	N	Param 0	Param 1	Param 2
29803	4.OA.4	MSCR	1	4097	1.68884	-2.46038	
29804	4.OA.5	MSCR	2	3958	0.93707	-1.79853	-0.97981
29805	4.NBT.1	MSCR	1	4204	1.42866	-1.56629	
29806	4.NBT.1	MSCR	1	4114	1.47745	-1.18777	
29807	4.NF.2	MSCR	1	4070	1.90567	-1.81626	
29815	4.OA.2	MSCR	1	4133	1.46000	-1.62072	
29816	4.OA.3b	MSCR	1	4157	0.88812	-1.00169	
29823	4.OA.2	MSCR	1	4100	1.57956	-1.28100	
29825	4.NBT.3	MSCR	1	4150	1.26575	-1.59775	
29827	4.NF.2	MSCR	1	4017	1.28280	-1.56489	
29829	4.MD.3	MSCR	1	4144	1.56405	-0.88958	
29878	4.NBT.3	MSCR	1	4078	1.27679	-1.35691	
29924	4.NBT.6	MSCR	1	4047	0.63474	-1.23188	
29927	4.NF.7	MSCR	1	4089	0.73222	-2.30293	
29931	4.OA.2	MSCR	1	4038	1.07835	-1.16113	
29934	4.OA.4	MSCR	1	4124	1.62937	-2.37934	
30063	4.OA.5	MSCR	1	4012	1.19429	-1.61421	
30997	4.G.2	MSCR	1	4118	1.28323	-2.38469	
31000	4.MD.1	MSCR	1	4107	1.52427	-1.81088	
31005	4.MD.6	MSCR	1	4054	1.14129	-2.57912	
31030	4.NBT.3	MSCR	2	4094	0.64252	-2.78010	-0.82254
31088	4.NF.3a	MSCR	1	4082	1.14528	-1.73335	
31089	4.NF.3b	MSCR	1	4086	1.07199	-1.35865	
31093	4.OA.4	MSCR	1	4069	1.04260	-2.06629	
31094	4.OA.5	MSCR	1	4111	1.28316	-1.47401	
31096	4.NF.1	MSCR	1	4133	1.51364	-1.34489	
31306	4.NF.1	MSCR	1	4125	1.72324	-1.15352	
31636	4.NBT.2	MSCR	1	4077	1.20581	-2.66474	
31637	4.NBT.3	MSCR	1	4028	1.26503	-1.74839	
31640	4.NBT.5	MSCR	1	4140	0.66004	0.23621	
31641	4.NBT.1	MSCR	2	4101	0.68878	-2.23386	-1.22522
31834	4.NF.3b	MSCR	1	4126	1.55729	-1.90170	
31863	4.NF.3c	MSCR	1	4067	1.53554	-1.14716	
32001	4.NBT.6	MSCR	1	4213	1.04416	-1.23120	
32004	4.NBT.3	MSCR	1	4128	1.12142	-2.41790	
32047	4.OA.5	MSCR	1	4121	1.58421	-2.68809	
32896	4.MD.1	MSCR	2	4125	0.63206	-0.35381	-2.67837
32897	4.MD.1	MSCR	1	4152	1.23904	-1.27266	
32899	4.MD.2a	MSCR	1	3974	1.51111	-2.26888	
32904	4.NF.3a	MSCR	1	4006	1.11532	-2.17162	

ITS ID	Standard	MC vs. MSCR	Points	N	Param 0	Param 1	Param 2
32906	4.NF.6	MSCR	1	4031	1.28946	-2.36705	
32911	4.OA.3a	MSCR	1	4077	0.97684	-0.49537	
32914	4.NF.3c	MSCR	1	4064	1.24364	-1.12341	
32918	4.OA.5	MSCR	1	4086	0.94611	-0.77346	
32921	4.OA.3b	MSCR	1	4036	1.54830	-2.10717	
32927	4.OA.5	MSCR	1	4073	1.03397	-2.84199	
32928	4.OA.3b	MSCR	1	4071	0.91045	-1.76725	
32929	4.OA.3b	MSCR	1	4040	1.21133	-1.92014	
32938	4.MD.2a	MSCR	1	4139	1.02201	-1.65767	

J–17. Field-Test MC Items: Item Parameters for Grade 5 Math

ITS ID	Standard	MC vs. MSCR	Points	N	A Param	B Param	C Param
29831	5.OA.2b	MC	1	4619	1.63256	0.27546	0.12295
29862	5.OA.2b	MC	1	4603	1.14005	-0.75842	0.11096
29863	5.OA.1	MC	1	4418	0.79601	-3.11544	0.08558
29864	5.OA.1	MC	1	4585	0.91772	-2.55138	0.23019
29865	5.NBT.7	MC	1	4450	1.31085	-0.07943	0.30267
29870	5.NF.2	MC	1	4470	1.21324	-0.92142	0.12948
29871	5.OA.2b	MC	1	4453	1.25955	-2.14969	0.05889
29872	5.OA.2a	MC	1	4552	0.80808	-1.76920	0.03604
29881	5.NF.4b	MC	1	4570	1.56943	-0.64765	0.19049
29884	5.OA.3	MC	1	4640	0.95558	-1.95551	0.08632
29885	5.OA.1	MC	1	4507	1.21811	-1.95046	0.04596
29886	5.OA.1	MC	1	4531	0.94812	-1.49302	0.16223
29891	5.NF.5a	MC	1	4585	1.81349	-0.39797	0.15959
29892	5.NF.7c	MC	1	4651	0.91264	-0.69917	0.10878
29893	5.NF.7a	MC	1	4471	0.74270	-1.62925	0.18151
29939	5.NBT.4	MC	1	4369	1.14757	-0.03998	0.30546
29940	5.NBT.7	MC	1	4593	0.99470	-1.07648	0.26489
29941	5.NBT.4	MC	1	4504	1.75056	-0.41454	0.20547
29942	5.NBT.5	MC	1	4500	0.97140	-2.15629	0.11467
29946	5.NF.2	MC	1	4512	1.30771	-1.07162	0.16233
29947	5.NF.5b	MC	1	4438	1.58593	-0.82756	0.30246
29958	5.OA.3	MC	1	4510	0.80229	-0.73494	0.05811
30971	5.MD.1	MC	1	4439	0.81858	-1.33791	0.19094
30989	5.NBT.1	MC	1	4544	1.37522	-0.94808	0.24345
31103	5.NF.1	MC	1	4467	2.41062	-0.88486	0.22058
31104	5.NF.7a	MC	1	4537	1.48965	0.02308	0.12205
31106	5.NF.7b	MC	1	4539	0.67630	-0.38255	0.07088
31108	5.NF.7c	MC	1	4459	0.90439	-0.94674	0.11291
31258	5.NBT.3a	MC	1	4488	1.07567	-0.71133	0.11977
31262	5.NBT.3b	MC	1	4493	0.84016	-1.49108	0.23262
31263	5.NF.6	MC	1	4714	1.50669	-0.38487	0.38694
31264	5.NF.4b	MC	1	4542	0.93338	-0.30796	0.41066
31265	5.OA.2a	MC	1	4481	0.97442	-0.92107	0.27261
31628	5.OA.1	MC	1	4563	1.14135	-1.05457	0.35854
31644	5.OA.2a	MC	1	4530	1.02265	-2.19943	0.06184
31765	5.MD.5a	MC	1	4618	1.00763	-2.24403	0.03069
31769	5.MD.1	MC	1	4454	1.21910	-1.11191	0.21946
31774	5.G.2	MC	1	4387	1.05553	-1.40021	0.29459
31780	5.NBT.5	MC	1	4424	0.98034	-1.95874	0.10975
31792	5.NBT.7	MC	1	4455	1.14037	-0.68054	0.25506
31794	5.NBT.3a	MC	1	4555	1.71782	-0.33090	0.27662

ITS ID	Standard	MC vs. MSCR	Points	N	A Param	B Param	C Param
31798	5.NBT.2	MC	1	4641	1.63035	-0.87235	0.21628
31799	5.NF.3	MC	1	4508	1.32780	-0.35931	0.06473
31801	5.NBT.3b	MC	1	4512	1.89335	-0.87866	0.23085
31821	5.OA.1	MC	1	4613	0.86647	-2.05462	0.14108
31842	5.NF.6	MC	1	4554	1.38438	-0.15516	0.04994
31848	5.NF.2	MC	1	4508	1.64682	-0.62732	0.23912
31856	5.OA.2a	MC	1	4521	1.08181	-2.65395	0.17850
31887	5.NBT.6	MC	1	4554	1.51860	0.16186	0.33842
31949	5.OA.2b	MC	1	4570	0.41444	-1.16117	0.12588
31974	5.OA.1	MC	1	4429	0.84370	-2.22820	0.17770
32054	5.NF.5a	MC	1	4590	2.07836	-0.42627	0.23359
32476	5.NF.1	MC	1	4588	1.41638	-1.07603	0.08342
32693	5.OA.3	MC	1	4552	1.10974	-2.43190	0.04428
32987	5.NF.7b	MC	1	4536	0.72969	-1.93866	0.24380
32989	5.OA.2b	MC	1	4507	0.84448	-0.62635	0.21786
32991	5.OA.2a	MC	1	4464	1.10715	-1.89265	0.03727
32994	5.OA.2b	MC	1	4490	1.00485	-1.25440	0.22362
33287	5.OA.1	MC	1	4476	1.05589	-2.25685	0.16667

MSCR Items: Item Parameters for Grade 5 Math

ITS ID	Standard	MC vs. MSCR	Points	N	Param 0	Param 1	Param 2
29861	5.OA.2a	MSCR	1	4578	0.94342	0.07692	
29868	5.NF.1	MSCR	1	4548	1.57172	-0.99714	
29869	5.NF.1	MSCR	2	4627	0.92334	-0.94676	-0.26437
29873	5.OA.3	MSCR	2	4489	0.54997	-3.18874	1.22435
29876	5.NBT.3a	MSCR	1	4591	1.31727	-0.63927	
29877	5.NBT.4	MSCR	1	4512	1.30483	-1.17403	
29879	5.NF.3	MSCR	1	4459	1.00573	-0.87550	
29880	5.NF.4a	MSCR	1	4464	1.21295	-0.12046	
29887	5.OA.1	MSCR	1	4557	0.67331	-0.04717	
29889	5.NBT.3b	MSCR	1	4542	0.98256	-1.88327	
29890	5.NBT.5	MSCR	1	4475	0.74902	-1.22782	
29938	5.NBT.3a	MSCR	1	4471	0.94025	-0.80165	
29945	5.NF.1	MSCR	1	4574	1.27766	-0.82287	
30067	5.NBT.5	MSCR	1	4549	0.76031	-1.45666	
30942	5.NF.5b	MSCR	1	4555	1.02078	-0.84293	
30969	5.G.3	MSCR	1	4542	0.90205	0.39099	
30973	5.MD.3a	MSCR	1	4465	0.65245	0.31633	
30974	5.MD.3b	MSCR	1	4583	0.87220	-0.03303	
30975	5.MD.5a	MSCR	1	4543	0.98981	-1.14380	
30987	5.MD.5b	MSCR	1	4404	1.09634	-1.50018	
30991	5.NBT.3b	MSCR	2	4526	0.77745	-2.59432	0.06514
31101	5.NBT.4	MSCR	1	4525	1.09238	-0.38547	
31820	5.NF.1	MSCR	1	4569	1.10550	-0.43373	
31890	5.G.4	MSCR	1	4462	1.02429	-0.32765	
31914	5.NF.4a	MSCR	2	4565	0.67693	-1.00015	-0.06923
31972	5.NBT.2	MSCR	1	4419	1.40485	0.00486	
32874	5.G.1b	MSCR	1	4464	0.76304	-2.42873	
32890	5.NF.3	MSCR	1	4514	1.10011	-0.90202	
32920	5.G.1b	MSCR	1	4563	0.74824	-1.89290	
32923	5.NF.2	MSCR	1	4511	1.57715	-0.85803	
32932	5.NF.7b	MSCR	1	4636	0.86773	-0.81686	
32946	5.G.1a	MSCR	1	4463	0.64795	-2.79739	
32947	5.NF.2	MSCR	1	4556	1.47203	-1.14011	
32951	5.NF.6	MSCR	1	4578	0.79994	0.86665	
32986	5.NF.6	MSCR	1	4451	1.16976	-0.11247	
32988	5.NF.7b	MSCR	1	4501	1.27466	-0.63661	
33018	5.OA.3	MSCR	1	4550	0.78581	-0.60798	
33021	5.NF.3	MSCR	1	4567	0.79742	-0.28596	
33025	5.OA.3	MSCR	2	4433	0.79613	-2.27591	0.02264

Table 4–J–19. Field-Test MC Items: Item Parameters for Grade 6 Math

ITS ID	Standard	MC vs. MSCR	Points	N	A Param	B Param	C Param
29963	6.EE.4	MC	1	3713	1.23747	0.11167	0.12089
29964	6.EE.7	MC	1	3668	0.48239	-1.88512	0.22217
29966	6.EE.9	MC	1	3686	1.15521	0.22380	0.17489
29968	6.NS.4	MC	1	3661	0.89357	-0.38416	0.12098
29969	6.NS.6a	MC	1	3593	0.93947	-2.64070	0.22665
29972	6.NS.7c	MC	1	3634	0.60217	-1.54928	0.20878
29973	6.RP.2	MC	1	3636	1.17714	-1.36175	0.10305
29976	6.G.3	MC	1	5307	0.92024	0.01826	0.35281
29977	6.G.4	MC	1	5366	0.59798	0.28467	0.26070
30110	6.NS.1c	MC	1	3532	0.96526	-0.06950	0.17563
30111	6.NS.1c	MC	1	3630	1.17895	-1.04685	0.15267
30113	6.NS.7a	MC	1	3673	0.50359	-0.21319	0.09696
30115	6.NS.7c	MC	1	3656	1.02165	0.72121	0.18923
30116	6.NS.8	MC	1	3648	0.94876	-2.15126	0.15203
30117	6.RP.1	MC	1	3687	0.68879	0.62287	0.27752
30118	6.G.1	MC	1	5245	0.94345	0.62648	0.26139
30120	6.SP.5b	MC	1	5185	1.28910	-1.81434	0.10873
30121	6.SP.5a	MC	1	5223	0.23187	-1.57511	0.11617
30122	6.SP.5d	MC	1	5147	0.45097	0.69209	0.36043
30149	6.EE.2a	MC	1	3597	1.15635	-0.15371	0.25932
30947	6.EE.1	MC	1	3569	1.38709	-1.01897	0.13214
30976	6.EE.2a	MC	1	3575	1.36991	-0.95848	0.29137
30978	6.EE.6	MC	1	3582	1.06721	-0.86124	0.30372
30980	6.G.4	MC	1	5291	0.69861	0.35423	0.19402
30982	6.NS.3	MC	1	3649	0.87923	0.22522	0.37782
30983	6.NS.2	MC	1	3533	0.97055	-0.32761	0.34890
31002	6.NS.6c	MC	1	3640	1.08431	0.10748	0.29821
31004	6.SP.1	MC	1	5187	0.46219	-0.74537	0.11195
31029	6.EE.4	MC	1	3649	1.14815	1.16923	0.28955
31032	6.NS.1a	MC	1	3719	1.47126	0.65914	0.39766
31068	6.RP.3a	MC	1	3719	1.15391	-0.35800	0.05144
31069	6.RP.3b	MC	1	3693	1.25158	-0.14065	0.23571
31070	6.SP.4	MC	1	5225	0.68663	-1.70338	0.27606
31266	6.NS.7a	MC	1	3682	0.99399	-1.49340	0.08612
31267	6.NS.7b	MC	1	3726	1.17144	-0.02481	0.20140
31281	6.G.2	MC	1	5325	1.07885	0.94905	0.10338
31781	6.NS.2	MC	1	3659	1.03315	-0.23134	0.24514
31787	6.RP.3a	MC	1	3607	0.96397	-0.70319	0.26058
31791	6.EE.7	MC	1	3712	0.77061	-1.06410	0.22577
31795	6.RP.3b	MC	1	3612	0.67110	0.34112	0.28895
31805	6.RP.3b	MC	1	3650	0.85723	-1.29344	0.20677

ITS ID	Standard	MC vs. MSCR	Points	N	A Param	B Param	C Param
31807	6.NS.8	MC	1	3680	0.83594	-1.65887	0.07940
31819	6.RP.2	MC	1	3636	1.37234	-0.91893	0.20566
31822	6.EE.8	MC	1	3620	0.94076	-0.11424	0.33420
31823	6.EE.2c	MC	1	3658	1.29922	0.89485	0.11685
31831	6.G.1	MC	1	5097	1.15536	0.38741	0.20244
31839	6.SP.5a	MC	1	5215	0.77519	-2.24356	0.09678
31846	6.RP.3c	MC	1	3580	0.80793	-1.43198	0.42366
31860	6.EE.3	MC	1	3652	0.77354	0.15709	0.09232
31866	6.G.3	MC	1	5278	0.89784	-1.25437	0.09386
31868	6.EE.2a	MC	1	3714	0.84787	-2.22501	0.13980
31900	6.SP.3	MC	1	5143	0.50556	0.96303	0.06187
31912	6.RP.3d	MC	1	3593	1.30541	-0.68628	0.41887
32782	6.EE.9	MC	1	3646	1.20444	0.01190	0.17281
32784	6.NS.2	MC	1	3654	1.20040	-0.82491	0.20920
32786	6.RP.1	MC	1	3659	1.08584	-1.05475	0.17855
32788	6.RP.1	MC	1	3583	1.16716	-0.97758	0.08524
32804	6.RP.1	MC	1	3636	1.45128	0.74947	0.15410
32838	6.SP.1	MC	1	5316	0.62743	-0.25000	0.19834
32839	6.SP.1	MC	1	5240	0.57550	-0.82775	0.21971
33009	6.EE.7	MC	1	3576	1.52735	-1.73570	0.30492

Table 4–J–20. Field-Test MSCR Items: Item Parameters for Grade 6 Math

ITS ID	Standard	MC vs. MSCR	Points	N	Param 0	Param 1	Param 2
27007	6.EE.9	MSCR	1	3632	1.52256	0.18644	
29962	6.EE.1	MSCR	1	3639	0.88670	0.06128	
29965	6.EE.8	MSCR	1	3613	0.62296	-0.13565	
29967	6.NS.3	MSCR	1	3554	0.85125	-0.17373	
29971	6.NS.6c	MSCR	1	3651	0.69367	-0.20042	
29974	6.RP.3a	MSCR	2	3580	0.68210	-1.21580	-0.81475
30104	6.EE.2c	MSCR	1	3580	0.76227	-0.30901	
30106	6.EE.5	MSCR	1	3542	1.11522	-0.32284	
30112	6.NS.6b	MSCR	1	3639	1.08567	-1.10707	
30114	6.NS.7b	MSCR	1	3657	1.01948	-1.24972	
30146	6.EE.6	MSCR	1	3779	1.06917	0.25570	
30168	6.NS.1a	MSCR	1	3577	0.82867	0.11224	
30191	6.NS.8	MSCR	2	3619	0.72676	-0.62221	-0.59195
30197	6.G.1	MSCR	2	5102	0.37683	1.17442	1.64528
30198	6.G.2	MSCR	1	5291	1.18901	2.11630	
30204	6.SP.5d	MSCR	1	5278	0.76314	0.25448	
30966	6.EE.1	MSCR	1	3631	0.95078	-0.66487	
31033	6.NS.4	MSCR	1	3558	0.85221	0.37362	
31117	6.EE.8	MSCR	2	3609	0.70160	-1.20659	0.86339
31122	6.SP.3	MSCR	1	5245	0.89188	1.30585	
31789	6.RP.1	MSCR	1	3508	0.69210	-1.72467	
31803	6.RP.3a	MSCR	1	3748	0.74724	0.37599	
31833	6.EE.2b	MSCR	1	3644	0.77117	-0.14126	
31908	6.RP.3c	MSCR	1	3592	0.55973	1.03351	
31923	6.NS.5	MSCR	1	3601	0.49290	-3.18262	
32012	6.EE.2c	MSCR	2	3597	0.59169	-2.00617	-0.83544
32033	6.NS.7c	MSCR	2	3700	0.42862	-1.25986	-0.86658
32088	6.NS.3	MSCR	1	3634	0.50873	0.07413	
32777	6.EE.8	MSCR	1	3587	1.15285	0.83571	
32781	6.EE.9	MSCR	1	3628	1.02968	-0.21450	
32783	6.EE.9	MSCR	1	3574	0.83708	-2.20444	
32785	6.NS.2	MSCR	1	3597	1.00580	-1.26802	
32801	6.RP.1	MSCR	1	3581	0.58185	-1.35299	
32806	6.RP.2	MSCR	1	3673	0.91303	-0.00971	
32808	6.RP.2	MSCR	1	3679	1.12891	-1.22207	
32821	6.RP.3a	MSCR	1	3558	0.97606	-0.85776	
32822	6.RP.3a	MSCR	1	3613	1.19692	-0.49652	
32828	6.RP.3b	MSCR	2	3674	0.86721	-1.93430	-0.12992
32829	6.RP.3c	MSCR	1	3591	1.30332	0.71041	
32834	6.RP.3c	MSCR	1	3698	0.98987	0.55625	

ITS ID	Standard	MC vs. MSCR	Points	N	Param 0	Param 1	Param 2
32837	6.RP.3c	MSCR	1	3641	1.06365	0.60767	
32840	6.SP.1	MSCR	1	5308	0.56597	-0.42067	
32995	6.EE.6	MSCR	1	3727	0.84324	1.52765	
33003	6.EE.5	MSCR	1	3591	0.33578	0.19502	
33005	6.EE.5	MSCR	1	3731	1.01209	-0.25796	
33007	6.EE.6	MSCR	1	3464	0.88342	-0.20773	
33010	6.EE.7	MSCR	1	3740	0.65964	-2.66916	
33011	6.EE.8	MSCR	1	3611	0.47221	-1.00468	

Table 4–J–21. Field-Test MC Items: Item Parameters for Grade 7 Math

ITS ID	Standard	MC vs. MSCR	Points	N	A Param	B Param	C Param
29982	7.EE.4b	MC	1	3856	0.87567	-0.15442	0.07528
29984	7.G.5	MC	1	3812	1.12710	0.67728	0.27059
29985	7.G.3	MC	1	3944	0.43728	0.45240	0.46012
29987	7.G.5	MC	1	4003	1.33537	0.30914	0.23689
29995	7.RP.2c	MC	1	4008	1.22895	0.49099	0.19102
29997	7.RP.2d	MC	1	3885	1.03142	-1.69550	0.27799
30090	7.G.1	MC	1	3874	0.55546	-0.21213	0.11703
30091	7.G.6	MC	1	3958	1.37869	1.43002	0.34434
30094	7.NS.2b	MC	1	3938	0.85254	0.53340	0.13360
30095	7.NS.3	MC	1	4002	0.71154	-0.17318	0.24757
30096	7.SP.1	MC	1	3908	1.19729	1.70628	0.21226
30097	7.SP.2	MC	1	4039	0.99845	0.76505	0.06136
30099	7.SP.8a	MC	1	3887	0.91723	-0.31693	0.08992
30100	7.SP.7b	MC	1	3906	1.16782	0.65463	0.10453
30183	7.RP.2a	MC	1	3808	0.44607	2.12105	0.13709
30985	7.RP.3	MC	1	3858	2.33533	1.57036	0.13594
30986	7.SP.6	MC	1	3925	0.62817	-2.42975	0.23433
31097	7.G.1	MC	1	3912	1.25500	1.57519	0.21644
31105	7.SP.7a	MC	1	3895	1.20986	0.20581	0.31322
31107	7.RP.2c	MC	1	3861	1.04856	1.22039	0.42442
31113	7.G.4	MC	1	3885	1.05165	1.89480	0.08085
31191	7.NS.1b	MC	1	3837	0.92933	-0.87050	0.14326
31197	7.EE.3	MC	1	3922	0.85166	1.34096	0.33782
31198	7.EE.4a	MC	1	3943	1.53189	1.51092	0.41610
31203	7.RP.1	MC	1	3922	0.92083	1.07015	0.13326
31205	7.RP.2b	MC	1	3869	0.73683	-0.12712	0.21616
31212	7.NS.2a	MC	1	3887	1.05176	1.53092	0.09643
31214	7.NS.1a	MC	1	3859	0.83094	1.00864	0.07980
31280	7.EE.4a	MC	1	3765	0.87667	0.08870	0.21363
31783	7.EE.4b	MC	1	3961	1.49158	0.37515	0.31652
31786	7.G.6	MC	1	3933	1.68901	0.55083	0.48843
31790	7.EE.1	MC	1	3922	0.69681	0.16266	0.25219
31812	7.EE.4a	MC	1	3887	1.12935	-0.64817	0.23407
31818	7.G.6	MC	1	3925	1.42501	1.57113	0.15275
31825	7.G.5	MC	1	3973	1.54332	0.10090	0.09309
31849	7.NS.1d	MC	1	3913	0.66322	-0.18567	0.03872
31869	7.RP.2d	MC	1	3801	1.05734	-1.20361	0.18512
31985	7.SP.4	MC	1	3946	0.73052	0.39691	0.05126
32056	7.RP.1	MC	1	3944	1.32749	-0.41134	0.16552
32067	7.RP.3	MC	1	3949	0.93461	0.97182	0.37298
32107	7.SP.5	MC	1	3855	0.65121	-1.25659	0.30848

ITS ID	Standard	MC vs. MSCR	Points	N	A Param	B Param	C Param
32145	7.SP.8c	MC	1	3926	0.29368	1.49413	0.05111
32462	7.SP.8b	MC	1	3871	1.36155	1.49036	0.03618
32471	7.SP.8a	MC	1	3916	1.43386	0.84087	0.13104
32490	7.RP.2b	MC	1	3935	1.04784	0.29561	0.27969
32842	7.NS.1a	MC	1	3879	1.19593	-0.97055	0.15080
32845	7.NS.2d	MC	1	3861	0.72339	1.00872	0.22625
32850	7.NS.3	MC	1	3926	0.54723	-0.66695	0.06049
32857	7.RP.1	MC	1	3754	0.79828	0.90136	0.07875
32893	7.RP.2a	MC	1	3970	1.22418	1.38466	0.19830

Table 4–J–22. Field-Test MSCR Items: Item Parameters for Grade 7 Math

ITS ID	Standard	MC vs. MSCR	Points	N	Param 0	Param 1	Param 2
29992	7.RP.2a	MSCR	1	3989	0.35534	0.73628	
30087	7.EE.2	MSCR	1	3815	0.46405	2.64878	
30089	7.EE.4a	MSCR	1	3919	0.95190	0.40567	
30093	7.NS.2a	MSCR	1	3829	0.61141	1.04806	
30166	7.G.5	MSCR	1	3869	1.36821	1.68163	
30170	7.G.6	MSCR	1	3866	1.17173	0.54705	
30175	7.NS.1a	MSCR	1	3834	0.65016	-0.41996	
30185	7.RP.2b	MSCR	1	4003	0.65084	0.95851	
30188	7.RP.2b	MSCR	1	3983	0.60707	-0.51800	
30205	7.EE.1	MSCR	1	3901	0.88213	1.11126	
30207	7.EE.2	MSCR	1	3917	0.99424	0.35787	
30209	7.EE.2	MSCR	1	3920	0.98913	2.65635	
30216	7.EE.3	MSCR	2	3955	0.71394	0.51999	1.71302
30220	7.EE.4a	MSCR	1	3905	1.20400	1.63685	
30226	7.EE.3	MSCR	1	3926	0.92517	1.07063	
30331	7.NS.3	MSCR	1	3911	1.22118	0.91515	
30337	7.SP.2	MSCR	2	3939	0.79186	1.35006	1.11418
30348	7.SP.6	MSCR	1	3887	0.77109	0.47855	
31110	7.G.2	MSCR	1	3906	0.68202	0.65723	
31193	7.EE.1	MSCR	1	3832	0.58803	1.66972	
31199	7.EE.4b	MSCR	1	3878	0.64347	1.67431	
31200	7.G.2	MSCR	1	4033	1.21782	1.07699	
31201	7.G.5	MSCR	1	3899	0.93976	0.81764	
31202	7.NS.2b	MSCR	2	3971	0.49938	0.09949	1.75509
31216	7.RP.2a	MSCR	1	3900	0.88316	0.10178	
31249	7.NS.2d	MSCR	1	3852	0.83330	0.09095	
31674	7.SP.2	MSCR	1	3916	0.63979	-0.04737	
31815	7.G.3	MSCR	1	4053	0.31007	3.22654	
31832	7.EE.2	MSCR	1	3888	0.69401	1.30276	
31840	7.NS.1c	MSCR	1	3886	0.80591	-0.16068	
31857	7.NS.3	MSCR	1	3812	0.95075	0.46069	
32076	7.RP.2a	MSCR	1	3944	0.63836	1.76491	
32466	7.NS.2a	MSCR	1	3941	0.62485	-0.25962	
32487	7.SP.7b	MSCR	2	4032	0.51603	-0.09484	1.51007
32843	7.NS.1d	MSCR	1	3915	0.53072	-1.51657	
32844	7.NS.1d	MSCR	1	3924	0.43378	-0.36808	
32848	7.NS.1d	MSCR	1	3934	0.75272	-0.56824	
32849	7.NS.3	MSCR	1	3879	0.89150	0.93052	
32852	7.RP.3	MSCR	1	3834	0.33533	1.86787	
32853	7.NS.3	MSCR	1	3785	0.85328	-0.36460	

ITS ID	Standard	MC vs. MSCR	Points	N	Param 0	Param 1	Param 2
32855	7.NS.3	MSCR	2	4046	0.95068	0.91857	1.93916
32856	7.RP.1	MSCR	1	3951	1.18363	0.25017	
32858	7.RP.1	MSCR	1	3853	0.73292	0.73385	
32859	7.RP.1	MSCR	1	4064	0.94413	0.21972	
32860	7.RP.1	MSCR	1	3888	1.31023	1.45865	
32863	7.RP.1	MSCR	1	3916	1.19561	1.02680	
32864	7.RP.1	MSCR	1	3920	0.76511	1.73481	
32880	7.RP.1	MSCR	1	3919	1.10696	0.11639	
32882	7.RP.2a	MSCR	1	4000	0.80359	-0.86648	
32895	7.RP.2c	MSCR	1	3913	1.44310	1.89283	
32903	7.RP.2d	MSCR	1	3948	1.05419	0.61000	
32905	7.RP.2d	MSCR	1	3765	1.20722	0.91906	

Table 4–J–23. Field-Test MC Items: Item Parameters for Grade 8 Math

ITS ID	Standard	MC vs. MSCR	Points	N	A Param	B Param	C Param
30007	8.F.5	MC	1	4407	0.65855	1.21337	0.08117
30008	8.F.5	MC	1	4357	0.96229	0.96957	0.21267
30020	8.G.8	MC	1	4423	1.24958	2.00101	0.18992
30021	8.SP.2	MC	1	4414	0.60859	0.97146	0.24415
30123	8.F.3	MC	1	4479	0.93743	2.10776	0.15846
30129	8.G.2	MC	1	4473	0.94148	0.91916	0.26343
30130	8.G.4	MC	1	4428	0.60923	0.79147	0.04329
30131	8.G.6	MC	1	4371	0.77208	-0.01754	0.22642
30132	8.NS.3	MC	1	4479	0.46658	0.97588	0.05080
30133	8.SP.1	MC	1	4491	0.87635	0.43981	0.27820
30134	8.F.2	MC	1	4449	1.35439	2.37297	0.27994
30135	8.F.5	MC	1	4448	0.63865	0.07933	0.14141
30136	8.EE.7c	MC	1	4440	1.08535	2.12518	0.25215
30138	8.G.1a	MC	1	4448	0.62997	-0.21558	0.15924
30139	8.G.1c	MC	1	4435	0.81111	2.50036	0.19953
30140	8.G.3	MC	1	4445	0.89010	1.50081	0.27413
30141	8.NS.1	MC	1	4422	0.72086	2.02368	0.11791
30142	8.NS.3	MC	1	4363	0.35118	1.79964	0.11455
30144	8.SP.4	MC	1	4352	0.31929	0.63458	0.10005
30349	8.G.1c	MC	1	4312	0.43992	1.12030	0.06322
30352	8.G.3	MC	1	4409	0.93013	2.66774	0.29031
30353	8.G.4	MC	1	4353	0.58392	1.36043	0.22518
30944	8.EE.1	MC	1	4478	0.65370	0.96646	0.21710
30946	8.EE.7a	MC	1	4442	0.63432	1.93116	0.11120
30951	8.G.1a	MC	1	4562	0.93437	2.69092	0.22656
30955	8.SP.2	MC	1	4401	0.75857	1.28388	0.25840
30956	8.SP.3	MC	1	4440	1.12436	2.81805	0.42575
30957	8.SP.4	MC	1	4485	0.88800	2.30443	0.28819
30958	8.EE.3	MC	1	4430	0.92689	2.17124	0.41379
31084	8.G.3	MC	1	4395	0.96073	1.45027	0.35170
31233	8.G.9	MC	1	4462	0.89094	2.02648	0.17279
31235	8.G.8	MC	1	4397	1.19326	1.96772	0.19260
31784	8.NS.2	MC	1	4400	0.83590	-0.04248	0.35821
31785	8.NS.3	MC	1	4506	0.65590	2.01042	0.53455
31806	8.F.3	MC	1	4385	0.79407	0.33153	0.21637
31808	8.G.3	MC	1	4481	0.55477	1.03557	0.03350
31809	8.NS.2	MC	1	4284	1.04475	-0.01026	0.35608
31816	8.NS.2	MC	1	4397	1.00054	-0.18330	0.34864
31838	8.SP.4	MC	1	4492	0.30972	3.76840	0.09481
31845	8.SP.1	MC	1	4376	0.56653	-1.18148	0.22438
31847	8.EE.8a	MC	1	4353	0.72191	-0.28999	0.30010

ITS ID	Standard	MC vs. MSCR	Points	N	A Param	B Param	C Param
31901	8.SP.3	MC	1	4397	0.18596	0.31252	0.09138
32919	8.NS.1	MC	1	4471	0.74224	0.06412	0.32840
32924	8.NS.2	MC	1	4330	0.82431	1.43730	0.35126
32964	8.SP.2	MC	1	4427	0.68750	-1.20817	0.26643
32968	8.SP.2	MC	1	4519	0.75552	-1.18832	0.44618
32970	8.SP.2	MC	1	4417	1.16823	1.56640	0.11829
32974	8.SP.2	MC	1	4516	0.77993	-1.93580	0.19036
32975	8.SP.4	MC	1	4414	0.63870	0.29719	0.24265
32979	8.SP.4	MC	1	4359	0.56288	-0.36029	0.17974

Table 4–J–24. Field-Test MSCR Items: Item Parameters for Grade 8 Math

ITS ID	Standard	MC vs. MSCR	Points	N	Param 0	Param 1	Param 2
30004	8.F.2	MSCR	1	4358	0.45143	3.11719	
30012	8.F.2	MSCR	1	4567	0.78258	0.86402	
30016	8.G.1b	MSCR	1	4458	0.70312	0.34197	
30022	8.SP.2	MSCR	1	4387	0.24380	3.98401	
30024	8.G.1a	MSCR	1	4383	0.45157	-0.88245	
30137	8.EE.8b	MSCR	1	4504	0.49352	2.80269	
30214	8.F.5	MSCR	1	4403	0.62870	0.24096	
30219	8.G.1b	MSCR	1	4454	0.51335	0.18508	
30221	8.G.8	MSCR	1	4393	1.06533	1.80491	
30225	8.SP.3	MSCR	2	4443	0.51106	-0.70369	-0.34226
30318	8.G.1b	MSCR	1	4484	0.61770	0.20539	
30325	8.G.7	MSCR	1	4404	0.70237	3.88227	
30346	8.EE.8c	MSCR	1	4442	0.63426	0.34681	
30347	8.G.1a	MSCR	1	4433	0.73072	-0.19194	
30351	8.G.1c	MSCR	1	4387	0.31291	1.88897	
30948	8.EE.7b	MSCR	1	4321	0.28112	2.73066	
30950	8.F.2	MSCR	1	4490	0.73592	2.20902	
30953	8.G.2	MSCR	1	4455	0.51678	1.61929	
30961	8.G.9	MSCR	1	4346	0.34372	3.29091	
30964	8.G.3	MSCR	2	4470	0.38347	-0.46581	1.84666
30965	8.SP.4	MSCR	2	4536	0.15749	3.49304	8.61422
31065	8.F.1	MSCR	1	4422	0.29336	3.22774	
31066	8.F.1	MSCR	1	4446	0.42799	3.00593	
31087	8.NS.1	MSCR	1	4477	0.29974	2.09050	
31236	8.G.1b	MSCR	1	4376	0.65678	0.84407	
31248	8.SP.1	MSCR	2	4424	0.41110	-1.61074	0.53366
31810	8.NS.1	MSCR	1	4422	0.49245	1.29703	
31828	8.F.5	MSCR	1	4386	0.40422	-0.20170	
31865	8.EE.8a	MSCR	1	4320	0.38840	2.12967	
31940	8.NS.2	MSCR	1	4449	0.49396	0.53848	
32002	8.EE.1	MSCR	1	4339	0.52536	1.44094	
32910	8.G.6	MSCR	1	4491	0.36373	0.54644	
32917	8.G.8	MSCR	1	4391	1.23883	2.52732	
32922	8.NS.1	MSCR	1	4397	0.62047	1.94332	
32930	8.NS.1	MSCR	1	4522	0.66600	-0.23592	
32931	8.NS.1	MSCR	1	4348	0.62724	2.00480	
32952	8.NS.2	MSCR	1	4462	0.59768	0.82704	
32953	8.NS.2	MSCR	1	4419	0.74054	0.53020	
32956	8.SP.1	MSCR	2	4411	0.59189	-0.06008	0.70201
32973	8.SP.2	MSCR	1	4304	0.50306	-1.21542	

ITS ID	Standard	MC vs. MSCR	Points	N	Param 0	Param 1	Param 2
32976	8.SP.4	MSCR	1	4524	0.47354	-1.65441	
32977	8.SP.4	MSCR	2	4418	0.29030	-2.51873	3.37699
32978	8.SP.4	MSCR	1	4477	0.76438	1.33079	
32980	8.SP.4	MSCR	1	4464	0.49159	-1.66733	

Table 4–J–25. Field-Test Items: Item Parameters for Grade 4 Science

ITS ID	Standard	Number of Assertions	Assertion Order	N	Parameter	Statistics
32748*	4.1.1	8	0	1731	1.50901	Difficulty
32748*	4.1.1	8	1	1731	3.36065	Difficulty
32748*	4.1.1	8	2	1731	-0.02036	Difficulty
32748*	4.1.1	8	3	1731	0.16551	Difficulty
32748*	4.1.1	8	4	1731	1.78197	Difficulty
32748*	4.1.1	8	5	1731	3.30702	Difficulty
32748*	4.1.1	8	6	1731	-0.32784	Difficulty
32748*	4.1.1	8	7	1731	-0.22528	Difficulty
32748*	4.1.1	8		1731	0.55236	Cluster variance
32820	4.1.1	8	0	1764	0.04667	Difficulty
32820	4.1.1	8	1	1764	2.14804	Difficulty
32820	4.1.1	8	2	1764	-0.17468	Difficulty
32820	4.1.1	8	3	1764	-0.17771	Difficulty
32820	4.1.1	8	4	1764	0.44401	Difficulty
32820	4.1.1	8	5	1764	-0.90067	Difficulty
32820	4.1.1	8	6	1764	-0.61543	Difficulty
32820	4.1.1	8	7	1764	1.37869	Difficulty
32820	4.1.1	8		1764	0.52541	Cluster variance
33041	4.1.1	8	0	1707	1.35670	Difficulty
33041	4.1.1	8	1	1707	1.94533	Difficulty
33041	4.1.1	8	2	1707	1.86332	Difficulty
33041	4.1.1	8	3	1707	0.32700	Difficulty
33041	4.1.1	8	4	1707	0.19142	Difficulty
33041	4.1.1	8	5	1707	-1.28226	Difficulty
33041	4.1.1	8	6	1707	-1.91087	Difficulty
33041	4.1.1	8	7	1707	-0.69236	Difficulty
33041	4.1.1	8		1707	0.56554	Cluster variance
32760	4.1.2	7	0	1655	0.83286	Difficulty
32760	4.1.2	7	1	1655	0.91074	Difficulty
32760	4.1.2	7	2	1655	0.81406	Difficulty
32760	4.1.2	7	3	1655	3.64080	Difficulty
32760	4.1.2	7	4	1655	4.62323	Difficulty
32760	4.1.2	7	5	1655	-0.62279	Difficulty
32760	4.1.2	7	6	1655	0.07915	Difficulty
32760	4.1.2	7		1655	0.91300	Cluster variance
32981	4.1.2	7	1	1760	1.37768	Difficulty
32981	4.1.2	7	2	1760	1.58848	Difficulty
32981	4.1.2	7	3	1760	1.21256	Difficulty

32981	4.1.2	7	4	1760	2.92557	Difficulty
32981	4.1.2	7	5	1760	2.03174	Difficulty
32981	4.1.2	7	6	1760	2.90984	Difficulty
32981	4.1.2	7	7	1760	0.35228	Difficulty
32981	4.1.2	7		1760	1.88529	Cluster variance
33102	4.1.2	7	0	1773	0.69458	Difficulty
33102	4.1.2	7	1	1773	0.71721	Difficulty
33102	4.1.2	7	2	1773	0.64015	Difficulty
33102	4.1.2	7	3	1773	-0.59259	Difficulty
33102	4.1.2	7	5	1773	-1.06052	Difficulty
33102	4.1.2	7	6	1773	-0.84766	Difficulty
33102	4.1.2	7	7	1773	-1.10108	Difficulty
33102	4.1.2	7		1773	0.45252	Cluster variance
32982	4.1.3	7	0	1708	-0.69559	Difficulty
32982	4.1.3	7	1	1708	-1.78139	Difficulty
32982	4.1.3	7	2	1708	0.77321	Difficulty
32982	4.1.3	7	3	1708	2.30996	Difficulty
32982	4.1.3	7	4	1708	-0.11699	Difficulty
32982	4.1.3	7	5	1708	1.14579	Difficulty
32982	4.1.3	7	6	1708	-0.39250	Difficulty
32982	4.1.3	7		1708	0.28204	Cluster variance
33098	4.1.3	9	0	1786	1.54315	Difficulty
33098	4.1.3	9	1	1786	2.34140	Difficulty
33098	4.1.3	9	2	1786	-1.55902	Difficulty
33098	4.1.3	9	3	1786	-0.58140	Difficulty
33098	4.1.3	9	4	1786	0.39656	Difficulty
33098	4.1.3	9	5	1786	-0.27330	Difficulty
33098	4.1.3	9	6	1786	0.60967	Difficulty
33098	4.1.3	9	7	1786	-0.61036	Difficulty
33098	4.1.3	9	8	1786	-1.31947	Difficulty
33098	4.1.3	9		1786	0.24321	Cluster variance
32738	4.1.4	8	0	1751	0.01016	Difficulty
32738	4.1.4	8	1	1751	-0.19021	Difficulty
32738	4.1.4	8	2	1751	-0.16769	Difficulty
32738	4.1.4	8	3	1751	0.69907	Difficulty
32738	4.1.4	8	4	1751	0.05577	Difficulty
32738	4.1.4	8	5	1751	0.56311	Difficulty
32738	4.1.4	8	6	1751	-0.08869	Difficulty
32738	4.1.4	8	7	1751	3.04480	Difficulty
32738	4.1.4	8		1751	1.22657	Cluster variance
33096	4.1.4	6	0	1664	-1.66873	Difficulty
33096	4.1.4	6	1	1664	-1.15358	Difficulty
33096	4.1.4	6	2	1664	-0.88777	Difficulty
33096	4.1.4	6	3	1664	0.36379	Difficulty
33096	4.1.4	6	4	1664	0.32481	Difficulty

33096	4.1.4	6	5	1664	-0.99119	Difficulty
33096	4.1.4	6		1664	0.78636	Cluster variance
32750	4.2.1	7	0	1702	0.67449	Difficulty
32750	4.2.1	7	1	1702	0.49519	Difficulty
32750	4.2.1	7	2	1702	-1.22796	Difficulty
32750	4.2.1	7	3	1702	-0.78953	Difficulty
32750	4.2.1	7	4	1702	-1.22438	Difficulty
32750	4.2.1	7	5	1702	0.56619	Difficulty
32750	4.2.1	7	6	1702	-1.71019	Difficulty
32750	4.2.1	7		1702	0.61243	Cluster variance
33026	4.2.1	7	0	1704	-0.51036	Difficulty
33026	4.2.1	7	1	1704	0.55381	Difficulty
33026	4.2.1	7	3	1704	0.26917	Difficulty
33026	4.2.1	7	4	1704	0.56109	Difficulty
33026	4.2.1	7	5	1704	0.20307	Difficulty
33026	4.2.1	7	6	1704	-0.02342	Difficulty
33026	4.2.1	7	7	1704	-0.01661	Difficulty
33026	4.2.1	7		1704	1.00321	Cluster variance
33063	4.2.2	5	0	1724	-0.82721	Difficulty
33063	4.2.2	5	1	1724	-0.59498	Difficulty
33063	4.2.2	5	2	1724	-0.77778	Difficulty
33063	4.2.2	5	3	1724	0.48334	Difficulty
33063	4.2.2	5	5	1724	0.13230	Difficulty
33063	4.2.2	5		1724	0.37413	Cluster variance
33097	4.2.2	9	0	1650	-1.83458	Difficulty
33097	4.2.2	9	1	1650	-0.84842	Difficulty
33097	4.2.2	9	2	1650	-0.55043	Difficulty
33097	4.2.2	9	3	1650	0.62512	Difficulty
33097	4.2.2	9	4	1650	0.08963	Difficulty
33097	4.2.2	9	5	1650	2.22268	Difficulty
33097	4.2.2	9	6	1650	-1.26939	Difficulty
33097	4.2.2	9	7	1650	-1.24560	Difficulty
33097	4.2.2	9	8	1650	0.24823	Difficulty
33097	4.2.2	9		1650	0.01762	Cluster variance
32915	4.2.3	9	0	1768	1.47194	Difficulty
32915	4.2.3	9	1	1768	0.81859	Difficulty
32915	4.2.3	9	2	1768	0.54251	Difficulty
32915	4.2.3	9	3	1768	0.78666	Difficulty
32915	4.2.3	9	4	1768	0.79019	Difficulty
32915	4.2.3	9	5	1768	0.93425	Difficulty
32915	4.2.3	9	6	1768	0.94527	Difficulty
32915	4.2.3	9	7	1768	1.19725	Difficulty
32915	4.2.3	9	8	1768	-0.94740	Difficulty
32915	4.2.3	9		1768	0.70810	Cluster variance
33034	4.2.4	11	0	1743	0.51858	Difficulty

33034	4.2.4	11	1	1743	0.58940	Difficulty
33034	4.2.4	11	2	1743	0.16929	Difficulty
33034	4.2.4	11	3	1743	1.10456	Difficulty
33034	4.2.4	11	4	1743	0.53779	Difficulty
33034	4.2.4	11	5	1743	0.71125	Difficulty
33034	4.2.4	11	6	1743	-0.75578	Difficulty
33034	4.2.4	11	7	1743	-0.75279	Difficulty
33034	4.2.4	11	8	1743	0.04979	Difficulty
33034	4.2.4	11	9	1743	-0.95628	Difficulty
33034	4.2.4	11	10	1743	-0.33457	Difficulty
33034	4.2.4	11		1743	0.31840	Cluster variance
33091	4.2.4	10	0	1694	2.16646	Difficulty
33091	4.2.4	10	1	1694	1.93516	Difficulty
33091	4.2.4	10	2	1694	0.51313	Difficulty
33091	4.2.4	10	3	1694	0.55429	Difficulty
33091	4.2.4	10	4	1694	0.60966	Difficulty
33091	4.2.4	10	5	1694	0.02684	Difficulty
33091	4.2.4	10	6	1694	-1.05540	Difficulty
33091	4.2.4	10	7	1694	-0.73694	Difficulty
33091	4.2.4	10	8	1694	-0.68780	Difficulty
33091	4.2.4	10	9	1694	0.15993	Difficulty
33091	4.2.4	10		1694	0.50391	Cluster variance
33107	4.3.1	8	0	1689	0.29512	Difficulty
33107	4.3.1	8	1	1689	0.58477	Difficulty
33107	4.3.1	8	2	1689	-0.45600	Difficulty
33107	4.3.1	8	3	1689	-0.67967	Difficulty
33107	4.3.1	8	4	1689	0.62969	Difficulty
33107	4.3.1	8	5	1689	1.04695	Difficulty
33107	4.3.1	8	6	1689	0.57789	Difficulty
33107	4.3.1	8	7	1689	0.98533	Difficulty
33107	4.3.1	8		1689	0.49167	Cluster variance
33052	4.3.2	7	0	1684	1.53353	Difficulty
33052	4.3.2	7	1	1684	1.48348	Difficulty
33052	4.3.2	7	2	1684	0.74745	Difficulty
33052	4.3.2	7	3	1684	0.57951	Difficulty
33052	4.3.2	7	4	1684	1.10236	Difficulty
33052	4.3.2	7	5	1684	1.90664	Difficulty
33052	4.3.2	7	6	1684	0.79931	Difficulty
33052	4.3.2	7		1684	0.46305	Cluster variance
33089	4.3.2	7	0	1728	2.25253	Difficulty
33089	4.3.2	7	1	1728	3.04510	Difficulty
33089	4.3.2	7	2	1728	0.42247	Difficulty
33089	4.3.2	7	3	1728	-0.86003	Difficulty
33089	4.3.2	7	4	1728	-0.61040	Difficulty
33089	4.3.2	7	5	1728	2.64319	Difficulty

33089	4.3.2	7	6	1728	3.00043	Difficulty
33089	4.3.2	7		1728	0.61416	Cluster variance
32900	4.3.3	8	0	1742	-0.83964	Difficulty
32900	4.3.3	8	1	1742	2.02892	Difficulty
32900	4.3.3	8	2	1742	2.40175	Difficulty
32900	4.3.3	8	3	1742	1.85641	Difficulty
32900	4.3.3	8	4	1742	-0.80745	Difficulty
32900	4.3.3	8	5	1742	-0.93398	Difficulty
32900	4.3.3	8	6	1742	0.02202	Difficulty
32900	4.3.3	8	7	1742	-0.53291	Difficulty
32900	4.3.3	8		1742	0.49293	Cluster variance
33140	4.3.3	6	0	1714	1.09602	Difficulty
33140	4.3.3	6	1	1714	0.13373	Difficulty
33140	4.3.3	6	2	1714	-0.77847	Difficulty
33140	4.3.3	6	3	1714	0.03766	Difficulty
33140	4.3.3	6	4	1714	0.74971	Difficulty
33140	4.3.3	6	5	1714	0.95155	Difficulty
33140	4.3.3	6		1714	0.62032	Cluster variance
33092	4.4.1	6	0	1751	-0.05038	Difficulty
33092	4.4.1	6	1	1751	0.82108	Difficulty
33092	4.4.1	6	2	1751	-0.50273	Difficulty
33092	4.4.1	6	3	1751	0.83737	Difficulty
33092	4.4.1	6	5	1751	-0.20559	Difficulty
33092	4.4.1	6	6	1751	1.80847	Difficulty
33092	4.4.1	6		1751	0.24783	Cluster variance
33133	4.4.1	6	0	1747	-1.77047	Difficulty
33133	4.4.1	6	1	1747	-1.27223	Difficulty
33133	4.4.1	6	2	1747	-0.21625	Difficulty
33133	4.4.1	6	3	1747	-1.00908	Difficulty
33133	4.4.1	6	4	1747	0.04439	Difficulty
33133	4.4.1	6	5	1747	-0.56904	Difficulty
33133	4.4.1	6		1747	0.12943	Cluster variance
33076	4.4.2	6	0	1740	-0.81447	Difficulty
33076	4.4.2	6	1	1740	-1.23970	Difficulty
33076	4.4.2	6	2	1740	-1.56065	Difficulty
33076	4.4.2	6	3	1740	-1.34114	Difficulty
33076	4.4.2	6	4	1740	0.39460	Difficulty
33076	4.4.2	6	5	1740	0.95479	Difficulty
33076	4.4.2	6		1740	0.24885	Cluster variance
33132	4.4.2	6	0	1715	0.39734	Difficulty
33132	4.4.2	6	1	1715	1.23729	Difficulty
33132	4.4.2	6	2	1715	0.11701	Difficulty
33132	4.4.2	6	3	1715	-0.44566	Difficulty
33132	4.4.2	6	4	1715	0.84906	Difficulty
33132	4.4.2	6	5	1715	-0.11020	Difficulty

33132	4.4.2	6	1715	0.31531	Cluster variance

*Rejected at Item Data Review

Table 4–J–26. Field-Test Items: Item Parameters for Grade 5 Science

ITS ID	Standard	Number of Assertions	Assertion Order	N	Parameter	Statistics
32926	5.1.1	6	0	1754	-0.81129	Difficulty
32926	5.1.1	6	1	1754	-1.21859	Difficulty
32926	5.1.1	6	2	1754	-0.32217	Difficulty
32926	5.1.1	6	3	1754	-1.0784	Difficulty
32926	5.1.1	6	4	1754	-1.60665	Difficulty
32926	5.1.1	6	5	1754	-1.27675	Difficulty
32926	5.1.1	6		1754	0.320252	Cluster variance
33012	5.1.1	6	0	1761	-0.87785	Difficulty
33012	5.1.1	6	1	1761	-0.03551	Difficulty
33012	5.1.1	6	2	1761	0.887435	Difficulty
33012	5.1.1	6	3	1761	-0.51578	Difficulty
33012	5.1.1	6	4	1761	-0.30926	Difficulty
33012	5.1.1	6	5	1761	2.584917	Difficulty
33012	5.1.1	6		1761	1.06074	Cluster variance
32950	5.1.2	7	0	1734	2.676306	Difficulty
32950	5.1.2	7	1	1734	0.710698	Difficulty
32950	5.1.2	7	2	1734	0.580056	Difficulty
32950	5.1.2	7	3	1734	-0.24326	Difficulty
32950	5.1.2	7	4	1734	-0.13855	Difficulty
32950	5.1.2	7	5	1734	1.258365	Difficulty
32950	5.1.2	7	6	1734	0.128597	Difficulty
32950	5.1.2	7		1734	0.173893	Cluster variance
33139	5.1.2	10	0	1703	2.822405	Difficulty
33139	5.1.2	10	1	1703	0.227354	Difficulty
33139	5.1.2	10	2	1703	1.827512	Difficulty
33139	5.1.2	10	3	1703	0.062176	Difficulty
33139	5.1.2	10	4	1703	1.33152	Difficulty
33139	5.1.2	10	5	1703	-0.6312	Difficulty
33139	5.1.2	10	6	1703	0.04221	Difficulty
33139	5.1.2	10	7	1703	-0.04928	Difficulty
33139	5.1.2	10	8	1703	1.296958	Difficulty
33139	5.1.2	10	9	1703	2.691799	Difficulty
33139	5.1.2	10		1703	0.101485	Cluster variance
32736	5.1.3	9	0	1677	0.102564	Difficulty
32736	5.1.3	9	1	1677	0.205985	Difficulty
32736	5.1.3	9	2	1677	-0.80096	Difficulty
32736	5.1.3	9	3	1677	1.344288	Difficulty
32736	5.1.3	9	4	1677	-0.55417	Difficulty
32736	5.1.3	9	5	1677	-0.4889	Difficulty

32736	5.1.3	9	6	1677	0.589089	Difficulty
32736	5.1.3	9	7	1677	-0.34109	Difficulty
32736	5.1.3	9	8	1677	0.029545	Difficulty
32736	5.1.3	9		1677	0.234853	Cluster variance
33131	5.1.3	8	0	1761	0.453386	Difficulty
33131	5.1.3	8	1	1761	0.53543	Difficulty
33131	5.1.3	8	2	1761	0.69113	Difficulty
33131	5.1.3	8	3	1761	2.517757	Difficulty
33131	5.1.3	8	4	1761	2.581412	Difficulty
33131	5.1.3	8	5	1761	0.56036	Difficulty
33131	5.1.3	8	6	1761	-0.86684	Difficulty
33131	5.1.3	8	7	1761	-0.1564	Difficulty
33131	5.1.3	8		1761	0.345264	Cluster variance
32743	5.1.4	8	0	1744	-0.1316	Difficulty
32743	5.1.4	8	1	1744	-0.32242	Difficulty
32743	5.1.4	8	2	1744	-0.15499	Difficulty
32743	5.1.4	8	3	1744	-0.42479	Difficulty
32743	5.1.4	8	4	1744	0.172156	Difficulty
32743	5.1.4	8	5	1744	0.571584	Difficulty
32743	5.1.4	8	6	1744	0.423547	Difficulty
32743	5.1.4	8	7	1744	2.819532	Difficulty
32743	5.1.4	8		1744	0.532458	Cluster variance
33042	5.1.4	8	0	1867	-1.011	Difficulty
33042	5.1.4	8	1	1867	-0.93294	Difficulty
33042	5.1.4	8	2	1867	1.394242	Difficulty
33042	5.1.4	8	3	1867	1.583395	Difficulty
33042	5.1.4	8	4	1867	1.640729	Difficulty
33042	5.1.4	8	5	1867	2.929747	Difficulty
33042	5.1.4	8	6	1867	0.465018	Difficulty
33042	5.1.4	8	7	1867	2.069208	Difficulty
33042	5.1.4	8		1867	0.170663	Cluster variance
33106	5.1.5	7	0	1743	-0.73579	Difficulty
33106	5.1.5	7	1	1743	-0.76121	Difficulty
33106	5.1.5	7	2	1743	0.093895	Difficulty
33106	5.1.5	7	3	1743	-1.27682	Difficulty
33106	5.1.5	7	4	1743	-1.75878	Difficulty
33106	5.1.5	7	5	1743	1.045707	Difficulty
33106	5.1.5	7	6	1743	-0.10582	Difficulty
33106	5.1.5	7		1743	0.137466	Cluster variance
32909	5.2.1	7	0	1738	0.983106	Difficulty
32909	5.2.1	7	1	1738	0.127582	Difficulty
32909	5.2.1	7	2	1738	-1.04907	Difficulty
32909	5.2.1	7	3	1738	-0.66644	Difficulty
32909	5.2.1	7	4	1738	-1.57618	Difficulty
32909	5.2.1	7	5	1738	0.462757	Difficulty

32909	5.2.1	7	6	1738	-0.65988	Difficulty
32909	5.2.1	7		1738	0.251553	Cluster variance
33035	5.2.1	7	0	1642	-2.19084	Difficulty
33035	5.2.1	7	1	1642	2.238963	Difficulty
33035	5.2.1	7	2	1642	3.082464	Difficulty
33035	5.2.1	7	3	1642	-0.47289	Difficulty
33035	5.2.1	7	4	1642	-0.59047	Difficulty
33035	5.2.1	7	5	1642	0.280319	Difficulty
33035	5.2.1	7	6	1642	0.877038	Difficulty
33035	5.2.1	7		1642	0.400963	Cluster variance
32749	5.2.2	6	0	1803	0.563486	Difficulty
32749	5.2.2	6	1	1803	1.570927	Difficulty
32749	5.2.2	6	2	1803	-0.15063	Difficulty
32749	5.2.2	6	3	1803	1.482388	Difficulty
32749	5.2.2	6	4	1803	-0.45252	Difficulty
32749	5.2.2	6	5	1803	-0.33156	Difficulty
32749	5.2.2	6		1803	0.202037	Cluster variance
33090	5.2.2	9	0	1727	0.197739	Difficulty
33090	5.2.2	9	1	1727	0.034234	Difficulty
33090	5.2.2	9	2	1727	-2.34109	Difficulty
33090	5.2.2	9	3	1727	-0.08203	Difficulty
33090	5.2.2	9	4	1727	1.376259	Difficulty
33090	5.2.2	9	5	1727	1.265632	Difficulty
33090	5.2.2	9	6	1727	2.917898	Difficulty
33090	5.2.2	9	7	1727	0.988293	Difficulty
33090	5.2.2	9	8	1727	0.313911	Difficulty
33090	5.2.2	9		1727	0.321176	Cluster variance
32836*	5.2.3	6	0	1684	-1.09119	Difficulty
32836*	5.2.3	6	1	1684	-0.27017	Difficulty
32836*	5.2.3	6	2	1684	-0.27327	Difficulty
32836*	5.2.3	6	3	1684	1.180077	Difficulty
32836*	5.2.3	6	4	1684	1.240601	Difficulty
32836*	5.2.3	6	5	1684	0.193717	Difficulty
32836*	5.2.3	6		1684	0.642026	Cluster variance
33043	5.2.3	8	0	1717	1.394894	Difficulty
33043	5.2.3	8	1	1717	1.365865	Difficulty
33043	5.2.3	8	2	1717	1.142027	Difficulty
33043	5.2.3	8	3	1717	2.746709	Difficulty
33043	5.2.3	8	4	1717	2.533868	Difficulty
33043	5.2.3	8	5	1717	0.695519	Difficulty
33043	5.2.3	8	6	1717	2.570634	Difficulty
33043	5.2.3	8	7	1717	2.589314	Difficulty
33043	5.2.3	8		1717	0.514794	Cluster variance
32996	5.2.4	7	0	1741	0.295388	Difficulty
32996	5.2.4	7	1	1741	0.151566	Difficulty

32996	5.2.4	7	2	1741	0.659874	Difficulty
32996	5.2.4	7	3	1741	0.892476	Difficulty
32996	5.2.4	7	4	1741	-1.3837	Difficulty
32996	5.2.4	7	5	1741	0.700161	Difficulty
32996	5.2.4	7	6	1741	-0.30133	Difficulty
32996	5.2.4	7		1741	0.46537	Cluster variance
33024	5.2.4	7	0	1716	0.84818	Difficulty
33024	5.2.4	7	1	1716	1.662689	Difficulty
33024	5.2.4	7	2	1716	1.433749	Difficulty
33024	5.2.4	7	3	1716	0.378223	Difficulty
33024	5.2.4	7	4	1716	1.486432	Difficulty
33024	5.2.4	7	5	1716	0.982958	Difficulty
33024	5.2.4	7	6	1716	0.126962	Difficulty
33024	5.2.4	7		1716	0.884922	Cluster variance
32944	5.3.1	7	0	1696	0.553224	Difficulty
32944	5.3.1	7	1	1696	1.414324	Difficulty
32944	5.3.1	7	2	1696	-1.12964	Difficulty
32944	5.3.1	7	3	1696	-0.83245	Difficulty
32944	5.3.1	7	4	1696	0.055458	Difficulty
32944	5.3.1	7	5	1696	-0.41035	Difficulty
32944	5.3.1	7	6	1696	0.072847	Difficulty
32944	5.3.1	7		1696	0.204562	Cluster variance
33231	5.3.1	6	0	1788	-0.25002	Difficulty
33231	5.3.1	6	1	1788	-0.63347	Difficulty
33231	5.3.1	6	2	1788	-0.02607	Difficulty
33231	5.3.1	6	3	1788	0.440749	Difficulty
33231	5.3.1	6	4	1788	0.541846	Difficulty
33231	5.3.1	6	5	1788	1.562161	Difficulty
33231	5.3.1	6		1788	0.290186	Cluster variance
33027	5.3.2	5	0	1772	0.7756	Difficulty
33027	5.3.2	5	1	1772	0.655582	Difficulty
33027	5.3.2	5	2	1772	-0.2408	Difficulty
33027	5.3.2	5	3	1772	0.354585	Difficulty
33027	5.3.2	5	4	1772	-1.11414	Difficulty
33027	5.3.2	5		1772	0.1554	Cluster variance
32761	5.3.3	9	0	1767	1.062455	Difficulty
32761	5.3.3	9	1	1767	0.645163	Difficulty
32761	5.3.3	9	2	1767	0.759843	Difficulty
32761	5.3.3	9	3	1767	0.310458	Difficulty
32761	5.3.3	9	4	1767	-0.84628	Difficulty
32761	5.3.3	9	5	1767	1.747821	Difficulty
32761	5.3.3	9	6	1767	1.51869	Difficulty
32761	5.3.3	9	7	1767	0.168228	Difficulty
32761	5.3.3	9	8	1767	0.928156	Difficulty
32761	5.3.3	9		1767	0.79182	Cluster variance

33072	5.3.3	8	0	1707	0.278235	Difficulty
33072	5.3.3	8	1	1707	0.628035	Difficulty
33072	5.3.3	8	2	1707	0.271336	Difficulty
33072	5.3.3	8	3	1707	0.760893	Difficulty
33072	5.3.3	8	4	1707	-0.62998	Difficulty
33072	5.3.3	8	5	1707	0.078992	Difficulty
33072	5.3.3	8	6	1707	0.437799	Difficulty
33072	5.3.3	8	7	1707	1.439482	Difficulty
33072	5.3.3	8		1707	1.335528	Cluster variance
33129	5.3.3	8	0	1787	0.018728	Difficulty
33129	5.3.3	8	1	1787	-0.37913	Difficulty
33129	5.3.3	8	2	1787	0.455087	Difficulty
33129	5.3.3	8	3	1787	1.266087	Difficulty
33129	5.3.3	8	4	1787	2.238913	Difficulty
33129	5.3.3	8	6	1787	0.572603	Difficulty
33129	5.3.3	8	7	1787	0.721676	Difficulty
33129	5.3.3	8	8	1787	1.21655	Difficulty
33129	5.3.3	8		1787	0.624182	Cluster variance
32735*	5.3.4	5	0	1772	-0.2111	Difficulty
32735*	5.3.4	5	1	1772	0.907305	Difficulty
32735*	5.3.4	5	2	1772	1.852969	Difficulty
32735*	5.3.4	5	3	1772	0.68634	Difficulty
32735*	5.3.4	5	4	1772	1.710156	Difficulty
32735*	5.3.4	5		1772	0.152716	Cluster variance
32756	5.3.4	8	0	1720	1.173433	Difficulty
32756	5.3.4	8	1	1720	1.305437	Difficulty
32756	5.3.4	8	2	1720	1.011149	Difficulty
32756	5.3.4	8	3	1720	1.295089	Difficulty
32756	5.3.4	8	4	1720	1.638674	Difficulty
32756	5.3.4	8	5	1720	1.333204	Difficulty
32756	5.3.4	8	6	1720	-2.1434	Difficulty
32756	5.3.4	8	7	1720	2.02049	Difficulty
32756	5.3.4	8		1720	0.144639	Cluster variance
32827	5.3.4	7	0	1763	0.947644	Difficulty
32827	5.3.4	7	1	1763	2.117454	Difficulty
32827	5.3.4	7	2	1763	0.515901	Difficulty
32827	5.3.4	7	3	1763	0.914881	Difficulty
32827	5.3.4	7	4	1763	-0.6225	Difficulty
32827	5.3.4	7	5	1763	-1.0533	Difficulty
32827	5.3.4	7	6	1763	1.349342	Difficulty
32827	5.3.4	7		1763	0.51111	Cluster variance

*Rejected at Item Data Review

Table 4–J–27. Field-Test Items: Item Parameters for Grade 6 Science

ITS ID	Standard	Number of Assertions	Assertion Order	N	Parameter	Statistics
32631	6.1.2	11	0	4414	1.641881	Difficulty
32631	6.1.2	11	1	4414	2.599981	Difficulty
32631	6.1.2	11	2	4414	-0.59247	Difficulty
32631	6.1.2	11	3	4414	-0.16532	Difficulty
32631	6.1.2	11	4	4414	-0.35833	Difficulty
32631	6.1.2	11	5	4414	0.135931	Difficulty
32631	6.1.2	11	6	4414	0.41789	Difficulty
32631	6.1.2	11	7	4414	0.775942	Difficulty
32631	6.1.2	11	8	4414	0.499675	Difficulty
32631	6.1.2	11	9	4414	2.199145	Difficulty
32631	6.1.2	11	10	4414	0.153043	Difficulty
32631	6.1.2	11		4414	0.33141	Cluster variance
32713	6.1.3	7	0	4285	1.619866	Difficulty
32713	6.1.3	7	1	4285	2.577421	Difficulty
32713	6.1.3	7	2	4285	1.332627	Difficulty
32713	6.1.3	7	3	4285	0.513422	Difficulty
32713	6.1.3	7	4	4285	-0.74114	Difficulty
32713	6.1.3	7	5	4285	1.515315	Difficulty
32713	6.1.3	7	6	4285	3.464843	Difficulty
32713	6.1.3	7		4285	0.246487	Cluster variance
33330	6.3.2	8	0	4334	0.751952	Difficulty
33330	6.3.2	8	1	4334	2.521704	Difficulty
33330	6.3.2	8	2	4334	2.500031	Difficulty
33330	6.3.2	8	3	4334	2.176107	Difficulty
33330	6.3.2	8	4	4334	1.160826	Difficulty
33330	6.3.2	8	5	4334	2.664455	Difficulty
33330	6.3.2	8	6	4334	2.622148	Difficulty
33330	6.3.2	8	7	4334	2.876803	Difficulty
33330	6.3.2	8		4334	0.77473	Cluster variance
32697*	6.3.3	9	0	4382	0.345887	Difficulty
32697*	6.3.3	9	1	4382	0.407917	Difficulty
32697*	6.3.3	9	2	4382	1.969049	Difficulty
32697*	6.3.3	9	3	4382	1.054161	Difficulty
32697*	6.3.3	9	4	4382	-0.17559	Difficulty
32697*	6.3.3	9	5	4382	1.670188	Difficulty
32697*	6.3.3	9	6	4382	1.070785	Difficulty
32697*	6.3.3	9	7	4382	0.89283	Difficulty
32697*	6.3.3	9	8	4382	0.745584	Difficulty

32697*	6.3.3	9		4382	0.452653	Cluster variance
33360*	6.3.3	8	0	4380	-0.43932	Difficulty
33360*	6.3.3	8	1	4380	-0.18356	Difficulty
33360*	6.3.3	8	2	4380	1.767926	Difficulty
33360*	6.3.3	8	3	4380	3.030315	Difficulty
33360*	6.3.3	8	4	4380	0.740718	Difficulty
33360*	6.3.3	8	5	4380	1.875838	Difficulty
33360*	6.3.3	8	6	4380	1.4025	Difficulty
33360*	6.3.3	8	7	4380	1.643423	Difficulty
33360*	6.3.3	8		4380	0.165754	Cluster variance
32655	6.4.1	8	0	4288	-0.87526	Difficulty
32655	6.4.1	8	1	4288	0.19719	Difficulty
32655	6.4.1	8	2	4288	0.027717	Difficulty
32655	6.4.1	8	3	4288	2.168978	Difficulty
32655	6.4.1	8	4	4288	0.009528	Difficulty
32655	6.4.1	8	5	4288	0.05896	Difficulty
32655	6.4.1	8	6	4288	2.24649	Difficulty
32655	6.4.1	8	7	4288	0.933312	Difficulty
32655	6.4.1	8		4288	0.50843	Cluster variance
32716	6.4.1	7	0	4271	2.527462	Difficulty
32716	6.4.1	7	1	4271	-0.93236	Difficulty
32716	6.4.1	7	2	4271	-0.45547	Difficulty
32716	6.4.1	7	3	4271	1.184675	Difficulty
32716	6.4.1	7	4	4271	1.459268	Difficulty
32716	6.4.1	7	5	4271	1.00768	Difficulty
32716	6.4.1	7	6	4271	0.839523	Difficulty
32716	6.4.1	7		4271	0.633541	Cluster variance
32623	6.4.5	8	0	4411	0.769946	Difficulty
32623	6.4.5	8	1	4411	-0.34924	Difficulty
32623	6.4.5	8	2	4411	0.233804	Difficulty
32623	6.4.5	8	3	4411	0.55588	Difficulty
32623	6.4.5	8	4	4411	0.386772	Difficulty
32623	6.4.5	8	5	4411	0.143352	Difficulty
32623	6.4.5	8	6	4411	0.606512	Difficulty
32623	6.4.5	8	7	4411	0.309886	Difficulty
32623	6.4.5	8		4411	0.149177	Cluster variance

*Rejected at Item Data Review

Table 4–J–28. Field-Test Items: Item Parameters for Grade 7 Science

ITS ID	Standard	Number of Assertions	Assertion Order	N	Parameter	Statistics
33361	7.1.3	8	0	3900	-0.58565	Difficulty
33361	7.1.3	8	1	3900	-1.1396	Difficulty
33361	7.1.3	8	2	3900	-0.96135	Difficulty
33361	7.1.3	8	3	3900	-2.0318	Difficulty
33361	7.1.3	8	4	3900	-1.55199	Difficulty
33361	7.1.3	8	5	3900	-1.43876	Difficulty
33361	7.1.3	8	6	3900	1.565647	Difficulty
33361	7.1.3	8	7	3900	-0.63366	Difficulty
33361	7.1.3	8		3900	0.852143	Cluster variance
32627	7.1.5	8	0	3982	-1.33784	Difficulty
32627	7.1.5	8	1	3982	-1.27994	Difficulty
32627	7.1.5	8	2	3982	-0.87615	Difficulty
32627	7.1.5	8	3	3982	-0.63775	Difficulty
32627	7.1.5	8	4	3982	-0.45662	Difficulty
32627	7.1.5	8	5	3982	-0.14285	Difficulty
32627	7.1.5	8	6	3982	0.242356	Difficulty
32627	7.1.5	8	7	3982	0.963477	Difficulty
32627	7.1.5	8		3982	0.418753	Cluster variance
32708	7.1.5	7	0	3868	0.810963	Difficulty
32708	7.1.5	7	1	3868	1.396797	Difficulty
32708	7.1.5	7	2	3868	0.943907	Difficulty
32708	7.1.5	7	3	3868	2.070748	Difficulty
32708	7.1.5	7	4	3868	1.211269	Difficulty
32708	7.1.5	7	5	3868	0.823689	Difficulty
32708	7.1.5	7	6	3868	2.428509	Difficulty
32708	7.1.5	7		3868	0.429873	Cluster variance
32705	7.2.6	9	0	3978	0.843595	Difficulty
32705	7.2.6	9	1	3978	0.392625	Difficulty
32705	7.2.6	9	2	3978	-0.52526	Difficulty
32705	7.2.6	9	3	3978	0.780316	Difficulty
32705	7.2.6	9	4	3978	0.175584	Difficulty
32705	7.2.6	9	5	3978	4.563551	Difficulty
32705	7.2.6	9	6	3978	5.060963	Difficulty
32705	7.2.6	9	7	3978	2.368788	Difficulty
32705	7.2.6	9	8	3978	2.453043	Difficulty
32705	7.2.6	9		3978	0.693128	Cluster variance
32670	7.4.3	8	0	3942	1.445124	Difficulty
32670	7.4.3	8	1	3942	1.633529	Difficulty

32670	7.4.3	8	2	3942	1.719978	Difficulty
32670	7.4.3	8	3	3942	0.74035	Difficulty
32670	7.4.3	8	4	3942	1.256336	Difficulty
32670	7.4.3	8	5	3942	0.801943	Difficulty
32670	7.4.3	8	6	3942	0.693604	Difficulty
32670	7.4.3	8	7	3942	0.629685	Difficulty
32670	7.4.3	8		3942	0.435105	Cluster variance
32717	7.5.2	11	0	3906	-0.55881	Difficulty
32717	7.5.2	11	1	3906	-0.5076	Difficulty
32717	7.5.2	11	2	3906	-1.94713	Difficulty
32717	7.5.2	11	3	3906	2.408074	Difficulty
32717	7.5.2	11	4	3906	1.382239	Difficulty
32717	7.5.2	11	5	3906	0.454979	Difficulty
32717	7.5.2	11	6	3906	1.319399	Difficulty
32717	7.5.2	11	7	3906	1.193892	Difficulty
32717	7.5.2	11	8	3906	0.608839	Difficulty
32717	7.5.2	11	9	3906	-0.69141	Difficulty
32717	7.5.2	11	10	3906	1.105739	Difficulty
32717	7.5.2	11		3906	0.772631	Cluster variance
32635	7.5.4	8	0	3986	1.309171	Difficulty
32635	7.5.4	8	1	3986	1.07363	Difficulty
32635	7.5.4	8	2	3986	0.980308	Difficulty
32635	7.5.4	8	3	3986	0.573064	Difficulty
32635	7.5.4	8	4	3986	2.063945	Difficulty
32635	7.5.4	8	5	3986	0.773445	Difficulty
32635	7.5.4	8	6	3986	-0.22181	Difficulty
32635	7.5.4	8	7	3986	2.534939	Difficulty
32635	7.5.4	8		3986	0.393651	Cluster variance
32744	7.5.4	10	0	4067	-0.37495	Difficulty
32744	7.5.4	10	1	4067	-0.41091	Difficulty
32744	7.5.4	10	2	4067	-0.22118	Difficulty
32744	7.5.4	10	3	4067	0.032483	Difficulty
32744	7.5.4	10	4	4067	0.31886	Difficulty
32744	7.5.4	10	5	4067	-0.15677	Difficulty
32744	7.5.4	10	6	4067	-0.78894	Difficulty
32744	7.5.4	10	7	4067	-0.42168	Difficulty
32744	7.5.4	10	8	4067	-0.12516	Difficulty
32744	7.5.4	10	9	4067	0.372152	Difficulty
32744	7.5.4	10		4067	0.502084	Cluster variance

Table 4–J–29. Field-Test Items: Item Parameters for Grade 8 Science

ITS ID	Standard	Number of Assertions	Assertion Order	N	Parameter	Statistics
32703	8.1.1	8	0	2098	-0.87761	Difficulty
32703	8.1.1	8	2	2098	0.01063	Difficulty
32703	8.1.1	8	3	2098	-0.24084	Difficulty
32703	8.1.1	8	4	2098	2.920653	Difficulty
32703	8.1.1	8	5	2098	2.781187	Difficulty
32703	8.1.1	8	6	2098	4.488706	Difficulty
32703	8.1.1	8	7	2098	0.519868	Difficulty
32703	8.1.1	8	8	2098	0.991309	Difficulty
32703	8.1.1	8		2098	0.666867	Cluster variance
32621	8.1.4	9	0	2081	-0.95808	Difficulty
32621	8.1.4	9	1	2081	-0.67217	Difficulty
32621	8.1.4	9	2	2081	-0.33846	Difficulty
32621	8.1.4	9	3	2081	0.230214	Difficulty
32621	8.1.4	9	4	2081	1.454019	Difficulty
32621	8.1.4	9	5	2081	1.075279	Difficulty
32621	8.1.4	9	6	2081	0.947559	Difficulty
32621	8.1.4	9	7	2081	-0.55574	Difficulty
32621	8.1.4	9	8	2081	-0.37764	Difficulty
32621	8.1.4	9		2081	0.639116	Cluster variance
32718	8.1.4	8	0	2047	3.671509	Difficulty
32718	8.1.4	8	1	2047	2.40469	Difficulty
32718	8.1.4	8	2	2047	1.247749	Difficulty
32718	8.1.4	8	3	2047	2.053372	Difficulty
32718	8.1.4	8	4	2047	2.502062	Difficulty
32718	8.1.4	8	5	2047	0.413541	Difficulty
32718	8.1.4	8	7	2047	1.885763	Difficulty
32718	8.1.4	8	9	2047	3.108658	Difficulty
32718	8.1.4	8		2047	0.751528	Cluster variance
32633	8.1.6	8	0	2186	1.042116	Difficulty
32633	8.1.6	8	1	2186	2.628533	Difficulty
32633	8.1.6	8	2	2186	3.590831	Difficulty
32633	8.1.6	8	3	2186	2.62548	Difficulty
32633	8.1.6	8	4	2186	3.888101	Difficulty
32633	8.1.6	8	5	2186	0.040277	Difficulty
32633	8.1.6	8	6	2186	1.202972	Difficulty
32633	8.1.6	8	7	2186	2.986691	Difficulty
32633	8.1.6	8		2186	0.901302	Cluster variance
32719	8.2.1	10	0	2163	0.631709	Difficulty

32719	8.2.1	10	1	2163	2.670624	Difficulty
32719	8.2.1	10	2	2163	0.732221	Difficulty
32719	8.2.1	10	3	2163	-0.44296	Difficulty
32719	8.2.1	10	4	2163	0.031454	Difficulty
32719	8.2.1	10	5	2163	0.591725	Difficulty
32719	8.2.1	10	6	2163	1.719061	Difficulty
32719	8.2.1	10	7	2163	0.856274	Difficulty
32719	8.2.1	10	8	2163	1.458041	Difficulty
32719	8.2.1	10	9	2163	0.276725	Difficulty
32719	8.2.1	10		2163	0.407576	Cluster variance
32711	8.2.2	10	0	2104	-0.97545	Difficulty
32711	8.2.2	10	1	2104	-0.82246	Difficulty
32711	8.2.2	10	2	2104	-0.26644	Difficulty
32711	8.2.2	10	3	2104	0.208022	Difficulty
32711	8.2.2	10	4	2104	0.614995	Difficulty
32711	8.2.2	10	5	2104	-0.0638	Difficulty
32711	8.2.2	10	6	2104	0.809497	Difficulty
32711	8.2.2	10	7	2104	0.578832	Difficulty
32711	8.2.2	10	8	2104	0.811464	Difficulty
32711	8.2.2	10	9	2104	0.228365	Difficulty
32711	8.2.2	10		2104	0.560091	Cluster variance
33363	8.2.4	8	0	2074	0.761422	Difficulty
33363	8.2.4	8	1	2074	-0.05779	Difficulty
33363	8.2.4	8	2	2074	0.423303	Difficulty
33363	8.2.4	8	3	2074	-0.04378	Difficulty
33363	8.2.4	8	4	2074	-0.29414	Difficulty
33363	8.2.4	8	5	2074	0.31125	Difficulty
33363	8.2.4	8	6	2074	0.803112	Difficulty
33363	8.2.4	8	7	2074	3.481612	Difficulty
33363	8.2.4	8		2074	0.326981	Cluster variance
32720	8.2.5	9	0	2163	2.030972	Difficulty
32720	8.2.5	9	1	2163	3.204545	Difficulty
32720	8.2.5	9	2	2163	1.360339	Difficulty
32720	8.2.5	9	3	2163	1.890349	Difficulty
32720	8.2.5	9	4	2163	2.310819	Difficulty
32720	8.2.5	9	5	2163	2.276372	Difficulty
32720	8.2.5	9	6	2163	1.194905	Difficulty
32720	8.2.5	9	7	2163	0.966562	Difficulty
32720	8.2.5	9	8	2163	0.446976	Difficulty
32720	8.2.5	9		2163	0.848629	Cluster variance
32639	8.2.6	9	0	2083	0.742239	Difficulty
32639	8.2.6	9	1	2083	-1.07952	Difficulty
32639	8.2.6	9	2	2083	-0.26383	Difficulty
32639	8.2.6	9	3	2083	-0.19055	Difficulty
32639	8.2.6	9	4	2083	0.895156	Difficulty

32639	8.2.6	9	5	2083	0.566706	Difficulty
32639	8.2.6	9	6	2083	-0.47541	Difficulty
32639	8.2.6	9	7	2083	-0.21812	Difficulty
32639	8.2.6	9	8	2083	0.879551	Difficulty
32639	8.2.6	9		2083	0.452333	Cluster variance
32637	8.3.2	7	0	2146	-0.54148	Difficulty
32637	8.3.2	7	2	2146	1.637186	Difficulty
32637	8.3.2	7	3	2146	1.729277	Difficulty
32637	8.3.2	7	4	2146	1.405404	Difficulty
32637	8.3.2	7	5	2146	-1.24669	Difficulty
32637	8.3.2	7	6	2146	4.096509	Difficulty
32637	8.3.2	7	7	2146	-0.20142	Difficulty
32637	8.3.2	7		2146	0.311633	Cluster variance
32698*	8.3.2	9	0	2121	-0.30119	Difficulty
32698*	8.3.2	9	1	2121	1.746944	Difficulty
32698*	8.3.2	9	2	2121	0.833294	Difficulty
32698*	8.3.2	9	3	2121	0.451246	Difficulty
32698*	8.3.2	9	4	2121	1.299272	Difficulty
32698*	8.3.2	9	5	2121	2.265338	Difficulty
32698*	8.3.2	9	6	2121	1.980842	Difficulty
32698*	8.3.2	9	7	2121	1.95841	Difficulty
32698*	8.3.2	9	8	2121	-0.53078	Difficulty
32698*	8.3.2	9		2121	0.324779	Cluster variance
33357	8.3.2	6	0	2111	2.349109	Difficulty
33357	8.3.2	6	1	2111	3.10637	Difficulty
33357	8.3.2	6	2	2111	2.471301	Difficulty
33357	8.3.2	6	3	2111	1.599022	Difficulty
33357	8.3.2	6	4	2111	-0.39787	Difficulty
33357	8.3.2	6	6	2111	-0.65945	Difficulty
33357	8.3.2	6		2111	0.229191	Cluster variance
32630	8.3.3	10	0	2084	0.823711	Difficulty
32630	8.3.3	10	1	2084	1.716676	Difficulty
32630	8.3.3	10	2	2084	1.881658	Difficulty
32630	8.3.3	10	3	2084	0.380189	Difficulty
32630	8.3.3	10	4	2084	0.106302	Difficulty
32630	8.3.3	10	5	2084	-0.11562	Difficulty
32630	8.3.3	10	6	2084	0.854758	Difficulty
32630	8.3.3	10	7	2084	-0.12231	Difficulty
32630	8.3.3	10	8	2084	-0.41014	Difficulty
32630	8.3.3	10	9	2084	-0.99974	Difficulty
32630	8.3.3	10		2084	0.316873	Cluster variance
32608	8.4.2	11	0	2101	-0.45916	Difficulty
32608	8.4.2	11	1	2101	1.672907	Difficulty
32608	8.4.2	11	2	2101	-0.46662	Difficulty
32608	8.4.2	11	3	2101	0.83368	Difficulty

32608	8.4.2	11	4	2101	0.568689	Difficulty
32608	8.4.2	11	5	2101	-1.45521	Difficulty
32608	8.4.2	11	6	2101	1.560993	Difficulty
32608	8.4.2	11	7	2101	1.901396	Difficulty
32608	8.4.2	11	8	2101	2.752006	Difficulty
32608	8.4.2	11	9	2101	-0.64114	Difficulty
32608	8.4.2	11	10	2101	1.885736	Difficulty
32608	8.4.2	11		2101	0.254822	Cluster variance
32714	8.4.2	6	0	2071	2.049241	Difficulty
32714	8.4.2	6	1	2071	2.485338	Difficulty
32714	8.4.2	6	3	2071	0.887681	Difficulty
32714	8.4.2	6	4	2071	-0.31714	Difficulty
32714	8.4.2	6	5	2071	-0.81029	Difficulty
32714	8.4.2	6	6	2071	-0.05188	Difficulty
32714	8.4.2	6		2071	0.419428	Cluster variance
33365*	8.4.2	8	0	2167	-0.43945	Difficulty
33365*	8.4.2	8	1	2167	0.238535	Difficulty
33365*	8.4.2	8	2	2167	0.247913	Difficulty
33365*	8.4.2	8	3	2167	0.554099	Difficulty
33365*	8.4.2	8	4	2167	0.566854	Difficulty
33365*	8.4.2	8	5	2167	1.168435	Difficulty
33365*	8.4.2	8	6	2167	-1.10964	Difficulty
33365*	8.4.2	8	7	2167	-0.58873	Difficulty
33365*	8.4.2	8		2167	0.403401	Cluster variance
33358	8.4.3	10	0	2116	-0.41386	Difficulty
33358	8.4.3	10	1	2116	-1.49778	Difficulty
33358	8.4.3	10	2	2116	0.504955	Difficulty
33358	8.4.3	10	3	2116	-0.50002	Difficulty
33358	8.4.3	10	4	2116	0.247917	Difficulty
33358	8.4.3	10	5	2116	-0.52224	Difficulty
33358	8.4.3	10	6	2116	0.459531	Difficulty
33358	8.4.3	10	7	2116	0.546311	Difficulty
33358	8.4.3	10	8	2116	0.522336	Difficulty
33358	8.4.3	10	9	2116	1.103416	Difficulty
33358	8.4.3	10		2116	0.408955	Cluster variance
33364	8.4.3	7	0	2135	-2.12076	Difficulty
33364	8.4.3	7	1	2135	0.055222	Difficulty
33364	8.4.3	7	2	2135	-1.44249	Difficulty
33364	8.4.3	7	3	2135	-0.7949	Difficulty
33364	8.4.3	7	4	2135	-0.17961	Difficulty
33364	8.4.3	7	5	2135	-0.20998	Difficulty
33364	8.4.3	7	6	2135	0.257243	Difficulty
33364	8.4.3	7		2135	0.702418	Cluster variance
33366	8.4.3	7	0	2167	1.22578	Difficulty
33366	8.4.3	7	1	2167	1.888138	Difficulty

33366	8.4.3	7	2	2167	1.636668	Difficulty
33366	8.4.3	7	3	2167	0.452875	Difficulty
33366	8.4.3	7	4	2167	-1.26422	Difficulty
33366	8.4.3	7	5	2167	0.081999	Difficulty
33366	8.4.3	7	6	2167	1.470667	Difficulty
33366	8.4.3	7		2167	0.417158	Cluster variance
32700	8.4.4	7	0	2139	-0.20746	Difficulty
32700	8.4.4	7	1	2139	0.059424	Difficulty
32700	8.4.4	7	2	2139	1.685361	Difficulty
32700	8.4.4	7	3	2139	1.863956	Difficulty
32700	8.4.4	7	4	2139	2.486355	Difficulty
32700	8.4.4	7	5	2139	2.329442	Difficulty
32700	8.4.4	7	6	2139	2.233712	Difficulty
32700	8.4.4	7		2139	0.77278	Cluster variance

*Rejected at Item Data Review

Appendix 4-K

Field-Test Items: Differential Item Functioning Classifications

Table 4-K–1. Field-Test Items: Differential Item Functioning Classifications for Grade 3 ELA

Item Number	Standard	Type (MC vs. MSCR)	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
30250	RL.3.2	MC	-A	-A	-A	+B			-A			
30251	RL.3.4	MC	-A	+A	-B	+A			+A			
30252	RL.3.1	MSCR	-B	-A	-B	+A			-A			
30253	L.3.4a	MC	-B	-B	-A	-A			-B			
30254	RL.3.9	MSCR	+A	-A	-A	-A			+A			
30255	RL.3.4	MC	-A	-B	-A	+A			-A			
30256	RI.3.1	MC	-B	+A	-A	-A			-A			
30257	RI.3.7	MC	-A	-A	+B	-A			-A			
30258	RI.3.7	MSCR	-B	-B	-A	-B			-B			
30259	RI.3.4	MSCR	+A	-A	-A	-A			+A			
30260	RI.3.6	MC	-B	-B	-A	-B			-A			
30261	RI.3.1	MC	+A	+A	+A	-A			+A			
30262	L.3.5a	MC	-B	-B	-B	-A			-B			
30358	RI.3.2	MSCR	+A	+A	+A	-A			+A			
30361	RI.3.3	MSCR	-A	-A	-A	-A			-A			
30366	RI.3.4	MC	-A	-A	-A	-B			-A			
30368	RI.3.5	MC	+A	-A	-A	-A			+A			
30371	RI.3.6	MSCR	+A	-A	-A	+A			+A			
30374	RI.3.7	MSCR	+A	+A	+A	-A			-A			
30377	RI.3.1	MSCR	-A	+A	-A	-A			-A			
30378	RI.3.8	MC	+A	-A	-A	-A			-A			
30383	RI.3.9	MSCR	-A	+A	-A	-B			-A			
30386	RI.3.9	MSCR	-A	-A	-A	-B			-A			
30389	L.3.5a	MSCR	-B	-A	+A	-A			-B			
30648	RL.3.2	MSCR	-A	-B	-B	+B			+A			
30651	RL.3.6	MC	-A	-A	-A	+B			-A			

Item Number	Standard	Type (MC vs. MSCR)	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
30654	RL.3.9	MSCR	-B	-A	+A	-A			-A			
30657	RL.3.3	MC	-A	+A	+A	+A			+A			
30658	RI.3.2	MSCR	-A	-B	-A	+A			-A			
30662	RI.3.4	MC	-A	-B	-A	-A			-B			
30665	RI.3.3	MSCR	-A	+A	+A	+A			-A			
30907	RL.3.3	MC	+A	-A	-B	+B			-A			
30909	RL.3.2	MSCR	-A	-B	-A	+A			+A			
30910	RL.3.2	MSCR	-A	-A	-A	+B			+A			
30911	RL.3.1	MSCR	-A	-A	+A	-A			-A			
30912	RL.3.3	MSCR	-A	-A	+A	-A			-A			
30914	L.3.5a	MC	+A	-A	-B	+B			+A			
30915	RL.3.4	MC	-B	-A	-A	-B			-B			
30916	RL.3.5	MC	-A	-A	-A	+A			-A			
30918	RL.3.6	MC	+B	-A	+A	+B			+A			
30919	RL.3.6	MSCR	-B	-A	-A	+A			-A			
30920	RL.3.7	MC	-A	-A	+A	-A			-A			
30930	RL.3.1	MC	-B	-A	-A	-A			-A			
30932	RL.3.1	MSCR	+A	-A	-A	+A			-A			
30933	RL.3.2	MSCR	+A	-A	-A	+A			+A			
30937	RL.3.2	MC	+A	-A	-A	+A			+A			
31035	RI.3.1	MSCR	+A	+A	-A	+A			+A			
31111	RL.3.1	MSCR	-A	-A	-A	-A			+A			
31116	RL.3.3	MC	-B	-A	-A	+A			-A			
31144	RI.3.2	MSCR	+A	-A	-A	+B			-A			
31148	RI.3.3	MSCR	+A	+A	-A	-A			-A			
31149	RI.3.4	MC	-A	+A	-A	-A			-A			
31152	RI.3.6	MC	-A	-A	-A	+A			-A			
31153	RI.3.7	MSCR	-A	-A	-A	+A			-A			
31154	RI.3.7	MSCR	-A	-A	-A	-A			-A			
31157	RI.3.8	MC	+A	+A	+A	+B			-A			
31160	L.3.4b	MC	-A	-B	+A	-B			-A			
31161	L.3.4a	MSCR	-A	-B	-B	+B			-B			

Item Number	Standard	Type (MC vs. MSCR)	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
31162	L.3.5a	MC	-B	-A	-A	-B			-A			
31192	RL.3.3	MSCR	-A	-A	-A	+A			-B			
31207	RL.3.4	MC	-B	-B	-A	-A			-B			
31215	RL.3.4	MSCR	+A	+A	-A	-A			+A			
31217	RL.3.5	MC	-B	-A	-A	+A			-A			
31219	RL.3.6	MC	-A	+A	+A	-A			-A			
31222	RL.3.9	MC	-A	-B	-A	+A			-A			
31223	RL.3.9	MC	+A	+A	-A	-A			+A			
31225	RL.3.9	MSCR	-A	-A	-A	+A			-A			
31227	RL.3.9	MSCR	-B	-A	-A	+A			-B			
31228	L.3.4a	MC	-A	-A	+B	-A			-A			
31230	L.3.5a	MC	-A	-A	+A	-B			-A			
31231	L.3.5b	MC	-B	-A	-A	+A			-A			
31314	RL.3.1	MC	-A	-A	+A	+A			-A			
31315	RL.3.2	MSCR	-A	-A	-A	+A			-A			
31317	RL.3.2	MC	-A	-A	-B	+B			-A			
31318	RL.3.3	MSCR	-A	-A	-B	+A			-A			
31319	RL.3.3	MC	-A	+A	+A	+A			+A			
31322	RL.3.4	MC	-B	-A	-B	-A			-A			
31323	RL.3.5	MSCR	-A	-A	-B	+A			-A			
31324	RL.3.6	MC	+A	-A	-A	-A			+A			
31325	RL.3.6	MC	+B	+A	-A	+A			+A			
31326	L.3.4a	MC	-B	-B	-A	+A			-B			
31327	L.3.4b	MC	+A	-A	-B	-B			-A			
31328	L.3.5a	MC	-A	-A	-B	+A			-A			
32762	L.3.4a	MC	-B	-B	-A	+A			-B			
32764	RI.3.8	MC	+A	-A	-A	-A			+B			
32766	L.3.5a	MC	-A	-A	-A	-A			-A			
32770	RI.3.7	MC	-B	-B	+A	+A			-A			
32778	RI.3.3	MC	-A	-A	-A	+B			-A			
32780	RI.3.5	MC	-B	-A	-A	+A			-A			
32789	RI.3.1	MC	+A	+A	+A	-A			+A			

Item Number	Standard	Type (MC vs. MSCR)	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
32792	RI.3.2	MC	-A	+A	-A	+B			+A			
32797	RI.3.5	MC	+A	-B	-A	+A			-A			
32811	RI.3.6	MC	+A	+A	-B	+B			+A			
32812	L.3.2e	MSCR	-B	-A	-C	+B			-B			-A
32813	L.3.2d	MSCR	+A	+A	-A	-B			-A			-A
32815	L.3.1f	MSCR	-B	-B	-B	+B			-B			+A
32816	L.3.2f	MSCR	+B	+A	-B	+B			+B			+B
32817	L.3.1g	MSCR	-B	-A	-B	+A			-B			+A
32818	L.3.2c	MSCR	+A	-B	+A	+B			-A			-A
32819	L.3.2e	MSCR	-A	-A	-C	+A			-A			+A
32861	SL.3.2	MSCR	-A	-A	-A	+A			-A			
32862	SL.3.2	MSCR	-A	-A	+A	+A			-A			
32865	SL.3.2	MSCR	+A	-A	-A	-B			-A			
32866	SL.3.2	MC	-B	-B	-A	-B			-B			
32867	SL.3.3	MC	-B	-B	+A	-B			-B			
32868	SL.3.3	MSCR	-A	-A	+A	-A			+A			
32869	SL.3.2	MSCR	-A	-A	-A	+A			-A			
32993	L.3.4a	MC	-B	-B	-A	+A			-B			
32997	RL.3.4	MC	-A	-A	-A	+A			-A			
33000	RL.3.1	MC	-A	-B	-A	+B			-A			
33004	RL.3.2	MSCR	+A	+A	-A	+A			+A			
33008	RL.3.2	MSCR	-A	-A	-A	-A			-A			
33016	RL.3.3	MSCR	+A	+A	-A	+B			-A			
33017	RL.3.3	MC	-A	+A	-B	+B			-A			
33032	L.3.4a	MC	+A	+A	-B	-B			+A			
33044	RL.3.6	MC	-A	-A	-A	+A			+A			
33045	RL.3.9	MSCR	-A	+A	+A	+A			+A			
33048	RL.3.9	MC	-B	-A	-A	-A			-A			
33103	RL.3.5	MC	-A	-A	+A	+A			-A			
33104	RL.3.5	MC	-A	-A	+A	+B			-A			

Table 4-K–2. Field-Test Items: Differential Item Functioning Classifications for Grade 4 ELA

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
30026	RL.4.3	MSCR	+A	-A	-B	+A			-A			
30027	RL.4.2	MSCR	+A	+A	+A	+B			+A			
30028	RL.4.1	MSCR	-A	-A	-A	-A			-A			
30034	RL.4.1	MC	-A	-B	-A	-A			+A			
30045	RL.4.4	MC	-C	-B	-B	+A			-C			
30080	RL.4.3	MC	-B	-A	-A	-A			-A			
30081	RL.4.3	MC	+A	-A	-A	+B			-A			
30082	RL.4.7	MC	-B	-A	+B	-A			-B			
30083	L.4.5a	MC	-A	-A	-B	+B			-A			
30084	L.4.4a	MC	-B	+A	-A	-A			-A			
30085	L.4.5a	MC	-A	-A	-A	-B			-B			
30280	RL.4.3	MC	-A	-A	-B	+A			-A			
30281	RL.4.2	MSCR	+A	-A	-B	+B			+A			
30283	L.4.5b	MC	-A	-A	-B	+B			-A			
30284	RL.4.4	MC	-B	-B	-B	+B			-A			
30285	L.4.5c	MC	-A	-B	-A	+B			-A			
30286	SL.4.2	MC	-A	-B	-A	-A			-A			
30287	SL.4.2	MC	-B	-A	-A	-B			-B			
30288	SL.4.2	MSCR	+A	+A	-A	-B			+A			
30289	SL.4.2	MC	+A	+A	-B	+B			+A			
30290	SL.4.3	MC	-A	-A	+A	-A			-A			
30359	RI.4.1	MSCR	-A	-A	-A	+A			-A			
30364	RI.4.2	MSCR	-A	-A	+A	+B			-A			
30369	RI.4.1	MC	-B	-A	+A	-A			-B			
30380	RI.4.3	MSCR	-A	-A	-A	-B			-A			
30384	RI.4.3	MC	-A	+A	-A	-A			-A			
30388	RI.4.4	MC	-B	-A	+A	-B			-B			
30391	RI.4.4	MC	-B	-B	-B	-B			-B			
30393	RI.4.5	MC	-B	-A	+B	-B			-A			
30397	RI.4.7	MC	-A	-A	+A	-A			-A			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
30399	RI.4.7	MSCR	-B	-A	+A	-A			-B			
30402	L.4.4a	MC	-A	-A	-B	+A			-A			
30690	RL.4.3	MSCR	-A	-A	-A	+B			-A			
30692	RL.4.4	MC	-A	-A	-A	+A			+A			
30693	RL.4.2	MSCR	-A	-A	-B	+B			+A			
30694	RL.4.3	MC	-A	+A	-A	+B			+A			
30695	RL.4.1	MSCR	+A	-A	-A	+A			+A			
30697	SL.4.2	MSCR	+A	-A	-A	-A			-A			
30698	SL.4.3	MSCR	-A	-A	-A	+B			-A			
30699	SL.4.2	MSCR	+A	+A	+A	-B			-A			
30700	SL.4.2	MSCR	-A	+A	+A	-A			-A			
31454	RL.4.9	MSCR	-A	+A	+A	+A			-A			
31455	RL.4.2	MC	+A	-B	-A	-A			+A			
31456	RL.4.1	MSCR	-A	-A	-A	+A			-A			
31459	RL.4.1	MC	-A	+A	+A	+A			-A			
31461	RL.4.1	MC	-A	-A	+A	+B			-A			
31463	RL.4.4	MC	+A	-A	-B	-A			+A			
31465	RL.4.5	MC	+B	+B	-A	-A			+A			
31467	RL.4.5	MSCR	+A	-A	-A	+B			+A			
31469	RL.4.5	MC	-B	-A	-A	-A			-A			
31472	RL.4.9	MSCR	-A	-A	-A	+B			-A			
31477	RL.4.1	MC	-A	-A	-A	-A			+A			
31480	L.4.4a	MSCR	-A	-A	-B	+B			-A			
31481	L.4.4a	MC	+A	+A	-A	+A			+A			
31482	L.4.5b	MC	-A	+A	-A	+A			-A			
31483	L.4.4a	MC	+A	-A	-A	+B			-A			
31646	RI.4.1	MSCR	+A	-A	-B	+A			+A			
31650	RI.4.2	MC	+B	+A	-A	-A			+B			
31653	RI.4.3	MC	-A	-A	-B	-A			-A			
31654	RI.4.4	MSCR	-B	-B	+A	-B			-B			
31655	RI.4.5	MC	-A	-A	-B	+A			-A			
31656	RI.4.5	MSCR	-B	-A	-A	-B			-A			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
31657	RI.4.6	MC	-A	+A	-A	-A			-A			
31659	RI.4.7	MC	+A	+A	-A	+A			+B			
31660	RI.4.8	MSCR	+A	+A	-A	-A			+A			
31661	RI.4.8	MC	+A	-A	-A	+A			+A			
31662	RI.4.9	MC	-A	-A	+A	-A			-A			
31663	RI.4.9	MSCR	-A	-A	+A	-A			-A			
31675	RI.4.9	MSCR	-B	-A	-B	-A			-B			
31676	RI.4.9	MC	+A	-A	-A	+B			-A			
31678	L.4.4a	MC	-B	-A	-A	+A			-B			
31679	L.4.4a	MC	-A	-A	-B	-B			+A			
31680	L.4.5c	MC	-A	-A	-A	-A			-A			
31681	L.4.4a	MC	-A	-A	-A	-B			+A			
32126	L.4.1i	MSCR	-B	-A	-B	+A			-B			
32127	L.4.1h	MSCR	+A	-A	+A	+B			-B			
32128	L.4.2c	MSCR	-A	-A	-B	+B			-A			
32129	L.4.2d	MSCR	-A	-A	-C	-A			-A			
32130	L.4.2a	MSCR	-A	-A	-B	-A			+A			-A
32131	L.4.2b	MSCR	+A	-A	-A	+B			-A			-A
32132	L.4.2d	MSCR	-A	-A	-A	+A			-A			+A
32133	L.4.1c	MSCR	-A	-A	-B	+B			-B			+B
32969	L.4.1h	MSCR	-B	-B	+A	+A			-B			
32971	L.4.1i	MSCR	-A	-A	-C	+B			-A			
32972	L.4.2d	MSCR	-A	-B	-C	+B			-A			
33013	L.4.1i	MSCR	+A	-A	-B	-A			-A			
33014	L.4.2d , L.4.2c	MSCR	-A	-A	-A	-A			-A			
33015	L.4.1e , L.4.1g	MSCR	-A	-A	-A	+A			-A			
33047	RL.4.4	MC	-A	-B	-A	-A			-B			
33049	RL.4.4	MC	-A	-A	-A	+B			-A			
33051	L.4.5b	MC	-B	-B	-B	-A			-B			
33053	RL.4.1	MSCR	+B	+A	-A	+A			+A			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
33054	RL.4.2	MSCR	+A	+A	-A	+A			+A			
33055	RL.4.3	MC	-A	+A	-B	+B			-A			
33056	RL.4.3	MC	+A	-A	-B	+A			+A			
33057	L.4.4a	MC	-C	-B	-B	-A			-B			
33058	RL.4.1	MSCR	-A	+A	-A	-A			-A			
33059	RL.4.9	MC	-A	+A	-A	+B			-A			
33060	RL.4.6	MC	+A	+A	-A	-A			+A			
33061	RL.4.9	MSCR	-A	-A	+A	+A			-B			
33062	RL.4.9	MC	+A	-A	-A	+B			+A			
33135	RL.4.6	MSCR	+A	-A	-A	+A			-A			

Table 4-K–3. Field-Test Items: Differential Item Functioning Classifications for Grade 5 ELA

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
30291	RL.5.3	MC	-A	-A	+A	+A			+A			
30292	RL.5.3	MC	-B	-A	-A	-A			-B			
30293	RL.5.4	MC	-B	-A	-A	-C			-A			
30294	L.5.5a	MC	-B	-B	-B	-A			-B			
30295	RL.5.1	MC	-A	-A	-A	+A			-A			
30296	RL.5.6	MC	-B	+A	-A	+B			-A			
30297	RL.5.6	MC	+A	-A	-A	+B			+A			
30311	SL.5.3	MC	+A	-A	+A	+A			+A			
30312	SL.5.2	MC	-A	-A	-A	-A			-B			
30313	SL.5.3	MC	-B	-B	-B	-A			-A			
30314	SL.5.3	MSCR	-B	-A	-A	-B			-B			-A
30315	SL.5.2	MC	-B	+A	-A	-A			-A			-A
30360	RI.5.2	MSCR	-A	-A	-A	-B			-A			
30362	RI.5.2	MSCR	+A	-A	-A	-A			+A			
30365	RI.5.3	MC	-A	+A	+B	-B			-A			
30367	RI.5.3	MC	-A	-B	-A	-A			-A			
30370	RI.5.4	MSCR	-A	-A	-A	+A			-A			
30375	RI.5.4	MC	-A	-A	-A	-C			+A			
30376	RI.5.4	MC	-A	-A	-B	-B			+A			
30382	RI.5.5	MC	-A	-A	-A	-B			-A			
30385	RI.5.6	MSCR	-A	-A	-B	-B			-B			
30390	RI.5.8	MSCR	+A	-A	-A	-A			+A			
30394	RI.5.9	MC	-B	-A	-B	-A			-B			
30396	RI.5.3	MC	-A	-A	-B	-B			-A			
30398	RI.5.3	MSCR	-A	-A	-A	-A			-A			
30400	L.5.4a	MC	-A	-A	-A	+A			-B			
30408	RL.5.2	MSCR	-B	-A	-A	+B			-A			
30412	RL.5.2	MSCR	-A	-A	-A	+B			-A			
30415	RL.5.3	MSCR	-A	-A	-B	+A			-A			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
30416	RL.5.3	MC	-B	-A	-B	+B			-A			
30420	RL.5.1	MC	-A	+A	-B	+B			-A			
30422	RL.5.1	MC	-A	-A	-B	+B			-A			
30425	RL.5.2	MSCR	-A	-A	-A	+A			-A			
30428	RL.5.5	MC	+A	-A	+A	+A			-A			
30432	RL.5.6	MSCR	-A	-A	-A	+A			+A			
30434	RL.5.5	MC	+B	+A	-A	+B			+A			
30436	RL.5.6	MSCR	-A	-B	-A	+B			+A			
30439	RL.5.5	MC	-A	-A	+A	+A			-A			
30442	L.5.5a	MC	-A	-A	-B	+B			+A			
30443	L.5.4a	MC	-A	-A	-A	+A			-A			
30618	RL.5.1	MSCR	-A	-A	-B	+A			+A			
30619	RL.5.2	MSCR	-B	-B	+A	-A			-A			
30623	RL.5.2	MSCR	-A	-B	-A	+A			-B			
30627	RL.5.9	MSCR	-A	-A	-B	-A			-A			
30634	RL.5.9	MSCR	-A	-B	-A	+A			-B			
30661	SL.5.2	MSCR	-B	-A	-A	+A			-A			
30663	SL.5.3	MSCR	-A	-B	-B	+B			-B			+A
30666	SL.5.2	MSCR	-A	-A	+A	-A			-A			
30668	SL.5.2	MSCR	-B	-B	-B	-A			-A			-A
31520	RL.5.1	MC	-A	-A	-A	+A			-A			
31521	RL.5.2	MSCR	+A	+A	-B	+B			-A			
31525	RL.5.3	MSCR	-B	-A	-B	+B			-A			
31526	RL.5.4	MC	+A	-A	-B	-A			-A			
31528	RL.5.5	MC	-B	-A	-A	+A			-A			
31529	RL.5.5	MSCR	-A	-A	-A	+B			-A			
31530	RL.5.6	MC	-B	-A	-A	+A			-B			
31531	RL.5.7	MC	+A	-A	-A	+B			-A			
31532	RL.5.7	MC	-B	-A	-B	+A			-A			
31533	L.5.4a	MC	+A	+A	-A	+A			-A			
31536	L.5.5c	MC	-B	-A	-A	-A			-A			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
31537	RI.5.1	MSCR	-A	+A	-A	-A			+A			
31543	RI.5.5	MSCR	-B	-A	-A	-A			-A			
31546	RI.5.2	MSCR	+A	+A	-A	+A			+A			
31548	RI.5.3	MSCR	-A	+A	-A	-A			-A			
31550	RI.5.4	MC	+A	-A	-A	-A			+A			
31551	RI.5.4	MC	-A	-A	-B	+A			-A			
31552	RI.5.5	MSCR	-A	-A	-B	+A			-A			
31554	RI.5.6	MC	-B	-A	+A	+A			-A			
31555	RI.5.4	MC	-A	-A	-A	-B			+A			
31558	RI.5.8	MSCR	+A	+A	-A	-B			+A			
31561	RI.5.8	MC	-A	+A	-A	-A			+A			
31563	RI.5.9	MSCR	-A	+A	-B	+B			+A			
31565	RI.5.9	MC	+A	-A	-A	+A			+A			
31567	RI.5.9	MSCR	+A	-A	-A	-A			+A			
31568	L.5.4a	MC	+A	+A	+A	+A			+A			
31570	L.5.5c	MC	-B	-B	-A	-B			-B			
31572	SL.5.2	MC	-A	-A	+A	+A			-A			+A
31573	SL.5.2	MC	+A	-A	-B	+A			-A			
31574	SL.5.2	MSCR	-B	-B	+A	-A			-B			+A
31576	SL.5.2	MC	-A	-A	-B	-A			+A			-A
31578	SL.5.2	MC	-B	-A	-B	-A			-A			
31581	SL.5.2	MC	-A	-A	-A	-A			-A			
31584	SL.5.3	MSCR	-A	-B	-B	-B			-A			+A
31585	SL.5.3	MC	-B	-A	-A	-B			-B			
31586	SL.5.3	MC	-B	-B	+B	-A			-B			-B
31587	SL.5.3	MC	+A	-A	+A	-A			-A			
31704	RI.5.1	MC	-A	+A	-A	+B			-A			
31705	RI.5.2	MSCR	+A	-B	-A	+B			+A			
31717	RI.5.4	MSCR	-B	-A	-A	+A			-B			
31719	RI.5.5	MSCR	-B	-A	-A	-A			-B			
31720	RI.5.6	MSCR	-A	-B	-A	-A			-B			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
31721	RI.5.5	MSCR	-B	-A	-A	+A			-B			
31722	RI.5.4	MC	-C	-B	-A	-A			-C			
31723	RI.5.8	MC	-B	-B	-B	-B			-B			
31724	RI.5.8	MSCR	-A	-A	-A	+A			-A			
31725	L.5.4a	MC	-B	-A	-B	-A			-A			
31727	L.5.5a	MC	-A	-A	-A	-B			-A			
31728	RL.5.4	MC	-A	-A	-C	-A			-A			
32983	L.5.1d	MSCR	-C	-B	-B	+B			-B			-A
32984	L.5.2e	MSCR	+A	-A	-B	+A			+A			-A
32985	L.5.2a	MSCR	-A	-A	-B	+A			+A			-A
33019	L.5.1c	MSCR	-A	-A	-B	-B			-A			+A
33020	L.5.2b	MSCR	-B	-B	-B	+B			-B			-A
33022	L.5.1f , L.5.1e	MSCR	-A	-A	-A	+B			-B			+A
33077	SL.5.3	MC	+A	-A	-A	+A			+A			
33078	SL.5.2	MSCR	+A	+A	-A	+A			+A			
33079	SL.5.3	MC	-A	-B	-B	-A			-A			
33080	SL.5.2	MSCR	-A	-A	-B	-A			-A			
33100	SL.5.2	MSCR	+A	+A	+A	+B			-A			
33101	SL.5.2	MSCR	-B	-A	-A	+A			-B			
33142	L.5.2b	MSCR	-A	-A	-B	+A			+A			+A

Table 4-K–4. Field-Test Items: Differential Item Functioning Classifications for Grade 6 ELA

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
29711	RI.6.1	MSCR	-A	-A	-A	+B			-A			
29712	RI.6.2	MSCR	-A	-A	-A	+A			-A			
29713	RI.6.3	MSCR	-A	-A	-A	-A			-A			
29714	RI.6.3	MSCR	-A	-B	-B	-B			-A			
29716	RI.6.5	MC	+B	+A	-B	+B			+B			
29719	RI.6.7	MSCR	-B	-A	-A	+A			-A			
29720	RI.6.7	MC	-A	-A	-A	+B			-A			
29721	RI.6.8	MC	+A	-A	-A	+B			-A			
29722	RI.6.8	MSCR	+A	-A	+A	+A			-A			
29723	L.6.4a	MSCR	-A	-A	-A	-A			-A			
29724	L.6.4b	MC	+A	+A	-A	+B			+A			
29832	RL.6.1	MSCR	-A	-A	-B	+A			-A			
29833	RL.6.2	MC	-B	-A	-B	+A			-A			
29834	RL.6.1	MC	-A	-A	-A	-B			-A			
29835	RL.6.3	MC	-A	+A	-A	+B			-A			
29837	RL.6.4	MSCR	-A	-B	-A	+A			-B			
29838	RL.6.4	MC	-B	-A	-B	-A			-B			
29839	RL.6.5	MC	-A	-A	-B	-A			-A			
29840	RL.6.5	MSCR	-B	-A	-A	+A			-A			
29841	RL.6.6	MSCR	-A	-A	-B	+A			-A			
29842	RL.6.9	MC	-B	-B	-B	+A			-B			
29843	RL.6.9	MSCR	-A	-A	+A	-A			-A			
29844	RL.6.9	MSCR	-B	-A	+B	+A			-B			
29846	L.6.5a	MC	+A	+A	-A	-A			+A			
30674	SL.6.2	MSCR	-B	-A	-A	-A			-B			
30753	RI.6.2	MSCR	-A	-A	-A	+A			-A			
30755	RI.6.3	MC	-A	-A	-A	-B			-A			
30757	RI.6.2	MSCR	+A	-A	-B	+A			-A			
30758	RI.6.1	MC	-A	-B	-A	-B			-A			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
30760	RI.6.4	MSCR	-A	-A	+A	-B			-A			
30763	RI.6.5	MC	-B	+A	-A	-A			-A			
30764	RI.6.5	MC	-A	-A	-A	-A			-A			
30768	RI.6.8	MC	-B	-B	-A	-A			-A			
30769	RI.6.7	MC	-A	-A	-B	-A			+A			
30771	RI.6.5	MC	+A	-A	-A	-A			-A			
30772	RI.6.7	MSCR	-A	+A	+A	+A			+A			
30775	L.6.4a	MC	-B	-A	-B	-A			-B			
30777	L.6.4b	MC	-B	-A	-A	+A			-A			
30881	SL.6.3	MC	-B	-A	-A	+A			-B			
30883	SL.6.2	MC	-A	-B	-A	-A			-A			
30884	SL.6.2	MSCR	-B	-B	+A	-C			-B			
30885	SL.6.3	MC	-B	-B	-A	-B			-B			
30886	SL.6.3	MC	-A	-A	+A	-B			-A			
30887	SL.6.3	MSCR	-B	-B	-A	-B			-B			
30939	L.6.1d	MSCR	-B	-B	+B	+B			-B			+A
31330	RL.6.1	MSCR	-B	-A	-A	-A			-A			
31332	RL.6.1	MC	-A	-A	-B	+B			+A			
31333	RL.6.2	MSCR	-A	+A	-A	+A			-A			
31334	RL.6.2	MC	-A	-A	-A	+B			-A			
31335	RL.6.2	MSCR	+A	-A	+A	+A			+A			
31336	RL.6.3	MSCR	-A	-B	-A	+B			-A			
31337	RL.6.3	MC	-B	-A	-A	+A			-B			
31340	RL.6.4	MC	+A	-A	-A	+A			+A			
31343	RL.6.5	MC	-A	+A	+A	+A			-A			
31345	RL.6.6	MSCR	-B	-A	-B	+A			-A			
31347	RL.6.9	MSCR	+B	+A	-A	+B			+A			
31348	RL.6.9	MC	+B	-A	+A	+A			+A			
31349	RL.6.9	MC	-B	-A	-A	-A			-A			
31350	RL.6.9	MSCR	-B	-A	-B	+B			-B			
31352	L.6.4a	MC	-A	+A	-A	-A			-A			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
31357	RL.6.2	MC	+A	-A	-A	+B			+A			
31358	RL.6.2	MSCR	-A	-A	-A	+B			-A			
31362	RL.6.4	MSCR	-A	-A	-B	+B			+A			
31363	RL.6.5	MC	+A	-B	-A	+B			-A			
31365	RL.6.6	MSCR	-B	-A	-B	+B			+A			
31366	RL.6.5	MC	+B	+A	+A	+B			+B			
31367	RL.6.1	MC	+A	+A	-A	+B			-A			
31368	L.6.4b	MC	-B	-A	-B	-B			-A			
31369	L.6.4a	MSCR	-A	+A	-A	+A			-A			
31370	L.6.5a	MC	-A	-A	-A	-A			+A			
31374	SL.6.2	MSCR	-A	-A	-A	-A			+A			
31375	SL.6.2	MC	+A	-B	-B	+B			+A			
31376	SL.6.3	MC	+A	-A	+A	-B			-A			
31377	SL.6.3	MC	+A	-A	-A	+B			+A			
31378	SL.6.3	MC	-A	-B	-A	+B			+A			
31379	SL.6.3	MC	-A	+A	-A	+B			+A			
31380	SL.6.3	MSCR	-A	+A	-B	+A			-A			
31381	SL.6.3	MSCR	-B	-B	-A	+A			-B			
32072	RI.6.1	MC	-A	-A	-A	+A			-A			
32081	RI.6.2	MC	-B	-B	-A	-B			-B			
32082	RI.6.2	MC	-A	-A	+A	-B			-A			
32083	RI.6.2	MSCR	-A	-A	+A	+A			-A			
32084	RI.6.3	MC	+A	-A	-B	+B			+A			
32085	RI.6.3	MSCR	-B	+A	-A	-B			-B			
32086	RI.6.3	MSCR	-B	-B	-A	-A			-B			
32091	RI.6.5	MC	-A	-B	+B	-B			-A			
32182	L.6.1a	MSCR	-B	-A	-B	+B			-B			-A
32183	L.6.2a	MSCR	-A	-B	-A	+B			-B			-B
32184	L.6.2b	MSCR	-B	-A	-B	+B			-A			+A
32460	RI.6.8	MC	+A	+A	-A	-B			+A			
32463	RI.6.8	MC	-A	+A	-A	-B			+A			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
32469	RI.6.9	MC	-A	-A	-A	+A			-A			
32472	RI.6.9	MC	+A	-A	-A	+A			-A			
32478	RI.6.9	MSCR	+A	-A	-A	-A			-A			
32482	L.6.4a	MC	-B	-A	-A	+A			-B			
32489	L.6.5b	MC	-A	-B	-A	-B			-A			
32491	L.6.5c	MSCR	-A	-A	+A	-B			+A			
32763	RL.6.3	MSCR	-A	-A	-A	+B			-A			
32765	RL.6.4	MSCR	-B	-B	-A	-A			-A			
32768	L.6.5a	MC	-B	-B	-A	-A			-B			
32769	RL.6.4	MC	-A	-A	-B	+A			-B			
32771	RL.6.1	MSCR	-A	-A	+A	+A			-A			
32772	RL.6.6	MC	+A	-A	-A	+A			+A			
32773	RL.6.2	MSCR	-B	-A	-B	+A			-B			
32774	L.6.4a	MC	-C	-B	-A	-B			-C			
32775	RL.6.5	MC	+A	-A	-A	+B			-A			
32776	RL.6.1	MC	-B	+A	-A	-B			-B			
32796	L.6.2b	MSCR	+A	-B	-B	+B			+A			-A
32799	L.6.2b	MSCR	+A	-A	-C	+B			+A			+A
32802	L.6.1c	MSCR	-A	-B	-B	+B			-B			-A
32957	L.6.1a	MSCR	-B	-B	-B	+B			-B			+A
32958	L.6.2a	MSCR	-A	-A	-B	+B			-A			-A
32959	L.6.1d	MSCR	-A	-A	-B	+B			-A			-A
33028	RL.6.1	MSCR	-A	-B	+A	+B			-A			
33029	RL.6.1	MC	-A	-A	-B	+A			-A			
33030	RL.6.2	MSCR	+B	-A	-A	+B			+A			
33033	RL.6.6	MC	-A	-A	-A	+A			-B			
33037	L.6.4a	MC	-A	-B	+A	+B			-B			
33038	RL.6.5	MSCR	-A	-A	-B	+B			-A			
33039	RL.6.2	MSCR	-A	-A	-A	+B			-A			
33040	RL.6.4	MC	-B	+A	-A	+A			-A			
33046	L.6.5b	MC	-A	-A	-B	+B			-A			

Table 4-K–5. Field-Test Items: Differential Item Functioning Classifications for Grade 7 ELA

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
29768	RI.7.1	MSCR	-A	-A	-A	-B			-A			
29769	RI.7.2	MC	-A	-B	-B	+A			-A			
29771	RI.7.3	MSCR	-A	-A	-B	+A			-A			
29772	RI.7.3	MC	-A	-A	-A	-A			+A			
29773	RI.7.4	MSCR	-A	-A	-A	-A			-A			
29774	RI.7.5	MC	+A	-A	-A	+B			-A			
29776	RI.7.5	MSCR	-A	-A	-A	+A			-A			
29777	RI.7.6	MC	+A	+A	-B	-A			-A			
29778	RI.7.8	MC	+A	+B	+A	+A			-A			
29779	RI.7.8	MC	-A	-A	-A	-A			+A			
29780	L.7.4a	MC	-A	+A	-A	+B			-A			
29781	L.7.4b	MC	-A	-B	-B	-B			-B			
30446	RL.7.1	MSCR	+A	-A	-A	-A			-A			
30447	RI.7.1	MSCR	+A	+A	+A	-A			-B			
30450	RI.7.1	MSCR	-A	-B	-B	-B			-B			
30451	RL.7.2	MC	-B	-B	-A	+B			-B			
30453	RI.7.2	MSCR	-A	-B	-A	-A			-A			
30455	RL.7.2	MSCR	-A	-A	-A	+A			-A			
30456	RI.7.3	MSCR	-A	-A	-A	-A			-A			
30457	RI.7.3	MC	+A	-A	-A	-B			-B			
30459	RL.7.2	MSCR	-B	-A	-B	-A			-B			
30461	RL.7.3	MC	-A	+A	+A	+B			+A			
30462	RI.7.4	MSCR	-A	-A	-A	+A			-A			
30464	RL.7.4	MC	-B	-B	-A	+A			-B			
30466	RL.7.5	MC	-A	-B	-A	-A			-A			
30467	RI.7.5	MC	-B	-B	-B	+A			-B			
30468	RL.7.6	MC	-B	-B	-A	-A			-B			
30470	RI.7.6	MSCR	-A	+A	-A	+B			+A			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
30471	RL.7.6	MC	+A	+A	-A	+B			+B			
30473	L.7.5a	MC	+A	+A	+A	-B			-A			
30474	L.7.4a	MSCR	-A	+A	-A	+A			-A			
30476	RI.7.6	MC	-B	-A	-A	+A			-A			
30478	RI.7.8	MSCR	-A	+A	-A	+B			-A			
30481	RI.7.8	MC	-A	-A	-A	+A			+A			
30482	L.7.4a	MC	+A	-A	-A	+A			-A			
30483	L.7.4a	MC	-B	-A	-A	+A			-B			
30858	SL.7.2	MC	-B	-A	+A	-B			-B			
30863	SL.7.2	MSCR	-A	-A	-B	+A			-B			
30867	SL.7.2	MSCR	-B	-A	+A	-B			-B			
30869	SL.7.2	MSCR	-B	-A	-A	-B			-A			
30871	SL.7.2	MC	-A	-A	-A	-A			+A			
30872	SL.7.3	MSCR	-A	+A	+A	-B			-A			
30873	SL.7.3	MC	-A	-A	-A	-B			-A			
30874	SL.7.3	MC	+A	-A	+A	-B			-B			
30929	SL.7.3	MC	+B	-A	+A	-A			+A			
30941	L.7.1c	MSCR	-A	+A	-B	+B			-A			
32226	L.7.1b	MSCR	-A	-A	-B	+B			-A			
32227	L.7.1b	MSCR	-A	-B	-B	+B			-A			
32228	L.7.2b	MSCR	+A	-A	-B	+A			+B			
32229	L.7.2a	MSCR	+A	-A	-B	+B			-A			
32230	L.7.1c	MSCR	-A	-A	-B	+B			-A			+A
32231	7.UD1.1	MSCR	+A	-B	-B	-B			-B			-A
32232	7.UD1.1	MSCR	+A	-A	-A	+A			-A			-A
32233	L.7.2a	MSCR	-A	-A	-B	+A			-A			-A
32234	L.7.2a	MSCR	-B	-B	-B	-A			-B			
32235	L.7.1a	MSCR	-A	-A	-C	+B			-A			
32236	L.7.1c	MSCR	+A	-A	-A	-A			+A			
32237	L.7.1b	MSCR	-A	-A	-A	+A			-A			
32238	L.7.2b	MSCR	+B	+A	-C	+B			+B			
32239	L.7.1b	MSCR	+A	-A	-B	+A			-A			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
32240	L.7.2a	MSCR	+A	-A	-A	+A			+A			
32503	RL.7.1	MC	-A	-A	-A	+B			-A			
32505	RL.7.2	MSCR	+A	+A	-B	+A			+B			
32506	RI.7.2	MSCR	-A	-B	-B	-A			-A			
32507	RI.7.2	MSCR	-A	-A	-A	-A			-A			
32508	RI.7.3	MC	+A	-A	-A	-B			-A			
32509	RL.7.3	MSCR	-A	-A	-A	-A			+A			
32510	RL.7.3	MSCR	-A	-A	-A	+B			-A			
32511	RL.7.4	MC	-A	-B	-A	-B			-B			
32512	RL.7.4	MC	-A	-B	-A	-B			-A			
32513	RL.7.3	MC	-A	-A	-B	+B			-B			
32514	RI.7.5	MSCR	-B	-A	-A	+A			-A			
32515	RL.7.3	MC	+A	+A	-A	+A			+A			
32516	RI.7.6	MC	-A	-A	-A	-B			-A			
32517	RL.7.6	MSCR	-B	-A	-A	+B			-B			
32518	RL.7.9	MC	-A	-A	-A	-A			-A			
32521	RL.7.9	MC	-B	-B	-A	-A			-B			
32522	RL.7.9	MSCR	-A	-B	-A	-B			-B			
32523	RL.7.9	MSCR	+A	-A	-B	+B			+A			
32870	SL.7.2	MSCR	-B	-A	-B	-B			-A			
32871	SL.7.2	MC	-A	-A	-B	+A			-A			
32872	SL.7.3	MSCR	-B	-B	-A	+A			-B			
32873	SL.7.3	MSCR	-B	-A	-A	-A			-B			
32875	SL.7.2	MC	-A	+A	-A	-A			+A			
32876	SL.7.3	MC	-A	-A	-A	+B			-A			
32960	L.7.1c	MSCR	-B	-A	+A	+A			-A			
32961	L.7.2a	MSCR	-A	-A	-A	+B			-A			
32962	L.7.2a	MSCR	-A	+A	-A	+A			-A			
32963	L.7.2b	MSCR	+B	+A	-C	+B			+B			

Table 4-K–6. Field-Test Items: Differential Item Functioning Classifications for Grade 8 ELA

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
30445	RI.8.1	MSCR	-A	-B	-B	+A			-B			
30449	RI.8.1	MSCR	-A	-A	-A	-B			-A			
30452	RI.8.2	MC	-A	-A	-A	+A			-A			
30454	RI.8.3	MSCR	-A	-A	+A	-A			-A			
30458	RI.8.3	MC	+A	-A	-A	-B			-A			
30460	RI.8.5	MSCR	+A	+A	+B	+B			-A			
30463	RI.8.4	MC	-B	-B	-B	-B			-C			
30465	RI.8.5	MC	+B	-A	-B	+B			+A			
30469	L.8.4a	MC	-A	-B	-B	-B			-A			
30472	RI.8.6	MC	-B	-A	-A	-B			+A			
30475	RI.8.8	MSCR	-A	-A	+A	-B			-A			
30477	RI.8.8	MC	+A	+A	-A	-B			+A			
30479	L.8.5a	MC	-A	-A	+A	-A			-A			
30480	L.8.4a	MC	-A	+A	-A	-A			-B			
30493	RI.8.3	MSCR	-A	-A	-B	+B			-A			
30497	RI.8.4	MC	-A	-B	-B	-B			-B			
30500	RI.8.4	MC	-A	-A	-A	-A			+A			
30502	RI.8.2	MC	-A	-B	-A	+B			-A			
30505	RI.8.5	MSCR	+A	-A	-A	-A			-A			
30514	RI.8.6	MSCR	-A	-A	-A	+B			-A			
30516	RI.8.6	MC	-A	-A	+A	+A			-B			
30523	RI.8.8	MSCR	+A	-A	-A	-B			-A			
30525	RI.8.8	MC	+A	-A	-A	+A			+A			
30526	L.8.5a	MC	-A	-A	-A	-A			-A			
30527	L.8.5c	MC	+A	-A	-B	+A			+A			
30782	RI.8.1	MC	-A	+A	-A	-A			-A			
30784	RI.8.2	MSCR	+A	-A	+A	-A			-A			
30787	RI.8.8	MSCR	+A	+A	-A	-B			-A			
30788	RI.8.4	MSCR	-B	+A	-B	-A			-B			
30791	RI.8.4	MC	-A	-A	-A	+B			+A			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
30794	RI.8.5	MC	-A	+A	-A	-B			-A			
30796	RI.8.6	MSCR	-A	-A	-A	-B			-A			
30799	RI.8.6	MC	+A	+A	-A	-A			+A			
30800	RI.8.8	MSCR	-A	-A	+A	-A			-A			
30802	RI.8.8	MC	+A	-A	+A	-A			-A			
30804	RI.8.8	MSCR	+A	-A	-A	-A			-A			
30805	RI.8.9	MC	-A	-A	+A	-B			+A			
30807	RI.8.9	MSCR	-A	-A	-A	-B			-A			
30810	RI.8.4	MC	-A	-A	-A	-A			-A			
31538	RL.8.1	MC	-A	-A	+A	-B			-A			
31539	RL.8.1	MC	-A	+A	+A	-B			-A			
31541	RL.8.2	MC	+B	+A	-A	-A			+B			
31542	RL.8.2	MC	-B	-B	-A	+A			-B			
31544	RL.8.2	MSCR	+A	+A	+A	+A			+A			
31556	RL.8.3	MC	+A	+A	-A	-A			-A			
31559	RL.8.3	MSCR	-A	+A	-A	+B			+A			
31560	L.8.4a	MC	-A	-A	-B	-B			+A			
31562	RL.8.4	MC	+A	+A	-A	+A			-A			
31575	RL.8.4	MSCR	-A	-A	-A	+B			-B			
31577	RL.8.3	MSCR	+A	-A	+B	-A			-B			
31580	RL.8.5	MSCR	-B	-B	-B	+A			-A			
31582	RL.8.6	MSCR	-C	-B	+A	-A			-B			
31588	RI.8.9	MC	+A	+A	+A	-A			+A			
31589	RL.8.5	MC	-B	-B	-A	-A			-A			
31590	RL.8.9	MC	+A	+A	-A	+A			+A			
31592	RL.8.9	MC	-A	+A	-A	+A			-B			
31593	L.8.4a	MC	-A	-A	-A	-A			+A			
31597	RI.8.1	MC	-A	-A	-A	-B			-A			
31598	RI.8.2	MC	+A	-A	+A	-A			+A			
31599	RI.8.2	MSCR	-A	-A	-B	+A			-A			
31600	RI.8.3	MC	-A	-B	-B	-B			-B			
31601	RI.8.3	MSCR	-C	-B	-B	-B			-B			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
31602	RI.8.4	MC	-A	-A	-A	-A			-B			
31603	RI.8.5	MC	-A	-A	-A	-B			+A			
31604	RI.8.6	MC	-A	-A	-A	-A			-A			
31605	RI.8.7	MC	-A	-A	-A	+A			-A			
31606	RI.8.7	MC	-A	-A	+A	-B			+A			
31611	L.8.5a	MSCR	-A	-A	-B	+A			-A			
31708	RL.8.1	MSCR	-A	+A	-A	-A			+A			
31709	RL.8.1	MC	-B	-B	-A	+A			-B			
31710	RL.8.3	MSCR	+A	-A	+A	-A			-A			
31711	RL.8.1	MSCR	-A	-A	-A	+B			+A			
31712	RL.8.2	MSCR	-B	-A	-A	+A			-A			
31713	RL.8.2	MC	-A	-A	-A	+A			-B			
31715	RL.8.3	MC	-A	-A	+A	-A			-A			
31730	L.8.4a	MC	-C	-B	-B	-B			-C			
31748	RL.8.3	MC	-B	-A	-B	-A			-B			
32100	RI.8.9	MSCR	+A	+A	+A	-B			-A			
32102	L.8.4a	MC	+A	+B	+A	-B			+A			
32103	L.8.4a	MSCR	-A	+A	-A	-A			-A			
32241	L.8.1d	MSCR	+A	+A	+A	-A			+A			-A
32242	L.8.2c	MSCR	-B	-B	-C	-B			-B			+A
32243	L.8.2b	MSCR	+B	-A	+B	-B			+B			-A
32244	L.8.1c	MSCR	-B	-B	-C	-B			-B			-A
32531	RI.8.2	MC	+A	+A	+A	-A			+A			
32533	RI.8.2	MSCR	+A	-A	-A	-A			+A			
32535	RI.8.3	MC	-B	-A	-A	-B			-A			
32536	RI.8.3	MSCR	-A	-A	-B	-B			-B			
32537	L.8.4a	MC	-A	-A	+A	-B			-B			
32538	RI.8.4	MC	-B	+A	+A	+A			-A			
32540	RI.8.6	MC	-A	-A	-B	+A			-A			
32541	RI.8.6	MSCR	-B	-B	-A	-A			-B			
32542	RI.8.8	MC	-A	-A	-A	-A			+A			
32543	RI.8.8	MC	+A	+A	-A	-A			+B			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
32544	RI.8.8	MSCR	-A	-B	-A	-B			-B			
32547	RI.8.9	MC	-A	-A	-A	-A			-A			
32965	L.8.1a	MSCR	-B	-B	-B	+B			-B			+B
32966	L.8.2a	MSCR	-A	+A	-B	+A			+A			+A
32967	L.8.1b	MSCR	-B	-B	-B	+A			-B			+A
32998	L.8.1a	MSCR	-B	-B	-C	-A			-B			+A
33001	L.8.2a , L.8.2c	MSCR	+A	-A	-A	-B			+A			-A
33006	L.8.1c	MSCR	-A	-A	-B	+B			+A			-A
33084	SL.8.3	MC	+A	-A	-A	+B			+A			
33085	SL.8.3	MC	-A	-A	+A	-B			-B			
33086	SL.8.2	MC	-A	-A	-A	+B			-A			
33087	SL.8.2	MSCR	-A	-A	-A	+B			+A			
33112	SL.8.2	MSCR	-A	-A	-A	+A			-B			
33113	SL.8.3	MC	-A	-A	+B	-A			+A			

Table 4-K–10. Field-Test Items: Differential Item Functioning Classifications for Grade 3 Mathematics

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
29699	3.NBT.3	MSCR	+A	-A	+A	-B			-A			
29732	3.OA.4	MSCR	+A	+A	+A	+B			+B			
29734	3.NBT.1	MC	-A	-A	-A	-A			-A			
29735	3.NBT.1	MC	-A	-A	+A	-B			-A			
29736	3.NBT.2	MSCR	+A	+A	-A	+B			+A			
29737	3.NBT.2	MSCR	+A	-A	-A	+A			+A			
29738	3.NF.3a	MC	-A	+A	+A	-A			-A			
29740	3.G.1	MC	-B	-A	-B	+A			-A			
29741	3.G.2	MC	-A	-B	-A	+B			-A			
29745	3.OA.6	MSCR	+B	-B	+A	+A			+A			
29746	3.OA.4	MSCR	+A	-B	-B	+B			-A			
29747	3.NBT.1	MC	-A	-A	-B	-B			-A			
29748	3.NBT.2	MSCR	-A	-A	+A	+B			-A			
29749	3.NBT.2	MC	+B	+A	+A	+B			+B			
29750	3.NBT.3	MC	+A	-A	+A	-B			+A			
29751	3.NBT.3	MSCR	+A	-A	+A	-A			-A			
29752	3.NF.3a	MSCR	+A	-A	-A	-A			+A			
29753	3.NF.3c	MC	-A	-A	+A	-A			+A			
29754	3.NF.2b	MC	+A	-A	+A	+B			+A			
29756	3.NBT.1	MSCR	-B	-A	-A	-A			-A			
29758	3.NBT.3	MSCR	+A	-A	-B	+A			+A			
29759	3.NF.3a	MSCR	+B	+A	+A	+A			+B			
29762	3.NF.2b	MSCR	-A	-A	+A	-A			-A			
29765	3.NF.1b	MC	+A	+A	-A	+A			+A			
29800	3.NBT.3	MSCR	+A	+A	-B	+A			+A			
29894	3.NBT.1	MC	-B	+A	-A	-B			-B			
29895	3.G.1	MSCR	-A	-A	-A	-A			-A			
29896	3.G.2	MC	+A	-A	-B	+C			-A			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
29898	3.NBT.1	MC	+A	-A	-A	-B			-A			
29899	3.NBT.1	MC	+A	-A	-A	-B			-A			
29900	3.NBT.2	MC	+A	-A	-A	+B			+A			
29901	3.NBT.2	MSCR	-A	-A	+A	+A			+A			
29902	3.NBT.3	MSCR	-A	+A	+A	-A			-A			
29903	3.NBT.3	MSCR	+A	-A	+A	-B			-A			
29904	3.NBT.3	MC	-A	-A	+A	-B			-A			
29905	3.NBT.3	MC	+A	+A	+B	-A			+B			
29906	3.NF.1a	MSCR	-B	-A	-A	+A			-B			
29907	3.NF.1b	MC	-A	+A	-A	-A			-A			
29910	3.NF.2a	MC	+A	-A	-A	+A			+A			
29917	3.OA.1	MC	-A	+A	-A	-B			-A			
30943	3.NBT.1	MSCR	-A	-A	-A	-B			-A			
31007	3.NBT.1	MC	-A	-A	-A	-A			-A			
31008	3.NBT.3	MSCR	+A	+A	-A	-A			+A			
31009	3.NBT.2	MC	+A	+A	+A	+A			+A			
31014	3.OA.5	MSCR	-A	-A	-A	+A			-A			
31019	3.G.1	MSCR	-B	-B	-B	-A			-B			
31023	3.OA.6	MSCR	+A	-B	-A	+B			+A			
31024	3.OA.9	MC	-A	-A	+A	+A			-A			
31026	3.OA.9	MSCR	-A	-B	-A	-A			-A			
31027	3.G.2	MSCR	-A	-A	-A	+B			-A			
31040	3.OA.8a	MSCR	+A	-A	-A	-B			-A			
31041	3.NBT.3	MSCR										
31209	3.OA.1	MC	+B	+B	-A	-B			+A			
31210	3.OA.2	MC	+A	+A	-A	-A			+A			
31211	3.OA.3	MC	-A	-A	-A	-A			-B			
31213	3.OA.4	MC	-A	-A	-A	-A			+A			
31253	3.NF.1a	MC	+A	-A	-A	+B			-A			
31254	3.NF.1b	MC	-A	-A	-B	+A			-A			
31255	3.NF.3d	MSCR	+A	+A	+A	+A			+A			
31309	3.MD.5b	MC	+A	+A	-B	+A			-A			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
31310	3.MD.7b	MSCR	+A	+A	-A	+A			+A			
31311	3.MD.1	MC	-A	-A	-A	-B			-A			
31312	3.MD.2	MC	-A	-A	-A	-B			-A			
31624	3.MD.6	MC	+B	+A	-B	+B			+B			
31626	3.MD.8	MSCR	-A	-A	+A	+A			+A			
31629	3.NF.3b	MSCR	-A	+A	-A	-A			-A			
31761	3.NBT.3	MC	+A	+A	+A	-B			+A			
31762	3.MD.3	MC	-A	-A	-A	-A			-A			
31766	3.NBT.1	MC	-A	-B	-A	-A			-A			
31767	3.NF.2a	MC	+A	+B	-B	-A			+A			
31770	3.NF.2b	MC	+B	-A	-A	+A			+B			
31771	3.NF.3a	MC	+A	-A	-A	+A			-A			
31772	3.OA.7a	MC	+A	+B	-B	+B			-A			
31773	3.NF.3d	MSCR	+A	+A	+A	-A			+A			
31776	3.NF.3a	MSCR	+A	+A	-A	+A			+A			
31793	3.NF.3a	MSCR	-A	-A	+B	-B			-A			
31796	3.OA.8a	MC	-A	+A	-A	+B			-A			
31797	3.NF.3c	MSCR	-A	+A	+B	-A			+A			
31802	3.OA.8b	MC	+B	+B	-A	+A			+A			
31817	3.OA.5	MC	+A	+A	+A	-A			+A			
31824	3.NBT.2	MC	+A	-A	+A	+B			+A			
31836	3.NBT.1	MSCR	-A	-A	-A	-B			-A			
31837	3.NF.3c	MSCR	+A	-A	-A	-B			+A			
31841	3.NBT.2	MC	+A	-A	-B	+B			-A			
31844	3.OA.6	MSCR	-A	-A	-A	+A			-A			
31855	3.OA.8b	MC	-A	+A	-A	-A			-A			
31864	3.NBT.1	MSCR	-A	-A	+A	-A			-A			
31886	3.G.1	MSCR	-B	-B	-A	+B			-B			
32003	3.OA.7b	MSCR	+A	-A	-A	+B			+B			
32779	3.G.2	MSCR	-A	+A	-B	+B			-A			
32787	3.MD.1	MSCR	-A	-A	-A	-B			-A			
32790	3.MD.2	MSCR	-B	+A	+A	-B			-B			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
32793	3.MD.1	MC	+A	+A	-B	-B			-A			
32794	3.MD.1	MC	-A	-A	-A	-B			-A			
32795	3.MD.4	MC	-B	-A	-A	-B			-B			
32798	3.NBT.1	MSCR	-A	-A	-A	-B			-A			
32800	3.MD.2	MSCR	+A	+A	+A	+A			+A			
32803	3.MD.3	MC	-A	-A	+A	-B			-A			
32805	3.MD.3	MSCR	-A	-A	-A	-B			-A			
32807	3.NBT.2	MSCR	+A	+B	-B	+B			+A			
32809	3.NF.1a	MC	-B	-B	-A	+B			-B			
32823	3.MD.3	MSCR	-B	-A	+A	-B			-B			
32824	3.MD.4	MSCR	-A	-A	+A	+A			-B			
32825	3.NF.3c	MC	+B	+A	+A	-A			+B			
32826	3.OA.1	MSCR	+A	-A	-A	+B			-A			
32830	3.OA.1	MC	-A	-A	-A	-A			+A			
32831	3.OA.2	MC	-A	+A	+A	+B			-B			
32832	3.OA.3	MC	-A	+A	+A	+A			+A			
32833	3.OA.2	MC	+A	-A	+A	+B			+A			
32835	3.OA.2	MC	-B	+A	-A	-A			-A			
32846	3.OA.3	MSCR	-A	-A	+A	-A			-B			
32854	3.OA.7a	MSCR	+A	-A	-A	+B			+A			
32877	3.OA.4	MSCR	+B	-A	+A	+B			+A			
32878	3.OA.6	MC	+A	+A	-A	+B			+A			
32881	3.OA.6	MC	-A	+A	-A	+A			-A			
32883	3.OA.8c	MC	+A	+A	-A	+A			+A			
32884	3.OA.6	MC	+A	+A	-A	+A			+A			
32885	3.MD.4	MSCR	-B	-A	+A	+B			-A			
32886	3.OA.3	MSCR	+A	+A	-A	+B			+A			
32887	3.OA.4	MSCR	+B	-A	-A	+B			+A			
32888	3.OA.5	MC	+A	+A	+A	-B			-A			
32889	3.OA.8c	MSCR	+A	-A	-A	-A			+A			
32891	3.OA.9	MSCR	-B	-A	-A	-A			-B			
32894	3.OA.6	MSCR	+A	-A	+A	-A			+A			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
32933	3.OA.8a	MC	+A	-A	-A	+B			+A			
32934	3.NF.2a	MSCR	-A	+A	+A	-A			-A			

Table 4-K–11. Field-Test Items: Differential Item Functioning Classifications for Grade 4 Mathematics

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
29801	4.OA.1	MC	-A	-A	-A	+A			+A			
29802	4.OA.4	MC	-A	-A	-A	-A			+A			
29803	4.OA.4	MSCR	-B	+A	-A	+A			-A			
29804	4.OA.5	MSCR	-A	-A	+A	+A			-A			
29805	4.NBT.1	MSCR	-B	-A	-B	+A			-A			
29806	4.NBT.1	MSCR	-A	+A	-A	-A			+A			
29807	4.NF.2	MSCR	-B	-B	-A	-B			-B			
29808	4.NF.5	MC	+A	+B	+B	-A			+A			
29809	4.G.1	MSCR	+A	-A	-B	+B			-A			
29810	4.G.1	MC	-A	-A	+A	+A			-A			
29813	4.OA.1	MC	+A	-A	-B	-A			-A			
29814	4.OA.2	MC	-A	-A	+A	-B			+A			
29815	4.OA.2	MSCR	-A	-A	-A	-B			-A			
29816	4.OA.3b	MSCR	-A	+A	+A	+A			+A			
29817	4.NF.5	MC	-A	+A	+A	-B			-A			
29818	4.NF.1	MC	-A	-A	+A	+B			+A			
29819	4.G.3	MSCR	-A	-A	+A	+A			-A			
29820	4.OA.1	MC	-A	+A	-B	-B			+A			
29822	4.OA.2	MC	-A	+A	-A	-A			+B			
29823	4.OA.2	MSCR	-A	-B	-A	-A			-A			
29825	4.NBT.3	MSCR	+A	+A	+A	-B			-A			
29826	4.NBT.6	MC	+A	+A	-A	+B			-A			
29827	4.NF.2	MSCR	-A	-A	-A	-B			-A			
29828	4.G.1	MSCR	-A	-A	-B	+B			+A			
29829	4.MD.3	MSCR	+A	+A	-B	+B			+A			
29830	4.MD.5b	MC	-B	-A	-A	-B			-B			
29878	4.NBT.3	MSCR	-A	+A	-A	-B			-A			
29920	4.G.1	MSCR	-A	-A	-A	+B			-A			
29921	4.MD.1	MC	-A	-A	+B	-B			-A			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
29922	4.NBT.1	MC	+A	-A	-A	+A			-A			
29923	4.NBT.3	MC	-A	+A	+A	-B			+A			
29924	4.NBT.6	MSCR	+A	+A	-A	+B			+A			
29925	4.NF.1	MC	-A	-A	+A	-B			-A			
29926	4.NF.5	MC	-A	-A	+B	-B			-B			
29927	4.NF.7	MSCR	+B	+B	-A	-B			+B			
29928	4.OA.1	MC	-B	-A	-B	-B			-A			
29929	4.OA.1	MC	-A	-A	-A	-A			-A			
29930	4.OA.2	MC	-B	-B	+A	-B			-B			
29931	4.OA.2	MSCR	-A	-A	+A	-B			-A			
29934	4.OA.4	MSCR	+A	+A	-B	-A			+A			
30063	4.OA.5	MSCR	-A	+A	-B	-A			-A			
30995	4.G.1	MC	-A	-A	-A	+A			-A			
30997	4.G.2	MSCR	-B	-A	-A	+A			-B			
31000	4.MD.1	MSCR	+A	-A	-B	-A			+A			
31001	4.MD.2a	MC	+A	-A	-A	-A			+A			
31005	4.MD.6	MSCR	-B	-A	-A	+B			-B			
31030	4.NBT.3	MSCR	-A	-A	+A	-A			-A			
31088	4.NF.3a	MSCR	+A	+A	-B	+A			+A			
31089	4.NF.3b	MSCR	+A	+A	-A	+A			-A			
31090	4.NF.3d	MSCR										
31091	4.OA.1	MSCR	-A	-A	+A	+A			-A			
31092	4.OA.3a	MC	+B	+A	-A	+A			+B			
31093	4.OA.4	MSCR	-A	+A	-A	-A			-A			
31094	4.OA.5	MSCR	-A	-A	-A	+B			-A			
31095	4.MD.3	MC	+A	-A	+A	+A			+A			
31096	4.NF.1	MSCR	-A	-A	+A	-A			-A			
31303	4.NBT.4	MC	+A	+A	-B	+B			+A			
31304	4.NBT.5	MC	+B	+A	-A	-A			+B			
31306	4.NF.1	MSCR	-A	-A	-A	-A			-B			
31313	4.MD.6	MC	-A	-B	+B	-B			-A			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
31331	4.MD.2b	MC	-A	+A	+A	-A			+A			
31398	4.MD.2b	MC	-B	-A	-A	-A			-A			
31523	4.G.3	MSCR	-A	-A	-A	-A			-A			
31633	4.MD.1	MC	-B	-A	-A	-A			-B			
31634	4.MD.6	MC	+A	+A	+A	+A			+A			
31635	4.NBT.1	MC	-A	+A	-A	-B			-A			
31636	4.NBT.2	MSCR	-A	-B	-B	+A			-B			
31637	4.NBT.3	MSCR	-A	-A	-A	-B			-A			
31640	4.NBT.5	MSCR	+A	+A	-A	+A			+A			
31641	4.NBT.1	MSCR	+A	-A	-A	+A			+A			
31764	4.NBT.1	MC	-B	-A	+A	-B			-A			
31768	4.NBT.2	MC	-A	+A	-B	-B			-B			
31777	4.NBT.3	MC	-A	+A	+A	-A			-A			
31778	4.NBT.4	MC	+A	-A	-A	+B			+A			
31779	4.NBT.6	MC	+A	-A	+A	+A			+A			
31800	4.NBT.5	MC	+A	-A	-A	+B			+A			
31804	4.NF.2	MC	-A	+A	-B	+A			-A			
31829	4.NF.3a	MC	+A	+A	-A	+B			+A			
31834	4.NF.3b	MSCR	+A	+A	+A	-A			+A			
31843	4.NF.3c	MC	+A	-A	-A	+B			+A			
31850	4.NF.3d	MC	+A	+B	-A	-A			+B			
31863	4.NF.3c	MSCR	-A	-A	-A	-B			+A			
31880	4.OA.2	MC	-B	-B	-A	-B			-B			
31881	4.NF.3d	MC	-A	-A	-B	+A			+A			
31882	4.NF.4a	MC	+A	+A	-A	-A			-A			
31892	4.NBT.5	MC	+A	+A	-A	+B			+A			
31895	4.NF.4b	MC	-A	-A	-A	-B			-A			
31957	4.OA.5	MC	+A	+A	-B	+A			+A			
31981	4.OA.3b	MC	-A	-A	-A	+A			-A			
31989	4.OA.4	MC	+B	-A	+A	+B			+A			
31993	4.OA.4	MC	-A	-A	-A	+A			-A			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
31996	4.OA.5	MC	-B	+A	+A	+A			-A			
32001	4.NBT.6	MSCR	+A	-A	-A	+B			+A			
32004	4.NBT.3	MSCR	-A	-A	-A	+A			-A			
32018	4.NF.3b	MC	+B	-A	-B	+A			+B			
32034	4.OA.3a	MC	-A	-A	+B	+B			-B			
32047	4.OA.5	MSCR	-A	-A	-B	-A			-A			
32896	4.MD.1	MSCR	-A	-A	-B	-A			-A			
32897	4.MD.1	MSCR	-A	-A	+A	-B			-A			
32899	4.MD.2a	MSCR	-B	-A	-B	-B			-A			
32904	4.NF.3a	MSCR	+B	+A	-B	+B			+A			
32906	4.NF.6	MSCR	+A	-A	-A	+A			-A			
32907	4.OA.3a	MC	-A	-A	-A	+A			-A			
32911	4.OA.3a	MSCR	-A	+A	+B	+B			-A			
32914	4.NF.3c	MSCR	+A	+A	+A	+A			-A			
32918	4.OA.5	MSCR	-A	-A	-A	+B			-B			
32921	4.OA.3b	MSCR	-A	-A	-A	+A			-A			
32927	4.OA.5	MSCR	+B	+A	-B	-B			+A			
32928	4.OA.3b	MSCR	-B	-A	-A	-A			-A			
32929	4.OA.3b	MSCR	-B	-A	-A	+A			-A			
32938	4.MD.2a	MSCR	-A	+A	+A	-B			+A			
32939	4.NF.6	MC	+A	+A	-A	+A			+A			
32943	4.OA.5	MC	-A	-A	-B	-A			-A			

Table 4-K–12. Field-Test Items: Differential Item Functioning Classifications for Grade 5 Mathematics

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
28481	5.NBT.7	MSCR	+A	-A	+A	-A			-A			
29831	5.OA.2b	MC	-A	+A	-A	+A			+A			
29861	5.OA.2a	MSCR	-A	-A	+A	+A			-A			
29862	5.OA.2b	MC	+A	-B	+A	+A			+A			
29863	5.OA.1	MC	-A	+A	-B	+A			-A			
29864	5.OA.1	MC	-A	+A	-B	+A			+A			
29865	5.NBT.7	MC	-A	+A	-A	+A			+A			
29868	5.NF.1	MSCR	+A	+A	-A	+A			+A			
29869	5.NF.1	MSCR	-B	-A	+A	-A			+A			
29870	5.NF.2	MC	+A	-A	+A	-A			-A			
29871	5.OA.2b	MC	-A	+A	-A	+A			+A			
29872	5.OA.2a	MC	-A	-A	-A	+B			-A			
29873	5.OA.3	MSCR	-A	-A	-B	+B			-A			
29876	5.NBT.3a	MSCR	-A	-A	+A	-A			-A			
29877	5.NBT.4	MSCR	-A	+A	-A	+A			-A			
29879	5.NF.3	MSCR	-B	-A	-A	+B			-A			
29880	5.NF.4a	MSCR	-A	+A	+A	-A			+A			
29881	5.NF.4b	MC	-A	-A	-A	+B			-B			
29883	5.OA.3	MC	+A	+A	-A	-A			+A			
29884	5.OA.3	MC	+A	+A	-B	+B			+B			
29885	5.OA.1	MC	+A	-A	-A	+B			-A			
29886	5.OA.1	MC	-A	-A	-A	+B			-A			
29887	5.OA.1	MSCR	+A	-A	-A	+A			+A			
29889	5.NBT.3b	MSCR	-C	-B	-B	+A			-B			
29890	5.NBT.5	MSCR	-A	+A	-A	+B			-A			
29891	5.NF.5a	MC	-A	+A	-A	-B			-A			
29892	5.NF.7c	MC	-B	-A	+A	-A			-B			
29893	5.NF.7a	MC	-B	-B	-A	+B			-B			
29938	5.NBT.3a	MSCR	+A	+A	-A	+B			-A			
29939	5.NBT.4	MC	-A	-B	-A	-A			-A			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
29940	5.NBT.7	MC	+A	+A	-A	-A			+B			
29941	5.NBT.4	MC	+A	+A	+A	-A			+A			
29942	5.NBT.5	MC	+B	+A	-A	+B			+A			
29945	5.NF.1	MSCR	+A	-A	-A	+A			-A			
29946	5.NF.2	MC	-B	-B	-B	-B			-B			
29947	5.NF.5b	MC	+A	-A	-A	-B			-A			
29958	5.OA.3	MC	+A	-A	+A	-B			-A			
30067	5.NBT.5	MSCR	+A	-B	-A	+B			-A			
30942	5.NF.5b	MSCR	-A	-A	-B	-A			-B			
30969	5.G.3	MSCR	-B	-A	+A	+A			-B			
30971	5.MD.1	MC	-B	-A	-B	-B			-B			
30973	5.MD.3a	MSCR	-A	-A	-A	-A			-A			
30974	5.MD.3b	MSCR	-A	+A	+A	+B			-A			
30975	5.MD.5a	MSCR	+A	+A	-A	+B			+A			
30987	5.MD.5b	MSCR	+A	-A	-A	+A			+A			
30989	5.NBT.1	MC	-A	-A	-A	+A			+A			
30991	5.NBT.3b	MSCR	-B	-B	+A	-B			-B			
31101	5.NBT.4	MSCR	+A	+A	-A	-A			-A			
31103	5.NF.1	MC	+A	+A	+A	+A			+A			
31104	5.NF.7a	MC	-A	-A	+A	+A			-A			
31106	5.NF.7b	MC	+A	+A	-A	+A			-A			
31108	5.NF.7c	MC	-A	-A	+B	-A			-B			
31258	5.NBT.3a	MC	+A	-A	-A	-A			+A			
31262	5.NBT.3b	MC	-A	-B	+A	-B			-A			
31263	5.NF.6	MC	-A	-A	-A	-A			+A			
31264	5.NF.4b	MC	+A	-A	-A	+B			+A			
31265	5.OA.2a	MC	-B	-A	-A	+B			-A			
31625	5.NF.6	MC	-A	-A	-A	+A			-A			
31628	5.OA.1	MC	+A	+A	+A	+B			+A			
31644	5.OA.2a	MC	+A	+A	-B	+B			+B			
31763	5.MD.2	MC	-A	-B	+A	-A			+A			
31765	5.MD.5a	MC	+A	+A	+A	+B			+B			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
31769	5.MD.1	MC	-A	-B	-A	-B			-B			
31774	5.G.2	MC	-A	-A	-A	+A			+A			
31780	5.NBT.5	MC	+B	+A	+A	+B			+A			
31792	5.NBT.7	MC	+A	-A	-B	+A			-A			
31794	5.NBT.3a	MC	+A	-A	-A	-A			-A			
31798	5.NBT.2	MC	+A	-A	+B	-B			-A			
31799	5.NF.3	MC	-A	+B	-A	+A			+A			
31801	5.NBT.3b	MC	-A	-A	+A	-B			-A			
31820	5.NF.1	MSCR	-A	-A	+A	+B			-A			
31821	5.OA.1	MC	-A	-A	-B	+B			-A			
31842	5.NF.6	MC	+A	-A	+A	+B			-A			
31848	5.NF.2	MC	+A	+A	-A	+A			+A			
31856	5.OA.2a	MC	+A	-A	-B	+A			+A			
31887	5.NBT.6	MC	-A	-A	-A	+B			-A			
31890	5.G.4	MSCR	-B	-A	+A	-A			-B			
31914	5.NF.4a	MSCR	-A	-A	-A	+B			-A			
31949	5.OA.2b	MC	-A	-B	-A	+A			-B			
31972	5.NBT.2	MSCR	-A	-A	-A	-A			+A			
31974	5.OA.1	MC	-A	-A	-A	+A			+A			
32054	5.NF.5a	MC	-A	-A	+A	+A			-A			
32476	5.NF.1	MC	-A	-A	-A	+B			+A			
32693	5.OA.3	MC	-A	+A	-B	+B			+A			
32874	5.G.1b	MSCR	+A	-A	-A	+B			-A			
32890	5.NF.3	MSCR	-A	-A	-A	-A			-A			
32920	5.G.1b	MSCR	+A	-A	-A	+A			+A			
32923	5.NF.2	MSCR	+B	-B	+A	+A			+A			
32932	5.NF.7b	MSCR	+B	+A	+A	+B			+A			
32946	5.G.1a	MSCR	-A	-A	+A	+B			-A			
32947	5.NF.2	MSCR	+A	-A	+B	+B			+A			
32951	5.NF.6	MSCR	+A	+A	-A	+A			-A			
32986	5.NF.6	MSCR	+B	-A	-A	+B			+A			
32987	5.NF.7b	MC	+A	+A	+A	+B			-A			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
32988	5.NF.7b	MSCR	-A	-A	+B	-B			-A			
32989	5.OA.2b	MC	+A	-A	-A	+A			-A			
32990	5.OA.2b	MC	+A	+A	-A	-A			+A			
32991	5.OA.2a	MC	+B	+A	-A	+A			+A			
32994	5.OA.2b	MC	-B	+A	-B	+A			-A			
33018	5.OA.3	MSCR	+A	+A	+A	+B			-A			
33021	5.NF.3	MSCR	+A	+A	+A	+A			+A			
33025	5.OA.3	MSCR	-A	-A	-A	+B			-A			
33287	5.OA.1	MC	+A	-A	-A	+A			+A			

Table 4-K–13. Field-Test Items: Differential Item Functioning Classifications for Grade 6 Mathematics

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
27007	6.EE.9	MSCR	-A	-A	-A	+A			-A			
29962	6.EE.1	MSCR	+B	+A	-B	+A			+B			
29963	6.EE.4	MC	+A	+A	-A	+A			-A			
29964	6.EE.7	MC	-A	-A	-B	+B			+A			
29965	6.EE.8	MSCR	-A	+A	-A	+A			-A			
29966	6.EE.9	MC	-A	+A	+A	+B			-A			
29967	6.NS.3	MSCR	+A	+A	-A	+B			+A			
29968	6.NS.4	MC	-A	-A	-A	-B			-A			
29969	6.NS.6a	MC	-A	-A	-B	+A			-A			
29970	6.NS.6a	MC	-A	-A	-A	+A			-A			
29971	6.NS.6c	MSCR	+A	+A	+A	-B			-A			
29972	6.NS.7c	MC	-A	+A	-B	+A			+A			
29973	6.RP.2	MC	-A	-A	-B	-A			-A			
29974	6.RP.3a	MSCR	+A	-A	-A	+B			+B			
29975	6.RP.3c	MSCR	+A	+A	+A	+A			-A			
29976	6.G.3	MC	-A	-A	+A	-B			-A			
29977	6.G.4	MC	-B	-A	+A	-B			-B			
30104	6.EE.2c	MSCR	+B	+A	-B	-A			+A			
30106	6.EE.5	MSCR	-B	-A	-A	-A			-A			
30110	6.NS.1c	MC	+B	+A	+A	+B			+A			
30111	6.NS.1c	MC	-A	-A	-A	-B			+A			
30112	6.NS.6b	MSCR	-B	+A	+A	-A			-B			
30113	6.NS.7a	MC	+A	-A	-A	+A			-A			
30114	6.NS.7b	MSCR	-A	-A	-B	-A			-A			
30115	6.NS.7c	MC	-A	-A	+A	-A			-B			
30116	6.NS.8	MC	-A	+A	-A	-B			-B			
30117	6.RP.1	MC	-B	+A	-A	-B			-A			
30118	6.G.1	MC	+A	-A	-A	-B			+A			
30119	6.G.2	MC	-A	-A	-A	-B			+A			
30120	6.SP.5b	MC	-B	-B	-B	+B			-B			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
30121	6.SP.5a	MC	+A	+A	+A	+B			-A			
30122	6.SP.5d	MC	+A	-A	-B	+B			+B			
30146	6.EE.6	MSCR	-A	+A	-A	+A			-A			
30149	6.EE.2a	MC	-A	-A	-A	-A			+A			
30168	6.NS.1a	MSCR	+A	+A	+A	+B			+A			
30191	6.NS.8	MSCR	-A	+A	-B	-B			-A			
30197	6.G.1	MSCR	+A	+A	-A	-A			-A			
30198	6.G.2	MSCR	-A	+A	+A	-B			-B			
30200	6.SP.5c	MSCR	+A	-B	-B	+B			-A			
30204	6.SP.5d	MSCR	-A	-B	+A	+B			-B			
30947	6.EE.1	MC	+A	+A	-A	-B			+A			
30966	6.EE.1	MSCR	+A	+A	-A	+B			+A			
30976	6.EE.2a	MC	-B	+A	-A	+B			-B			
30978	6.EE.6	MC	-A	-A	+A	+B			-A			
30980	6.G.4	MC	-B	-B	+B	-B			-B			
30982	6.NS.3	MC	+A	+A	-A	+B			+A			
30983	6.NS.2	MC	+B	+A	-A	+B			+B			
31002	6.NS.6c	MC	+A	+A	+A	+A			+A			
31004	6.SP.1	MC	-A	-B	-A	+A			-A			
31029	6.EE.4	MC	+A	-A	-A	+A			+A			
31032	6.NS.1a	MC	-A	+A	-A	+B			-A			
31033	6.NS.4	MSCR	+A	+A	-A	-A			+A			
31068	6.RP.3a	MC	-A	-A	+A	+A			-A			
31069	6.RP.3b	MC	-A	-A	-A	-A			-A			
31070	6.SP.4	MC	-A	-B	-A	+A			-A			
31117	6.EE.8	MSCR	-B	-B	-B	-B			-B			
31122	6.SP.3	MSCR	-A	-A	+A	-A			-B			
31124	6.SP.5c	MC	-A	-A	-A	+B			-A			
31259	6.EE.2b	MSCR	+B	+A	-A	-A			+B			
31266	6.NS.7a	MC	-A	-A	+A	-A			-A			
31267	6.NS.7b	MC	-A	-A	+A	-B			-A			
31281	6.G.2	MC	-A	+A	+A	+A			-A			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
31282	6.SP.5c	MC	+B	+A	-A	+A			+A			
31781	6.NS.2	MC	+B	+A	-A	+B			+B			
31787	6.RP.3a	MC	-B	+A	-A	-A			+A			
31789	6.RP.1	MSCR	+A	+A	-A	+A			+A			
31791	6.EE.7	MC	+A	-A	-A	+B			+A			
31795	6.RP.3b	MC	-A	-A	+A	-B			+A			
31803	6.RP.3a	MSCR	-A	-B	+A	-A			-A			
31805	6.RP.3b	MC	-A	-A	-B	-A			-A			
31807	6.NS.8	MC	-B	-B	-A	-B			-B			
31819	6.RP.2	MC	-A	-A	-A	-A			-A			
31822	6.EE.8	MC	+A	+A	+A	+B			-A			
31823	6.EE.2c	MC	+A	-A	+A	-A			-A			
31831	6.G.1	MC	+A	+A	-A	-A			+A			
31833	6.EE.2b	MSCR	-A	+A	-A	+B			-A			
31839	6.SP.5a	MC	-B	-B	-B	-A			-B			
31846	6.RP.3c	MC	-A	-A	-B	-B			-A			
31860	6.EE.3	MC	+A	+A	+A	-A			+A			
31866	6.G.3	MC	+A	+A	+A	+A			-A			
31868	6.EE.2a	MC	-A	-A	-B	+A			-A			
31900	6.SP.3	MC	-A	+A	-B	+B			-A			
31908	6.RP.3c	MSCR	+A	-A	+A	-A			-A			
31912	6.RP.3d	MC	-A	+A	-A	-B			-A			
31923	6.NS.5	MSCR	-A	-B	-B	+A			-B			
31954	6.SP.5c	MSCR	+A	-A	-A	+B			+A			
32012	6.EE.2c	MSCR	+A	-A	-A	+B			-A			
32033	6.NS.7c	MSCR	-B	-B	-A	-B			-B			
32088	6.NS.3	MSCR	+A	+A	+A	+B			+A			
32498	6.SP.5b	MC	-A	-B	-B	-A			-B			
32777	6.EE.8	MSCR	-A	+A	-B	-A			-A			
32781	6.EE.9	MSCR	-B	-A	+A	+B			-A			
32782	6.EE.9	MC	-A	-A	+B	+B			-A			
32783	6.EE.9	MSCR	-B	-A	-A	-A			-B			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
32784	6.NS.2	MC	+B	+A	-A	+B			+B			
32785	6.NS.2	MSCR	+A	-A	-A	+B			+A			
32786	6.RP.1	MC	+A	+A	+A	-B			+A			
32788	6.RP.1	MC	-B	-B	+A	-B			-B			
32801	6.RP.1	MSCR	-A	-A	-A	+B			-A			
32804	6.RP.1	MC	+A	+A	+A	-A			-A			
32806	6.RP.2	MSCR	-A	-B	+A	-B			-B			
32808	6.RP.2	MSCR	+A	+A	-A	+A			+A			
32821	6.RP.3a	MSCR	-A	-A	+A	-A			-B			
32822	6.RP.3a	MSCR	-A	-A	-A	-B			-A			
32828	6.RP.3b	MSCR	-A	-A	-B	-B			-A			
32829	6.RP.3c	MSCR	-A	-A	-A	-B			-A			
32834	6.RP.3c	MSCR	-B	-A	-A	-B			+A			
32837	6.RP.3c	MSCR	+A	-A	+A	-B			-A			
32838	6.SP.1	MC	-A	-A	+A	-A			-B			
32839	6.SP.1	MC	-A	-B	+A	+A			-A			
32840	6.SP.1	MSCR	-B	-B	-B	+A			-B			
32995	6.EE.6	MSCR	-A	-A	+A	-B			-A			
33003	6.EE.5	MSCR	-A	-A	+A	+B			-A			
33005	6.EE.5	MSCR	-B	-A	+B	+A			-B			
33007	6.EE.6	MSCR	-A	+B	-A	+B			+A			
33009	6.EE.7	MC	-B	-A	-A	-A			-B			
33010	6.EE.7	MSCR	-A	-A	-A	-A			+A			
33011	6.EE.8	MSCR	+A	+A	-A	+A			+A			

Table 4-K–14. Field-Test Items: Differential Item Functioning Classifications for Grade 7 Mathematics

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
29982	7.EE.4b	MC	+A	-A	+A	+B			+A			
29983	7.EE.4b	MC	+A	+A	+A	-B			+A			
29984	7.G.5	MC	-A	-A	-A	-B			-B			
29985	7.G.3	MC	-A	-A	+A	+A			-A			
29987	7.G.5	MC	-A	-A	+A	+B			+A			
29992	7.RP.2a	MSCR	+B	+A	-A	+B			+B			
29995	7.RP.2c	MC	+A	+A	+A	-B			+A			
29997	7.RP.2d	MC	-A	-A	+A	+B			+A			
30087	7.EE.2	MSCR	+A	+B	+A	-B			+B			
30088	7.EE.3	MC	-A	+A	-A	-B			-A			
30089	7.EE.4a	MSCR	-A	+A	-A	-A			+A			
30090	7.G.1	MC	-A	+A	-B	-A			+A			
30091	7.G.6	MC	+A	+A	-A	-A			-A			
30092	7.NS.1c	MC	-A	+A	-A	-A			+A			
30093	7.NS.2a	MSCR	+A	+A	-B	+B			+A			
30094	7.NS.2b	MC	-A	+A	-A	-C			-A			
30095	7.NS.3	MC	-A	+A	-A	-A			+A			
30096	7.SP.1	MC	-A	+A	-A	+B			-A			
30097	7.SP.2	MC	-A	-A	+B	-B			-B			
30099	7.SP.8a	MC	-A	-A	-A	+A			+A			
30100	7.SP.7b	MC	+A	-A	-A	-A			-A			
30148	7.EE.4b	MSCR										
30166	7.G.5	MSCR	+A	+A	-A	+A			+A			
30170	7.G.6	MSCR	-A	-A	+A	+A			-B			
30175	7.NS.1a	MSCR	+A	+B	+A	+B			+A			
30183	7.RP.2a	MC	-A	-A	-B	-A			+A			
30185	7.RP.2b	MSCR	-A	-A	-A	+A			-A			
30188	7.RP.2b	MSCR	+B	+A	-A	+B			+A			
30205	7.EE.1	MSCR	-A	-A	-A	+A			+A			
30207	7.EE.2	MSCR	-A	-A	-A	-B			-A			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
30209	7.EE.2	MSCR	-A	-A	+A	-B			-A			
30216	7.EE.3	MSCR	-A	+A	+A	-B			-B			
30220	7.EE.4a	MSCR	-A	-A	-A	+B			-A			
30226	7.EE.3	MSCR	-A	-A	+A	-B			-A			
30229	7.G.1	MSCR	-A	-A	-A	+A			-A			
30331	7.NS.3	MSCR	-A	-A	-A	-B			+A			
30337	7.SP.2	MSCR	-A	-A	+A	-A			-A			
30348	7.SP.6	MSCR	+A	-A	-A	-B			-A			
30968	7.NS.3	MC	-A	-A	-A	-A			+A			
30985	7.RP.3	MC	-A	-A	+A	-B			+A			
30986	7.SP.6	MC	-B	-B	-A	+A			-A			
31097	7.G.1	MC	+A	+A	-A	+A			+A			
31100	7.NS.2c	MC	+A	-A	-A	-B			+A			
31105	7.SP.7a	MC	+A	-A	+A	+A			+A			
31107	7.RP.2c	MC	+B	+A	+A	-A			+A			
31110	7.G.2	MSCR	-A	+A	+A	+A			-A			
31113	7.G.4	MC	+A	-A	-A	-A			+A			
31114	7.G.6	MC	+A	+A	+A	-B			+A			
31191	7.NS.1b	MC	-B	-B	+A	-B			-B			
31193	7.EE.1	MSCR	+A	+A	-A	+A			+A			
31194	7.EE.2	MC	+A	-A	-A	-B			+A			
31197	7.EE.3	MC	-A	+A	+B	+A			-B			
31198	7.EE.4a	MC	-A	-A	+A	+B			+A			
31199	7.EE.4b	MSCR	+A	-A	+A	-B			+B			
31200	7.G.2	MSCR	+A	-A	+A	-B			+A			
31201	7.G.5	MSCR	-A	-A	-A	+B			-A			
31202	7.NS.2b	MSCR	+A	+A	+A	+A			+A			
31203	7.RP.1	MC	+A	+A	+A	-A			+A			
31205	7.RP.2b	MC	-A	-A	-B	-B			+A			
31208	7.G.4	MC	-A	+A	-A	-B			-A			
31212	7.NS.2a	MC	+A	+A	+B	+A			+A			
31214	7.NS.1a	MC	-A	-A	-B	-B			-A			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
31216	7.RP.2a	MSCR	-A	-A	-B	+B			-A			
31249	7.NS.2d	MSCR	+A	+A	-A	+B			+A			
31280	7.EE.4a	MC	+A	+A	+B	+B			+B			
31674	7.SP.2	MSCR	-B	-B	-A	-A			-B			
31783	7.EE.4b	MC	-A	-B	-A	+A			-A			
31786	7.G.6	MC	-A	+A	-A	-A			+A			
31790	7.EE.1	MC	+A	-A	+A	+B			+A			
31812	7.EE.4a	MC	-A	+A	-A	-A			-A			
31815	7.G.3	MSCR	+A	-A	-A	-A			+A			
31818	7.G.6	MC	-A	-A	-A	-B			-B			
31825	7.G.5	MC	-A	-A	+A	+A			-B			
31832	7.EE.2	MSCR	-A	+A	-A	-B			-A			
31840	7.NS.1c	MSCR	-A	-A	-B	+B			+A			
31849	7.NS.1d	MC	+A	+A	+B	+B			-A			
31857	7.NS.3	MSCR	-A	-A	-A	-A			-A			
31869	7.RP.2d	MC	+A	+A	-A	+B			+A			
31870	7.SP.3	MC	+A	+A	+A	-A			-A			
31985	7.SP.4	MC	-A	-A	-A	+B			-A			
32056	7.RP.1	MC	-A	+A	-A	-A			+A			
32067	7.RP.3	MC	-A	+B	-A	+A			-A			
32076	7.RP.2a	MSCR	-A	-A	+A	+A			+A			
32107	7.SP.5	MC	-B	-B	-B	-B			-B			
32145	7.SP.8c	MC	+A	-A	-A	-B			-A			
32462	7.SP.8b	MC	-A	-A	+A	-B			-B			
32466	7.NS.2a	MSCR	+A	-A	-A	+B			+A			
32471	7.SP.8a	MC	-B	-B	+A	-B			-B			
32487	7.SP.7b	MSCR	+A	+A	-B	-A			+B			
32490	7.RP.2b	MC	+A	-A	-A	+A			+A			
32842	7.NS.1a	MC	-B	-B	-A	-A			-A			
32843	7.NS.1d	MSCR	+A	+A	+A	+B			-A			
32844	7.NS.1d	MSCR	+A	+A	+B	+B			+A			
32845	7.NS.2d	MC	+A	+A	-A	+B			+B			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
32848	7.NS.1d	MSCR	-B	-B	-A	-B			-B			
32849	7.NS.3	MSCR	-A	-A	-A	-A			-A			
32850	7.NS.3	MC	+B	+A	-A	+B			+A			
32852	7.RP.3	MSCR	-A	-A	-A	-A			-A			
32853	7.NS.3	MSCR	-B	-A	+A	+A			-B			
32855	7.NS.3	MSCR	-B	-A	+A	-B			-B			
32856	7.RP.1	MSCR	+A	+A	-A	-B			-A			
32857	7.RP.1	MC	+A	-A	+A	-A			+A			
32858	7.RP.1	MSCR	+A	-A	-A	-A			+A			
32859	7.RP.1	MSCR	+A	-A	-B	+B			+A			
32860	7.RP.1	MSCR	-A	-A	+A	+A			-A			
32863	7.RP.1	MSCR	+A	+A	-A	-B			+A			
32864	7.RP.1	MSCR	+A	+A	+A	+A			+A			
32880	7.RP.1	MSCR	-A	-A	-A	-B			-B			
32882	7.RP.2a	MSCR	-B	-B	-A	+A			-A			
32893	7.RP.2a	MC	+A	+A	-A	+A			+A			
32895	7.RP.2c	MSCR	-A	-A	-A	+B			-A			
32898	7.RP.2c	MSCR	-A	-A	-A	+A			+A			
32903	7.RP.2d	MSCR	+A	+A	-A	+B			+A			
32905	7.RP.2d	MSCR	-A	+A	-A	+B			+A			

Table 4-K–15. Field-Test Items: Differential Item Functioning Classifications for Grade 8 Mathematics

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
30004	8.F.2	MSCR	+A	+A	+A	+B			+A			
30007	8.F.5	MC	-A	-A	+A	-B			-A			
30008	8.F.5	MC	-B	-B	-B	-B			-B			
30009	8.F.5	MSCR	+A	-A	-A	+A			-A			
30012	8.F.2	MSCR	-B	-A	-B	-B			-A			
30016	8.G.1b	MSCR	-A	+A	-A	-A			-B			
30020	8.G.8	MC	-A	-A	-B	-A			-B			
30021	8.SP.2	MC	-A	-A	-A	-A			-A			
30022	8.SP.2	MSCR	-A	-A	-A	-A			+A			
30024	8.G.1a	MSCR	-B	-A	-A	+A			-A			
30123	8.F.3	MC	-A	-A	+A	-B			-B			
30124	8.EE.3	MC	-A	-A	-A	-B			-A			
30125	8.EE.7c	MC	+A	+B	-A	+B			+B			
30129	8.G.2	MC	-A	+A	+A	-A			-B			
30130	8.G.4	MC	-A	-A	-A	-A			-A			
30131	8.G.6	MC	+A	-A	+A	+B			-A			
30132	8.NS.3	MC	+A	+B	-A	+B			+A			
30133	8.SP.1	MC	-B	-A	-B	+B			-A			
30134	8.F.2	MC	-A	-A	-A	+B			-A			
30135	8.F.5	MC	-B	-A	-B	-A			-B			
30136	8.EE.7c	MC	-A	-A	-A	+B			-A			
30137	8.EE.8b	MSCR	+A	+A	-A	+A			+A			
30138	8.G.1a	MC	-B	-A	-B	+B			-B			
30139	8.G.1c	MC	-A	-A	-A	-A			+A			
30140	8.G.3	MC	-A	+A	-A	-B			-B			
30141	8.NS.1	MC	+B	+B	+A	+A			+B			
30142	8.NS.3	MC	-A	+A	+A	+B			+A			
30144	8.SP.4	MC	+A	+A	+A	+A			+A			
30214	8.F.5	MSCR	-A	-B	-B	-B			-A			
30219	8.G.1b	MSCR	-A	-A	-A	-A			-A			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
30221	8.G.8	MSCR	-A	-A	+A	-A			+A			
30225	8.SP.3	MSCR	-A	-A	-C	-B			+A			
30318	8.G.1b	MSCR	-A	-A	+A	-A			-A			
30325	8.G.7	MSCR	-A	-A	-A	-A			-A			
30346	8.EE.8c	MSCR	-B	-A	-B	-B			-A			
30347	8.G.1a	MSCR	-B	-B	-A	-A			-A			
30349	8.G.1c	MC	+A	-B	+A	-A			+A			
30351	8.G.1c	MSCR	-A	-B	-A	-A			-B			
30352	8.G.3	MC	-A	+A	+B	+A			-B			
30353	8.G.4	MC	-A	-B	-A	-A			-B			
30944	8.EE.1	MC	+A	+B	+A	+B			+A			
30946	8.EE.7a	MC	+A	-A	-A	+A			+A			
30948	8.EE.7b	MSCR	+A	-A	+A	+A			+A			
30950	8.F.2	MSCR	+A	-A	-B	+A			+A			
30951	8.G.1a	MC	-A	-A	-A	+A			-A			
30953	8.G.2	MSCR	+A	+A	-A	-A			+A			
30955	8.SP.2	MC	-A	-A	-A	+A			-A			
30956	8.SP.3	MC	+A	-A	+A	-B			+A			
30957	8.SP.4	MC	-A	-A	+A	-A			+A			
30958	8.EE.3	MC	-A	-A	+A	-A			+A			
30961	8.G.9	MSCR	+A	+A	+A	-A			+A			
30964	8.G.3	MSCR	-A	-B	-A	+A			-A			
30965	8.SP.4	MSCR	+A	-A	+A	-B			+A			
31065	8.F.1	MSCR	-B	-A	-B	+B			-B			
31066	8.F.1	MSCR	+A	-A	-A	-A			+A			
31082	8.F.3	MC	-B	-B	-A	-A			+A			
31084	8.G.3	MC	-A	-A	-A	-B			-A			
31087	8.NS.1	MSCR	-B	-A	-A	-A			-A			
31233	8.G.9	MC	-A	-A	-A	+A			-A			
31235	8.G.8	MC	+A	-A	-A	-B			+B			
31236	8.G.1b	MSCR	+A	+A	-A	+B			+A			
31248	8.SP.1	MSCR	-A	-A	-B	+A			-A			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
31784	8.NS.2	MC	+A	+A	+A	-A			+A			
31785	8.NS.3	MC	+B	+A	-B	+A			+A			
31806	8.F.3	MC	+A	-A	+A	+B			-A			
31808	8.G.3	MC	+A	-A	+A	-A			+A			
31809	8.NS.2	MC	+B	-A	-A	-A			+A			
31810	8.NS.1	MSCR	-A	+A	-A	+A			-A			
31816	8.NS.2	MC	-A	-A	-A	+B			-A			
31828	8.F.5	MSCR	-A	-A	-A	-A			-A			
31838	8.SP.4	MC	-A	-A	+A	+A			-A			
31845	8.SP.1	MC	-A	+A	-A	+A			-A			
31847	8.EE.8a	MC	-A	+A	-B	+B			-A			
31865	8.EE.8a	MSCR	-A	-A	-A	+A			-B			
31867	8.EE.1	MC	+A	+A	-A	+A			+A			
31901	8.SP.3	MC	-A	+A	+A	+A			+A			
31940	8.NS.2	MSCR	+B	+A	+A	+B			+B			
32002	8.EE.1	MSCR	+A	+A	-A	+B			+B			
32910	8.G.6	MSCR	-A	-A	-A	+B			+A			
32916	8.G.8	MSCR	-A	-A	-A	-A			-A			
32917	8.G.8	MSCR	-A	-A	-A	-B			+A			
32919	8.NS.1	MC	+B	+B	-A	+B			+A			
32922	8.NS.1	MSCR	-A	-A	-A	-A			-A			
32924	8.NS.2	MC	+A	+A	+A	+B			+B			
32930	8.NS.1	MSCR	-A	+B	+A	+B			+B			
32931	8.NS.1	MSCR	+A	+A	+A	+A			-A			
32952	8.NS.2	MSCR	+A	+A	-A	+A			-A			
32953	8.NS.2	MSCR	-A	-A	-B	+A			-A			
32956	8.SP.1	MSCR	-A	+A	-B	+B			-A			
32964	8.SP.2	MC	+A	-A	+A	-A			-A			
32968	8.SP.2	MC	-A	-A	+A	-B			-B			
32970	8.SP.2	MC	+B	+A	+A	-B			-A			
32973	8.SP.2	MSCR	-A	+A	-A	+A			-B			
32974	8.SP.2	MC	-A	+A	+A	-A			-A			

Item Number	Standard	Type	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
32975	8.SP.4	MC	+A	+A	-B	+A			+A			
32976	8.SP.4	MSCR	-A	-A	-A	-A			-A			
32977	8.SP.4	MSCR	-A	-A	-A	-A			+A			
32978	8.SP.4	MSCR	-A	-A	+A	+A			-A			
32979	8.SP.4	MC	-A	-A	-A	-A			-A			
32980	8.SP.4	MSCR	-C	-A	-A	-A			-B			

Table 4-K–16a. Field-Test Items: Differential Item Functioning Classifications for Grade 4 Science (Clusters)

Item Number	Standard	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
32748*	4.1.1	0	0	0	0			0			
32820	4.1.1	0	0	0	0			0			
33041	4.1.1	0	0	0	0			0			
32760	4.1.2	0	0	0	0			0			
32981	4.1.2	0	0	0	0			0			
33102	4.1.2		0	0	0			0			
32982	4.1.3	-1	0	0	0			0			
33098	4.1.3	0	0	0	0			0			
32738	4.1.4	0	0	0	0			0			
33096	4.1.4		0	0	0			0			
32750	4.2.1		0	0	0			0			
33026	4.2.1		0	0	0			0			
33063	4.2.2		0	0	0			0			
33097	4.2.2	0	0	0	0			0			
32915	4.2.3		0	0	0			0			
33034	4.2.4	0	0	0	0			0			
33091	4.2.4	0	0	0	0			0			
33107	4.3.1	0	0	0	0			0			
33052	4.3.2		0	0	0			0			
33089	4.3.2	0	0	0	0			0			
32900	4.3.3	0	0	0	0			0			
33140	4.3.3	0	0	0	0			0			
33092	4.4.1	0	0	0	0			0			
33133	4.4.1	0	0	0	0			0			
33076	4.4.2	0	0	-1	0			0			
33132	4.4.2	0	0	0	0			0			

*Rejected at Item Data Review

Table 4-K–16b. Field-Test Items: Differential Item Functioning Classifications for Grade 4 Science (Assertions)

Item Number	Standard	Assertion Order	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
32748*	4.1.1	0	+A	-A	-A	-A			-A			
32748*	4.1.1	1	+A	+A	+A	+A			+A			
32748*	4.1.1	2	-A	-A	-A	+A			-A			
32748*	4.1.1	3	-A	+A	+A	-B			-A			
32748*	4.1.1	4	-B	-A	-A	-A			-A			
32748*	4.1.1	5	+A	+A	+A	+A			-A			
32748*	4.1.1	6	-A	-A	-A	+B			+A			
32748*	4.1.1	7	-A	-A	-A	+B			+A			
32820	4.1.1	0	-B	+A	-A	-A			-A			
32820	4.1.1	1	+A	-A	+A	+B			+A			
32820	4.1.1	2	-B	-A	+A	+A			-B			
32820	4.1.1	3	+A	+A	+A	+B			+B			
32820	4.1.1	4	+A	+A	+A	+B			+B			
32820	4.1.1	5	+A	-A	-B	+B			+B			
32820	4.1.1	6	-A	-A	-B	+A			+A			
32820	4.1.1	7	-A	-A	-A	+A			+A			
33041	4.1.1	0	-A	-A	+A	+B			+A			
33041	4.1.1	1	-A	-A	-A	+B			-A			
33041	4.1.1	2	+A	+A	-A	+A			+A			
33041	4.1.1	3	+A	-B	-A	+B			-A			
33041	4.1.1	4	-A	+A	-A	+B			-A			
33041	4.1.1	5	+B	+A	-B	+B			+A			
33041	4.1.1	6	+A	-A	-B	+A			+A			
33041	4.1.1	7	+A	+A	-B	+A			-A			
32760	4.1.2	0	-A	+A	+A	+A			-A			
32760	4.1.2	1	-A	-A	+A	+A			-A			
32760	4.1.2	2	+A	-A	+A	-A			+A			
32760	4.1.2	3	-A	+A	-A	-A			+A			
32760	4.1.2	4	+A	+A	+A	-B			+A			

32760	4.1.2	5	+A	+A	+A	-A	+A
32760	4.1.2	6	-B	-A	+A	+A	-B
32981	4.1.2	1	-B	-A	-A	+A	-A
32981	4.1.2	2	-A	-A	+A	+A	-A
32981	4.1.2	3	-A	+A	-A	+A	-A
32981	4.1.2	4	-A	-A	-A	+A	-B
32981	4.1.2	5	-A	-A	-A	+B	-A
32981	4.1.2	6	-A	-A	+B	+A	-A
32981	4.1.2	7	-B	-A	-A	+A	-B
33102	4.1.2	0		-B	-A	-A	+A
33102	4.1.2	1		-A	+A	-A	-A
33102	4.1.2	2		-A	-A	+B	-B
33102	4.1.2	3		+A	-A	-B	-A
33102	4.1.2	5		-A	-A	+B	-B
33102	4.1.2	6		-B	-A	-A	-B
33102	4.1.2	7		+A	+A	-A	-A
32982	4.1.3	0	-A	-A	-A	+B	-B
32982	4.1.3	1	-A	-B	+A	+B	-B
32982	4.1.3	2	-A	-A	-A	-A	-A
32982	4.1.3	3	-A	-A	-A	+A	-A
32982	4.1.3	4	-A	-A	-A	+A	-A
32982	4.1.3	5	-A	-A	-A	+B	-A
32982	4.1.3	6	-C	-B	+A	-B	-B
33098	4.1.3	0	-B	-A	-A	+A	-A
33098	4.1.3	1	-A	+A	+A	+A	-A
33098	4.1.3	2	-A	-A	-B	+A	-A
33098	4.1.3	3	+A	-A	-A	+B	+A
33098	4.1.3	4	-A	+A	-A	+A	+A
33098	4.1.3	5	+A	-A	-A	+B	+A
33098	4.1.3	6	-A	-A	+A	-A	-A
33098	4.1.3	7	-A	-A	-A	+A	+A
33098	4.1.3	8	-A	-B	-B	+B	-A
32738	4.1.4	0	-A	-B	+A	-B	-B
32738	4.1.4	1	-A	-A	-B	+B	-B
32738	4.1.4	2	-A	+A	+A	+A	+A

32738	4.1.4	3	-A	-A	+A	-A	-A
32738	4.1.4	4	-B	-A	+A	+A	-A
32738	4.1.4	5	-A	-A	+A	+A	-A
32738	4.1.4	6	+A	+A	+A	-A	-A
32738	4.1.4	7	-A	-A	+A	-A	-A
33096	4.1.4	0		-A	-A	+A	-A
33096	4.1.4	1		+A	-A	+A	-A
33096	4.1.4	2		-B	-A	+A	-B
33096	4.1.4	3		-A	+A	+B	-A
33096	4.1.4	4		-A	-A	-A	-A
33096	4.1.4	5		-B	-A	-A	-B
32750	4.2.1	0		-B	-A	+A	-A
32750	4.2.1	1		-B	+A	-A	-B
32750	4.2.1	2		+A	-A	+A	+A
32750	4.2.1	3		-A	-B	+A	+A
32750	4.2.1	4		-A	-A	+A	-B
32750	4.2.1	5		+A	-A	-B	+A
32750	4.2.1	6		+A	-B	+A	-A
33026	4.2.1	0		-A	-A	+B	+A
33026	4.2.1	1		-A	-A	+A	-A
33026	4.2.1	3		-B	-A	+A	-A
33026	4.2.1	4		+A	-A	-A	-A
33026	4.2.1	5		+A	-A	+A	+A
33026	4.2.1	6		+A	+A	+A	+A
33026	4.2.1	7		+A	-A	+A	+A
33063	4.2.2	0		-A	-A	-A	-B
33063	4.2.2	1		+A	+A	-A	+A
33063	4.2.2	2		-A	-A	+A	-A
33063	4.2.2	3		+A	-A	+B	-A
33063	4.2.2	5		+A	-A	-A	-B
33097	4.2.2	0	-A	-A	+A	-A	-A
33097	4.2.2	1	-A	-A	-A	-A	-A
33097	4.2.2	2	-A	+A	+A	+A	+A
33097	4.2.2	3	-A	+A	+A	+A	+A
33097	4.2.2	4	-A	-A	+A	-A	-A

33097	4.2.2	5	-B	-A	+A	+A	-B
33097	4.2.2	6	-B	-B	-A	+A	-A
33097	4.2.2	7	-A	-A	-B	-A	-A
33097	4.2.2	8	+A	-A	+A	-B	+A
32915	4.2.3	0		-A	-A	+A	-A
32915	4.2.3	1		-A	-B	-A	-A
32915	4.2.3	2		-A	-B	+A	+A
32915	4.2.3	3		+A	+A	+A	+A
32915	4.2.3	4		+A	+A	+A	+A
32915	4.2.3	5		+A	+A	+A	+A
32915	4.2.3	6		-A	-A	-A	-B
32915	4.2.3	7		-A	-A	-A	-A
32915	4.2.3	8		-B	-A	+B	-A
33034	4.2.4	0	+A	+A	-A	-A	-A
33034	4.2.4	1	+A	+A	+A	-A	-B
33034	4.2.4	2	-A	+A	+A	-A	-A
33034	4.2.4	3	+A	+A	+A	-A	+A
33034	4.2.4	4	+A	-A	-A	-A	-A
33034	4.2.4	5	-A	-A	+A	-A	-A
33034	4.2.4	6	+A	-A	+A	-A	-A
33034	4.2.4	7	-A	-A	-A	+A	-A
33034	4.2.4	8	+A	-A	+A	-B	-A
33034	4.2.4	9	-A	+A	-B	-A	-A
33034	4.2.4	10	-B	-A	-A	+A	-B
33091	4.2.4	0	+A	+A	+A	-A	+A
33091	4.2.4	1	-A	-A	+A	-A	+A
33091	4.2.4	2	-A	+B	+A	-A	-A
33091	4.2.4	3	-A	+B	+A	-A	-A
33091	4.2.4	4	+A	+A	+A	-A	-A
33091	4.2.4	5	-A	-A	+A	-A	-A
33091	4.2.4	6	-B	-A	-A	-A	-A
33091	4.2.4	7	+A	+A	-B	-A	+A
33091	4.2.4	8	+A	-A	+A	-A	-A
33091	4.2.4	9	-A	-A	-A	-B	-A
33107	4.3.1	0	-B	-A	-B	+A	-A

33107	4.3.1	1	+A	+A	+A	-A	-A
33107	4.3.1	2	+A	+A	+A	-A	+A
33107	4.3.1	3	+A	+A	-A	-B	-A
33107	4.3.1	4	-A	-A	-B	-A	-A
33107	4.3.1	5	+A	+A	-A	-B	+A
33107	4.3.1	6	-A	-A	-A	-A	-A
33107	4.3.1	7	-A	-A	-B	-A	-A
33052	4.3.2	0		-A	+A	-A	+A
33052	4.3.2	1		-A	+A	+B	-A
33052	4.3.2	2		-A	+A	+B	-A
33052	4.3.2	3		-A	-A	-B	+A
33052	4.3.2	4		-A	-A	+A	-A
33052	4.3.2	5		-A	+A	-A	-A
33052	4.3.2	6		-A	-A	+A	-A
33089	4.3.2	0	+A	+A	-A	+A	-A
33089	4.3.2	1	-A	+A	-A	+A	-A
33089	4.3.2	2	-A	+A	+A	-B	-A
33089	4.3.2	3	+A	+A	-A	+A	+A
33089	4.3.2	4	-A	-A	+A	+A	-A
33089	4.3.2	5	-A	-A	+A	-A	-A
33089	4.3.2	6	-A	+A	+A	-A	-A
32900	4.3.3	0	-B	-A	-A	+A	-A
32900	4.3.3	1	-A	-A	-A	-A	-A
32900	4.3.3	2	-A	-B	+A	-A	-A
32900	4.3.3	3	-A	-B	-A	+A	-A
32900	4.3.3	4	+A	+A	-A	+A	+B
32900	4.3.3	5	-A	-A	-B	+B	+A
32900	4.3.3	6	-A	-A	-A	+A	-A
32900	4.3.3	7	+A	+A	-B	+A	-A
33140	4.3.3	0	+A	-A	-A	+A	-A
33140	4.3.3	1	-A	-A	-A	-A	+A
33140	4.3.3	2	-A	-A	-A	-A	-A
33140	4.3.3	3	+A	+B	-A	+A	+A
33140	4.3.3	4	+A	+A	-A	+B	+A
33140	4.3.3	5	-A	-A	-A	-A	-A

33092	4.4.1	0	+A	+A	-B	-A	+A
33092	4.4.1	1	+A	-A	-A	+A	+A
33092	4.4.1	2	-B	+A	-B	+A	-B
33092	4.4.1	3	-A	-A	-A	-B	+A
33092	4.4.1	5	+A	-A	-A	-A	+A
33092	4.4.1	6	-A	-B	+A	-A	-B
33133	4.4.1	0	-A	-A	+A	-A	-B
33133	4.4.1	1	-A	-A	-A	+A	+A
33133	4.4.1	2	-A	+A	-A	-A	+A
33133	4.4.1	3	-B	-A	-A	-A	-A
33133	4.4.1	4	+A	-A	+B	+A	+A
33133	4.4.1	5	-A	-A	-A	-A	-A
33076	4.4.2	0	-A	-A	-B	+A	+A
33076	4.4.2	1	-B	+A	-A	-B	-A
33076	4.4.2	2	+A	-A	-B	-A	-A
33076	4.4.2	3	-A	-A	-C	-A	-A
33076	4.4.2	4	+B	+A	+A	+A	+A
33076	4.4.2	5	+A	-A	-A	-B	-A
33132	4.4.2	0	-B	-B	-B	-A	-A
33132	4.4.2	1	-B	-A	-A	-A	-A
33132	4.4.2	2	-B	-B	-A	+B	-A
33132	4.4.2	3	-B	-A	-B	+A	-A
33132	4.4.2	4	+A	+A	-A	-B	+A
33132	4.4.2	5	-B	-B	+A	-A	-B

*Rejected at Item Data Review

Table 4-K–17a. Field-Test Items: Differential Item Functioning Classifications for Grade 5 Science (Clusters)

Item Number	Standard	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
32926	5.1.1	0	0	0	0			0			
33012	5.1.1		0	0	0			0			
32950	5.1.2	0	0	0	0			0			
33139	5.1.2		0		0			0			
32736	5.1.3	0	0	0	0			0			
33131	5.1.3	0	0	0	0			0			
32743	5.1.4	0	0	0	0			0			
33042	5.1.4	0	0	0	0			0			
33106	5.1.5		0	0	0			0			
32909	5.2.1	0	0	0	0			0			
33035	5.2.1	0	0	0	0			0			
32749	5.2.2	0	0	0	0			0			
33090	5.2.2		0	0	0			0			
32836*	5.2.3		0		0			0			
33043	5.2.3		0	0	0			0			
32996	5.2.4		0	0	0			0			
33024	5.2.4	0	0	0	0			0			
32944	5.3.1	0	0	0	0			0			
33231	5.3.1	0	0	0	0			0			
33027	5.3.2		0	0	0			0			
32761	5.3.3		0	0	0			0			
33072	5.3.3		0	0	0			0			
33129	5.3.3	0	0	0	0			0			
32735*	5.3.4	0	0	0	0			0			
32756	5.3.4		0		0			0			
32827	5.3.4	0	0	0	0			0			

*Rejected at Item Data Review

Table 4-K–17b. Field-Test Items: Differential Item Functioning Classifications for Grade 5 Science (Assertions)

Item Number	Standard	Assertion Order	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
32926	5.1.1	0	-A	-A	-A	-A			-A			
32926	5.1.1	1	+A	-A	-A	+A			+A			
32926	5.1.1	2	-A	-A	-A	-B			-B			
32926	5.1.1	3	-B	-B	-B	-A			-B			
32926	5.1.1	4	-A	+A	-A	-B			-A			
32926	5.1.1	5	-B	-A	+A	-B			-B			
33012	5.1.1	0		-A	-B	+A			+A			
33012	5.1.1	1		-A	+A	-A			-A			
33012	5.1.1	2		-B	-A	-A			-B			
33012	5.1.1	3		-A	-A	+A			-A			
33012	5.1.1	4		-A	+A	+B			-A			
33012	5.1.1	5		-A	-A	-A			-A			
32950	5.1.2	0	-A	-A	-A	-A			+A			
32950	5.1.2	1	-A	-B	-A	-B			-A			
32950	5.1.2	2	-A	-A	+A	-B			-A			
32950	5.1.2	3	+A	+A	+A	-B			+A			
32950	5.1.2	4	-A	-A	-B	+B			-A			
32950	5.1.2	5	+A	+A	+A	-A			-A			
32950	5.1.2	6	-B	-A	-A	-B			-B			
33139	5.1.2	0		-A		+A			-A			
33139	5.1.2	1		-B		-B			-A			
33139	5.1.2	2		-A		-B			-A			
33139	5.1.2	3		-A		+A			-B			
33139	5.1.2	4		-A		+A			+A			
33139	5.1.2	5		-A		-A			-B			
33139	5.1.2	6		+A		-A			-A			
33139	5.1.2	7		-A		-A			+A			
33139	5.1.2	8		+A		-A			-A			
33139	5.1.2	9		-A		+A			+A			

32736	5.1.3	0	+B	+A	-A	+A	+A
32736	5.1.3	1	+A	+A	+A	-A	+A
32736	5.1.3	2	+A	+B	-A	+A	+A
32736	5.1.3	3	-A	-B	+A	-B	-A
32736	5.1.3	4	-A	-A	-A	-A	-B
32736	5.1.3	5	-A	+A	-A	-A	-B
32736	5.1.3	6	+B	-A	-A	-A	+B
32736	5.1.3	7	+A	-A	-A	+A	-A
32736	5.1.3	8	+A	-A	+A	-A	+A
33131	5.1.3	0	-B	-A	-A	+A	-A
33131	5.1.3	1	-B	-A	-A	-A	-B
33131	5.1.3	2	-B	-A	-A	-B	-A
33131	5.1.3	3	-A	-B	-A	-B	-A
33131	5.1.3	4	+A	-A	-A	-B	-A
33131	5.1.3	5	-A	+A	-A	-A	-B
33131	5.1.3	6	-B	-A	-A	+A	-A
33131	5.1.3	7	-A	-A	-B	+B	-A
32743	5.1.4	0	+A	+A	-A	-A	+A
32743	5.1.4	1	+A	-A	-A	-A	+A
32743	5.1.4	2	+B	+A	-A	-B	+B
32743	5.1.4	3	-A	-A	+B	-A	-A
32743	5.1.4	4	-A	-A	-A	-B	-A
32743	5.1.4	5	-A	-A	-A	-A	-A
32743	5.1.4	6	+B	+A	+A	+B	+A
32743	5.1.4	7	-B	-A	+A	+B	-A
33042	5.1.4	0	-A	-A	-A	-B	+A
33042	5.1.4	1	-A	-A	+A	-A	+A
33042	5.1.4	2	-A	+A	-B	+A	-A
33042	5.1.4	3	-A	+A	-A	+A	+A
33042	5.1.4	4	-A	-A	-A	+B	-A
33042	5.1.4	5	-A	-A	-A	-A	-A
33042	5.1.4	6	-B	-A	-B	+B	-A
33042	5.1.4	7	-A	-A	-A	-A	+A
33106	5.1.5	0		-A	-A	-A	-A
33106	5.1.5	1		-B	-A	-B	-A

33106	5.1.5	2		-B	+A	-A	-A
33106	5.1.5	3		-A	-A	-A	-B
33106	5.1.5	4		-A	-A	+B	-A
33106	5.1.5	5		-A	+A	+A	-A
33106	5.1.5	6		-B	+A	-A	-B
32909	5.2.1	0	-B	-A	-B	+A	-A
32909	5.2.1	1	-A	-A	-A	+A	+A
32909	5.2.1	2	-A	-A	-A	+B	-A
32909	5.2.1	3	-A	+A	-A	-A	-A
32909	5.2.1	4	+A	+A	-A	-B	-B
32909	5.2.1	5	-B	+A	-A	+A	-B
32909	5.2.1	6	-A	-A	-B	+B	-A
33035	5.2.1	0	-B	+A	-B	+B	-A
33035	5.2.1	1	-A	-B	+A	-A	-B
33035	5.2.1	2	+A	-A	+A	-A	-A
33035	5.2.1	3	-A	-A	-A	+A	-A
33035	5.2.1	4	-A	-A	-A	-A	-A
33035	5.2.1	5	-A	-A	-A	+B	+A
33035	5.2.1	6	-B	-A	-A	-A	-A
32749	5.2.2	0	-A	+A	+A	+B	+A
32749	5.2.2	1	-A	+A	-B	+B	-A
32749	5.2.2	2	+A	+A	-A	+B	-A
32749	5.2.2	3	+A	-A	+A	+A	+A
32749	5.2.2	4	-A	-A	-A	+A	-A
32749	5.2.2	5	-A	-A	-A	-A	+A
33090	5.2.2	0		+A	-A	+B	-A
33090	5.2.2	1		-A	-A	-A	+A
33090	5.2.2	2		+A	-A	+B	-A
33090	5.2.2	3		+A	-B	+B	-A
33090	5.2.2	4		-A	+A	+A	+A
33090	5.2.2	5		+A	-A	-A	-A
33090	5.2.2	6		+A	-A	+B	+A
33090	5.2.2	7		-A	-A	-A	-A
33090	5.2.2	8		-A	-A	-A	-A
32836*	5.2.3	0		-A		-A	+A

32836*	5.2.3	1		+A		-A	-A
32836*	5.2.3	2		+A		+B	+A
32836*	5.2.3	3		-B		-A	-A
32836*	5.2.3	4		-A		-A	-A
32836*	5.2.3	5		+A		-B	+A
33043	5.2.3	0		+A	-B	-A	-A
33043	5.2.3	1		-A	-A	-A	+A
33043	5.2.3	2		+A	+A	-B	-A
33043	5.2.3	3		+A	-A	+A	+A
33043	5.2.3	4		-A	-A	-A	-A
33043	5.2.3	5		-A	-B	+A	-A
33043	5.2.3	6		+A	-A	+A	-A
33043	5.2.3	7		+A	-A	+A	+B
32996	5.2.4	0		+A	-A	+A	-A
32996	5.2.4	1		+A	-B	+B	+A
32996	5.2.4	2		-A	-A	-A	-B
32996	5.2.4	3		-A	+A	-A	-A
32996	5.2.4	4		-A	-B	+A	+A
32996	5.2.4	5		+A	+A	-B	-A
32996	5.2.4	6		+A	-A	-A	+A
33024	5.2.4	0	-B	-A	+A	-B	-A
33024	5.2.4	1	-A	-A	+A	-B	+A
33024	5.2.4	2	-A	-A	-A	-A	+A
33024	5.2.4	3	-A	+A	-A	-A	-A
33024	5.2.4	4	-A	+A	-A	-B	+A
33024	5.2.4	5	-A	+A	+B	-B	+A
33024	5.2.4	6	-A	+A	-B	+B	+A
32944	5.3.1	0	-A	-A	-A	+A	-A
32944	5.3.1	1	-A	-A	-A	-B	-A
32944	5.3.1	2	+A	-A	-B	+A	+A
32944	5.3.1	3	-A	-A	-B	+B	+A
32944	5.3.1	4	+A	+A	-A	+B	+B
32944	5.3.1	5	-A	+A	-A	-A	-A
32944	5.3.1	6	+A	-A	+A	+A	-A
33231	5.3.1	0	-A	-A	+A	+A	+A

33231	5.3.1	1	+B	+A	-A	+A		+A
33231	5.3.1	2	+A	+A	+B	-A		+A
33231	5.3.1	3	+A	-A	-A	-A		-A
33231	5.3.1	4	+A	-A	-A	+B		+A
33231	5.3.1	5	+A	+A	+A	-A		+A
33027	5.3.2	0		-A	-A	-A		+A
33027	5.3.2	1		+A	+A	+A		+A
33027	5.3.2	2		-A	-A	+B		-A
33027	5.3.2	3		-B	-A	-B		-A
33027	5.3.2	4		-A	-A	+B		-A
32761	5.3.3	0		-A	+A	-B		-A
32761	5.3.3	1		-A	-A	-B		+A
32761	5.3.3	2		-A	-A	-B		+A
32761	5.3.3	3		+A	-A	+A		-A
32761	5.3.3	4		+A	-A	-A		+A
32761	5.3.3	5		-A	-A	-A		+A
32761	5.3.3	6		+A	+A	-A		-A
32761	5.3.3	7		-A	+A	-A		+A
32761	5.3.3	8		+A	+A	-A		+A
33072	5.3.3	0		+A	+A	+A		-A
33072	5.3.3	1		+A	+A	-A		-A
33072	5.3.3	2		+A	+A	+A		-A
33072	5.3.3	3		+A	+B	-A		-A
33072	5.3.3	4		+A	-B	+B		+A
33072	5.3.3	5		-A	-A	+A		-B
33072	5.3.3	6		-A	-A	+A		-B
33072	5.3.3	7		-A	-A	+A		+A
33129	5.3.3	0	-B	-A	-A	+A		-B
33129	5.3.3	1	-B	-A	+A	-B		-A
33129	5.3.3	2	-B	-B	+A	-B		-B
33129	5.3.3	3	-B	-A	-A	+A		-A
33129	5.3.3	4	-A	-A	-A	+A		+A
33129	5.3.3	6	-A	-A	+A	+A		+A
33129	5.3.3	7	-A	-A	-A	-B		+A
33129	5.3.3	8	-A	-A	+A	+A		+A

32735*	5.3.4	0	-A	-A	-B	+B			-B
32735*	5.3.4	1	+A	-A	-A	+A			+A
32735*	5.3.4	2	+A	+A	-A	-A			-A
32735*	5.3.4	3	-A	-B	-B	+B			-A
32735*	5.3.4	4	-A	-A	-A	+A			-A
32756	5.3.4	0		-B		-A			-B
32756	5.3.4	1		-A		-A			-A
32756	5.3.4	2		-A		-A			-A
32756	5.3.4	3		-A		+A			-A
32756	5.3.4	4		-A		+A			-A
32756	5.3.4	5		-A		+B			-A
32756	5.3.4	6		-A		-A			-A
32756	5.3.4	7		+A		+A			+A
32827	5.3.4	0	-A	-A	-A	+A			+A
32827	5.3.4	1	-B	+A	-A	+A			-A
32827	5.3.4	2	+A	-A	-A	+B			-A
32827	5.3.4	3	-A	-A	-A	+A			+A
32827	5.3.4	4	-A	+A	+A	+A			-A
32827	5.3.4	5	-A	-A	-A	+A			+A
32827	5.3.4	6	-A	+A	-A	+A			-A

*Rejected at Item Data Review

Table 4-K–18a. Field-Test Items: Differential Item Functioning Classifications for Grade 6 Science (Clusters)

Item Number	Standard	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
32631	6.1.2	0	0	0	0		0	0			0
32713	6.1.3	0	0	0	0			0			
33330	6.3.2	0	0	0	0		0	0			
32697*	6.3.3	0	0	0	0		0	0			
33360*	6.3.3	0	0	0	0			0	0		0
32655	6.4.1	0	0	0	0			0			
32716	6.4.1	0	0	0	0			0			
32623	6.4.5	0	0	0	0		0	0			

*Rejected at Item Data Review

Table 4-K–18b. Field-Test Items: Differential Item Functioning Classifications for Grade 6 Science (Assertions)

Item Number	Standard	Assertion Order	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
32631	6.1.2	0	-B	-B	-A	-B		-B	-B			-A
32631	6.1.2	1	-A	-A	+B	-B		-A	-A			-A
32631	6.1.2	2	-B	-B	-B	+B		-A	-B			-A
32631	6.1.2	3	+A	+A	-A	+B		-B	-A			-A
32631	6.1.2	4	-B	-A	-A	-B		+A	-B			-A
32631	6.1.2	5	+A	-B	-A	-A		+A	-A			-A
32631	6.1.2	6	-A	-A	-A	-A		-A	-A			+A
32631	6.1.2	7	+A	-A	+A	-B		-A	+A			-A
32631	6.1.2	8	-A	-A	-A	-A		+A	+A			+A
32631	6.1.2	9	+A	+A	+A	+A		-A	+A			+A
32631	6.1.2	10	-A	-A	-A	-B		-A	-B			-A
32713	6.1.3	0	-A	-B	-B	+A			-A			
32713	6.1.3	1	-A	-A	+A	-B			-A			
32713	6.1.3	2	-A	-B	-A	-B			+A			
32713	6.1.3	3	-B	-A	-A	-B			-A			
32713	6.1.3	4	+A	+A	-A	+A			+A			
32713	6.1.3	5	-A	-B	-B	-A			-A			
32713	6.1.3	6	+A	-A	+A	-A			+A			
33330	6.3.2	0	+A	+A	-A	+B		-A	-A			
33330	6.3.2	1	-A	-A	+A	+A		-A	-A			
33330	6.3.2	2	-A	-A	-A	-A		-A	-A			
33330	6.3.2	3	+A	+A	-A	+B		+B	+A			
33330	6.3.2	4	-B	-A	-B	+A		-A	-B			
33330	6.3.2	5	-A	+A	+A	-A		-A	-A			
33330	6.3.2	6	-A	-A	-A	+A		+A	-A			
33330	6.3.2	7	-A	-A	-A	+B		+A	-A			
32697*	6.3.3	0	-A	+A	+A	+A		+A	-A			
32697*	6.3.3	1	+B	-A	+A	-A		-A	+A			
32697*	6.3.3	2	-A	+A	+A	-A		+A	-A			

32697*	6.3.3	3	-B	-B	-A	-A		-A	-B			
32697*	6.3.3	4	+A	-A	-A	-B		-A	+A			
32697*	6.3.3	5	+A	-A	-A	+B		+A	-A			
32697*	6.3.3	6	-B	-A	+A	-B		-A	+A			
32697*	6.3.3	7	+A	-A	+A	-B		-A	-A			
32697*	6.3.3	8	+A	-A	+A	-B		-A	-A			
33360*	6.3.3	0	-B	-B	-B	+B			-B	+A		-A
33360*	6.3.3	1	-B	-A	+A	+B			-B	+A		-A
33360*	6.3.3	2	-B	+A	+A	+A			-B	+A		+A
33360*	6.3.3	3	-A	-A	-A	+A			+A	+A		+A
33360*	6.3.3	4	+A	-A	-A	+A			+A	+A		+A
33360*	6.3.3	5	+A	-A	-B	-A			+A	-A		+A
33360*	6.3.3	6	-B	-B	-B	-B			-B	-A		-A
33360*	6.3.3	7	-B	-A	-A	-A			-A	-A		-A
32655	6.4.1	0	+A	-B	-A	-A			-A			
32655	6.4.1	1	-B	-B	-B	-B			-A			
32655	6.4.1	2	-B	-B	-B	-B			-B			
32655	6.4.1	3	+A	-A	+A	-A			+A			
32655	6.4.1	4	-A	-B	-B	+A			-A			
32655	6.4.1	5	-A	-A	-A	-B			+A			
32655	6.4.1	6	+A	-A	+A	-A			+A			
32655	6.4.1	7	-A	-B	-A	+A			+A			
32716	6.4.1	0	-A	-B	-A	+A			-A			
32716	6.4.1	1	-A	-B	-B	+B			+A			
32716	6.4.1	2	-A	-A	-B	+B			-A			
32716	6.4.1	3	-A	-A	-B	-A			-A			
32716	6.4.1	4	+A	-A	-A	+B			-B			
32716	6.4.1	5	-B	-B	-B	+B			-A			
32716	6.4.1	6	-A	-A	-A	-A			+A			
32623	6.4.5	0	-A	-A	+A	+A		+A	-A			
32623	6.4.5	1	+A	-B	-A	+A		+A	-A			
32623	6.4.5	2	-B	-B	-A	+B		-A	-A			
32623	6.4.5	3	+A	+A	+A	-B		+A	+A			
32623	6.4.5	4	+A	+A	-A	+B		+A	+A			
32623	6.4.5	5	-A	-A	+A	-A		-A	-B			

32623	6.4.5	6	-A	-A	+A	-B		+A	-A
32623	6.4.5	7	-A	-A	-A	-B		-B	-A

*Rejected at Item Data Review

Table 4-K–19a. Field-Test Items: Differential Item Functioning Classifications for Grade 7 Science (Clusters)

Item Number	Standard	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
33361	7.1.3	0	0	0	0			0	0		0
32627	7.1.5	0	0	0	0		0	0			
32708	7.1.5	0	0	0	0			0			
32705	7.2.6	0	0	0	0			0			
32670	7.4.3			0	0						
32717	7.5.2	0	0	0	0			0			
32635	7.5.4	0	0	0	0		0	0			
32744	7.5.4	0	0	0	0		0	0	0		0

Table 4-K–19b. Field-Test Items: Differential Item Functioning Classifications for Grade 7 Science (Assertions)

Item Number	Standard	Assertion Order	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
33361	7.1.3	0	+A	+A	-A	+B			+A	-A		+A
33361	7.1.3	1	+B	+A	+A	+A			+B	-A		+A
33361	7.1.3	2	+B	-A	+A	-B			+A	-A		-A
33361	7.1.3	3	-B	-A	-A	-B			-A	-A		+A
33361	7.1.3	4	-A	-B	-A	-B			-A	-B		-A
33361	7.1.3	5	-A	-A	-A	-B			-A	-A		-A
33361	7.1.3	6	-A	-B	-B	+B			-A	-A		-A
33361	7.1.3	7	-A	-A	-B	-B			-A	-B		-A
32627	7.1.5	0	-A	-A	-B	+B		-B	-A			
32627	7.1.5	1	-A	-A	-B	+B		-B	-A			
32627	7.1.5	2	+A	-A	-B	-B		-A	+A			
32627	7.1.5	3	-A	-B	-B	+B		-A	-A			
32627	7.1.5	4	-B	-B	-B	-B		-B	-B			
32627	7.1.5	5	-B	-A	+A	-B		-B	-B			
32627	7.1.5	6	-B	-B	-B	-B		-B	-B			
32627	7.1.5	7	+A	-B	+A	-A		-A	-A			
32708	7.1.5	0	-A	-B	-A	-A			-A			
32708	7.1.5	1	+A	-A	+A	-A			+A			
32708	7.1.5	2	+B	+A	-A	+B			+B			
32708	7.1.5	3	-A	+A	+A	-A			-A			
32708	7.1.5	4	-A	-A	+A	-B			-A			
32708	7.1.5	5	+A	+A	-A	+B			+A			
32708	7.1.5	6	+A	-A	-B	+A			+A			
32705	7.2.6	0	+B	+A	-A	+B			+B			
32705	7.2.6	1	+B	+A	-A	+B			+B			
32705	7.2.6	2	-A	-A	-B	+B			-A			
32705	7.2.6	3	-A	-A	-B	+A			+A			
32705	7.2.6	4	-A	-A	-B	+A			-A			
32705	7.2.6	5	+A	-B	-A	-A			+A			

32705	7.2.6	6	+A	-A	-A	-A			-A			
32705	7.2.6	7	+A	-A	-A	+A			-A			
32705	7.2.6	8	+A	-A	-A	+A			-A			
32670	7.4.3	0			-A	+A						
32670	7.4.3	1			-A	+A						
32670	7.4.3	2			+A	+A						
32670	7.4.3	3			-A	+A						
32670	7.4.3	4			-A	+B						
32670	7.4.3	5			-A	+A						
32670	7.4.3	6			-A	+A						
32670	7.4.3	7			-A	+A						
32717	7.5.2	0	-A	+A	-A	+B			-A			
32717	7.5.2	1	-A	-A	-A	+B			-A			
32717	7.5.2	2	-A	-A	-B	+B			-A			
32717	7.5.2	3	-A	-A	-A	-A			-B			
32717	7.5.2	4	-A	-A	-A	-B			-A			
32717	7.5.2	5	-B	-A	-A	+B			-B			
32717	7.5.2	6	-A	-A	-A	-A			-A			
32717	7.5.2	7	-A	+A	-A	+B			-A			
32717	7.5.2	8	-A	-A	+A	-B			+A			
32717	7.5.2	9	+A	+A	-A	-B			+A			
32717	7.5.2	10	+A	+A	-A	-A			+A			
32635	7.5.4	0	-A	+A	-A	-A		-A	-B			
32635	7.5.4	1	-A	-A	-A	+A		+A	-B			
32635	7.5.4	2	-A	+A	-A	-A		-A	-A			
32635	7.5.4	3	+A	-A	-B	+B		-A	-A			
32635	7.5.4	4	-A	-A	-A	+B		+A	-A			
32635	7.5.4	5	+A	-A	-A	+B		-A	-A			
32635	7.5.4	6	-A	-A	-A	+B		+B	-A			
32635	7.5.4	7	+A	-A	-B	+B		-A	-A			
32744	7.5.4	0	-A	-A	-B	+B		-B	+A	+A		+A
32744	7.5.4	1	-A	+A	-B	+B		-B	+A	-A		+A
32744	7.5.4	2	-A	+A	-B	+A		-B	+A	-A		-A
32744	7.5.4	3	-A	-A	-A	+B		-A	-A	-A		-A
32744	7.5.4	4	-A	-A	-B	+B		+A	+A	-A		-A

32744	7.5.4	5	-B	-B	-B	+B		-A	-A	+A		+A
32744	7.5.4	6	+A	-A	-A	+B		-A	-A	-A		+A
32744	7.5.4	7	+A	-A	-B	+B		-A	+A	-A		+A
32744	7.5.4	8	-A	-A	-B	+B		-A	+A	-A		+B
32744	7.5.4	9	+A	+A	-A	-A		+A	+A	+A		+A

Table 4-K–20a. Field-Test Items: Differential Item Functioning Classifications for Grade 8 Science (Clusters)

Item Number	Standard	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
32703	8.1.1	0	0	0	0			0			
32621	8.1.4	0	0	0	0		0	0			
32718	8.1.4	0	0	0	0			0			
32633	8.1.6	0	0	0	0			0			
32719	8.2.1	0	0	0	0			0			
32711	8.2.2	0	0	0	0			0			
33363	8.2.4	0	0	0	0			0	0		0
32720	8.2.5	0	0	0	0			0			
32639	8.2.6	0	0	0	0		0	0			
32637	8.3.2	-1	0	0	0			0			
32698*	8.3.2	0	0	0	0			0			
33357	8.3.2		0		0						
32630	8.3.3	0	0	0	0		-1	0			
32608	8.4.2	0	0	0	0		0	0			0
32714	8.4.2	0	0	0	0			0			
33365*	8.4.2	0	0	0	0		0	0			
33358	8.4.3	0	0	0	0		0	0			
33364	8.4.3	0	0	0	0			0	0		0
33366	8.4.3			0	0			0			
32700	8.4.4	0	0	0	0			0			

*Rejected at Item Data Review

Table 4-K–20b. Field-Test Items: Differential Item Functioning Classifications for Grade 8 Science (Assertions)

Item Number	Standard	Assertion Order	LEP / Non-LEP	Low Income / Non-Low income	SPED / No-SPED	Female / Male	Asian / White	African American / White	Hispanic / White	Native American / White	Pacific Islander / White	Multi-ethnic / White
32703	8.1.1	0	+A	+A	-A	+B			+A			
32703	8.1.1	2	-A	-A	-A	+B			-A			
32703	8.1.1	3	-B	-A	-A	-B			-B			
32703	8.1.1	4	+A	-A	+A	-A			-A			
32703	8.1.1	5	-A	+A	+A	-A			-A			
32703	8.1.1	6	+A	-A	-A	+A			-A			
32703	8.1.1	7	-A	+A	-A	-A			-A			
32703	8.1.1	8	-A	-A	+A	-B			-B			
32621	8.1.4	0	+A	-A	-B	+B		+A	+A			
32621	8.1.4	1	+A	-A	-B	+B		-A	-A			
32621	8.1.4	2	+A	+B	-B	+B		+A	+A			
32621	8.1.4	3	-A	+A	-B	+B		+A	+A			
32621	8.1.4	4	-A	+A	-A	+B		-A	+A			
32621	8.1.4	5	-A	-A	-B	+B		-A	+A			
32621	8.1.4	6	-A	+A	-B	+B		-A	+A			
32621	8.1.4	7	+A	-A	-A	+B		-A	-A			
32621	8.1.4	8	-B	-A	-A	+B		+A	-A			
32718	8.1.4	0	+A	+A	+A	+A			+A			
32718	8.1.4	1	+A	-A	-A	+B			+B			
32718	8.1.4	2	+A	+A	-B	+B			+A			
32718	8.1.4	3	-A	-A	-A	+B			-A			
32718	8.1.4	4	+A	+A	+A	+A			+A			
32718	8.1.4	5	-A	-A	+A	-A			+A			
32718	8.1.4	7	+A	-A	-A	+A			+A			
32718	8.1.4	9	+A	-A	-A	+A			-A			
32633	8.1.6	0	-A	-B	-A	+B			-A			
32633	8.1.6	1	-A	-A	-A	+A			-A			
32633	8.1.6	2	-A	-A	-A	+A			-A			
32633	8.1.6	3	-A	-A	-A	+A			-B			

32633	8.1.6	4	+A	-A	+A	+A	-A		
32633	8.1.6	5	-B	+A	+B	+A	+A		
32633	8.1.6	6	-A	-A	-A	+A	-A		
32633	8.1.6	7	-A	+A	-A	-A	-B		
32719	8.2.1	0	+A	-A	-A	-A	+A		
32719	8.2.1	1	+A	+A	-A	+A	+A		
32719	8.2.1	2	+A	+A	-A	-A	-A		
32719	8.2.1	3	-A	-A	-B	-A	-B		
32719	8.2.1	4	-A	+A	+A	+A	+A		
32719	8.2.1	5	-A	-A	-B	+B	+A		
32719	8.2.1	6	-A	-A	-A	-A	-A		
32719	8.2.1	7	+A	-A	+A	-A	+A		
32719	8.2.1	8	+A	-A	+A	-A	+A		
32719	8.2.1	9	+A	+A	-B	-A	+A		
32711	8.2.2	0	-A	+B	-B	+B	-A		
32711	8.2.2	1	-A	+B	-A	+B	-A		
32711	8.2.2	2	-A	+A	-B	+B	+A		
32711	8.2.2	3	+A	-A	-A	-A	-A		
32711	8.2.2	4	-A	+A	+A	-A	+A		
32711	8.2.2	5	-A	+A	-A	-B	-A		
32711	8.2.2	6	-B	+A	+A	-B	-A		
32711	8.2.2	7	-A	-A	+A	-B	-A		
32711	8.2.2	8	-A	+A	+A	-B	-B		
32711	8.2.2	9	-A	-A	-B	-B	-B		
33363	8.2.4	0	-B	-B	-B	-A	-A	-B	-A
33363	8.2.4	1	-A	-A	-B	-B	-A	-B	-A
33363	8.2.4	2	-A	-B	-B	-B	+A	-B	-A
33363	8.2.4	3	+A	-A	-A	-B	-A	-A	-A
33363	8.2.4	4	+A	-A	-A	-A	+A	-A	-A
33363	8.2.4	5	-A	-B	-A	-B	-A	-B	-A
33363	8.2.4	6	-A	-B	-A	+A	-A	-A	+A
33363	8.2.4	7	+A	-A	-A	-A	+A	-A	-A
32720	8.2.5	0	-A	-B	-A	-B	-A		
32720	8.2.5	1	+A	-A	-A	-B	-A		
32720	8.2.5	2	-A	-A	-B	-B	-A		

32720	8.2.5	3	+A	-A	+A	-B		+A
32720	8.2.5	4	-A	-A	-A	+A		-A
32720	8.2.5	5	-A	-A	-B	+A		-A
32720	8.2.5	6	-A	-A	+A	-B		+A
32720	8.2.5	7	-A	-A	-A	-A		+A
32720	8.2.5	8	+A	+A	+A	-A		+A
32639	8.2.6	0	+A	-A	-A	+B	-A	+B
32639	8.2.6	1	-A	+B	-A	+A	+B	-A
32639	8.2.6	2	+A	-A	-A	+A	-A	-A
32639	8.2.6	3	-A	+A	-A	+B	-A	+A
32639	8.2.6	4	-A	+A	-A	+B	+A	+A
32639	8.2.6	5	-A	-A	-A	+A	-B	-A
32639	8.2.6	6	+A	+A	-A	+B	-A	+A
32639	8.2.6	7	+B	+B	-A	+A	+A	+B
32639	8.2.6	8	-A	-A	-B	+B	-B	-A
32637	8.3.2	0	-C	-B	-B	-A		-B
32637	8.3.2	2	+A	-B	-A	+A		+A
32637	8.3.2	3	+B	+A	-A	+A		+A
32637	8.3.2	4	-A	-A	-A	+A		-A
32637	8.3.2	5	-A	-B	-A	-B		-B
32637	8.3.2	6	+A	-A	-A	-B		+A
32637	8.3.2	7	+B	-A	+A	+A		+A
32698*	8.3.2	0	+A	-A	-B	-A		-A
32698*	8.3.2	1	+A	+A	+B	-A		+A
32698*	8.3.2	2	-A	+A	-A	-B		-B
32698*	8.3.2	3	-A	-A	-A	+B		+A
32698*	8.3.2	4	-A	-A	-B	+A		-A
32698*	8.3.2	5	+A	+A	-B	+A		-A
32698*	8.3.2	6	-A	+A	+A	+A		+A
32698*	8.3.2	7	-A	-A	-A	+A		-B
32698*	8.3.2	8	-A	-A	-B	+B		-A
33357	8.3.2	0		+A		-A		
33357	8.3.2	1		-A		-A		
33357	8.3.2	2		+A		+A		
33357	8.3.2	3		+A		-A		

33357	8.3.2	4		-A		+B						
33357	8.3.2	6		+A		+B						
32630	8.3.3	0	+A	-A	+A	+B		+A	-A			
32630	8.3.3	1	-A	-A	+A	-A		-A	+A			
32630	8.3.3	2	-A	-A	-A	+A		-A	-A			
32630	8.3.3	3	-A	-A	+A	-B		-C	-B			
32630	8.3.3	4	-A	-A	-B	+A		-A	-A			
32630	8.3.3	5	-B	-A	-B	-A		-A	-B			
32630	8.3.3	6	+A	+A	+A	-B		-A	-A			
32630	8.3.3	7	-A	+A	-B	+B		+A	+A			
32630	8.3.3	8	-A	+A	-A	+A		-A	-A			
32630	8.3.3	9	-A	-A	-A	-A		+A	-A			
32608	8.4.2	0	-A	-A	-A	+A		-A	-A			-A
32608	8.4.2	1	-A	-A	-A	+B		-A	+A			-A
32608	8.4.2	2	+A	-A	-B	+A		-A	+A			-A
32608	8.4.2	3	-A	-A	-B	-A		+A	-A			+A
32608	8.4.2	4	-A	-A	+A	-A		-A	+B			-A
32608	8.4.2	5	-A	-A	-B	-A		-A	+A			+A
32608	8.4.2	6	-A	-A	-B	+A		-A	-A			-A
32608	8.4.2	7	+A	-A	+A	+A		-B	+A			-B
32608	8.4.2	8	+A	-A	+A	-A		+A	+A			-A
32608	8.4.2	9	-A	-A	-A	+A		-A	-A			-A
32608	8.4.2	10	-A	-A	-A	+A		-B	-B			-A
32714	8.4.2	0	-A	-A	-A	-A			-A			
32714	8.4.2	1	-B	-B	-A	+A			-A			
32714	8.4.2	3	+A	+A	-A	+B			-A			
32714	8.4.2	4	+A	-A	+A	+A			-A			
32714	8.4.2	5	+A	-A	-A	+B			+A			
32714	8.4.2	6	+A	+A	-A	+A			+A			
33365*	8.4.2	0	+A	-B	-A	-A		-B	+B			
33365*	8.4.2	1	+A	-A	-B	-A		-A	+B			
33365*	8.4.2	2	-A	-A	-A	-A		-A	+A			
33365*	8.4.2	3	+A	-A	-A	+A		+A	+A			
33365*	8.4.2	4	+A	-A	-B	+A		+A	+A			
33365*	8.4.2	5	-A	-A	-A	-A		+A	-A			

33365*	8.4.2	6	+A	-A	-B	-A		+A	+B			
33365*	8.4.2	7	+A	-A	-A	+A		-A	+A			
33358	8.4.3	0	+A	+A	-A	-B		+A	+A			
33358	8.4.3	1	-B	+A	-A	+B		-B	+A			
33358	8.4.3	2	-A	-A	-A	+A		-A	-A			
33358	8.4.3	3	+A	-A	+A	-A		+A	+A			
33358	8.4.3	4	-A	+A	-A	+B		-A	+A			
33358	8.4.3	5	+A	-A	+A	-B		-A	-A			
33358	8.4.3	6	+A	-A	+A	-A		+A	+A			
33358	8.4.3	7	-A	-A	+A	+A		+A	+A			
33358	8.4.3	8	+A	-A	-A	+A		-A	+A			
33358	8.4.3	9	+A	+A	+A	-A		-A	+A			
33364	8.4.3	0	-B	-B	-B	+A			-B	-B		-A
33364	8.4.3	1	+A	-A	-B	+B			+A	-A		+A
33364	8.4.3	2	+A	+B	+A	+B			+B	+A		+B
33364	8.4.3	3	+A	+B	-A	+B			+B	+A		+A
33364	8.4.3	4	-A	+A	-A	+B			+A	-A		+A
33364	8.4.3	5	-A	-B	-B	+B			-A	-B		-A
33364	8.4.3	6	-A	+A	-A	-A			-B	+A		-A
33366	8.4.3	0			-A	-A			-B			
33366	8.4.3	1			+A	-A			+A			
33366	8.4.3	2			-A	-A			+A			
33366	8.4.3	3			-A	-A			+A			
33366	8.4.3	4			-A	+A			-A			
33366	8.4.3	5			-B	+A			-A			
33366	8.4.3	6			+A	+A			+A			
32700	8.4.4	0	+B	-A	-B	+B			+A			
32700	8.4.4	1	-A	-A	-A	+A			-B			
32700	8.4.4	2	-A	+A	-A	-B			-A			
32700	8.4.4	3	-A	+A	-A	-B			+A			
32700	8.4.4	4	+A	+A	-A	-A			+A			
32700	8.4.4	5	-A	+A	-B	-B			-A			
32700	8.4.4	6	-A	-A	-B	-A			-A			

*Rejected at Item Data Review

APPENDIX 4-L

DIFFERENTIAL ITEM FUNCTIONING FLAG RESULTS

Appendix 4-L
Differential Item Functioning Flag Results

Table 4-L–1. SY2020–2021 DIF Flags

Grade	+C	+B	+A	-A	-B	-C
			ELA			
3		30	164	307	104	2
4		38	120	262	88	6
5		25	124	288	128	6
6		51	126	294	145	4
7		31	89	225	101	3
8		26	134	262	120	8
			Mathematics			
3	1	57	211	276	80	
4	259	43	170	259	88	
5	50	181	1	222	61	
6	249	52	178	249	111	
7	47	205	1	234	78	
8	42	150	2	239	67	

Table 4-L–2. SY2020–2021 Items Flagged for High DIF in ELA

Grade	Cluster	Total	Item Type					
			MC			MSCR		
			DOK 1	DOK 2	DOK 3	DOK 1	DOK 2	DOK 3
3	3.A	2				2	0	
4	4.A	3				3	0	
	4.B	1	0	1				
	4.C	1	0	1				
5	5.A	1				0	1	
	5.B	4	0	4				
6	6.A	2				1	1	
	6.C	1	1	0				
7	7.A	3				3	0	
8	8.A	4				3	1	
	8.B	2	0	1		0	1	
	8.C	1	0	1				
Total		25	1	8		12	4	

Table 4-L–3. SY2020–2021 Items Flagged for High DIF in Mathematics

Grade	Cluster	Total	Item Type					
			MC			MSCR		
			DOK 1	DOK 2	DOK 3	DOK 1	DOK 2	DOK 3
5	5.1-4	1					1	
7	7.1-3	1		1				
8	8.1-4	2					2	
Total		4		1			3	

Table 4-L–4. SY2020–2021 Grade 3 ELA DIF Flags

DIF Flag	LEP/ Non-LEP	Low Income/ Non-Low income	SPED/ Non-SPED	Female/ Male	Asian/ White	African American/ White	Hispanic/ White	Native American/ White	Pacific Islander/ White	Multi-ethnic/ White
+C										
+B	3		2	22			2			1
+A	31	28	26	46			30			3
-A	57	69	71	37			70			3
-B	29	23	19	15			18			
-C			2							
Items Evaluated	120	120	120	120	0	0	120	0	0	7
% Items Flagged C	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%

Table 4-L–5. SY2020–2021 Grade 4 ELA DIF Flags

DIF Flag	LEP/ Non-LEP	Low Income/ Non-Low income	SPED/ Non-SPED	Female/ Male	Asian/ White	African American/ White	Hispanic/ White	Native American/ White	Pacific Islander/ White	Multi-ethnic/ White
+C										
+B	3	1	2	29			2			1
+A	27	22	18	26			26			1
-A	52	66	52	35			55			2
-B	18	13	27	12			18			
-C	2		3				1			
Items Evaluated	102	102	102	102	0	0	102	0	0	4
% Items Flagged C	2%	0%	3%	0%	0%	0%	1%	0%	0%	0%

Table 4-L–6. SY2020–2021 Grade 5 ELA DIF Flags

DIF Flag	LEP/ Non-LEP	Low Income/ Non-Low income	SPED/ Non-SPED	Female/ Male	Asian/ White	African American/ White	Hispanic/ White	Native American/ White	Pacific Islander/ White	Multi-ethnic/ White
+C										
+B	1		2	22						
+A	22	17	12	37			29			7
-A	54	74	60	35			57			8
-B	32	20	36	15			24			1
-C	2		1	2			1			
Items Evaluated	111	111	111	111	0	0	111	0	0	16
% Items Flagged C	2%	0%	1%	2%	0%	0%	1%	0%	0%	0%

Table 4-L–7. SY2020–2021 Grade 6 ELA DIF Flags

DIF Flag	LEP/ Non-LEP	Low Income/ Non-Low income	SPED/ Non-SPED	Female/ Male	Asian/ White	African American/ White	Hispanic/ White	Native American/ White	Pacific Islander/ White	Multi-ethnic/ White
+C										
+B	5		3	41			2			
+A	22	20	17	37			26			4
-A	58	74	69	23			65			5
-B	36	28	32	20			28			1
-C	1		1	1			1			
Items Evaluated	122	122	122	122	0	0	122	0	0	10
% Items Flagged C	1%	0%	1%	1%	0%	0%	1%	0%	0%	0%

Table 4-L–8. SY2020–2021 Grade 7 ELA DIF Flags

DIF Flag	LEP/ Non-LEP	Low Income/ Non-Low income	SPED/ Non-SPED	Female/ Male	Asian/ White	African American/ White	Hispanic/ White	Native American/ White	Pacific Islander/ White	Multi-ethnic/ White
+C										
+B	3	1		22			5			
+A	21	17	10	27			13			1
-A	47	53	52	22			48			3
-B	18	18	24	18			23			
-C			3							
Items Evaluated	89	89	89	89	0	0	89	0	0	4
% Items Flagged C	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%

Table 4-L–9. SY2020–2021 Grade 8 ELA DIF Flags

DIF Flag	LEP/ Non-LEP	Low Income/ Non-Low income	SPED/ Non-SPED	Female/ Male	Asian/ White	African American/ White	Hispanic/ White	Native American/ White	Pacific Islander/ White	Multi-ethnic/ White
+C										
+B	3	1	4	14			3			1
+A	28	25	24	22			31			4
-A	57	62	55	38			45			5
-B	17	20	22	34			27			
-C	3		3				2			
Items Evaluated	108	108	108	108	0	0	108	0	0	10
% Items Flagged C	3%	0%	3%	0%	0%	0%	2%	0%	0%	0%

Table 4-L–10. SY2020–2021 Grade 3 Math DIF Flags

DIF Flag	LEP/ Non-LEP	Low Income/ Non-Low income	SPED/ Non-SPED	Female/ Male	Asian/ White	African American/ White	Hispanic/ White	Native American/ White	Pacific Islander/ White	Multi-ethnic/ White
+C				1						
+B	10	5	3	31			8			
+A	53	42	41	29			46			
-A	49	69	65	35			58			
-B	13	9	16	29			13			
-C										
Items Evaluated	125	125	125	125	0	0	125	0	0	0
% Items Flagged C	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%

Table 4-L–11. SY2020–2021 Grade 4 Math DIF Flags

DIF Flag	LEP/ Non-LEP	Low Income/ Non-Low income	SPED/ Non-SPED	Female/ Male	Asian/ White	African American/ White	Hispanic/ White	Native American/ White	Pacific Islander/ White	Multi-ethnic/ White
+C										
+B	7	3	6	21			6			
+A	32	39	27	34			38			
-A	57	64	55	28			55			
-B	16	6	24	29			13			
-C										
Items Evaluated	112	112	112	112	0	0	112	0	0	0
% Items Flagged C	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Table 4-L–12. SY2020–2021 Grade 5 Math DIF Flags

DIF Flag	LEP/ Non-LEP	Low Income/ Non-Low income	SPED/ Non-SPED	Female/ Male	Asian/ White	African American/ White	Hispanic/ White	Native American/ White	Pacific Islander/ White	Multi-ethnic/ White
+C										
+B	6	1	4	35			4			
+A	41	35	31	35			39			
-A	44	55	54	22			47			
-B	11	12	14	11			13			
-C	1									
Items Evaluated	103	103	103	103	0	0	103	0	0	0
% Items Flagged C	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Table 4-L–13. SY2020–2021 Grade 6 Math DIF Flags

DIF Flag	LEP/ Non-LEP	Low Income/ Non-Low income	SPED/ Non-SPED	Female/ Male	Asian/ White	African American/ White	Hispanic/ White	Native American/ White	Pacific Islander/ White	Multi-ethnic/ White
+C										
+B	8	1	3	33			7			
+A	35	47	38	26			32			
-A	56	53	55	30			55			
-B	19	17	22	29			24			
-C										
Items Evaluated	118	118	118	118	0	0	118	0	0	0
% Items Flagged C	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Table 4-L–14. SY2020–2021 Grade 7 Math DIF Flags

DIF Flag	LEP/ Non-LEP	Low Income/ Non-Low income	SPED/ Non-SPED	Female/ Male	Asian/ White	African American/ White	Hispanic/ White	Native American/ White	Pacific Islander/ White	Multi-ethnic/ White
+C										
+B	4	3	6	28			6			
+A	44	45	36	26			54			
-A	55	56	61	25			37			
-B	10	9	10	33			16			
-C				1						
Items Evaluated	113	113	113	113	0	0	113	0	0	0
% Items Flagged C	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%

Table 4-L–15. SY2020–2021 Grade 8 Math DIF Flags

DIF Flag	LEP/ Non-LEP	Low Income/ Non-Low income	SPED/ Non-SPED	Female/ Male	Asian/ White	African American/ White	Hispanic/ White	Native American/ White	Pacific Islander/ White	Multi-ethnic/ White
+C										
+B	6	6	1	22			7			
+A	29	28	32	27			34			
-A	53	58	50	35			43			
-B	11	8	16	16			16			
-C	1		1							
Items Evaluated	100	100	100	100	0	0	100	0	0	0
% Items Flagged C	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%

Table 4-L–16a. SY2020–2021 Grade 4 Science DIF Flags (Clusters)

DIF Flag	LEP/ Non-LEP	Low Income/ Non-Low income	SPED/ Non-SPED	Female/ Male	Asian/ White	African American/ White	Hispanic/ White	Native American/ White	Pacific Islander/ White	Multi-ethnic/ White
Clusters Evaluated	19	26	26	26	0	0	26	0	0	0
Clusters Flagged C	0	0	0	0	0	0	0	0	0	0
% Clusters Flagged C	0%	0%	0%	0%	-	-	0%	-	-	-

Table 4-L–16b. SY2020–2021 Grade 4 Science DIF Flags (Assertions)

DIF Flag	LEP/ Non-LEP	Low Income/ Non-Low income	SPED/ Non-SPED	Female/ Male	Asian/ White	African American/ White	Hispanic/ White	Native American/ White	Pacific Islander/ White	Multi-ethnic/ White
+C	0	0	0	0	0	0	0	0	0	0
+B	2	3	2	30	0	0	4	0	0	0
+A	46	63	69	74	0	0	58	0	0	0
-A	74	107	95	72	0	0	105	0	0	0
-B	22	20	26	17	0	0	26	0	0	0
-C	1	0	1	0	0	0	0	0	0	0
Assertions Evaluated	145	193	193	193	0	0	193	0	0	0
% Assertions Flagged C	1%	0%	1%	0%	-	-	0%	-	-	-

Table 4-L–17a. SY2020–2021 Grade 5 Science DIF Flags (Clusters)

DIF Flag	LEP/ Non-LEP	Low Income/ Non-Low income	SPED/ Non-SPED	Female/ Male	Asian/ White	African American/ White	Hispanic/ White	Native American/ White	Pacific Islander/ White	Multi-ethnic/ White
Clusters Evaluated	15	26	23	26	0	0	26	0	0	0
Clusters Flagged C	0	0	0	0	0	0	0	0	0	0
% Clusters Flagged C	0%	0%	0%	0%	-	-	0%	-	-	-

Table 4-L–17b. SY2020–2021 Grade 5 Science DIF Flags (Assertions)

DIF Flag	LEP/ Non-LEP	Low Income/ Non-Low income	SPED/ Non-SPED	Female/ Male	Asian/ White	African American/ White	Hispanic/ White	Native American/ White	Pacific Islander/ White	Multi-ethnic/ White
+C	0	0	0	0	0	0	0	0	0	0
+B	5	1	4	32	0	0	4	0	0	0
+A	24	62	41	56	0	0	65	0	0	0
-A	58	111	99	68	0	0	97	0	0	0
-B	19	15	21	33	0	0	23	0	0	0
-C	0	0	0	0	0	0	0	0	0	0
Assertions Evaluated	106	189	165	189	0	0	189	0	0	0
% Assertions Flagged C	0%	0%	0%	0%	-	-	0%	-	-	-

Table 4-L–18a. SY2020–2021 Grade 6 Science DIF Flags (Clusters)

DIF Flag	LEP/ Non-LEP	Low Income/ Non-Low income	SPED/ Non-SPED	Female/ Male	Asian/ White	African American/ White	Hispanic/ White	Native American/ White	Pacific Islander/ White	Multi-ethnic/ White
Clusters Evaluated	8	8	8	8	0	4	8	1	0	2
Clusters Flagged C	0	0	0	0	0	0	0	0	0	0
% Clusters Flagged C	0%	0%	0%	0%	-	0%	0%	0%	-	0%

Table 4-L–18b. SY2020–2021 Grade 6 Science DIF Flags (Assertions)

DIF Flag	LEP/ Non-LEP	Low Income/ Non-Low income	SPED/ Non-SPED	Female/ Male	Asian/ White	African American/ White	Hispanic/ White	Native American/ White	Pacific Islander/ White	Multi-ethnic/ White
+C	0	0	0	0	0	0	0	0	0	0
+B	1	0	1	14	0	1	0	0	0	0
+A	21	11	20	15	0	13	21	5	0	7
-A	28	36	31	18	0	19	32	3	0	12
-B	16	19	14	19	0	3	13	0	0	0
-C	0	0	0	0	0	0	0	0	0	0
Assertions Evaluated	66	66	66	66	0	36	66	8	0	19
% Assertions Flagged C	0%	0%	0%	0%	-	0%	0%	0%	-	0%

Table 4-L–19a. SY2020–2021 Grade 7 Science DIF Flags (Clusters)

DIF Flag	LEP/ Non-LEP	Low Income/ Non-Low income	SPED/ Non-SPED	Female/ Male	Asian/ White	African American/ White	Hispanic/ White	Native American/ White	Pacific Islander/ White	Multi-ethnic/ White
Clusters Evaluated	7	7	8	8	0	3	7	2	0	2
Clusters Flagged C	0	0	0	0	0	0	0	0	0	0
% Clusters Flagged C	0%	0%	0%	0%	-	0%	0%	0%	-	0%

Table 4-L–19b. SY2020–2021 Grade 7 Science DIF Flags (Assertions)

DIF Flag	LEP/ Non-LEP	Low Income/ Non-Low income	SPED/ Non-SPED	Female/ Male	Asian/ White	African American/ White	Hispanic/ White	Native American/ White	Pacific Islander/ White	Multi-ethnic/ White
+C	0	0	0	0	0	0	0	0	0	0
+B	5	0	0	29	0	1	4	0	0	1
+A	18	16	9	15	0	4	18	3	0	9
-A	32	36	38	12	0	13	32	13	0	8
-B	6	9	22	13	0	8	7	2	0	0
-C	0	0	0	0	0	0	0	0	0	0
Assertions Evaluated	61	61	69	69	0	26	61	18	0	18
% Assertions Flagged C	0%	0%	0%	0%	-	0%	0%	0%	-	0%

Table 4-L–20a. SY2020–2021 Grade 8 Science DIF Flags (Clusters)

DIF Flag	LEP/ Non-LEP	Low Income/ Non-Low income	SPED/ Non-SPED	Female/ Male	Asian/ White	African American/ White	Hispanic/ White	Native American/ White	Pacific Islander/ White	Multi-ethnic/ White
Clusters Evaluated	18	19	19	20	0	6	19	2	0	3
Clusters Flagged C	0	0	0	0	0	0	0	0	0	0
% Clusters Flagged C	0%	0%	0%	0%	-	0%	0%	0%	-	0%

Table 4-L–20b. SY2020–2021 Grade 8 Science DIF Flags (Assertions)

DIF Flag	LEP/ Non-LEP	Low Income/ Non-Low income	SPED/ Non-SPED	Female/ Male	Asian/ White	African American/ White	Hispanic/ White	Native American/ White	Pacific Islander/ White	Multi-ethnic/ White
+C	0	0	0	0	0	0	0	0	0	0
+B	4	7	2	41	0	1	9	0	0	1
+A	60	48	35	52	0	19	69	3	0	6
-A	80	92	83	48	0	30	65	6	0	18
-B	9	13	41	26	0	6	18	6	0	1
-C	1	0	0	0	0	1	0	0	0	0
Assertions Evaluated	154	160	161	167	0	57	161	15	0	26
% Assertions Flagged C	1%	0	0	0	-	2%	0	0	-	0

APPENDIX 4-M

SUMMARY OF SUBSTRAND ITEMS BY ITEM TYPE AND DOK

APPENDIX 4-M

Summary of Substrand Items by Item Type and DOK for SY2020-2021

Table 4-M-1. SY2020-2021 Substrand Level Test Items by Item Type and DOK for ELA

Grade	Cluster	Total	Item Type					
			MC			MSCR		
			DOK 1	DOK 2	DOK 3	DOK 1	DOK 2	DOK 3
3	3.A	390	36	61	6	166	94	27
	3.B	144	11	66	7	3	47	10
	3.C	127	5	40	15	1	40	26
4	4.A	424	31	88	15	169	91	30
	4.B	140	9	78		5	41	7
	4.C	139	7	53	17	3	30	29
5	5.A	362	24	71	7	141	101	18
	5.B	141	6	60	5	8	47	15
	5.C	138	11	47	15	12	41	12
6	6.A	384	26	62	18	144	107	27
	6.B	212	4	89	22		69	28
	6.C	167	7	60	14	2	57	27
7	7.A	384	8	58	17	146	107	48
	7.B	179	4	81	11	1	54	28
	7.C	132	5	40	13	5	45	24
8	8.A	378	17	81	13	124	92	51
	8.B	148	3	59	9	1	36	40
	8.C	124	4	33	16	1	44	26

Grade	Cluster	Total	Item Type					
			MC			MSCR		
			DOK 1	DOK 2	DOK 3	DOK 1	DOK 2	DOK 3
	Total	4113	218	1127	220	932	1143	473

Table 4-M-2. SY2020-2021 Depth of Knowledge Items by Item Type for ELA

Grade	Depth of Knowledge	Total	Item Type	
			MC	MSCR
3	DOK 1	222	52	170
	DOK 2	348	167	181
	DOK 3	91	28	63
4	DOK 1	224	47	177
	DOK 2	381	219	162
	DOK 3	98	32	66
5	DOK 1	202	41	161
	DOK 2	367	178	189
	DOK 3	72	27	45
6	DOK 1	183	37	146
	DOK 2	444	211	233
	DOK 3	136	54	82
7	DOK 1	169	17	152
	DOK 2	385	179	206
	DOK 3	141	41	100
8	DOK 1	150	24	126
	DOK 2	345	173	172
	DOK 3	155	38	117

Table 4-M-3. SY2020-2021 Substrand Level Test Items by Item Type and Depth of Knowledge for Mathematics

Grade	Cluster	Total	Item Type					
			MC			MSCR		
			DOK 1	DOK 2	DOK 3	DOK 1	DOK 2	DOK 3
3	3.1-2	59	14	8		15	14	8
	3.1-3	314	35	31	3	68	156	21
	3.1-4and7	121	25	11	1	21	53	10
	3.3-4	32		5		3	19	5
	3.5-6	71	4	22		7	35	3
	3.5-7	54	9	14		9	10	12
	3.8	16	3	3		2	2	6
	3.8-9	70	2	15		4	36	13
4	4.1-2	85	4	11	3	11	40	16
	4.1-3	270	65	53		42	92	18
	4.3	24	1	2	1		6	14
	4.3-4	104	8	12		29	51	4
	4.4	46	9	9		9	14	5
	4.4-6	110	14	17		31	39	9
	4.5	43		15		1	26	1
	4.5-7	150	11	26	1	23	78	11
5	5.1	18	2	7		3	4	2
	5.1-2	212	19	58		29	75	31
	5.1-4	130	27	11		46	44	2
	5.2	26	3			2	19	2
	5.3	33		7	2		21	3
	5.3-4	30	1	8		7	11	3

Grade	Cluster	Total	Item Type					
			MC			MSCR		
			DOK 1	DOK 2	DOK 3	DOK 1	DOK 2	DOK 3
	5.3-5	83	5	17		15	36	10
	5.3-7	175	9	62	1	11	69	23
	5.5-7	123	8	28		26	48	13
6	6.1	39	1	5		11	19	3
	6.1-3	214	29	25	1	51	88	20
	6.1-4	181	15	34	1	39	68	24
	6.2-4	54	8	18		18	7	3
	6.4-5	79	4	21		21	20	13
	6.5-8	163	9	23	2	42	70	17
	6.9	33	2	3		4	18	6
7	7.1-2	76	6	14	1	14	37	4
	7.1-3	366	21	35	8	64	174	64
	7.3-4	75	4	14	1	8	39	9
	7.4-6	77	3	8		11	40	15
	7.5-8	86	14	21		15	34	2
8	8.1-3	164	19	11	5	69	51	9
	8.1-4	197	38	22		48	67	22
	8.1-5	97	11	13	1	21	38	13
	8.4-5	70	12	13		11	28	6
	8.5-6	54	3	4		10	15	22
	8.6-8	61	2	10		9	31	9
	8.7-8	90	6	2		37	19	26
	8.9	38		5	1	2	13	17
	BF	35	4	5	1	4	19	2

Grade	Cluster	Total	Item Type					
			MC			MSCR		
			DOK 1	DOK 2	DOK 3	DOK 1	DOK 2	DOK 3
SMI	CED	78	2	15		8	40	13
	CO	100	8	29	1	8	46	8
	GPE	45		9	3	4	26	3
	ID	60	4	14	6	6	21	9
	IF	84	24	16		11	27	6
	LE	46	4	14	1	3	17	7
	Q	14	2	2			8	2
	REI	102	7	29	2	10	35	19
	SSE	15	1	6		1	3	4
	Total	5192	541	892	47	974	2116	622

Table 4-M-4. SY2020-2021 Depth of Knowledge Items by Item Type for Mathematics

Grade	Depth of Knowledge	Total	Item Type	
			MC	MSCR
3	DOK 1	221	92	129
	DOK 2	434	109	325
	DOK 3	82	4	78
4	DOK 1	258	112	146
	DOK 2	491	145	346
	DOK 3	83	5	78
5	DOK 1	213	74	139
	DOK 2	525	198	327
	DOK 3	92	3	89
6	DOK 1	254	68	186
	DOK 2	419	129	290
	DOK 3	90	4	86
7	DOK 1	160	48	112
	DOK 2	416	92	324
	DOK 3	104	10	94
8	DOK 1	298	91	207
	DOK 2	342	80	262
	DOK 3	131	7	124
SMI	DOK 1	111	56	55
	DOK 2	381	139	242
	DOK 3	87	14	73

APPENDIX 4-N

AVERAGE ITEM DIFFICULTY BY CLUSTER AND AFFINITY GROUP

Appendix 4-N
Average Item Difficulty by Cluster and Affinity Group from SY2020-2021

Table 4-N-1. Average Item Difficulty by Cluster for ELA

Grade	Cluster	Mean	Std. Dev.	Min	Max
3	3.A	-1.05	0.95	-3.36	2.63
	3.B	-0.88	0.79	-2.61	3.53
	3.C	-0.63	0.84	-2.41	2.28
4	4.A	-0.75	1.02	-4.08	6.04
	4.B	-0.45	1.16	-2.12	7.56
	4.C	-0.52	1.05	-2.38	4.92
5	5.A	-0.37	1.01	-2.98	4.23
	5.B	-0.10	0.88	-1.78	3.23
	5.C	-0.15	1.02	-2.10	5.11
6	6.A	-0.14	1.05	-2.87	3.54
	6.B	0.30	0.93	-1.81	3.57
	6.C	0.26	0.89	-2.12	2.83
7	7.A	0.43	1.10	-1.86	8.14
	7.B	0.44	0.80	-1.43	2.64
	7.C	0.59	1.02	-1.34	3.81
8	8.A	0.31	1.20	-4.36	4.93
	8.B	0.76	1.11	-1.49	5.74
	8.C	0.82	1.20	-1.91	4.85

Table 4-N-2. Average Item Difficulty by Affinity Group for ELA

Grade	Cluster	Mean	Std. Dev.	Min	Max
3	DOK 1	-1.50	0.81	-3.36	0.88
	DOK 2	-0.72	0.80	-2.54	3.53
	DOK 3	-0.36	0.85	-1.68	2.28
4	DOK 1	-1.07	1.03	-4.08	6.04
	DOK 2	-0.53	0.99	-2.38	7.56
	DOK 3	-0.12	1.06	-1.84	4.92
5	DOK 1	-0.83	0.81	-2.98	2.06
	DOK 2	-0.01	0.98	-2.02	5.11
	DOK 3	0.03	0.86	-2.10	2.12
6	DOK 1	-0.63	0.87	-2.87	1.53
	DOK 2	0.22	0.93	-1.81	3.57
	DOK 3	0.54	0.96	-2.12	3.37
7	DOK 1	-0.07	1.10	-1.86	8.14
	DOK 2	0.57	0.94	-1.43	3.81
	DOK 3	0.79	0.88	-1.17	4.50
8	DOK 1	-0.20	1.36	-4.36	4.76
	DOK 2	0.60	0.96	-1.91	4.93
	DOK 3	1.00	1.23	-0.77	5.74

Table 4-N-3. Average Item Difficulty by Cluster for Mathematics

Grade	Cluster	Mean	Std. Dev.	Min	Max
3	3.1-2	-2.52	0.78	-4.17	-0.91
	3.1-3	-2.35	0.61	-5.35	1.08
	3.1-4and7	-2.67	0.52	-3.81	-1.17
	3.3-4	-2.35	0.48	-3.18	-1.39
	3.5-6	-2.35	0.48	-3.52	-1.39
	3.5-7	-2.30	0.78	-4.06	-1.05
	3.8	-2.10	0.76	-3.76	-1.12
	3.8-9	-2.19	0.78	-4.28	1.21
4	4.1-2	-1.53	0.72	-2.97	0.44
	4.1-3	-1.89	0.84	-3.82	0.41
	4.3	-1.10	0.50	-2.19	-0.43
	4.3-4	-1.80	0.94	-3.33	2.85
	4.4	-1.51	0.76	-3.02	-0.07
	4.4-6	-1.90	0.55	-3.31	-0.63
	4.5	-1.93	0.80	-3.49	-0.15
	4.5-7	-1.88	0.61	-3.50	-0.38
5	5.1	-0.85	0.46	-1.98	-0.03
	5.1-2	-1.23	0.76	-3.20	1.11
	5.1-4	-1.07	0.63	-2.48	1.41
	5.2	-0.52	0.93	-2.13	2.47
	5.3	-1.39	0.98	-3.23	1.25
	5.3-4	-0.44	1.22	-2.22	3.82
	5.3-5	-1.30	0.68	-2.98	0.48
	5.3-7	-0.59	0.89	-3.04	2.38
	5.5-7	-1.41	0.92	-3.39	1.17
6	6.1	-0.07	0.67	-1.18	1.54
	6.1-3	-0.40	1.19	-3.82	2.70
	6.1-4	0.19	1.16	-3.46	4.61
	6.2-4	-0.59	0.93	-2.17	3.14
	6.4-5	-0.18	1.38	-2.65	5.58
	6.5-8	-0.44	1.22	-5.67	2.03
	6.9	-0.24	0.97	-2.04	2.43
7	7.1-2	1.25	1.49	-1.42	7.24
	7.1-3	0.55	1.27	-2.47	8.34
	7.3-4	1.13	1.28	-1.73	3.79
	7.4-6	1.12	0.99	-1.24	3.67
	7.5-8	0.21	1.42	-2.88	4.38
8	8.1-3	1.69	1.20	-1.03	4.57
	8.1-4	0.96	1.47	-2.07	5.08
	8.1-5	1.55	1.57	-2.38	6.54
	8.4-5	1.20	1.15	-1.11	3.30
	8.5-6	2.04	1.17	-1.65	4.79
	8.6-8	2.15	1.01	-0.82	4.25
	8.7-8	2.08	1.16	-1.47	5.84
	8.9	2.95	0.79	1.72	5.69
SM1	BF	2.97	1.66	-1.12	6.22
	CED	2.61	1.13	0.50	4.92
	CO	2.52	1.43	-0.86	7.46
	GPE	2.66	1.19	-0.53	4.89
	ID	2.14	1.48	-1.38	5.62
	IF	2.25	1.28	-0.71	4.92
	LE	2.60	1.30	-2.10	5.17
	Q	3.05	1.49	-0.26	5.16

Grade	Cluster	Mean	Std. Dev.	Min	Max
	REI	2.50	1.05	-1.13	4.65
	SSE	3.00	0.76	1.99	4.52

Table 4-N-4. Average Item Difficulty by Affinity Group for Mathematics

Grade	DOK	Mean	Std. Dev.	Min	Max
3	DOK 1	-2.71	0.57	-4.17	-0.80
	DOK 2	-2.37	0.56	-5.35	-0.91
	DOK 3	-1.66	0.66	-3.02	1.21
4	DOK 1	-2.20	0.61	-3.82	-0.69
	DOK 2	-1.73	0.73	-3.50	2.85
	DOK 3	-0.95	0.70	-3.08	1.02
5	DOK 1	-1.45	0.76	-3.39	0.32
	DOK 2	-1.05	0.81	-3.37	3.82
	DOK 3	-0.17	0.84	-2.14	2.47
6	DOK 1	-0.68	1.37	-5.67	5.58
	DOK 2	-0.19	0.98	-3.00	3.19
	DOK 3	0.78	0.82	-0.56	4.61
7	DOK 1	-0.06	1.37	-2.47	4.64
	DOK 2	0.81	1.21	-2.88	8.34
	DOK 3	1.53	1.11	-0.80	4.16
8	DOK 1	1.07	1.42	-2.38	5.25
	DOK 2	1.69	1.21	-1.79	6.54
	DOK 3	2.63	1.07	-0.10	5.84
SMI	DOK 1	1.85	1.22	-1.13	4.49
	DOK 2	2.56	1.28	-2.10	7.46
	DOK 3	3.17	1.11	0.52	6.03

Appendix 5-A

Test Administration Manual

READINESS
IMPROVEMENT
SUCCESS
EMPOWERMENT

Test Administration Manual

User Guide and Scripts

2020-2021

Published September 4, 2020

Prepared by Cambium Assessment, Inc.

Cambium Assessment

Table of Contents

Utah RISE Assessments

Introduction

Teachers and test administrators (TAs) play a key role in ensuring that students have the directions they need to participate fully in a secure test administration process. This manual provides resources to assist them in establishing and managing a positive student experience in this new test administration environment. Details on the assessments, checklists for test days, instructions for navigating the platform, suggestions for active classroom monitoring, and required standardized testing scripts—these and more are included in the pages that follow.

As required by Board Rule R277-404, all staff members involved in the administration of the RISE assessments must follow the directions for administering the tests as outlined in this document. For questions concerning information presented in this manual or about administration of the RISE assessments, please contact your school administrator or local education agency (LEA) (school district or charter school) assessment director.

Organization of the Test Administration (TA) Manual

This manual includes the following sections:

- **How TAs Proctor Test Sessions in the TA Site**
- **How Students Sign in to the Student Testing Site and Complete Tests**

There is also an Appendix with additional information and instructions.

Please note: To return to the page in this manual that you were on before clicking a link to the appendix, use one of the following keyboard shortcuts: ***Alt*** *+* ***Left Arrow*** *(for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or* ***Command*** *+* ***Left Arrow*** *(for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

Understanding the Online Testing System's Sites

The Online Testing System delivers Utah's online tests and consists of training sites and operational testing sites. The training site function identically to the operational testing sites.

Training Site

- **TA Training Site:** Allows TAs to practice administering tests
- **Student Training Site:** Allows students to practice taking tests online and using test resources/tools. Students can sign in to the testing site with their name and ID or as guests. They can either take proctored tests in sessions created by TAs in the TA Training Site or they can take non-proctored tests.

Operational Testing Sites

- **TA Interface:** Allows TAs to administer operational tests
- **Student Testing Site:** Allows students to take operational tests

Throughout the rest of this manual, "TA Site" refers to both the TA Interface and TA Training Site.

How TAs Proctor Test Sessions in the TA Site

Administering online tests in the test delivery system (TDS) is a straightforward process, and the basic workflow is as follows:

1. The TA selects tests and starts a test session in the TA Site.
2. Students sign in to the Student Testing Site and request approval for tests.
3. The TA reads the appropriate script to the students.
4. The TA reviews students' requests and approves them for testing.
5. Students complete and submit their tests.
6. The TA stops the test session and logs out.

This section describes the following tasks that TAs must perform to successfully administer online tests:

- Selecting Tests and Starting a Test Session
- Approving Students for Testing
- Managing a Test Session

For information about the testing process from a student's perspective, see the section *How Students Sign in to the Student Testing Site and Complete Tests*.

Selecting Tests and Starting a Test Session

The first step in administering online tests is to select the tests that you wish to administer and start a test session. You can select tests and start a test session from the ***Test Selection*** window that opens automatically when you sign in to the TA Site.

Only the tests that you select will be available to students who join your session. You can have only one session open at a time. You cannot reopen closed sessions, but students can resume a test in a new session.

How to Create a New Test Session

1. If the ***Test Selection*** window is not open, click **Select Tests** in the upper-right corner of the TA Site (see Figure 1); otherwise, skip to Step 2.

Figure 1. Select Tests Button

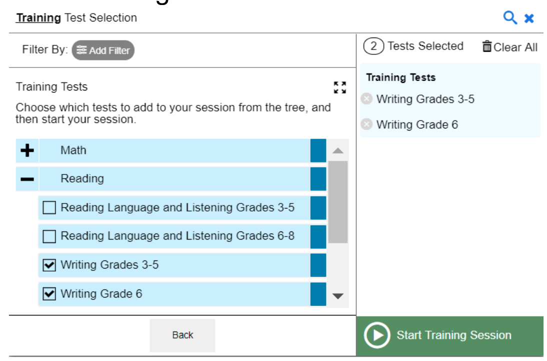
2. To select tests for the session, do one of the following:

   – To select individual tests, mark the checkbox for each test you want to include.

   – To select all the tests in a test group, mark the checkbox for that group.

   – ***The best practice is to select the specific test(s) to be delivered to prevent students from starting an incorrect test.***

Figure 2. Test Selection Window

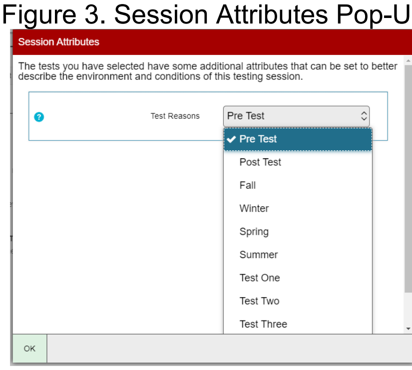


Please note, the ***Training Test Selection*** window color-codes tests and groups them into various categories. A test group may include one or more sub-groups. All test groups and sub-groups appear collapsed by default, and you may have to expand the test group to view individual tests. See Figure 2.

– To expand a test group, click ✚. To collapse an expanded test group, click ▬.

3. A pop-up window will appear prompting you to select a test reason for the session. It is now required for TAs to specify a test reason for each session. Select the appropriate test reason for your session from the drop-down menu (see Figure 3) and then click "OK" to proceed.

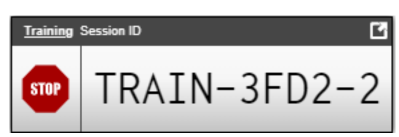
Figure 3. Session Attributes Pop-Up



4. The Session ID will appear on the TA Site. See Figure 4. Provide the Session ID to your students. Please remember to write down the Session ID in case you accidentally close the browser window and need to return to the active test session.

   Note: Session IDs include three parts: the first part will be 'LIVE' for operational tests or 'TRAIN' for training and practice tests.

Figure 4. Test Session ID



5. Click the icon in the upper righthand corner of the Session ID box (see Figure 5) to activate the screensaver (see Figure 6). The screensaver makes the Session ID easy to see as well as hides the TA Interface.

Figure 5. Session ID Screensaver Icon

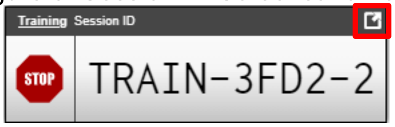
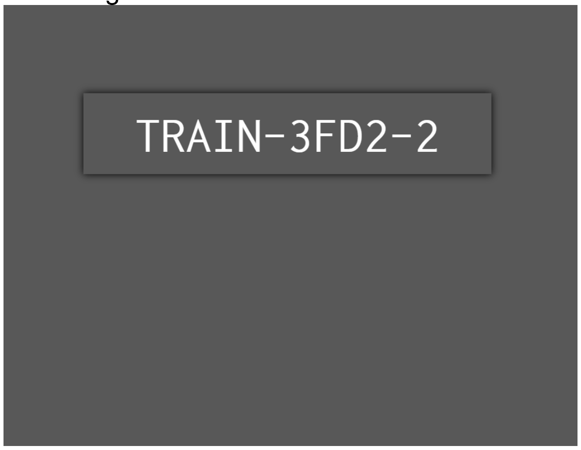


Figure 6. TA Interface Screensaver



How to Add Tests to an Active Test Session

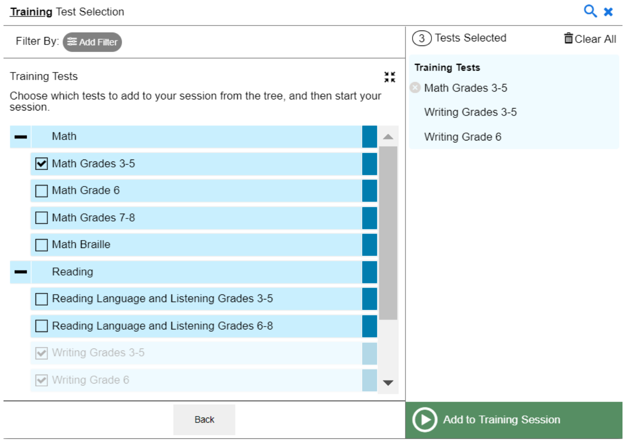
If necessary, you can add additional tests to an ongoing test session.

While you can add tests to an active test session, you cannot remove tests from an active test session.

1. In the upper-right corner of the TA Site, click **Select Tests**.

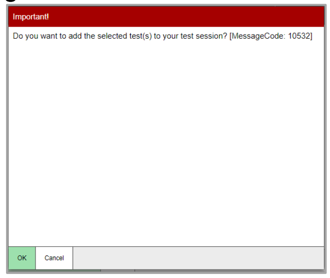
2. In the ***Test Selection*** window (see Figure 7), mark the checkbox for the test(s) you wish to add and click **Add to RISE Live Tests Session** in the lower-left corner. (If you are on the Training and Practice site, this will say **Add to Training Session**).

Figure 7. Add to Session Button



3. In the confirmation message that appears (see Figure 8), click **OK**.

Figure 8. Confirm Test Addition



Approving Students for Testing

After students sign in to the Student Testing Site and select tests, you must verify that their settings and accommodations are correct before approving them for testing. Additionally, the grade 6 mathematics tests include segments requiring TA approval. You must follow the same procedure you do for approving students to enter whole tests when approving students' entry to test segments.

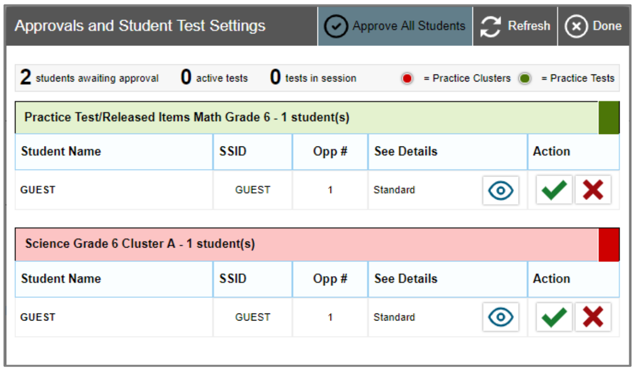
Figure 9. Students Awaiting Approval

When students are awaiting approval, the **Approvals** button next to the Session ID becomes active and shows you how many students are awaiting approval (see Figure 9). The **Approvals** notification updates regularly, but you can also click in the upper-right corner to update it manually.

How to Approve Students for Testing

1. Click **Approvals**. The ***Approvals and Student Test Settings*** window appears, displaying a list of students grouped by test (and test segment, if applicable). See Figure 10.

Figure 10. Approvals and Student Test Settings Window



2. To check a student's test settings and accommodations, click for that student. The student's information appears in the Test Settings window (see Figure 11). This window groups test settings by their test.

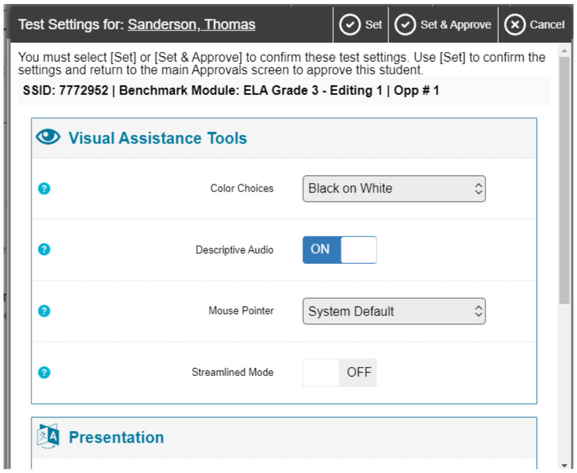
   a. If any settings are incorrect, update them as required. Students should not begin testing until their settings are correct.

      - Editable settings must be updated in this window, while non-editable settings must be updated in the Test Information Distribution Engine (TIDE).

   b. Do one of the following:

- To confirm the settings, click **Set**. With this option, you must then separately approve the student for testing (see Step 5).
- To confirm the settings and approve the student simultaneously, click **Set & Approve**.

Figure 11. Test Settings Window for a Selected Student



- To return to the ***Approvals and Student Test Settings*** window without confirming settings, click **Cancel**.

3. Repeat Step 2 for each student in the ***Approvals and Student Test Settings*** list. Since the ***Approvals and Student Test Settings*** window does not automatically refresh, click **Refresh** at the top of the window to update the list of students awaiting approval. See Figure 10.

4. If you need to deny a student access to testing, do the following (otherwise skip to Step 5):

a. Click ✖ for that student.
b. *Optional:* In the window that appears, enter a brief reason for denying the student.
c. Click **Deny**. The student receives a message explaining the reason for the denial and is logged out. The student can request access to the test again.

5. If you wish to approve students directly from the ***Approvals and Student Test Settings*** window, do the following:

- To approve individual students, click ✔ for each student.
- To approve all students for a given test or segment, click **Approve All Students** for that test or segment.

Managing a Test Session

After you approve students for testing, you can monitor the testing progress for each student logged in to your session, approve a student's print request for an accommodated test, and pause a student's test if necessary.

How to Monitor Students' Test Progress

You can monitor the testing progress for each student logged in to your session from the table(s) displayed on the TA Site.

At the start of the test, all your students will be listed in the **Tests without issue** table. If TDS detects that a student requires assistance, such as a student with a pending print request, or if a student's test has been paused due to an environment security breach or due to the launching of a forbidden application, the **Tests with potential issues** table appears at the top. See Figure 12. The top table lists the students who need intervention, and the bottom table lists the other students in your session.

The table(s) refresh at regular intervals, but you can also refresh them manually by clicking the refresh icon in the upper-right corner of the TA Site. You can also sort the tables by a given column by clicking the column header. See Table 1 on the following page.

Figure 12. Table(s) for Monitoring Students' Test Progress

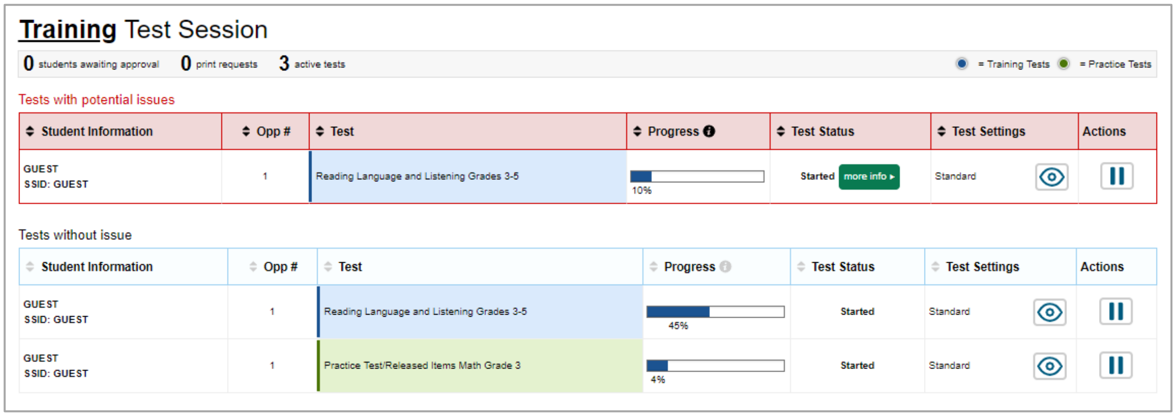


Table 1 below describes each column in the tables for monitoring students' test progress.

Table 1. Columns in the Table(s) for Monitoring Students' Test Progress

Column	Description
Student Information	Name and SSID of the student in the session
Opp #	Opportunity number for the student's selected test
Test	Name of the test the student selected. For segmented tests, this column also displays the name of the test segment that the student is currently testing.
Progress	Indicates the student's test progress. It will display a progress bar to indicate how far the student has progressed in the test. The progress bar indicates the percentage of questions the students have answered out of the total number of questions.
Test Status	Current status for each student in the session. For more information about the statuses in this column, see Table 2. If TDS detects that a student may be experiencing technical difficulties or requires assistance (e.g., if the student is experiencing connection issues, has a pending print request, has paused his test), a "more information" icon more info ▸ is displayed in this column. When you hover over the icon, a message is displayed providing details about the issue.
Test Settings	This column displays one of the following: • **Standard:** Default test settings are applied for this test opportunity. • **Custom:** One or more of the student's test settings or accommodations differ from the default settings. To view the student's settings for the current test opportunity, click .
Actions	Allows you to perform any available actions for an individual student's test. The Pause button in this column pauses the student's test. When a test pauses, this column displays an information button that opens a pop-up message explaining how the test became paused. However, the information button is not displayed if the TA pauses a student's test. A Printer button appears in this column when the student requests a printout of test material; this option is available to students with the Print-on-Request accommodation. For information on how to approve students' print requests, see the following section, "How to Approve a Student's Print Request."

Table 2 below describes the codes in the Test Status column of the table(s) for monitoring students' test progress.

Table 2. Student Testing Statuses

Column	Description
Approved	You approved the student, but the student did not yet start or resume the test.
Started	Student has started the test and is actively testing.
Review	Student has visited all questions and is currently reviewing answers before completing the test.
Completed	Student has submitted the test. The student can take no additional action at this point.
Submitted	Test was submitted for quality assurance review and validation.
Reported	Test passed quality assurance and is undergoing further processing.
Paused*	Student's test is paused. The time listed indicates how long the test has been paused.
Expired*	Test was not completed by the end of the testing window, and the opportunity expired.
Pending*	Student is awaiting approval for a new test opportunity.
Suspended*	Student is awaiting approval to resume a test opportunity.

*Appears when the student is not actively testing. The student's row grays out in such cases.

How to Approve a Student’s Print Request

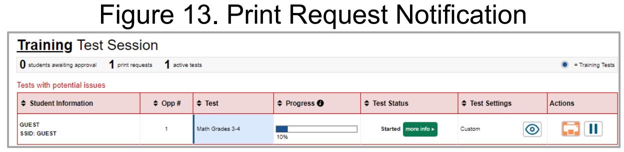
Students with the Print-on-Request accommodation can request printouts of test passages and questions. You must view and approve these print requests. When students send print requests, the request notification appears in the **Tests with potential issues** table (see Figure 13).

You can also view a list of every print request you approved during the current session. For more information, please refer to the “Print Approved Requests Information” section in the appendix of this manual.

*Please note: To return to this page after following this link to the appendix, use one of the following keyboard shortcuts: **Alt** + **Left Arrow** (for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or **Command** + **Left Arrow** (for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

1. Click in the Actions column of the **Tests with potential issues** table for a student. The request notification appears for students who have sent print requests.

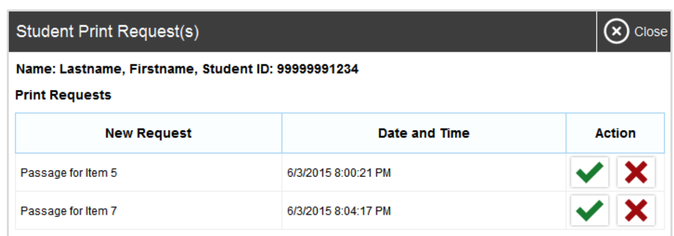
Figure 13. Print Request Notification



2. Review the request in the ***Student Print Request(s)*** window (see Figure 14) and do one of the following:

   a. To approve the request, click . A cover sheet appears in a new browser window.

Figure 14. Student Print Request Window



   b. To deny the request, click . In the window that appears, enter a brief reason for denying the request and click **Deny**. Do not proceed to Step 3.

3. In the new window, click **Print** to open the printer dialog box.

4. Click **OK** to print the requested test elements.

How to Pause a Student’s Test

You can pause a student’s test if necessary.

1. In the Actions column of the table(s) for monitoring students’ test progress, click for the student whose test you wish to pause.

2. Click **Yes** to confirm. The Online Testing System logs the student out.

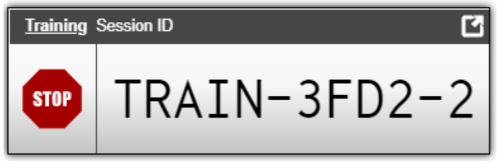
How to Stop a Test Session

When students finish testing, or the current testing timeslot is over, you should stop the test session. Stopping a session automatically logs out all the students in the session and pauses their tests.

Once you stop a test session, you cannot resume it. To resume testing students, you must start a new session. Please note, the Online Testing System automatically logs you out after 20 minutes of both user and student inactivity in the session. This action automatically stops the test session.

In the upper-right corner of the TA Site, click STOP (see Figure 15), then click **OK** in the confirmation message that appears. The test session stops.

Figure 15. Stop Test Session Button



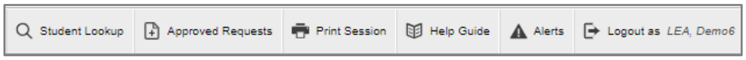
How to Log Out of the Test Administration Site

You should log out of the TA Site only after stopping a test session to prevent stopping a test session that is in progress. Please note that navigating away from the TA Site also logs you out. If you need to access another application while administering tests, open it in a separate browser window.

If you log out from another RISE system, such as TIDE, you will also log out of the TA Site.

1. In the banner, click (see Figure 16). A warning message appears.

Figure 16. Log Out Button

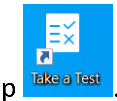


2. In the warning message, click **Yes**. The RISE Portal appears.

How Students Sign in to the Student Testing Site and Complete Tests

This section describes the student sign-in process for the Student Testing Site that students follow when starting a new test or resuming a paused test. It also describes how students can view stimuli, respond to questions, pause a test, review previously answered questions, and submit a test.

How Students Sign in and Select Tests

When testing, students must sign in to the appropriate testing site. For sessions created in the TA Interface, students sign in to the Student Testing Site on the Secure Browser or Take a Test  app 

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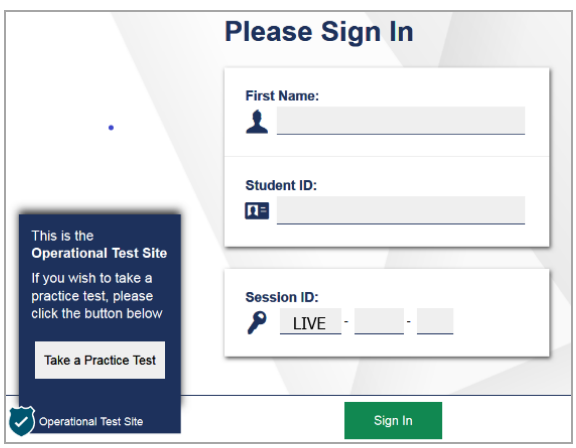
NOTE: Students are currently permitted to take specific Benchmark modules remotely without the Secure Browser; students are **not** permitted to take any Interim or Summative assessment in a remote setting. For a list of the Benchmark modules that are permitted to be accessed remotely, see the Benchmark Modules Directory on the RISE portal. For instructions on how to access these Benchmark modules remotely without the Secure Browser, see the *Quick Guide to Administer Benchmarks Remotely* on the RISE portal.

Students may also take training tests in the Student Training Site to familiarize themselves with the online testing process. Aside from the sign-in process, the Student Training Site has the same appearance and functionality as the Student Testing Site. For information on how students sign in to the Student Training Site, please see the relevant "Training Test Site Student Sign-in Process" section in the appendix of this manual.

*Please note: To return to this page after following this link to the appendix, use one of the following keyboard shortcuts: **Alt** + **Left Arrow** (for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or **Command** + **Left Arrow** (for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

How to Sign in to the Secure Browser or Take a Test App

Figure 17. Student Testing Site Student Sign-In Page



1. Launch the Secure Browser or Take a Test app on the student's testing device. The ***Student Sign-In*** page appears (see Figure 17).
2. Next, students enter the following information:
   a. In the *First Name* and *SSID* fields, students enter their first name and SSID as they appear in TIDE.
   b. In the *Session ID* field, students enter the Session ID as it appears on the TA Site. The first part of the three-part session ID that indicates whether a student is on the Student Testing Site or the Student Training Site is pre-filled.
3. Students select **Sign In**. The ***Is This You?*** page appears.

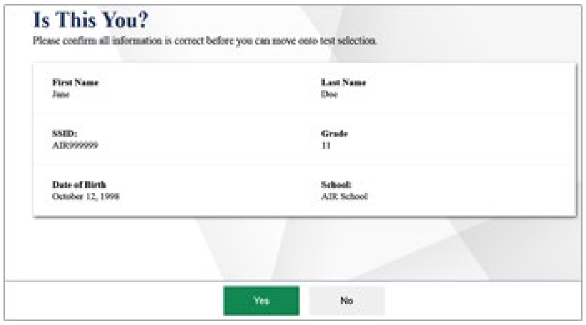
How to Verify Student Information

After signing in to the Student Testing Site, students must verify their personal information on the ***Is This You?*** page (see Figure 18).

If all the information on the ***Is This You?*** page is correct, the student selects **Yes** to proceed.
If any of the information is incorrect, the student must select **No**.

You must notify the appropriate school personnel that the student's information is incorrect. Incorrect student demographic information must be updated before the student begins testing

Figure 18. Is This You? Page



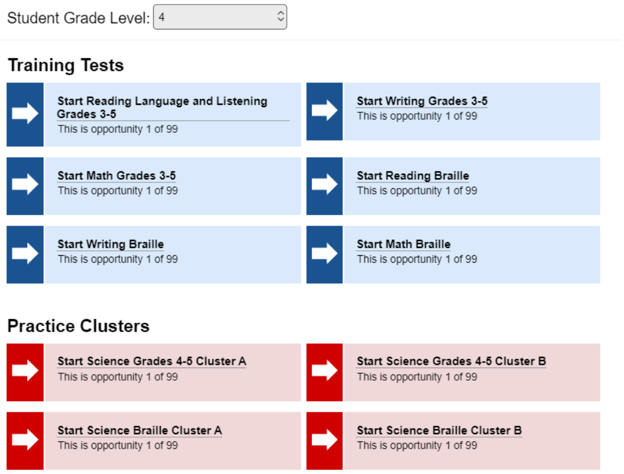
How to Select a Test

Students can select their tests from the ***Your Tests*** page that appears after students verify their personal information (see Figure 19). The ***Your Tests*** page displays all the tests that a student is eligible to take. Students can select only tests that are included in the session and still need to be completed.

If a student is eligible for only one test, the ***Your Tests*** page is skipped. The test is automatically selected, and the student is taken directly to the ***Waiting for Approvals*** page.

1. From the ***Your Tests*** page that lists a student's eligible tests in color-coded categories, the student selects the name of the test.
   – If a student's required test is inactive or not displayed, the student should log out. You should verify the test session includes the correct tests and add additional tests, if necessary.

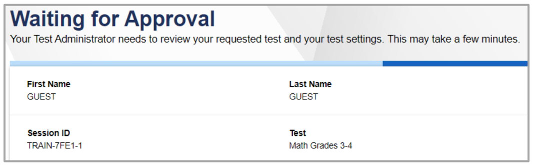
Figure 19. Your Tests Page (Training and Practice Tests)



2. The student's request is sent to the TA for approval, and the student is taken to the ***Waiting for Approval*** page (see Figure 20). After you approve the student for testing, the student can proceed to the next step:

- If starting a new test, a student must complete the login process before beginning testing.
- If resuming a paused test, the student will be taken directly to the test page where the student stopped the test based on the applicable pause rules.

Figure 20. Waiting for Approval Page



How to Check Student Device Functionality

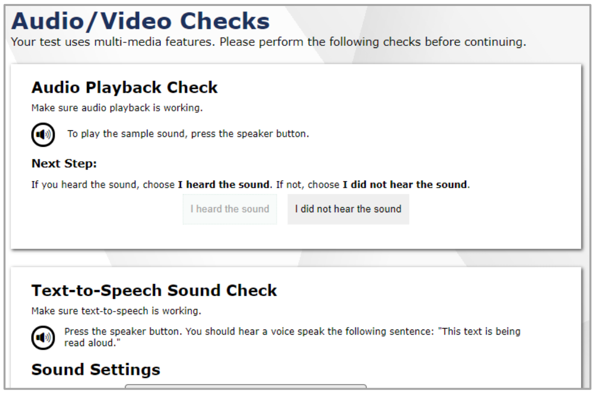
Depending on the test content and the specified test settings, students may need to verify that their testing device is functioning properly from the ***Audio/Video Checks*** page (see Figure 21). If a test does not require functionality checks, this page is skipped.

1. From the ***Audio/Video Checks*** page that displays each required functionality check in its own panel, the student verifies each functionality as explained below.

2. Once all functionality checks have been verified, the student selects **Continue** to proceed to the ***Instructions and Help*** page.

To proceed without verifying any functionality, the student selects **Skip TTS Checks** (if available) at the bottom of the page, and then selects **Yes** in the affirmation message that appears.

Figure 21. Audio/Video Checks Page



How to Check Text-to-Speech Functionality

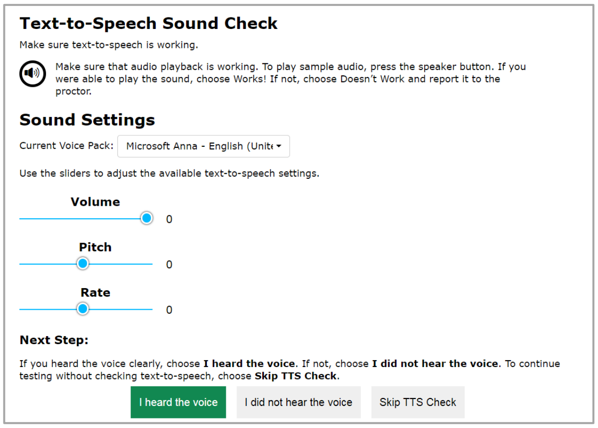
The ***Text-to-Speech Sound Check*** panel appears for all students (see Figure 22). Students can use TTS only within the Secure Browser, a supported Chrome or Firefox browser, or the Take a Test app.

Please note: If TTS does not work, students should log out. You can work with students to adjust their audio or headset settings or move them to another device.

From the ***Text-to-Speech Sound Check*** panel, students select and listen to the audio.

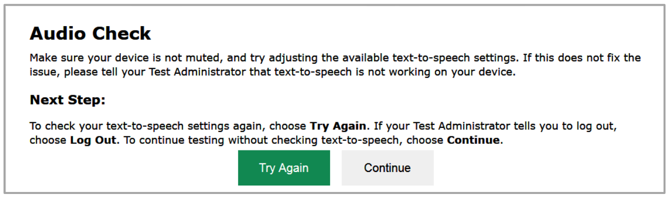
- If the voice is clearly audible, students select **I heard the voice**. A green check appears at the upper-right corner of the panel, and students can proceed to the next functionality check.
- If the voice is not clearly audible, students adjust the settings using the sliders and select to listen to the audio again.

Figure 22. Text-to-Speech Sound Check Panel



- If students still cannot hear the voice clearly, they select **I did not hear the voice** to open the ***Audio Check*** panel (see Figure 23).
  - Students can select **Try Again** to return to the ***Text-to-Speech Sound Check*** panel and retry.

Figure 23. Audio Check Panel



  - Students can select **Continue** to skip verifying the TTS functionality. Students can also do this from the ***Text-to-Speech Sound Check*** panel by selecting **Skip TTS Check**.

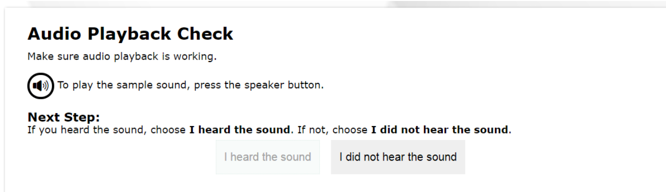
How to Check Audio Playback Functionality

The ***Audio Playback Check*** panel appears for tests with listening questions and allows students to verify that they can hear the sample audio.

Please note: If the audio does not work, students should log out. You should troubleshoot the device and headphones or move the student to another device with working audio.

From the ***Audio Playback Check*** panel (see Figure 24), students select and listen to the audio.

Figure 24. Audio Playback Check Panel



- If the sound is clearly audible, students select **I heard the sound**. A green check appears at the upper-right corner of the panel, and students can proceed to the next functionality check.
- If the sound is not clearly audible, students select **I did not hear the sound** to open the ***Sound Check: Audio Problem*** panel.
  - Students can select **Try Again** to return to the ***Audio Playback Check*** panel and retry.

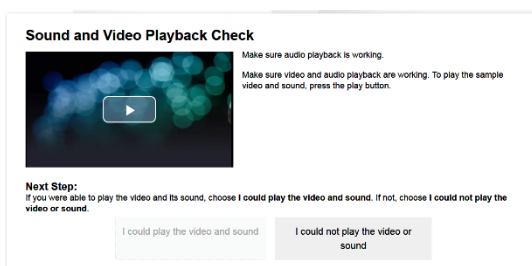
How to Check Sound and Video Playback Functionality

The ***Sound and Video Playback Check*** panel appears for tests where the American Sign Language accommodation is applied and allows students to verify that they can view the sample video and hear its associated sound.

Please note: If the video or audio does not work, students should log out. You should troubleshoot the device and headphones or move the student to another device with working audio and video.

From the ***Sound and Video Playback Check*** panel (see Figure 25), students select to play the video and sound.

Figure 25. Sound and Video Playback Check Panel



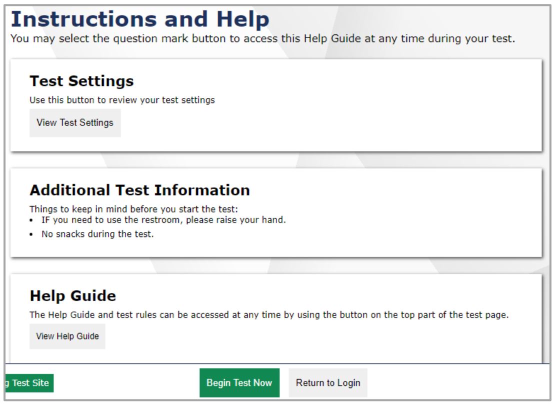
- If the video can be played and the sound is clearly audible, students select **I could play the video and sound**. A green check appears at the upper-right corner of the panel and students can proceed to the next functionality check.
- If students are not able to play the video or hear the sound, students select **I could not play the video or sound** to open the ***Video Playback Problem*** panel.
  - Students can select **Try Again** to return to the ***Sound and Video Playback Check*** panel.

How to View Instructions and Begin Testing

The ***Instructions and Help*** page (see Figure 26) is the last step of the sign-in process. Students may review this page to understand how to navigate the test and use test resources/tools. Students may also review their test settings from this page. The TA needs to read aloud all scripting prior to approving students for testing.

1. *Optional*: To view the help guide, students select **View Help Guide**. To close the window, students select **Back**.
2. *Optional*: To review their test settings, students select **View Test Settings**. To close the window, students select **OK**.
3. To start the test, students select **Begin Test Now**.

Figure 26. Instructions and Help Page



How Students Navigate the Student Testing Site

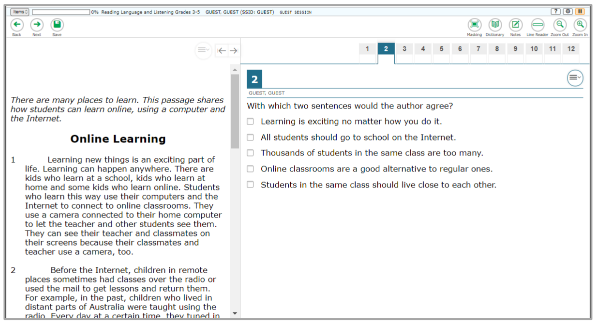
A test page (see Figure 27) can include the following sections:

The *Global Menu* section displays the global navigation and tool buttons. It also includes the **Questions** menu, test information, help button, pause button, system settings button, and timer (if available).

The *Stimulus* section, which appears only for questions associated with a stimulus, contains the stimulus content, context menu, and the reading mode button.

The *Question* section contains one or more test questions (also known as “items”). Each question includes a number, context menu, stem, and response area. Each question also displays the student’s name and the question’s most recent save date.

Figure 27. Test Layout



The following sections provide details about how to navigate the Student Testing Site.

How to Navigate Between Items

Some test pages may have only one question and others may have more or may consist of multiple parts that students must answer.

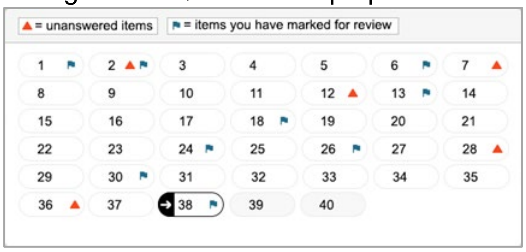
- After students respond to all the questions on a page, they select **Next** in the upper-left corner to proceed to the next page (see Figure 28).
- To navigate to a previous question in a test, students select **Back** (see Figure 28).

Figure 28. Navigation Buttons

To jump directly to an item, select an item number from the pop-up window that appears when you select the **Questions** menu (see Figure 29).

- If an item has been marked for review, is displayed next to the item.
- If an item has not been answered, is displayed next to the item.

Figure 29. Questions Pop-up Window



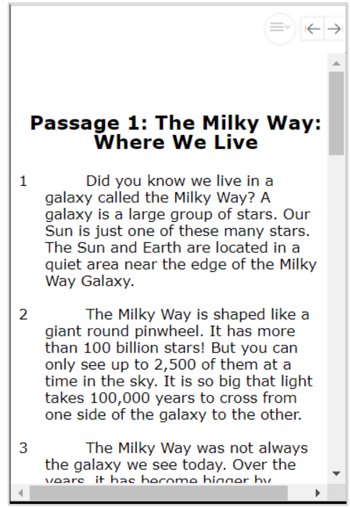
How to View Stimuli

When a test question is associated with a stimulus, students should review that stimulus before responding to the question. A stimulus is a reading passage or other testing material (such as a video or graphic) that students review in order to answer associated questions.

Reading Passages: When the stimulus is a reading passage (see Figure 30), the content is paginated.

- To expand or contract the reading passage, students can click on the right and left arrows in the upper right-hand corner of the passage.
- Students can use the passage scroll bar to view the entire passage or multiple passages.

Figure 30. Reading Passage



Videos: When the stimulus is a video (see Figure 31), students can use standard video features to control the playback.

- To play a video, select in the lower-left corner.
- To jump to a different point in the video, drag the slider to the required location.
- To adjust the speed at which the video plays, select 1x, and then select the required speed from the menu that appears.

Figure 31. Video Playback Features

- To mute or unmute the video, select in the lower-right corner.
- To expand the video to full screen mode, select in the lower-right corner. To exit full screen mode, select again.

How to Respond to Test Questions

The items presented in TDS are of various types, and students may need to respond to them differently. Students can use the Student Training Site to familiarize themselves with the question types that may appear on their operational tests.

All responses are saved automatically. Students can also manually save their responses to questions by selecting **Save** in the upper-left corner.

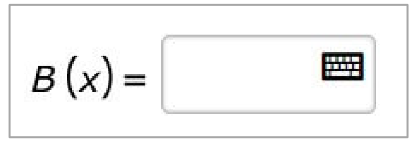
Test questions may require students to do any of the following tasks:

Select one or more choices from a list of answer options.

- For multiple-choice items, students can re-click a selected radio button to deselect the response option (provided this feature is enabled).

Use an on-screen keypad (see Figure 32) to generate an answer. Students can select in the answer space to open the keypad.

Figure 32. Answer Space with Keypad Button



Select graphic objects or text excerpts.
Place points, lines, or bars on a graph.
Drag and drop text or graphic objects.
Enter text in a text box or table.
Match answer options together.
Modify a highlighted word or phrase in a reading selection.
Enter input parameters to run an on-screen simulation.
Copy content from a passage to a text box.
Expand categories and select options within them.

How to Pause Tests

Students can pause the test at any time. Pausing a test logs out the student. To resume testing, students must repeat the sign-in process.

- To pause a test, students select **Pause** in the global menu and then select **Yes** in the confirmation message that appears.

Please note: If students are testing on Chromebooks, please ensure that they pause the test before closing the lid of the Chromebook. If the lid is closed before the test pauses, whomever opens the Chromebook next will be able to see the last question that the student was viewing (and any response they entered).

How Students Use Testing Resources/Tools

A number of testing resources/tools are available for students in TDS. Some resources/tools are available for all tests, while others are available only for a particular subject, accommodation, or type of question. There are primarily three types of test resources/tools available:

Resources/Tools Set for the Student: These resources/tools are set by users in TIDE or in the TA interface when approving the test and will be applied to all test screens.
Global resources/tools: These resources/tools appear in the global menu at the top of the test page and are available to all students for all items in a test.
Context Menu resources/tools: These resources/tools are specific to the passage or question being viewed.

Students can access resources/tools using a mouse or keyboard commands. For information about keyboard commands, please see the relevant “Keyboard Commands in the Student Testing Site” section in the appendix of this manual.

*Please note: To return to this page after following this link to the appendix, use one of the following keyboard shortcuts: **Alt** + **Left Arrow** (for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or **Command** + **Left Arrow** (for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

How to Set Resources/Tools for the Student

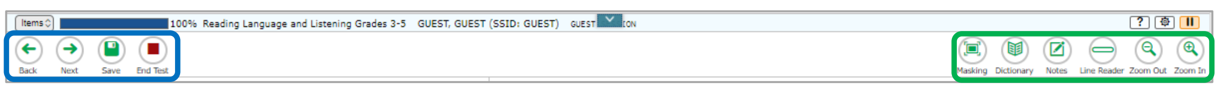
A number of resources/tools can be set in TIDE or in the TA interface when approving the test. Best practice is to have the students use the training tests to determine their preferences and then set all resources/tools and accommodations in TIDE before students take any operational tests.

Tool Name	Instructions
Mouse Pointer	Sets the size and color of the mouse pointer.
Color Choices	Sets the color of the text and the background.
Streamlined Mode	Streamlined mode removes frames from the item and stimulus formatting and is required for any tests using a screen reader or for students with a visual impairment when a high magnification (print size) is set.
Print Size	Sets the zoom level for all test content. Zoom levels of 5X or more require streamlined mode to be turned on.

How to Use Global Resources/Tools

The global menu (see Figure 33) consists of navigation buttons on the left and tool buttons on the right. Table 3 on the next page lists the resources/tools available in the global menu.

Figure 33. Global Menu



To use a global test tool, select the button for the tool. The selected test tool activates.

Table 3. Global resources/tools

Tool Name	Instructions
Calculator	To use the on-screen calculator, select **Calculator** in the global menu.
Dictionary	To look up definitions and synonyms in the Merriam-Webster dictionary or thesaurus, select **Dictionary** in the global menu.
Help ?	To view the on-screen ***Help Guide*** window, select the question mark ? button in the upper-right corner.
Line Reader	To highlight an individual line of text in a passage or question, select **Line Reader** in the global menu. This tool is not available while the Highlighter tool is in use.
Masking	The Masking tool temporarily covers a distracting area of the test page. To use this tool: • Select **Masking** in the global menu. • Click and drag across the distracting area. • To close the Masking tool, select **Masking** again. To remove a masked area, select **X** in the upper-right corner of that area.
Notes	To enter notes in an on-screen notepad, select **Notes** in the global menu. The text entered in this tool cannot be copied and pasted into an item's response area.
Pause	To pause a test, select . If you pause the test, you will be logged out.
Print Page	For students with the Print-on-Request accommodation, to print the entire test page, select **Print Page** in the global menu.
Print Item	For students with the Print-on-Request accommodation, to send a print request for an individual question, select **Print Item** from the context menu. After sending the request, a printer icon appears next to the question number on the test page.
Print Passage	For students with the Print-on-Request accommodation, to print a reading passage, select **Print Passage** in the global menu.
Scoring Guide	To view the on-screen scoring guide, select **Scoring Guide** in the global menu.
System Settings	To adjust audio volume during the test, select in the upper-right corner. Students testing with Text-to-Speech (TTS) can also use this tool to adjust TTS settings. Students testing on mobile devices cannot use this tool to adjust volume. To adjust audio volume on mobile devices, students must use the device's built-in volume control.
Zoom Buttons	To enlarge the text and images on a test page, select **Zoom In** . Multiple zoom levels are available. To undo zooming, select **Zoom Out** .

How to Use the Masking Tool

The Masking tool allows students to hide distracting areas of the test page.

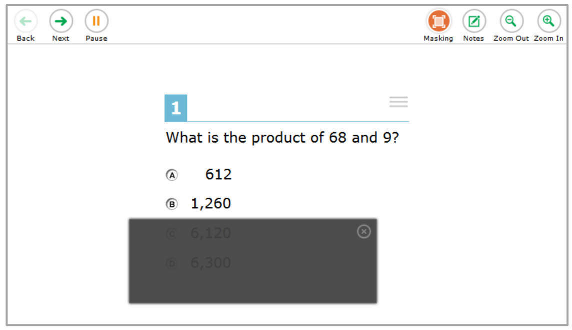
To mask an area of a test page:

a. Select **Masking** in the global menu. The button becomes orange.

b. Click and drag across the distracting area of the test page. The selected area becomes dark gray (see Figure 34). The tool remains active until you deactivate it.

To deactivate the masking tool, select **Masking** in the global menu again. The button becomes green. Please note that masked areas will remain on the screen until you remove them.

Figure 34. Test Page with Masked Area



To remove a masked area from a test page, select **X** in the upper-right corner of a masked area.

How to Use Context Menu Resources/Tools

A test page may include several elements, such as the question, answer options, and stimulus. The context menu for each element contains resources/tools that are applicable to that element (see Figure 35 and Figure 36). Table 4 on the next page lists the available context menu resources/tools.

Figure 35. Context Menu for Questions

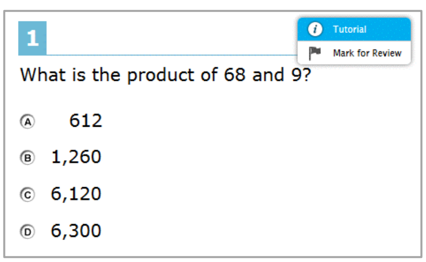
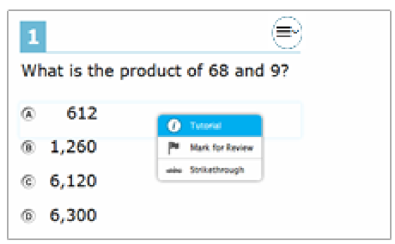


Figure 36. Context Menu for Answer Options



If a question has multiple parts, a context menu may be available for each part of the question. In such cases, the active context menu (i.e., the context menu for the item or stimulus currently in focus) appears enabled while the other context menus look grayed out.

Furthermore, when enabled, the item number and context menu of the item a student is attempting remains visible on the screen even when scrolling through the item's content to allow easy access to an item's context menu.

To use a context menu tool for a stimulus or question, open the context menu by clicking the context menu or by right-clicking the required elements, and then select the tool.
To use a context menu tool for answer options, open the context menu for answer options and select the required tool. To open the context menu for answer options, do one of the following:

- If you are using a **two-button mouse**, right-click an answer option.
- If you are using a **single-button mouse**, click an answer option while pressing **Ctrl**.
- If you are using a **Chromebook**, click an answer option while pressing **Alt**.
- If you are using a **tablet**, tap the answer option and then tap the context menu button (this selects the answer option until you select a different option).

Table 4. Context Menu resources/tools

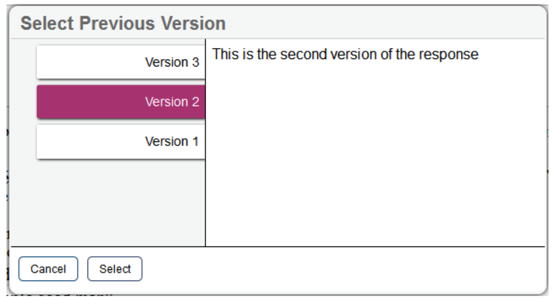
Tool Name	Instructions
American Sign Language	For students with the American Sign Language accommodation (ASL), to watch videos that translate test content into American Sign Language (ASL). *To view ASL videos:* From the context menu, select **American Sign Language**. • If only one ASL video is available, the video opens automatically. If multiple ASL videos are available, sign language ( ) icons appear next to the test content for each video. Select the icon for the test content you wish to translate into ASL.
Glossary (Word List)	To open the glossary, click a word or phrase that has a border around it.
Highlighter	To highlight text, select the text on the screen and then select **Highlight Selection** from the context menu. If multiple color options are available, select an option from the list of colors that appears. To remove highlighting, select **Reset Highlighting** from the context menu. Text in images cannot be highlighted. This tool is not available while the Line Reader tool is in use.
Mark for Review	To mark a question for review, select **Mark for Review** from the context menu. The question number displays a flap in the upper-right corner and a flag icon appears next to the question number on the test page. The **Questions** pop-up window also displays a flag icon next to the question number.
Select Previous Version	To view and restore responses previously entered for a Text Response question, select the **Select Previous Version** option from the context menu. A list of saved responses appears. Select the appropriate response and click **Select**.
Strikethrough	For selected-response questions, you can cross out an answer option to focus on the options you think might be correct. There are two options for using this tool: • Option A: a. To activate Strikethrough mode, open the context menu and select **Strikethrough**. b. Select each answer option you wish to strike out. c. To deactivate Strikethrough mode, press **Esc** or click outside the question's response area. • Option B: Right-click an answer option and select **Strikethrough**.
Text-to-Speech	To listen to passages and questions, select a **Speak** option from the context menu. Note: if the descriptive audio accommodation is set in TIDE, the system will also read the interactive answer spaces.
Tutorial	To view a short video demonstrating how to respond to a particular question type, select **Tutorial** from the context menu.

How to Use the Select Previous Version Tool

The Select Previous Version tool allows students to view and restore responses they previously entered for a text response question. For example, if students type a response, click **Save**, delete the text, and enter new text, they can use this tool to recover the original response. Please note that if the student's test pauses, any responses entered prior to pausing will no longer appear in the ***Select Previous Version*** window.

1. To recover a previously entered response, select the **Select Previous Version** option from the context menu. The ***Select Previous Version*** window appears (see Figure 37), listing all the saved responses for the question in the left panel.
2. Select a response version from the left panel. The text associated with that response appears in the right panel.
3. Click **Select**. The selected response appears in the text box for the question.

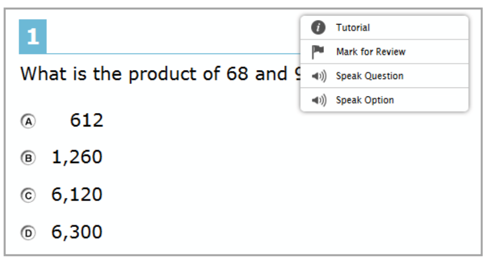
Figure 37. Select Previous Version Window



How to Use the Text-to-Speech Tool

Students testing with TTS can listen to writing passages, questions, and answer options using the TTS options available in the selected element's context menu. Text-to-Speech will not read reading comprehension passages or excerpts. If a student is using Text-to-Speech tracking, the words become highlighted as they are read aloud. TTS is available only when using the Secure Browser or a supported Chrome or Firefox browser.

Figure 38. TTS Options for Questions



To listen to a passage, students open the passage context menu (see Figure 38) and select a **Speak** option. Students can also select a portion of text to listen to, such as a word or phrase. To do this, students select the text, open the passage context menu, and select **Speak Selection**.

– Please note that when listening to passages, students can pause TTS and then resume it at the point where it was paused. While this functionality is available on Windows, Mac, and iOS, it is not available on Chrome OS. Students testing on a Chrome OS can resume a paused TTS passage by selecting the remaining text to be read aloud and selecting **Speak Selection** from the context menu.

To listen to a question with its answer options or just each answer option, students open the question context menu and select one of the following **Speak** options:

– To listen to a multiple-choice question and all answer options, students select **Speak Question**.

- To listen to only an answer option, select **Speak Option** from the context menu and then select the answer option. Students could also right-click the answer option and select **Speak Option**.

How to Use the Expand Buttons

In addition to the global resources/tools and context menu resources/tools, there are some expand buttons that may be available to students depending on the test page layout. You can use them to expand the passage section or the question section for easier readability.

To expand the passage section, select the right arrow icon below the global menu. To collapse the expanded passage section, select the left arrow icon in the upper-right corner.
To expand the question section, select the left arrow icon below the global menu. To collapse the expanded question section, select the right arrow icon in the upper-left corner.

How Students Complete a Test

After students have completed their test, they need to submit their test.

How to Complete a Grade 6 Mathematics Test Segment

In the grade 6 mathematics segmented tests, the ***End Segment*** page appears after students finish the last question in a segment where students can review questions from the current segment or proceed to the next segment (see Figure 39).

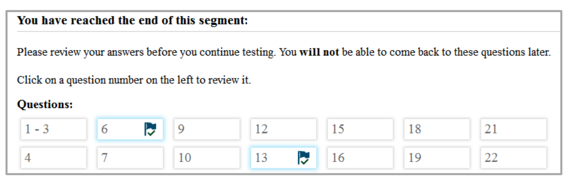
Please note that students cannot return to the segment after selecting **Next**. The TA will then need to approve the student to begin the second segment.

To review questions, students select a question number.

- A flag ( ) icon appears for any questions marked for review. A warning ( ) icon appears for any unanswered questions.

To move to the next segment, students select **Next** in the global menu.

Figure 39. End Segment Page



How to Submit a Test

To complete the testing process, students must submit their tests when they are finished answering questions. Note: The End Test button will be available only once a student has responded to all questions on the test or segment.

Please note that once students submit their tests, they cannot return to the test or modify answers.

1. Students select **End Test** in the upper-left corner, which appears after students respond to the last test question (see Figure 40). A confirmation message appears.

2. Students select **Yes**. The ***End Test*** page appears, allowing students to review answers and submit the test for scoring (See Figure 41).

   – A flag ( ) icon appears for any questions marked for review. A warning ( ) icon appears for any unanswered questions.

3. *Optional*: To review previous answers, students select a question number. When finished reviewing, they can return to the ***End Test*** page by selecting **End Test** again.

4. To submit the tests, students select **Submit Test**, then select **Yes** in the confirmation message that appears. The ***Your Results*** page appears (see Figure 42), displaying the student's name, the test name, and the completion date.

5. To exit the Student Testing Site, students select **Log Out,** and then close the Secure Browser.

Figure 40. Global Menu with End Test Button

Figure 41. End Test Page

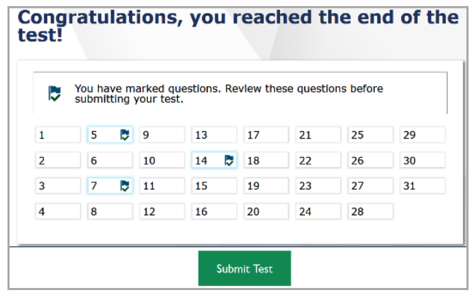
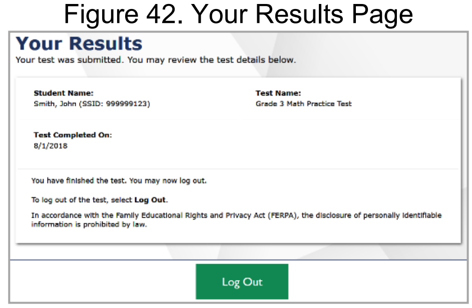


Figure 42. Your Results Page



Resources/Tools and Accommodations

Students may access and use a variety of resources/tools for any RISE Assessment. Students should be familiar with and be able to use these resources/tools prior to taking an assessment. It is recommended that students gain this familiarity by accessing and using these features with the RISE Training Tests available through the RISE Portal.

Most Utah students are able to participate in the RISE Assessments through accessing available resources/tools. However, to meet the needs of some students, assessment accommodations are allowed in specific situations in order to enable students to better demonstrate their knowledge.

These decisions apply to:

- Students with an Individualized Educational Program (IEP)
- Students with a Section 504 Plan
- Students who are English Learners (EL)

Accommodations are determined by an EL, IEP, or Section 504 Plan team. Federal and state laws require that all students enrolled in public schools participate in assessments designed to provide accountability for the effectiveness of instruction in schools. These include the Every Student Succeeds Act (ESSA) and the Individuals with Disabilities Education Improvement Act of 2004 (IDEA). Therefore, all students are expected to participate in the state accountability system, including students who are ELs, students with an IEP, and students with a Section 504 Plan.

Decisions regarding accommodations and modifications must be made by an EL, IEP, or Section 504 Plan team and documented in the student's file. EL team members, IEP team members, and Section 504 Plan team members must actively engage in a planning process that addresses the assurance of the provision of accommodations to facilitate student access to grade-level instruction and state assessments. **Individual teachers may not make decisions regarding assessment accommodations at the time of test administration. These decisions must be made in advance by the appropriate team.**

To obtain detailed information about the official state policy for assessment accommodations, refer to the USBE Special Education website: https://schools.utah.gov/specialeducation/resources/assessment?mid=3780&tid=0

For assistance with questions about special education accommodations, contact Tracy Gooley at tracy.gooley@schools.utah.gov

Student Test Settings

Test settings, located in the Test Information Distribution Engine (TIDE), is where online accessibility resources/tools and/or accommodations that need to be enabled for a student during a testing session are identified. The test settings simplify the task of maintaining student records by allowing district or school personnel to provide information directly in TIDE. This information will direct a student to a specific form or set of items. Accommodations are set based on a student's IEP, Section 504 Plan, or EL plan. Online resources/tools are available based on student preference.

Resources/tools and accommodations must be enabled separately for each content area. Once accommodations have been set in TIDE, they are available on all applicable RISE assessments, including the Benchmark Modules, Interim, and Summative assessments.

For detailed instructions on enabling online accessibility resources/tools and/or accommodations in TIDE, see the *TIDE User Guide*, found at UtahRISE.org.

Online Resources/Tools

The following sections detail the online resources/tools available in the test delivery system (TDS) for all students. The complete set of resources/tools and accommodations is available in the How Students Use Testing Resources/Tools section of this manual.

Please note: To return to this page after following this link, use one of the following keyboard shortcuts: ***Alt*** *+* ***Left Arrow*** *(for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or* ***Command*** *+* ***Left Arrow*** *(for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

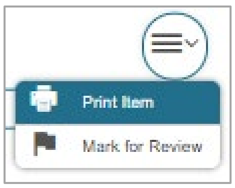
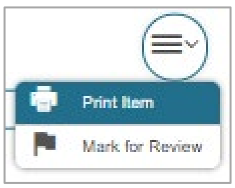
Students should access the Training Test to familiarize themselves with the online resources/tools available during testing. The Training Test is available at UtahRISE.org.

Accommodations

Table 5 on the next page details the accommodations allowed for students on the Utah RISE Assessments, as outlined in their IEP, Section 504 Plan, or EL plan. Accommodations are assigned to students via their Student Record in TIDE and are delivered in the test delivery system (TDS).

IMPORTANT: Remember to always select the specific test for which you would like to assign accommodations for students by clicking **Change** at the top of the TIDE page. Once the accommodations have been set in TIDE, they are available on all applicable RISE assessments, including the Benchmark Modules, Interim, and Summative assessments.

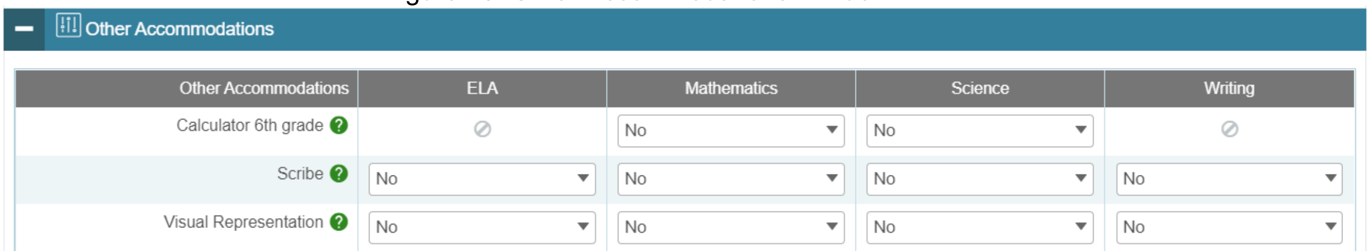
Table 5. Testing Accommodations

Accommodation	Description
American Sign Language/ASL 	Note: This accommodation is available only for ELA listening stimuli. You can watch videos that translate test content into American Sign Language (ASL). To view ASL videos: From the context menu above the stimulus, select **American Sign Language**. Designed for hearing-impaired students, this accommodation offers ASL videos for audio items. An ASL certified interpreter may interpret parts of the assessment in which the ASL videos are not available, except for the ELA reading passages. See Utah's Interpreter Guidelines for State Standardized Assessment on the USBE website. https://schools.utah.gov/specialeducation/resources/assessment
Assistive Technology	The Assistive Technology setting allows students to use a range of third-party devices and software with the test delivery system (TDS) during a secure testing session, such as Speech-to-Text, switches, and other communicationdevices. **IMPORTANT:** Contact Tracy Gooley at tracy.gooley@schools.utah.gov if a student requires this accommodation. Only the USBE will be able to enable this accommodation for students.
Print-on-Request: 	The Print-on-Request option allows for on-site printing of an item or stimulus. From the global menu, the student can Print Page to print the entire page, Print Passage to print a passage, or Print Item to print an individual question. After sending the request, a printer icon appears next to the question number on the test page. The student's responses should be transcribed as he or she takes the test. Procedures for securely destroying these materials once testing has completed must befollowed. **IMPORTANT:** This accommodation must be enabled in TIDE prior to the student beginning testing in the test delivery system (TDS).
Print-on-Request: Braille 	The Print-on-Request option allows for on-site printing of the embossed braille form, including tactile graphics. The student's responses should be transcribed as he or she takes the test. **IMPORTANT:** This accommodation must be enabled in TIDE prior to the student beginning testing in the test delivery system (TDS).
Refreshable Braille	When enabled, this accommodation allows a third-party program (Job Access with Speech, JAWS®) to translate digital text to braille characters on a student's assistive braille device. Test administrators need to assist students and provide the additional Accommodated Script specified in the *Test Administration Manual* (TAM, this manual). This accommodation is available for use only on devices that have JAWS® software installed and a refreshable braille display connected to the Windows operating system. For information on assisting students navigating the TDS using a Screen Reader, see the Assistive Technology Manual located at UtahRISE.org. **IMPORTANT:** This accommodation must be enabled in TIDE prior to the student beginning testing in the TDS.

Offline Accommodations

There are other student accommodations that are provided locally to the student, not through the test delivery system (TDS). These offline accommodations need to be indicated for use in TIDE in the student's test settings (see Figure 43). Once the offline accommodations have been set in TIDE, they are available on all applicable RISE assessments, including the Benchmark Modules, Interim, and Summative assessments.

Figure 43. Other Accommodations Window in TIDE


Other Accommodations

Other Accommodations	ELA	Mathematics	Science	Writing
Calculator 6th grade		No	No	
Scribe	No	No	No	No
Visual Representation	No	No	No	No

These offline accommodations, found in TIDE on the student's search results screen, include:

- Visual Representation
- Calculator 6th Grade—please note a four-function, non-internet accessible calculator is the approved model
- Scribe (requires USBE notification; contact Tracy Gooley at tracy.gooley@schools.utah.gov)

If the student requiring a scribe also requires the use of an assistive device, such as Speech-to-Text, you must contact Tracy Gooley at tracy.gooley@schools.utah.gov for approval to ensure that the assistive technology accommodation is also enabled for that student.

For details on enabling accommodations for students in TIDE, please see the *TIDE User Guide*, also available at UtahRISE.org.

RISE Training Tests and Grades 4–8 Science Practice Clusters

Purpose

The RISE Training Tests and grades 4–8 Science Practice Clusters are provided to familiarize students and teachers with the design, format, and procedures for answering the different types of items that will be included in the RISE assessments. They can be used to verify all accommodations, and resources are applied to individual students' work correctly prior to taking the RISE Summative assessments. They can also be used to certify that local technology is configured properly and can successfully deliver RISE assessments via the Secure Browser or to review testing procedures prior to the remote administration of select RISE Benchmark modules.

The Training Tests and grades 4-8 Science Practice Clusters cover a grade span and mirror the online testing experience for Utah students taking the RISE assessments on CAI's testing platform. The training tests are not predictive of how students will perform on the Benchmark modules, Interim, or Summative assessments.

The Training Tests and grades 4-8 Science Practice Clusters are available on the RISE Portal, located at UtahRISE.org.

Schools are encouraged to have students take the appropriate Training Test and grades 4-8 Science Practice Cluster prior to the administration of the RISE Benchmark modules, Interim, and Summative assessments. Each local education agency (LEA) and school should be strategic in deciding how it wants to use these recommended resources with its students.

Best practices for using the Training Tests and Practice Clusters include

- working through the test items as a class while discussing how to navigate the assessment, how to use testing resources/tools, and how to answer each item type; and/or
- having faculty and staff members use the tests to experience the RISE test delivery system (TDS) firsthand during a staff meeting or professional learning community (PLC) meeting.

Format

The Training Tests and grade 4-8 Science Practice Clusters are divided into separate grade bands and content areas as follows (see Table 6):

Table 6. Training Test and Grades 4-8 Science Practice Clusters

Mathematics	Science	Language Arts and Literacy	Writing
Grades 3-5 Grade 6 Grades 7-8 Math Braille	Practice Clusters: Grades 4-5 Grade 6 Grade 7 Grade 8 Science Braille Clusters	Reading, Language, and Listening Grades 3-5 Reading, Language, and Listening Grades 6-8 Reading Braille	Grades 3-5 Grade 6 Grades 7-8 Writing Braille

Each Training Test and grade 4-8 Science Practice Cluster aligns to the Utah Core Standards by individual grade band and represents the variety, in terms of both difficulty and item format, that students may see on the RISE

Benchmark modules, Interim, and Summative assessments. Students may have difficulty with content aligned to higher grades within the grade band of each test; this should not interfere with students' ability to interact with an item for its intended training purpose. If an item appears to be too difficult, encourage your students to experiment with the resources/tools, choose the best answer, and move on to the next item.

Security

The items included in the Training Tests and grades 4-8 Science Practice Clusters are not secure. They should be used to help students understand how to enter responses, access testing resources/tools, and navigate through a test.

Reporting

The Training Test and grade 4-8 Science Practice Clusters do not include an item for each of the aligned Utah Core Standards that will be measured by the RISE Benchmark modules, Interim, or Summative assessments. The Training Test **does not provide scores for students and should not be used to measure students' content knowledge**.

RISE Benchmark Modules

NOTE: Students are currently permitted to take specific Benchmark modules remotely without the Secure Browser. For a list of the Benchmark modules that are permitted to be accessed remotely, see the Benchmark Modules Directory on the RISE portal.

The RISE Benchmark modules are a productivity tool for Utah teachers and students that focus on specific strands within the Utah Core Standards. Participation is determined locally and is *not required* by the USBE. Student results are provided for LEA and school use; no Benchmark module student results are collected by the USBE.

The Benchmark modules are fixed-form assessments—typically 8–22 items, depending on the content area, grouped under overarching strands—that are designed to give teachers and students an opportunity to identify strengths and weaknesses about the specific knowledge, skills, and abilities outlined in the Utah Core Standards. A list of available Benchmark modules for mathematics, English language arts (ELA), writing, and science is available on the RISE Portal at UtahRISE.org.

A Benchmark Previewing System is available to all users registered in TIDE. This system allows users to preview all Benchmark modules available at any time to determine appropriate instructional use. It is not appropriate to use the Benchmark Previewing System to review the Benchmark Modules with students. To access this system, users click on the Benchmark Previewing card on the UtahRISE.org home page.

Security

The RISE Benchmark modules are secure but not public assessments. Educators can review student responses but cannot copy, paste, photograph, place questions into presentations or other assessments, or share test items outside of the classroom instructional level.

Considerations for sharing Benchmark Module reporting data in a classroom setting should include:

- How to discuss/present classroom-level data without revealing Personally Identifiable Information (PII) on any test item
- How to provide equitable instruction to students with a Parental Exclusion for Benchmark Modules who do not have access to the assessment
- How to maintain the integrity of the Interim and Benchmark Module shared item banks since both items and individual student responses can be reviewed following the assessment

The Benchmark modules are available for Utah educators to schedule for their classrooms between August 11, 2020, and June 11, 2021. Students can take multiple Benchmark module assessments throughout the year, and they can take a specific Benchmark module more than once. The Utah State Board of Education (USBE) does not recommend that schools administer both the Benchmark module assessments and the RISE Interim assessments.

RISE Interim Assessments

Purpose

The RISE Interim assessments are optional. Participation is determined locally and is *not required* by the USBE. Student results are provided for LEA and school use; no Interim student results are collected by the USBE. These assessments are designed to assess the knowledge, skills, and abilities described in the Utah Core Standards for English language arts (ELA), mathematics, and science.

For the 2020-2021 test administration, the Utah State Board of Education (USBE) is allowing below-grade Interim assessments in addition to the traditional at-grade Interim assessments. Students are automatically eligible for the Interims for the grade below their current courses in addition to the Interims for their current courses; for example, if a student is eligible for a Grade 8 Math Interim for 2020-2021, they will also automatically be eligible for the Grade 7 Math Interim this year.

Testing Windows and Scheduling

Students may participate in one grade-level Interim assessment per subject area and one below-grade Interim assessment in the fall testing window and one grade-level Interim assessment per subject area and one below-grade Interim assessment n the winter testing window. For more information about state testing windows, please contact Kim Rathke, kim.rathke@schools.utah.gov, or Jared Wright, jared.wright@schools.utah.gov. For more information about local testing windows, please contact the LEA assessment director.The LEA assessment director is responsible for ensuring that each student has an appropriate opportunity to demonstrate their knowledge, skills, and abilities related to RISE-assessed courses. This ensures that each student has a standardized (similar and fair) testing experience.

Each LEA is responsible for determining school testing schedules for the optional RISE Interim assessments. Under the direction of the LEA, schools may divide the times specified in the table into multiple testing sessions, depending on local needs. Table 7 outlines appropriate testing times for the RISE Interim assessments.

Table 7. Appropriate Interim Testing Times

Subject	Appropriate Testing Times Per Student
	Interim
ELA, Mathematics	45–60 minutes per assessment

The RISE Interims are available for Utah educators to schedule for their classrooms between August 11, 2020, and December 22, 2020, and again between January 5, 2021, and March 5, 2021. The USBE does not recommend that schools administer both the Benchmark modules assessments and RISE Interim assessments. The RISE interim assessments cannot be administered in a remote setting.

Extra Testing Time

It is inappropriate for the test administrator to allow students to take excessive time to test. In rare circumstances, a student may need longer than the times specified here. The RISE Interims are not timed assessments, so technically, extended time is not an accommodation that needs to be marked in participation codes. All students should be allotted the appropriate amount of time they need to complete the assessment. However, unlimited time is not appropriate or feasible for any student. When IEP, Section 504 Plan, or EL teams are determining the appropriate amount of extended time for a student on a state-provided assessment, it should be based upon the amount of extended time a student uses during instruction, classroom, and LEA assessments. For example, if a student typically takes twice the amount of time to complete an assignment or classroom test, then that should be the amount of extended time the student should take for a state-provided assessment. Decisions should also be made on a case-by-case basis, keeping in mind the type of assessment.

Unexpected/Unforeseen Circumstances

Some students may be unable to participate in regular testing schedules due to absence, technical difficulties, or other unforeseen circumstances. Opportunities for these students to complete each assessment must be provided within the school's testing window. Other circumstances, such as fire drills and power failures, may interrupt testing for groups of students. Test completion sessions should be scheduled when normal conditions are restored. Interruptions should not reduce the total amount of time students are given to complete tests.

Security

The RISE Interim assessments are secure but not public assessments. The Interim reading passages, writing prompts, and test items may be reviewed with students, discussed as a class, or reviewed during instructional conversations. Educators can review student responses but cannot copy, paste, photograph, place questions into presentations or other assessments, or share test items outside of the classroom instructional level. The RISE Interim assessments follow the 2020 spring RISE Interim blueprints for each assessed course.

Considerations for sharing Interim reporting data in a classroom setting should include:

- How to discuss/present classroom-level data without revealing Personally Identifiable Information (PII) on any test item
- How to provide equitable instruction to students with a Parental Exclusion for the Interim who do not have access to the assessment
- How to maintain the integrity of the Interim and Benchmark Module shared item banks since both items and individual student responses can be reviewed following the assessment

Administering the RISE Benchmark Modules and Interim Assessments

This section is designed to guide the test administrator chronologically through the process of test administration. For students to take specific Benchmark modules or Interim assessments, they must use the Secure Browser, which should be installed on all student computers prior to testing. No Interim or Summative assessments can be administered in a remote setting. For a list of the Benchmark modules that are permitted to be accessed remotely without the Secure Browser, see the Benchmark Modules Directory on the RISE portal.

- For questions concerning the Secure Browser, please contact your school administrator or local education agency (LEA) (school district or charter school) assessment director.

Before Testing for Teachers

Step 1: Complete Standard Test Administration and Testing Ethics Training

It is important that every staff member involved in the administration of the RISE assessments receive training in testing ethics and carefully follow the directions for administration as outlined in the Standard Test Administration and Testing Ethics Policy. Testing Ethics training is provided under the direction of each LEA assessment director. This policy is approved by the USBE and updated as needed.

- For information regarding the Standard Test Administration and Testing Ethics Policy Training, please contact Jared Wright, jared.wright@schools.utah.gov.

Step 2: Evaluate the Testing Environment Where Your Students Will Be Completing Their Assessments

- Eliminate distracting noises—do not play music during standardized assessments.
- Cover or remove materials that may provide hints or answers to students.
- If possible, arrange the room to prevent students from viewing other computer screens.
- Notify students of electronic device policy—no devices allowed during testing—and how devices will be collected. Electronic devices include, but are not limited to, cellphones, smart phones, smart watches, or any other internet-capable device.

Step 3: Sign In to TIDE and Perform the Following Tasks:

- Review and enable online resources and accommodations to applicable student records in TIDE.
- Optional: Print test tickets and keep them secure.

Step 4: Use the RISE Training Test to Prepare for Benchmark Module or Interim Administration

- Ensure that each device students will use is able to support RISE testing.
- Ensure that keyboards and headphones are in working order.
- Ensure that each student and test administrator has participated in the Training Test.
- Practice the functionality of the test delivery system (TDS):
  - Answer various item types.
  - Navigate in the interface and through the assessment.
  - Become familiar with the available settings and resources/tools.

Please refer to the Training Test section of this manual for more detailed information on this step.

Step 5: Prepare Testing Materials

- Optional: Student Test Tickets
  - Ensure that students have access to their seven-digit SSID, as this information is used to sign in to any RISE assessment.
  - Follow school test ticket security procedures, if provided.
  - TAs may provide sign-in information to students using test tickets generated from TIDE or may follow local procedures to help students sign in. For information on generating optional test tickets or locating student sign-in information in TIDE, refer to the *TIDE User Guide*, located at UtahRISE.org.
- Allowed Materials
  - Headphones
  - Scratch and/or graph paper
  - Calculators, as appropriate

Headphones

All students will need headphones to listen to online testing resources/tools instructions as well as audio in the assessments.

- Students can use Text-to-Speech to listen to stimuli or test items being read aloud.
- Some assessments contain several items that have recorded audio.

Students with a braille accommodation can use the Job Access with Speech (JAWS®) screen-reading software.

Scratch/Graph Paper

The scratch/graph paper becomes part of the secure testing materials. Students may not take their scratch/graph paper with them or bring scratch/graph paper to a testing session. The use of sticky notes, white boards, or teacher-provided graphic organizers, even if specified on a student's IEP, is not allowed. The test administrator (TA) should always collect scratch/graph paper at the end of every session. If a student wants to reuse scratch/graph paper on a later session (e.g., notes from the writing session), he or she may, as long as the scratch paper is for the same test and is securely stored between sessions. After the testing session has closed, the TA must ensure that all scratch/graph paper is securely destroyed.

Calculators—Mathematics

Please note: The RISE Calculator Manual is available on the portal.

Working with numbers by hand was purposeful in the design of the Elementary Mathematics Utah Core Standards. Because of this purpose, calculators are not allowed in grades 3-5.

Grades 3–5: Calculators are NOT allowed.

- Calculators are not available onscreen.
- Students cannot use handheld calculators.

Grade 6: Calculator is embedded and provided for the Geometry and Statistics/Probability benchmark module.

- The calculator is available ONLY onscreen.
  - Students cannot use handheld calculators. (Students with a calculator accommodation documented in an IEP or Section 504 Plan can bring in a handheld four-function calculator with no internet access to use on items for which a calculator is available onscreen.)
  - For additional information, see the RISE Calculator Manual available on the portal.

Grade 7 and Grade 8: Calculators are allowed on all items.

- The calculator is available onscreen.
- Students may also provide their own calculators or use a classroom calculator that was used during classroom instruction (e.g., scientific, graphing, or basic).
- Phones, smart watches, or other internet-capable devices are NOT allowed during testing.

Calculators—Science

Although mathematical calculation is inherent in science instruction, the Utah Core Standards for Science are not calculation heavy. Some students may feel more at ease during testing if a calculator is available. To respond to this student need, two options are available for calculator use on RISE science assessments:

- An onscreen calculator is available to ALL students.
  - Grades 4-5 will have a basic four-function calculator (i.e., add, subtract, multiply, and divide).
  - Grades 6-8 Benchmark module assessments will have a scientific calculator.
- Students may also provide their own calculators or use a classroom calculator that was used during course instruction (e.g., scientific, graphing, or basic).
- Phones, smart watches, or other internet-capable devices are NOT allowed during testing.

  For detailed information on the embedded calculator and links to provide on student desktops, see the RISE Calculator Manual available on the portal.

Follow local procedures to ensure that the Secure Browser is available and launched on each device students will use for testing. Ensure that the student devices are prepared for testing. All background applications, programs, and internet browsers should be closed. Ensure that all students have headphones and a keyboard.

During Testing

While students sign in to the assessments through the Secure Browser, the steps below outline the process for test administrators (TAs) to sign in to TIDE.

TAs will help students sign in to their assessments by reading the directions for administration. All directions are indicated by the word "**SAY**" in bold type.

Step 1: Distribute Materials

- Ensure that blank scratch/graph paper, headphones, and appropriate test materials are distributed. If you are using student test tickets, ensure that those are also distributed.
- Follow local procedures to ensure that the Secure Browser is available and launched on each device

students will use for testing. Ensure that all students have headphones and a keyboard.

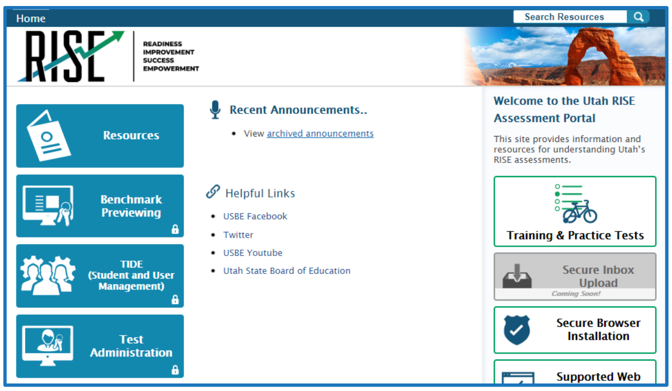
- TAs may provide sign-in information to students using test tickets generated from TIDE or may follow local procedures to help students sign in. For information on generating test tickets or locating student sign-in information in TIDE, refer to the *TIDE User Guide* located at UtahRISE.org.

Note: A student may use scratch paper for multiple sessions of the same test as long as the scratch paper is collected and stored securely between sessions.

Step 2: Sign In to TDS system

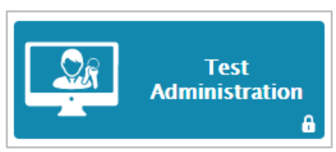
- Navigate to the RISE Portal (see Figure 44) at UtahRISE.org.

Figure 44. RISE Portal Home Page



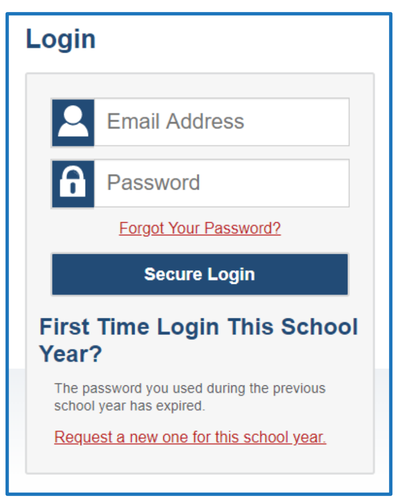
- Click on the **Test Administration** card (see Figure 45).

Figure 45. Test Administration Card



- You will be directed to the TDS sign-in screen (see Figure 46).

Figure 46. TDS Sign-in Screen



- Enter your username (email address) and password into the respective text fields.

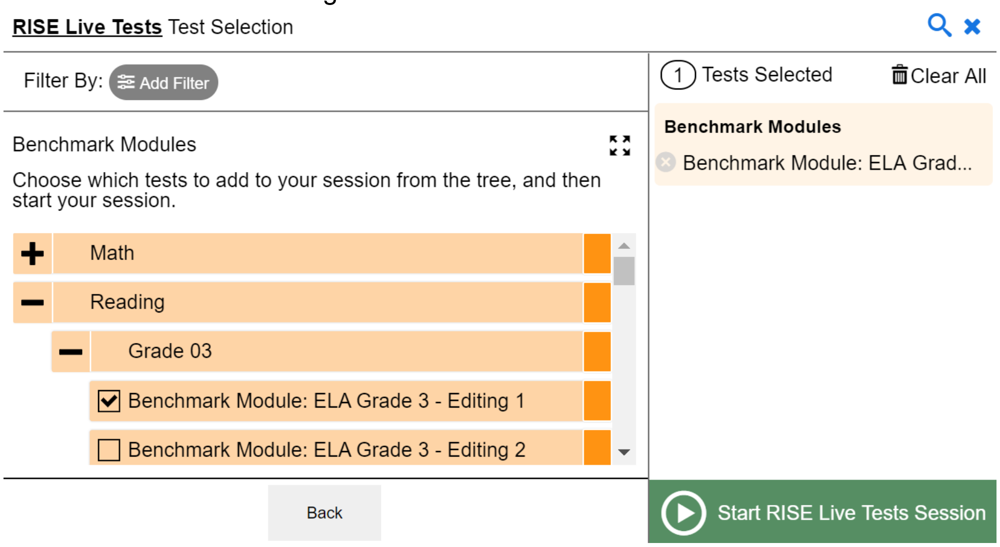
- Click **Secure Login**. The TA site will display with the list of possible tests to add to your session.

Note: If you do not have a username and password, contact your school administrator.

Step 3: Select Tests to Administer

- In the test selection tree (see Figure 47), mark checkboxes for the test or tests you want to include in the session. Best practice is to select only the individual test(s) to be delivered in your session to prevent students from starting the wrong test by mistake. The system does allow users to select groups of tests if needed. To select all tests in a group, mark the checkbox for that group.
- Click Start RISE Live Tests Session

Figure 47. Test Selection Window



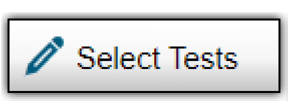
Step 4: Locate Session ID

- You will see the Session ID for the test(s) to be administered (see Figure 48).

Figure 48. Session ID Window

- Each test session will be automatically assigned a unique Session ID. The Session ID to begin each testing session will be provided to students by the TA.
- If necessary, you can add additional tests to an ongoing test session by selecting **Select Tests** from the Session ID window (see Figure 49).

Figure 49. Select Tests Button



Step 5: Help Students Sign In to the Test Session

- Students access RISE assessments through the Secure Browser, which must be downloaded and installed on the testing device.

Please note: If you have students using the Refreshable Braille or Screen Reader accommodations, there is additional scripting required. For the Accommodated Script, refer to the Accommodated Script section of this manual.

Please note: To return to this page after following this link, use one of the following keyboard shortcuts: ***Alt*** *+* ***Left Arrow*** *(for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or* ***Command*** *+* ***Left Arrow*** *(for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

Benchmark Module and Interim Student Instructions

SAY: "You will now sign in to the test. You should see a sign-in screen on your device. If you do not, please let me know now." **[Pause.]** ***"On the sign-in screen, please enter your first name and seven-digit SSID along with the Session ID."*** **[If sign-in tickets have not been provided, provide students with their first name and SSID as displayed in TIDE system.]** ***"Then click the Sign In button."***

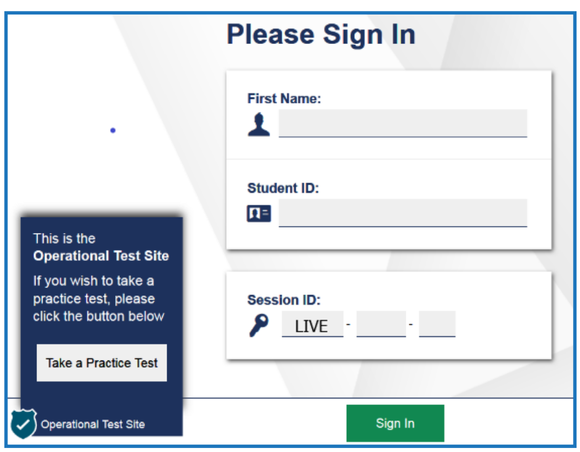
Troubleshooting tips: If a student is unable to sign in, he or she will be prompted to try again or contact the TA.

- Has the student entered his or her legal first name, not a nickname?
- Has the student entered the correct SSID?
- Has the student entered the correct Session ID?

Please note: The TA can look up the student's information using the Student Lookup function on the TA site. TAs may assist students with signing in, if necessary.

Test Sign-in for Students

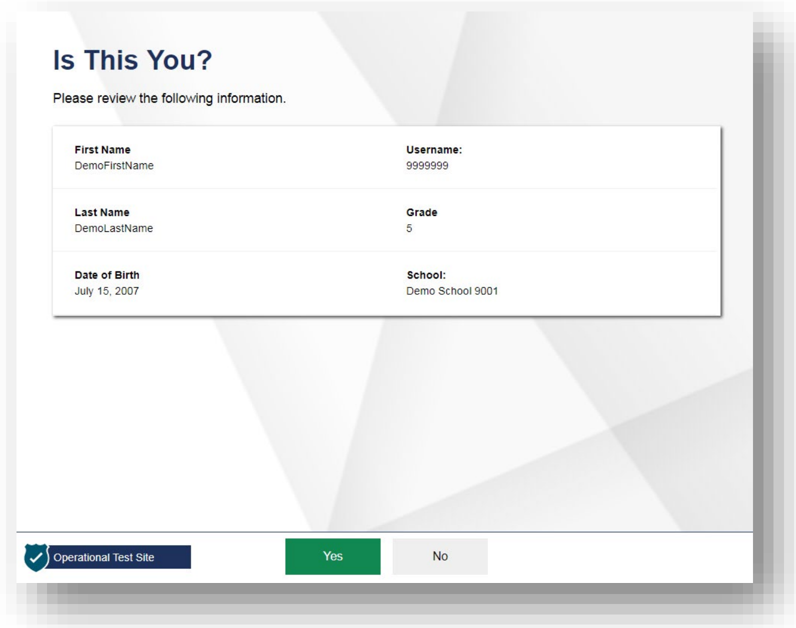
Figure 50. Student Sign In Page



Pause while students sign in (see Figure 50).

SAY: "Please review the information on the screen, making sure the information on the screen is correct. If any of the information is incorrect, please raise your hand and I will help you; otherwise, select Yes to continue."

Figure 51. Is This You? Page



SAY: "Then please click on the **[insert course name]** ***test and you will see a Waiting for Approval page. You should wait for your test to be approved. I will approve your test when I am finished giving instructions."***

Figure 52. Students' Your Tests Page

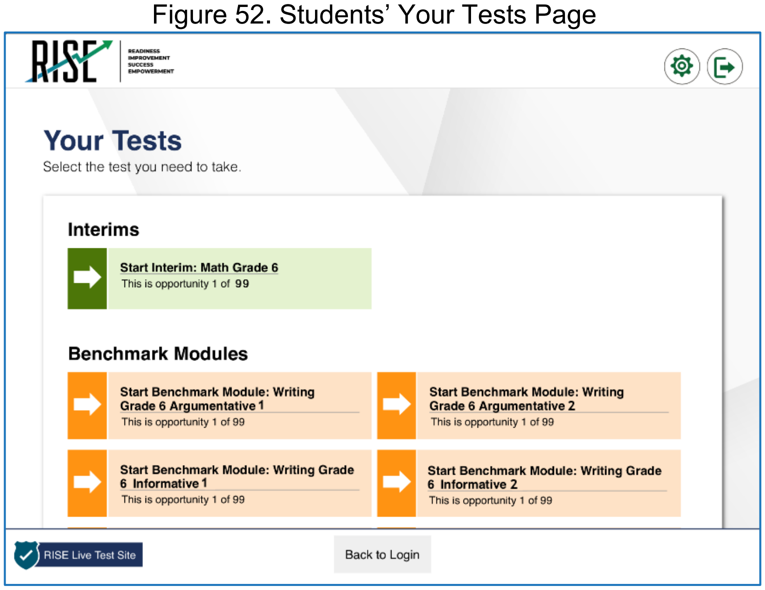
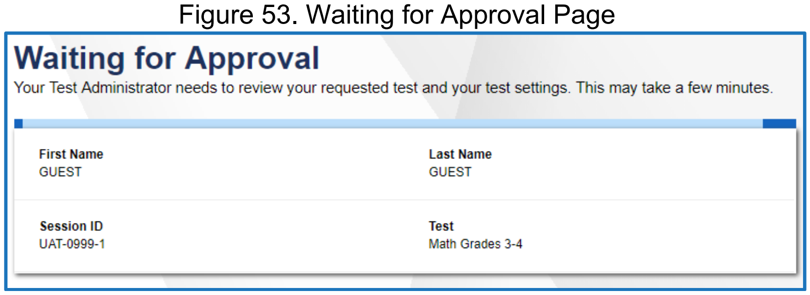
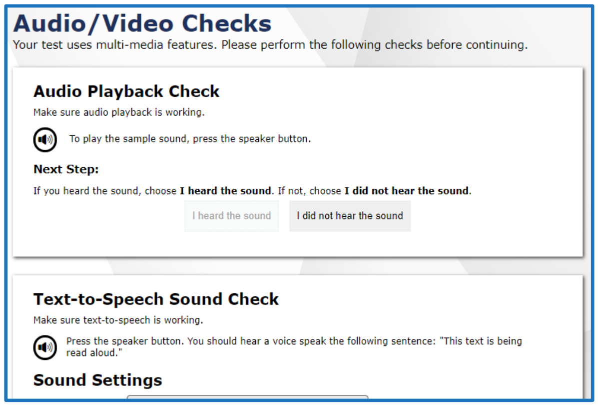


Figure 53. Waiting for Approval Page



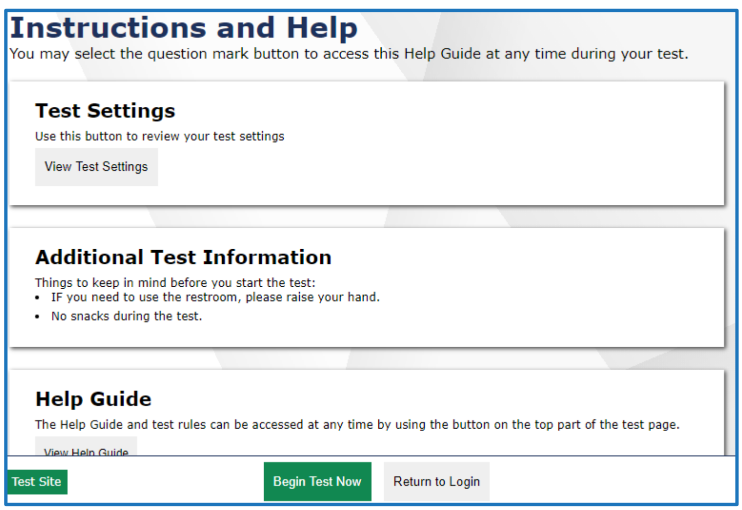
SAY: "On the next screen, you may be presented with a series of Audio/Video Checks screens. If the voice is not audible or clear, adjust the settings using the sliders and click the speaker icon again. If you still cannot hear the voice clearly, click 'I did not hear the sound' and raise your hand."

Figure 54. Audio/Video Checks Screens



SAY: "Once you complete the audio/video checks, the Instructions and Help page will appear. You can review this page to understand what test resources/tools are available and how to navigate through the test."

Figure 55. Instructions and Help Page



SAY: "You may return to the Help Guide at any time during the test by selecting the question mark button. If you do not know how to use the system to enter your response, please raise your hand and I will help you. Please remember that I will show you only how to use the program."

Please note: If you have students using the Refreshable Braille or Screen Reader accommodations, there is additional scripting required. For the Accommodated Script, refer to the [Accommodated Script](#) section of this manual.

*Please note: To return to this page after following this link, use one of the following keyboard shortcuts: **Alt** + **Left Arrow** (for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or **Command** + **Left Arrow** (for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

SAY: "Today's testing session will go until **[insert time the session will end]*. Everyone should complete a test by this time.***

To review your test before submitting it, select the End Test button and select the items you want to review from the End Test screen. It will help you to see if you have answered all the items. You can go back to an item by clicking on the item number. Then select Review again to return to the Review screen. When you have completed your test, please raise your hand before you click the Submit Test button. Once you have finished your review and you are ready to submit the test, click the Submit Test button. You are now ready to take the **[insert Benchmark Module or Interim name]*****. This test is designed to measure your understanding of the*** **[insert standard or learning objective]*****."***

SAY: "I will now approve your test, allowing you to go through the Audio/Video checks and Help guide. Once you are done, select Begin Test Now."

Note: Reading the RISE Benchmark and Interim scripted testing instructions of the TAM is only optional for Benchmark Modules and Interim tests. Reading the testing scripts is recommended to familiarize teachers and students with RISE standardized testing procedures. The scripts for each Benchmark Module and Interim test are found below.

Writing Benchmark Module Script

Beginning of writing testing session:

SAY: "You are going to respond to one writing prompt for **[insert type of prompt].** ***You will see guidelines that suggest how much you should write and how long it should take you to respond. Most of you will finish in one hour. If you have not completed your writing at the end of the testing session, please select "End Test. Do not submit your writing tests until you have completed the entire essay. Please raise your hand before you submit your writing test***

End of writing testing session:

SAY: "There are five minutes remaining in this test session. Please prepare to pause or end your writing test. You will be able to return to your response later if you are not finished."

ELA, Mathematics, or Science Benchmark Module or ELA or Mathematics Interim Script

Please note, there are no Science Interim tests.

Beginning of ELA, mathematics, or science testing session:

SAY: "You are now ready to take the **[insert Benchmark Module or Interim name].** ***This test is designed to measure your understanding of*** **[insert standard or learning objective].** ***When you have completed your test, please raise your hand before submitting your test."***

End of ELA, mathematics (grades 3,4,5,7,8), or science testing session:

SAY: "There are five minutes remaining in this test session. Please prepare to pause or end your test. If your test is paused, you will not be able to return to items you have responded to, so please review them before you pause the test. You will not be able to return to your test once you have submitted it."

Follow local procedures to actively proctor the test session and to document any testing anomalies that occur. Students who finish early should be encouraged to use any remaining time to check their answers before submitting the test for scoring.

SAY: "I will now collect your testing materials."

Mathematics Grade 6 Interim Script

The grade 6 mathematics assessment contains two segments:

- Segment 1 is to be taken without a calculator.
- Segment 2 allows the use of an embedded onscreen calculator.
    - Note: TAs must approve students to advance to Segment 2 in the TA interface

Students will not be able to return to the first segment after you direct them to start the second segment.

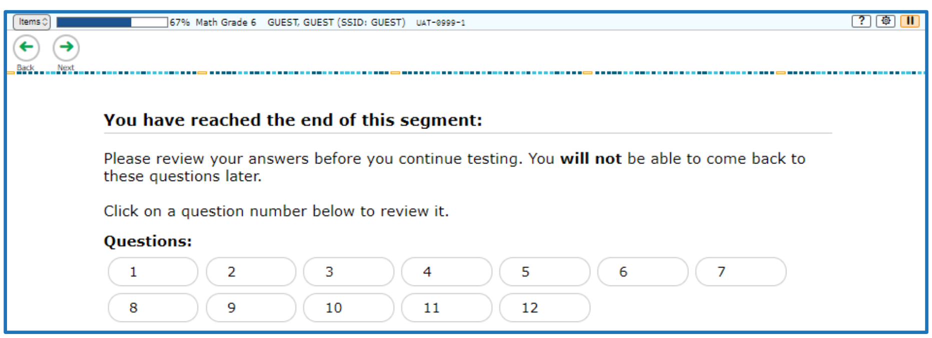
Please note that students should not select "Next" until the TA has been notified by the student that they are moving to second segment. The TA must approve the second segment for the student.

SAY: "You are now ready to take Segment 1 of the grade 6 mathematics test. This test is designed to measure your understanding of the Utah Core Standards for grade 6 mathematics."

SAY: "You may return to the Help Guide at any time during the test by selecting the question mark button. Also, you will find tutorials available on each item showing how to work with each item type. If you do not know how to use the system to enter your response, please raise your hand and I will help you. Please remember that I will show you only how to use the program."

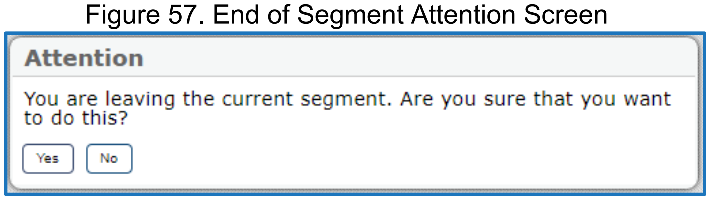
SAY: "This test is divided into two segments. For the first segment, you will not be allowed to use a calculator. For the second segment, you will be able to use the online calculator tool. When you respond to the last item in the first segment, you will see a review screen. Please review your responses BEFORE clicking the Next arrow to move to the next segment. Raise your hand before you continue to Segment 2. I must approve you to move on to Segment 2."

Figure 56. End of Segment Review Screen



SAY: "Once you go to the second segment, you will be unable to return to the first segment."

Figure 57. End of Segment Attention Screen



Please note: If you have students using the Refreshable Braille or Screen Reader accommodations, there is additional scripting required. For the Accommodated Script, refer to the *Accommodated Script* *section of this manual.*

Please note: To return to this page after following this link, use one of the following keyboard shortcuts: ***Alt*** *+* ***Left Arrow*** *(for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or* ***Command*** *+* ***Left Arrow*** *(for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

SAY: "When you are ready, select Begin Test Now."

Ending the Test Session

Secure materials should be stored between testing sessions and destroyed at the end of testing according to local procedures.

Ensure the following materials are secure:

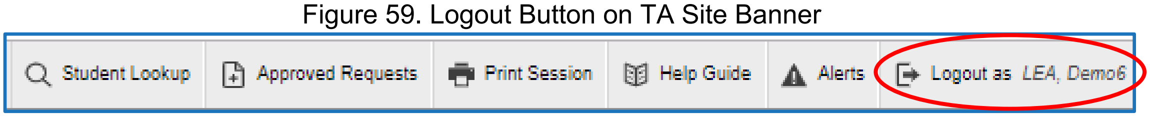
- Scratch paper/graph paper written on by students
- Embossed items and passages (for students with braille accommodation)
- Print-on-Demand items and passages (for students with Large Print or paper-based accommodations)
- Student test tickets, if printed (should already have been collected and placed in a secure location after the students began testing)
- When students finish testing, or the current testing session is over, you should stop the test session. Stopping a session automatically signs out all the students in the session and pauses their tests. Click the STOP button in the upper-right corner next to the Session ID (see Figure 58).

- Figure 58. Session ID Window

Test Administrator—Sign Out

After ending the test session, click the Logout button in the upper-right corner of the TA site (see Figure 59).

Figure 59. Logout Button on TA Site Banner



After Testing

Please reference the *Reporting User Guide* for instructions on accessing reports following the RISE Benchmark or Interim assessments. For instructions on interpreting the results, please consult the *Reporting User Guide*. The document can be found at UtahRISE.org.

RISE Summative Assessments

RISE provides students, teachers, and parents a baseline for student learning, while ensuring that student proficiency and growth reflect what they know and can do.

Purpose

Assessments are an essential element of the learning process. Teachers use a variety of assessments. The RISE Summative assessments are designed to assess the knowledge, skills, and abilities described in the Utah Core Standards for English language arts (ELA), writing for grades 5 and 8, mathematics, and science. For information regarding course codes that will require RISE Summative assessments, please contact Melissa Preziosi, Melissa.Preziosi@schools.utah.gov.

Testing Windows and Scheduling

For information regarding LEA testing windows, please contact the LEA assessment director. Information regarding state assessment windows is found on the Assessment and Accountability website, www.schools.utah.gov, or users can contact Kim Rathke, kim.rathke@schools.utah.gov.

The LEA assessment director is responsible for ensuring that each student has an appropriate opportunity to demonstrate knowledge, skills, and abilities related to RISE-assessed courses. This ensures that each student has a standardized (similar and fair) testing experience.

Each LEA is responsible for determining school testing schedules. Under the direction of the LEA, schools may divide the times specified in the table below into multiple testing sessions, depending on local needs. Table 8 outlines required testing times for each RISE Summative assessment.

Expected Testing Times

Table 8. Required Testing Times

Subject	Test Administration	Most Students Should Be Finished	All Students Should Be Finished
English language arts (ELA)	Reading, Language, Listening	90 minutes	135 minutes
Mathematics	All	90 minutes	135 minutes
Science	All	90 minutes	135 minutes
Writing	Writing Grades 5 and 8, one prompt either Opinion/ Argument or Informative	60 minutes	90 minutes

Extra Testing Time

It is inappropriate for the TA (teacher or test administrator) to allow students to take excessive time to test. In rare circumstances, a student may need longer than the times specified here; in those cases, only the LEA assessment director may approve extra testing time for a specific student due to individual student needs or circumstances. RISE is not a timed assessment, so technically, extended time is not an accommodation that needs to be marked in participation codes. All students should be allotted the appropriate amount of time they need to complete the assessment. However, unlimited time is not appropriate or feasible for any student. When IEP, Section 504 Plan, or EL teams are determining the appropriate amount of extended time for a student on a statewide assessment, it should be based upon the amount of extended time a student uses during instruction, classroom, and LEA assessments. For example, if a student typically takes twice the amount of time to complete an assignment or classroom test, that should be the amount of extended time the student should take for a statewide assessment. Decisions should also be made on a case-by-case basis, keeping in mind the type of assessment.

Unexpected/Unforeseen Circumstances

Some students may be unable to participate in regular testing schedules due to absence, technical difficulties, or other unforeseen circumstances. Opportunities for these students to complete each assessment must be provided within the school's testing window. Other circumstances such as fire drills and power failures may interrupt testing for groups of students. Test completion sessions should be scheduled when normal conditions are restored. Interruptions should not reduce the total amount of time students are given to complete tests.

Security

The RISE Summative assessments are secure assessments that follow the 2019–2020 RISE Summative blueprints for each assessed course in either fall or spring. Summative reading passages, writing prompts, and test items may not be reviewed with students, discussed as a class, or reviewed during instructional conversations. All test security requirements of the RISE Summative assessments must be met. Personnel involved in test administration must have Testing Ethics training. For information regarding the Standard Test Administration and Testing Ethics Policy, please contact Jared Wright, jared.wright@schools.utah.gov.

Administering the RISE Summative Assessments

This section is designed to guide the test administrator (TA) chronologically through the process of test administration.

Before Testing for Teachers

Step 1: Complete Standard Test Administration and Testing Ethics Policy Training

It is important that every staff member involved in the administration of the RISE assessments receive training in testing ethics and carefully follow the directions for administration as outlined in the Standard Test Administration and Testing Ethics Policy. Testing Ethics Policy training is provided under the direction of each LEA assessment director. This policy is approved by the Utah State Board of Education and updated as needed.

- For information regarding the Standard Test Administration and Testing Ethics Policy Training, please contact Jared Wright, jared.wright@schools.utah.gov.

Step 2: Review Eligibility of Students for RISE Summative Assessments

- Ensure that all students are appropriately registered in the school's student information system (SIS), and that these data are accurately represented in TIDE, including correct course assignments.
  - Verify proper test assignments.
  - Compile documentation concerning unique student circumstances that affect testing.
  - Check that all students who are expected to test are assigned to the assessment.

Step 3: Use the RISE Training and Practice site to prepare for Summative Administrations

- Ensure that each student and TA has participated in the Training Tests.
  - Practice the functionality of the test delivery system (TDS).
    - Answer various item types.
    - Navigate in the interface and through the assessment.
    - Become familiar with the available settings and resources/tools.

Step 4: Check Student Accommodations, Online Resources, and Participation Codes

- Use TIDE to mark and/or check appropriate accommodations, online resources, and participation codes for Parental Exclusion.
- For more details, refer to the *TIDE User Guide* located at UtahRISE.org.

Step 5: Evaluate the Testing Environment Where Your Students Will Be Completing Their Assessments

- Eliminate distracting noises—do not play music during standardized assessments.
- Cover or remove materials that may provide hints or answers to students.
- If possible, arrange the room to prevent students from viewing other computer screens.
- Notify students of electronic device policy—no devices allowed during testing—and how devices will be collected.

Step 6: Prepare Testing Materials

- Ensure that students have access to their seven-digit SSID, as this information is used to sign in to any RISE assessment.

- Test tickets can be printed from TIDE if needed.
- For more details on printing student test tickets, refer to the *TIDE User Guide*, located at UtahRISE.org.

- Allowed Materials
  - Headphones
  - Scratch and/or graph paper
  - Calculators, as appropriate

Headphones

All students will need headphones to listen to online testing resources/tools instructions as well as audio in the assessments.

- Students can use Text-to-Speech to listen to stimuli or test items being read aloud.
- Some assessments contain several items that have recorded audio.
- Students with a braille accommodation can use the Job Access with Speech (JAWS®) screen-reading software.

Please note: If you have students using the Refreshable Braille or Screen Reader accommodations, there is additional scripting required. For the Accommodated Script, refer to the Accommodated Script section of this manual.

*Please note: To return to this page after following this link, use one of the following keyboard shortcuts: **Alt** + **Left Arrow** (for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or **Command** + **Left Arrow** (for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

Scratch/Graph Paper

The scratch/graph paper becomes part of the secure testing materials. Students may not take their scratch/graph paper with them or bring scratch/graph paper to a testing session. The use of sticky notes, white boards, or graphic organizers, even if specified on a student's IEP, is not allowed. The TA should always collect scratch/graph paper at the end of every session. If a student wants to reuse scratch/graph paper on a later session (e.g., notes from the writing session), he or she may, as long as the scratch/graph paper is for the same test and is securely stored between sessions. After the testing session has closed, the TA must ensure that all scratch/graph paper is destroyed.

Calculators—Mathematics

Please note: the RISE Calculator Manual is available on the portal.

Working with numbers by hand was purposeful in the design of the Elementary Mathematics Utah Core Standards. Because of this purpose, calculators are not allowed in grades 3–5.

Grades 3–5: Calculators are NOT allowed.

- Calculators are not available onscreen.
- Students cannot use handheld calculators.

Grade 6: Calculator is embedded and provided ONLY on the second segment of the session for Geometry and Statistics/Probabilty section.

- The calculator is available ONLY onscreen.
  - Students cannot use handheld calculators. (Students with a calculator accommodation documented in an IEP or Section 504 Plan can bring in a handheld four-function, non-internet accessible calculator to use ONLY on the calculator segment, on items for which a calculator is available onscreen.)

Grade 7 and Grade 8: Calculators are allowed on all items.

- The calculator is available onscreen.
- Students may also provide their own calculators or use a classroom calculator that was used during classroom instruction (e.g., scientific, graphing, or basic).
- Phones, smart watches, or other internet-capable devices are NOT allowed during testing.

Calculators—Science

Although mathematical calculation is inherent in science instruction, the Utah Core Standards for Science are not calculation heavy. Some students may feel more at ease during testing if a calculator is available. To respond to this student need, two options are available for calculator use on RISE science assessments:

- An onscreen calculator is available to ALL students.
  - **Grades 4–6** will have a basic four-function calculator (i.e., add, subtract, multiply, and divide).
  - **Grades 7–8** will have a scientific calculator (including logarithms, trigonometric functions, and scientific notation; no graphing).
- Students may also provide their own calculators or use a classroom calculator that was used during course instruction (e.g., scientific, graphing, or basic).
- Phones, smart watches, or other internet-capable devices are NOT allowed during testing.

Test Irregularities

On rare occasions, a non-standard situation that requires action arises during test administration. Five irregularities that require action are described below.

Grace Period Extension

Grace Period Extension (GPE) allows the student to review previously answered questions upon resuming a test or test segment after expiration of the pause timer. Upon receiving a GPE, a student can review previously answered questions when resuming the test. The normal pause rules apply to this opportunity. Grace Period Extensions can be created by an LEA- or School-level User but require approval by an LEA-Level user.

Reset a Test

Resetting a test eliminates all responses for a student. When that student signs in to the test again, the test will start over. This should be done only in situations where the test cannot be appropriately completed as is (e.g., two students accidentally sign in to each other's tests, a student requiring braille was not given the accommodation, etc.). A test should never be reset to give a student a second opportunity. Test Resets can be created by an LEA- or School-Level User but require approval by an LEA-Level user.

Reopen a Test

Reopening a test changes the test's status from completed or reported to paused. This is useful if a student accidentally submits a test prior to reviewing it. After you reopen a test, a student can resume it. A test should not be reopened once a student sees a score. Test Reopens can be created by an LEA- or School-Level User but require approval by an LEA-Level user.

Reopen a Test Segment

Reopening a test segment changes the test segment's status from completed to paused. (Only the grade 6 mathematics test is a segmented test.) This is useful if a student accidentally submits the first segment of a grade 6 mathematics test prior to reviewing it. After you reopen a test segment, a student can resume it. A test segment should not be reopened once a student sees a score. Test Segment Reopens can be created by an LEA- or School-Level User but require approval by an LEA-Level user.

Test Invalidation

Tests should be invalidated when a student's performance is not an accurate measure of his or her ability (e.g., the student cheated, used inappropriate materials, etc.). If a test is invalidated, the student is not given another opportunity to take the test. Test Invalidations can be created by an LEA- or School-Level User but require approval by an LEA-Level user.

Please refer to the *TIDE User Guide* for detailed instructions on creating appeals, including test invalidation and grace period extensions, located at UtahRISE.org.

During Testing

While students sign in to the assessments through the Secure Browser, the steps below outline the process for test administrators (TAs) to sign in to TIDE.

TAs will then help students sign in to their assessments by reading the directions for administration. Reading the scripted instructions is required as part of each standardized test administration. All directions are indicated by the word “**SAY**” in bold type. Read these directions exactly as they are written. Follow the test-specific instructions for administering each test. Sections that will need to be tailored to the specific testing situation are noted. Directions and scripting are the same for most tests. Please note that there are unique directions and scripting for writing; mathematics grades 6, 7, and 8; and for students with screen reader and/or braille accommodations.

Step 1: Distribute Materials

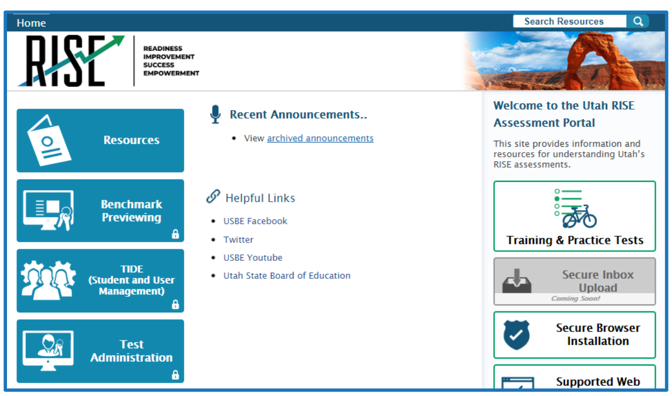
- Ensure that blank scratch/graph paper, headphones, and appropriate test materials are distributed. If you are using student test tickets, ensure that those are also distributed.
- Follow local procedures to ensure that the Secure Browser is available and launched on each device students will use for the test. Ensure that all students have headphones and a keyboard.
- TAs may provide sign-in information to students using test tickets generated from TIDE or may follow local procedures to help students sign in. For information on generating test tickets or locating student sign-in information in TIDE, refer to the *TIDE User Guide*, located at UtahRISE.org.

Note: A student may use scratch/graph paper for multiple sessions of the same test as long as it is collected and stored securely between sessions.

Step 2: Sign In to TDS system

- Navigate to the RISE Portal (see Figure 60) at UtahRISE.org.

Figure 60. RISE Portal Home Page

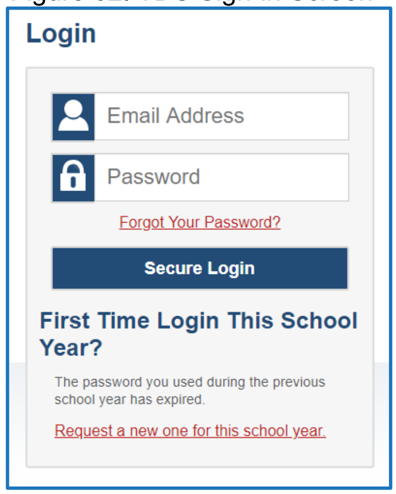


- Click on the **Test Administration** card (see Figure 61).

Figure 61. Test Administration Card

- You will be directed to the TDS sign-in screen (see Figure 62).

Figure 62. TDS Sign-in Screen



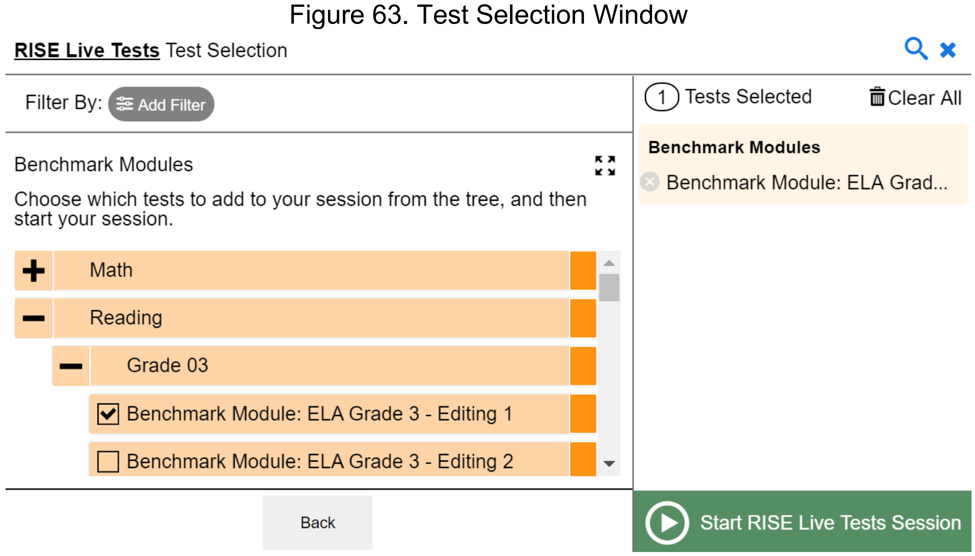
- Enter your username (email address) and password into the respective text fields.
- Click **Secure Login**. The TA site will display with the list of possible tests to add to your session.

Note: If you do not have a username and password, contact your school administrator.

Step 3: Select Tests to Administer

- In the test selection tree (see Figure 63), mark checkboxes for the test or tests you want to include in the session. Best practice is to select only the individual test(s) to be delivered in your session to prevent students from starting the wrong test by mistake. The system does allow users to select groups of tests if needed. To select all tests in a group, mark the checkbox for that group.
- Click Start RISE Live Tests Session

Figure 63. Test Selection Window



Step 4: Locate Session ID

- You will see the Session ID for the test(s) to be administered (see Figure 64).

Figure 64. Session ID Window

- Each test session will be automatically assigned a unique Session ID. The Session ID to begin each testing session will be provided to students by the TA.
- If necessary, you can add additional tests to an ongoing test session by selecting **Select Tests** from the Session ID window (see Figure 65).

Figure 65. Select Tests Button

Step 5: Help Students Sign In to the Test Session

- Students access RISE assessments through the Secure Browser, which must be downloaded and installed on the testing device.

Please note: If you have students using the Refreshable Braille or Screen Reader accommodations, there is additional scripting required. For the Accommodated Script, refer to the Accommodated Script section of this manual.

*Please note: To return to this page after following this link, use one of the following keyboard shortcuts: **Alt** + **Left Arrow** (for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or **Command** + **Left Arrow** (for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

Summative Student Instructions—Required for every assessment

SAY: "You will now sign in to the test. You should see a sign-in screen on your device. If you do not, please let me know now." **[Pause.]** ***"On the sign-in screen, please enter your first name and seven-digit SSID along with the Session ID."*** **[If sign-in tickets have not been provided, provide students with their first name and SSID as displayed in TIDE system.]** ***"Then click the Sign In button."***

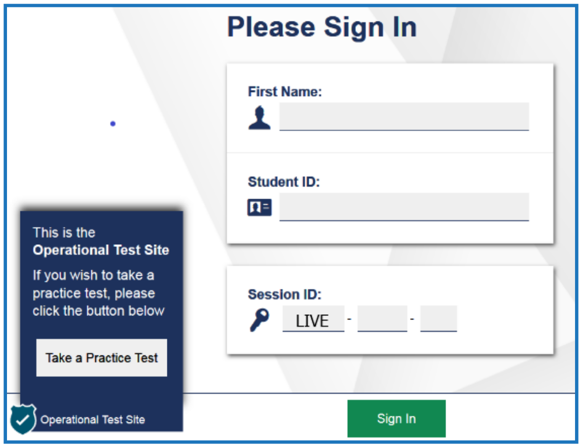
Troubleshooting tips: If a student is unable to sign in, he or she will be prompted to try again or contact the TA.

- Has the student entered his or her legal first name, not a nickname?
- Has the student entered the correct SSID?
- Has the student entered the correct Session ID?

Please note: The TA can look up the student's information using the Student Lookup function on the TA site. TAs may assist students with signing in, if necessary.

Test Sign-in for Students

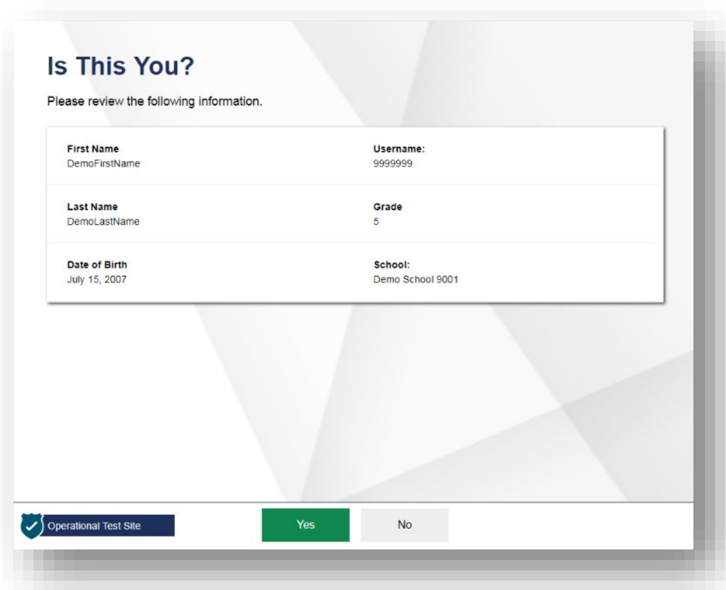
Figure 66. Student Sign In Page



Pause while students sign in (see Figure 66).

SAY: "Please review the information on the screen, making sure the information on the screen is correct. If any of the information is incorrect, please raise your hand and I will help you; otherwise, select Yes to continue."

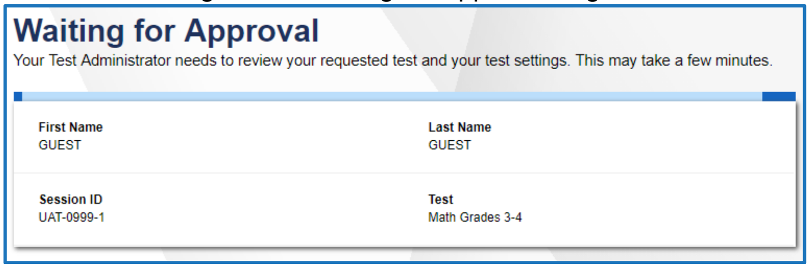
Figure 67. Is This You? Page



SAY: "Then please click on the [insert course name] ***test and you will see a Waiting for Approval page. You should wait for***

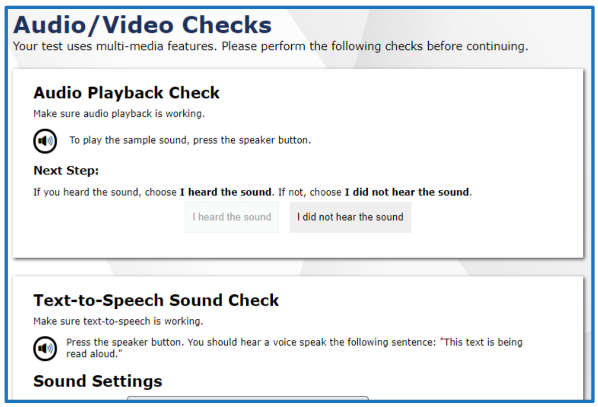
your test to be approved. I will approve your test when I am finished giving instructions."

Figure 68. Waiting for Approval Page



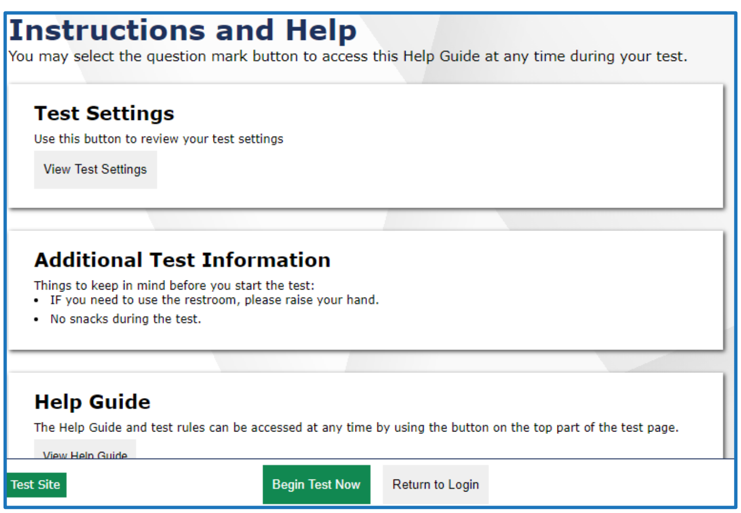
SAY: "On the next screen, you may be presented with a series of Audio/Video Checks screens. If the voice is not audible or clear, adjust the settings using the sliders and click the speaker icon again. If you still cannot hear the voice clearly, click 'I did not hear the sound' and raise your hand."

Figure 69. Audio/Video Checks Screens



SAY: "Once you complete the audio/video checks, the Instructions and Help page will appear. You can review this page to understand what test resources/tools are available and how to navigate through the test."

Figure 70. Instructions and Help Page



SAY: "You may return to the Help Guide at any time during the test by selecting the question mark button. If you do not know how to use the system to enter your response, please raise your hand and I will help you. Please remember that I will show you only how to use the program."

Please note: If you have students using the Refreshable Braille or Screen Reader accommodations, there is additional scripting required. For the Accommodated Script, refer to the [Accommodated Script](#) *section of this manual.*

Please note: To return to this page after following this link, use one of the following keyboard shortcuts: ***Alt*** *+* ***Left Arrow*** *(for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or* ***Command*** *+* ***Left Arrow*** *(for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

ELA, Mathematics (grades 3, 4, 5, 7, 8), or Science Summative Script

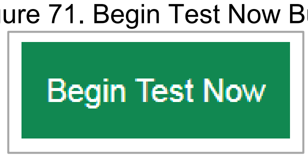
SAY: "You are now ready to take the **[insert grade level, course name]** ***test. This test is designed to measure your understanding of the Utah Core Standards for*** **[insert grade level, course name].** ***You may return to the Help Guide at any time during the test by selecting the question mark button. If you find that you do not know how to enter your responses, please raise your hand. If you do not finish during this testing session, you may be able to continue later. I will let you know when there are about five minutes left in the session."***

SAY: "Before you begin testing, I will provide additional instructions."

"You will not be able to return to the test once you have submitted it. Please make sure to review your test and complete any questions marked for review. To review your test before submitting it, select the End Test button and select the items you want to review from the End Test screen. You can go back to an item by clicking on the item number. Once you have completed your review and are ready to submit the test, please raise your hand."

Follow local procedures to actively proctor the test session and to document any testing anomalies that occur.

Figure 71. Begin Test Now Button



SAY: "I will now approve your test, allowing you to go through the Audio/Video checks and Help guide. Once you are done, select Begin Test Now."

Five-Minute Alert Before the End of the Test Session

Follow appropriate local procedures to attract the students' attention and then read the following script.

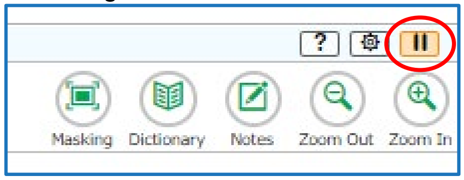
SAY: "There are five minutes remaining in this test session. Now, please review any test items you answered because you will not be able to review them later. If you are not finished with this test, you will have a chance to answer the remaining items later."

Ending the Test Session

Students—End the Session and Sign Out

SAY: "The test session is now over. If you have not finished, click the Pause button in the upper-right corner."

Figure 72. Pause Button



SAY: "If you have completely finished the test, click End Test and raise your hand when you see the Attention box."

Figure 73. End Test Button

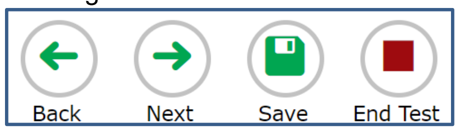
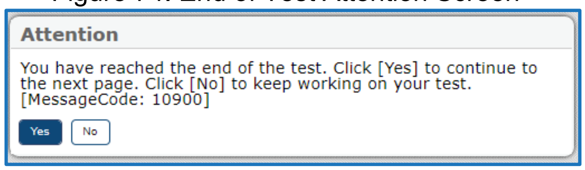
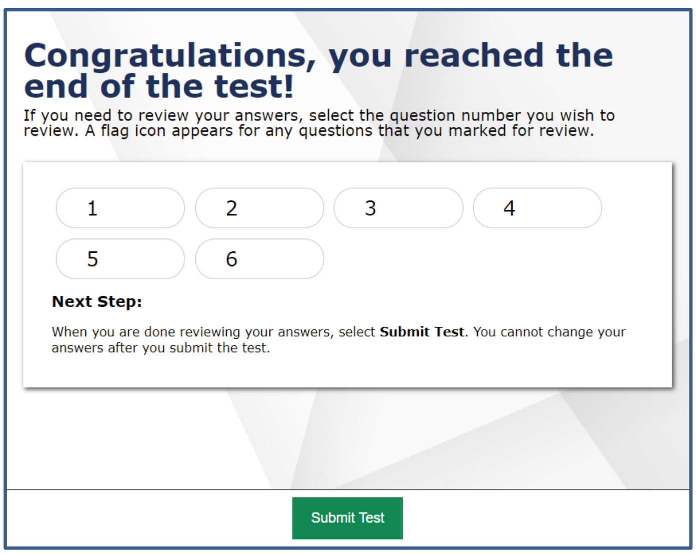


Figure 74. End of Test Attention Screen



SAY: "Please review your test one more time to make sure you are happy with your responses. You will not be able to return to the test after you have submitted your test."

Figure 75. End of Test Review Screen



SAY: "Click Submit Test on the Review Items Screen to submit your test."

SAY: "If you do not know how to submit your test, or cannot submit your test, please let me know now."

The student can click Logout to exit the Secure Browser.

[Pause.]

SAY: "I will now collect your testing materials."

Secure materials should be stored between testing sessions and destroyed at the end of testing according to local procedures.

Ensure the following materials are secure:

- Scratch paper/graph paper written on by students
- Embossed items and passages (for students with braille accommodation)
- Print-on-Demand items and passages (for students with Large Print or paper-based accommodations)
- Student test tickets, if provided (should have been collected already and placed in a secure location after the students began testing)

Test Administrator—Sign Out

SAY: "Click Logout in the top right corner of the TDS system."

Figure 76. Logout Button in TDS

Summative Writing Script

The writing assessment may be completed in multiple testing sessions within the testing times listed in the Testing Windows and Scheduling section of this manual. Testing sessions should be reasonable and must fit within local testing schedules.

Please note: To return to this page after following the link above, use one of the following keyboard shortcuts: ***Alt*** *+* ***Left Arrow*** *(for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or* ***Command*** *+* ***Left Arrow*** *(for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

SAY: "Then please click on the* [insert course name] *test and you will see a Waiting for Approval page. You should wait for your test to be approved. I will approve your test when I am finished giving instructions."

Figure 77. Students' Your Tests Page

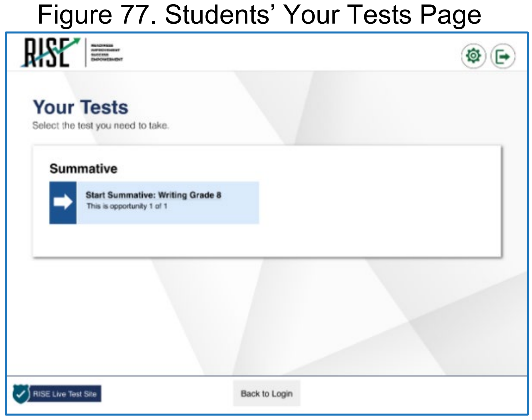
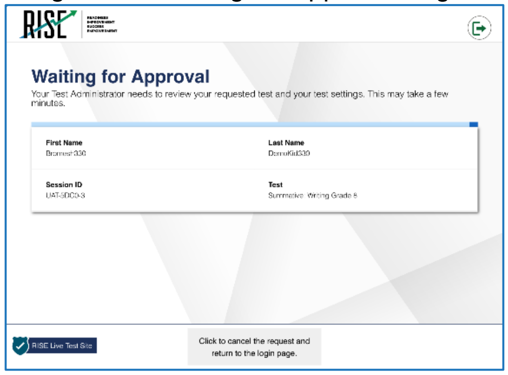
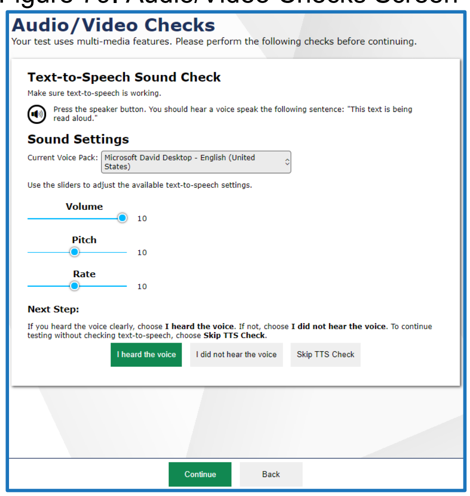


Figure 78. Waiting for Approval Page



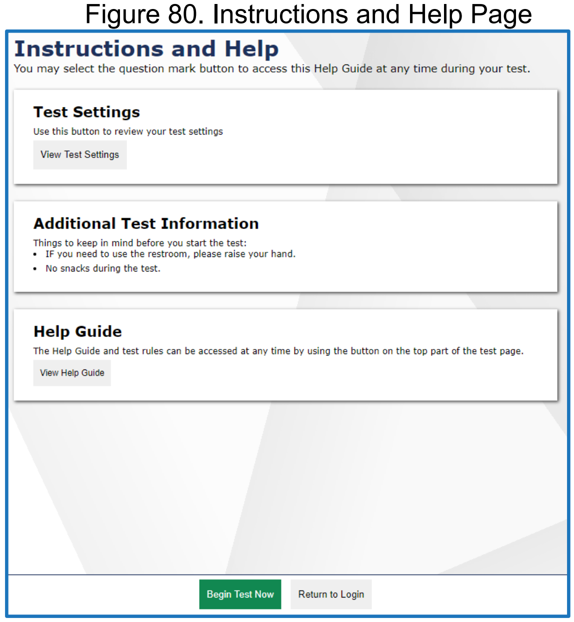
SAY: "Next, you will be presented with an Audio/Video Checks screen. If the voice is not audible or clear, adjust the settings using the sliders and click the speaker icon again. If you still cannot hear the voice clearly, click 'I did not hear the voice' and raise your hand."

Figure 79. Audio/Video Checks Screen



SAY: "Once you complete the audio/video checks, the Instructions and Help page will appear. You can review this page to understand what test resources/tools are available and how to navigate through the test."

Figure 80. Instructions and Help Page



SAY: "You may return to the Help Guide at any time during the test by selecting the question mark button. If you do not know how to use the system to enter your response, please raise your hand and I will help you. Please remember that I will show you only how to use the program."

Please note: If you have students using the Refreshable Braille or Screen Reader accommodations, there is additional scripting required. For the Accommodated Script, refer to the *Accommodated Script* *section of this manual.*

*Please note: To return to this page after following this link, use one of the following keyboard shortcuts: **Alt** + **Left Arrow** (for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or **Command** + **Left Arrow** (for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

Note: If students are continuing a test that has been paused, they will need to go through the sign-in process again.

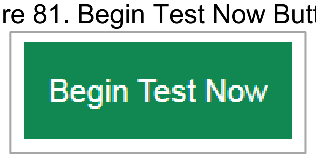
SAY: "Before you begin testing, I will provide additional instructions."

Follow local procedures to actively proctor the test session and document any testing anomalies that occur.

SAY: "You are going to respond to one writing prompt. You will see guidelines that suggest how much you should write and how long it should take you to respond. Most of you will finish in one hour. If you do not finish during this testing session, you will be able to continue later. Do not submit your test if you need more time at the end of this testing session."

SAY: "I will now approve your test, allowing you to go through the Audio/Video checks and Help guide. Once you are done, select Begin Test Now."

Figure 81. Begin Test Now Button



Five-Minute Alert Before the End of the Test Session

Follow appropriate local procedures to attract the students' attention and then read the following script.

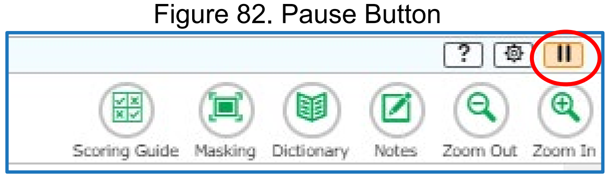
SAY: "There are five minutes remaining in this test session. Please prepare to pause or end your writing test. You will be able to return to your response later if you are not finished."

Ending the Test Session

Students—End the Session and Sign Out

SAY: "The test session is now over. If you have not finished, click the Pause button in the upper-right corner."

Figure 82. Pause Button



SAY: "If you have completely finished the test, click End Test and confirm by clicking Yes on the Attention screen."

Figure 83. End Test Button

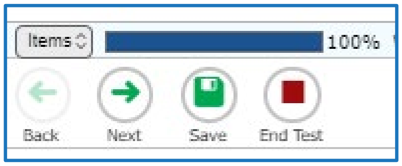
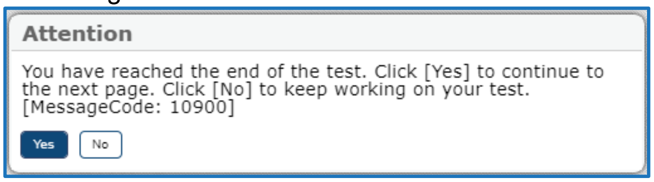
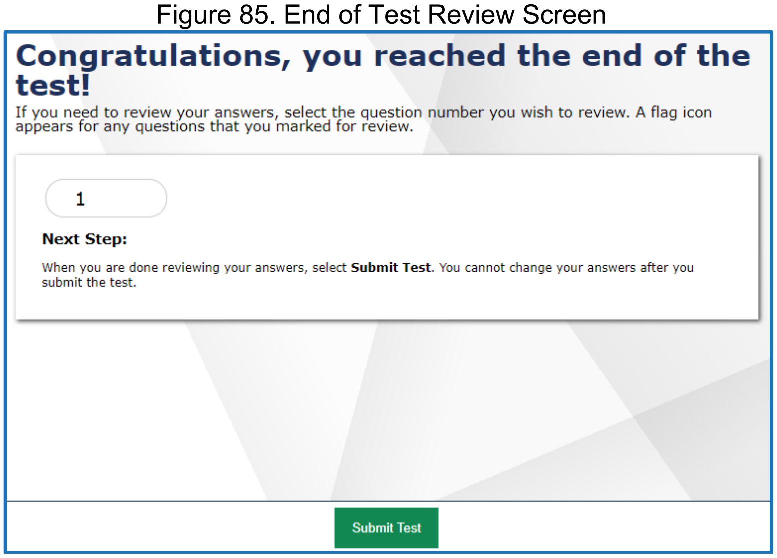


Figure 84. End of Test Attention Screen



SAY: "Click Submit Test on the End Test screen to submit your test."

Figure 85. End of Test Review Screen



SAY: "If you do not know how to submit your test, or cannot submit your test, please let me know now."

The student can click Logout to sign out of the Secure Browser.

[Pause.]

SAY: "I will now collect your testing materials."

Secure materials should be stored between testing sessions and destroyed at the end of testing according to local procedures.

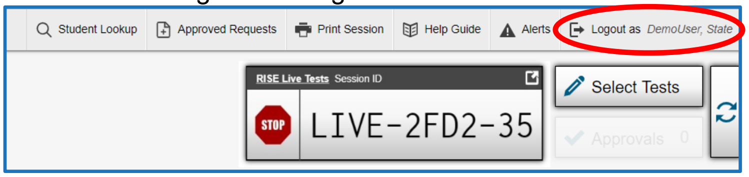
Ensure the following materials are secure:

- Scratch paper/graph paper written on bystudents
- Embossed items and passages (for students with braille accommodation)
- Print-on-Demand items and passages (for students with Large Print or paper-based accommodations)
- Student test tickets, if provided (should have been collected already and placed in a secure location after the students began testing)

Test Administrator—Sign Out

SAY: "Click Logout in the top right corner of the TDS system."

Figure 86. Logout Button in TDS



Summative Mathematics Grade 6 Script

SAY: "Then please click on the [insert course name] test and you will see a Waiting for Approval page. You should wait for your test to be approved. I will approve your test when I am finished giving instructions."

Figure 87. Students' Your Tests Page

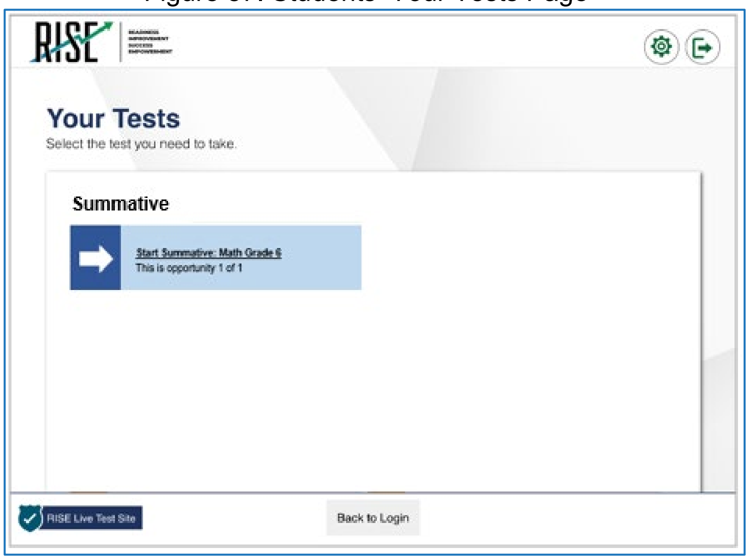
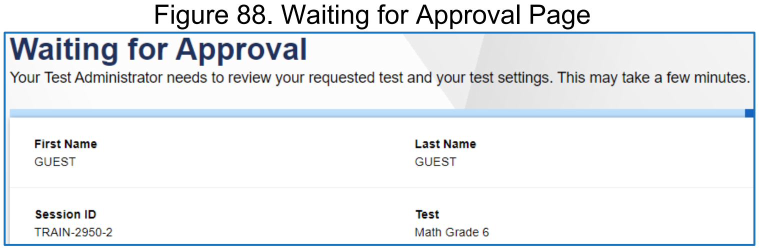
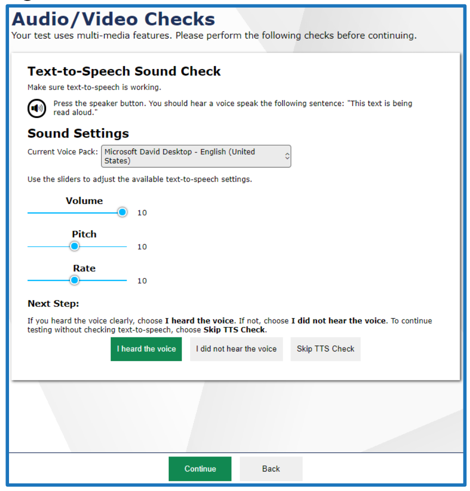


Figure 88. Waiting for Approval Page



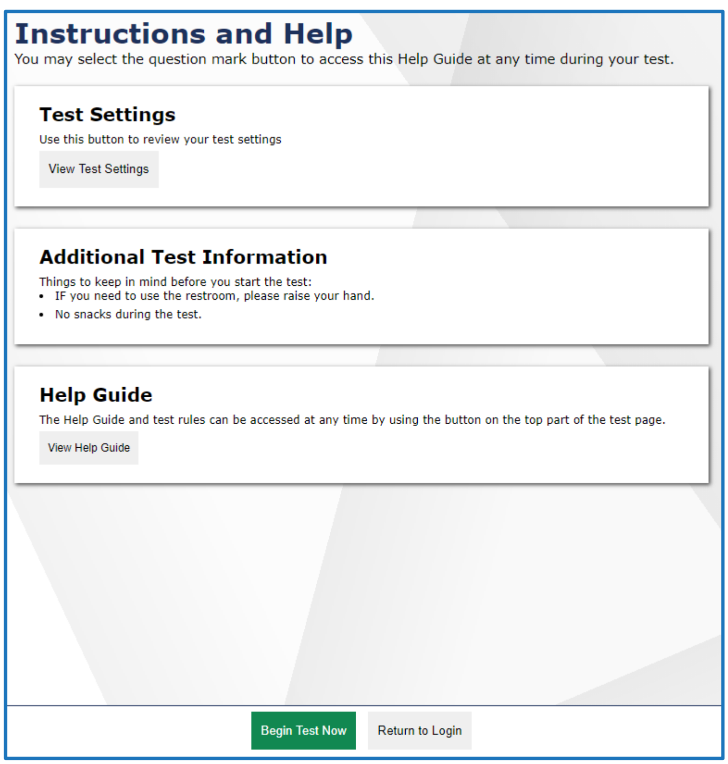
Say: "Next, you may be presented with a series of Audio/Video Checks screens. If the voice is not audible or clear, adjust the settings using the sliders and click the speaker icon again. If you still cannot hear the voice clearly, click 'I did not hear the voice' and raise your hand."

Figure 89. Audio/Video Checks Screen



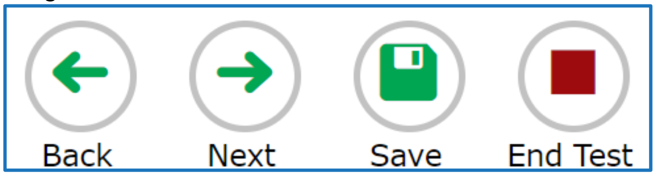
SAY: "Once you complete the audio/video checks, the Instructions and Help page will appear. You can review this page to understand what test resources/tools are available and how to navigate through the test."

Figure 90. Instructions and Help Page



SAY: "You may return to the Help Guide at any time during the test by selecting the question mark button. Also, you will find tutorials available on each item showing how to work with each item type. If you do not know how to use the system to enter your response, please raise your hand and I will help you. Please remember that I will show you only how to use the program."

Figure 91. Back, Next, Save and End Test Buttons



RISE Summative Mathematics: Grade 6

The mathematics grade 6 assessment contains two segments:

- Segment 1 is to be taken without a calculator.
- Segment 2 allows the use of an embedded onscreen calculator.
    - Note: TAs must approve students to advance to Segment 2 in the TA interface.

Students will not be able to return to the first segment after you direct them to start the second segment.

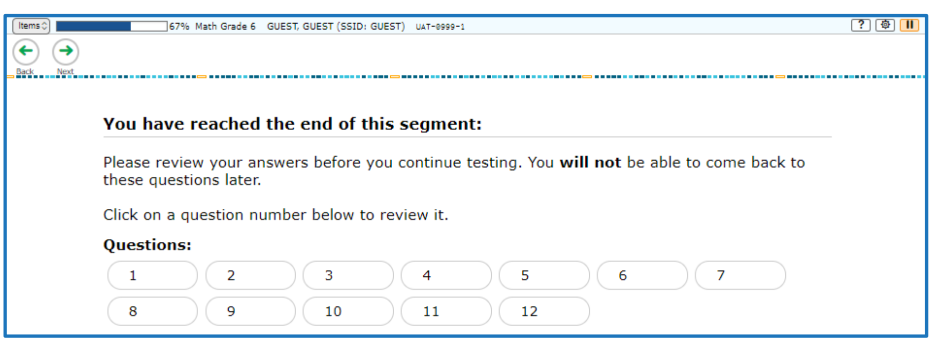
Please note that students should not select "Next" until the TA has been notified by the student that they are moving to second segment. The TA must approve the second segment for the student.

SAY: "You are now ready to take Segment 1 of the grade 6 mathematics test. This test is designed to measure your understanding of the Utah Core Standards for grade 6 mathematics."

SAY: "You may return to the Help Guide at any time during the test by selecting the question mark button. Also, you will find tutorials available on each item showing how to work with each item type. If you do not know how to use the system to enter your response, please raise your hand and I will help you. Please remember that I will show you only how to use the program."

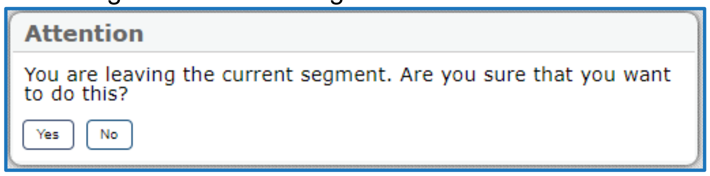
SAY: "This test is divided into two segments. For the first segment, you will not be allowed to use a calculator. For the second segment, you will be able to use the online calculator tool. When you respond to the last item in the first segment, you will see a review screen. Please review your responses BEFORE clicking the Next arrow to move to the next segment. Raise your hand before you continue to Segment 2. I must approve you to move on to Segment 2."

Figure 92. End of Segment Review Screen



SAY: "Once you go to the second segment, you will be unable to return to the first segment."

Figure 93. End of Segment Attention Screen



Please note: If you have students using the Refreshable Braille or Screen Reader accommodations, there is additional scripting required. For the Accommodated Script, refer to the [Accommodated Script](#) section of this manual.

*Please note: To return to this page after following this link, use one of the following keyboard shortcuts: **Alt** + **Left Arrow** (for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or **Command** + **Left Arrow** (for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

SAY: "When you are ready, select Begin Test Now."

Five-Minute Alert Before the End of the Test Session

Follow appropriate local procedures to attract the students' attention and then read the following script.

SAY: "There are five minutes remaining in this test session. Now, please review any test items you answered, because you will not be able to review them later. If you are not finished with this test, you will have a chance to answer the remaining items later."

Ending the Test Session

Students—End the Session and Sign Out

SAY: "The test session is now over. If you have not finished, click the Pause button in the upper-right corner."

SAY: "If you have completely finished the test, click End Test and confirm by clicking Yes on the Attention screen."

Figure 94. End Test Button

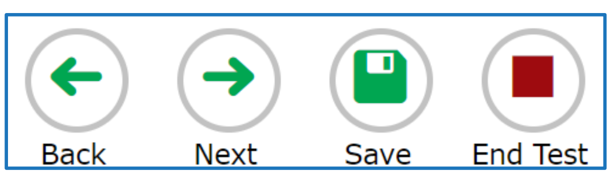
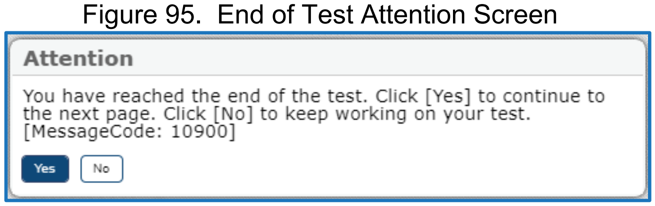
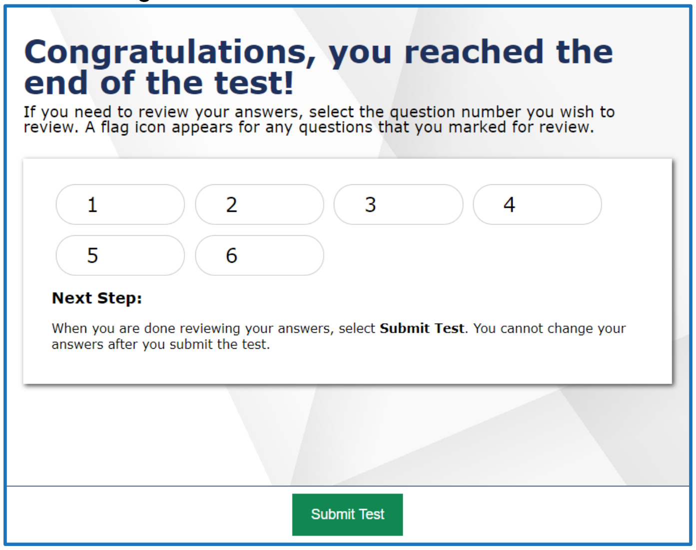


Figure 95. End of Test Attention Screen



SAY: "Click Submit Test on the End Test Review Screen to submit your test. You will not be able to return to the test after you have submitted your test."

Figure 96. End of Test Review Screen



SAY: "If you do not know how to submit your test, or cannot submit your test, please let me know now."

[Pause.]

SAY: "I will now collect your testing materials."

Secure materials should be stored between testing sessions and destroyed at the end of testing session according to local procedures.

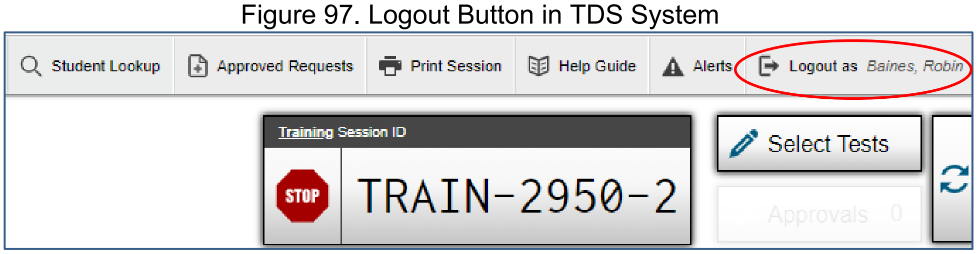
Ensure the following materials are secure:

- Scratch paper/graph paper written on bystudents
- Embossed items and passages (for students with brailleaccommodation)
- Print-on-Demand items and passages (for students with Large Print or paper-based accommodations)
- Student test tickets, if provided (should have been collected already and placed in a secure location after the students began testing)

Test Administrator—Sign Out

SAY: "Click Logout in the upper-right corner of the TDS system."

Figure 97. Logout Button in TDS System



Accommodated Script

If a student's test includes listening items, those students will be asked to perform an audio check before learning about the online testing resources/tools. In this event, please instruct students to check that their headphones are working.

SAY: "Check your audio. Press play below to hear a sound. Change your volume as needed."

If a student's test does not include an audio check, simply instruct those students to follow along while you read aloud the general instructions.

SAY: "The directions will help you learn about how to take your test."

SAY: "The Help Guide and Pause can be found in the upper-right corner of the screen during the test. Press the question mark link to see the Help Guide again at any point during your test. Press Pause to pause and sign out of your test without submitting it."

SAY: "The Items button can be found in the upper-left corner of the screen during the test. Press this button to see your progress on the test and quickly move between questions. This is also where the End Test button will appear for you to submit your test when you are finished."

SAY: "The right and left arrow buttons will be located in the upper-left corner of the screen during the test. Move between different questions on your test by using these buttons. The right arrow takes you forward. The left arrow takes you back."

SAY: "Some items on your test may be split into side-by-side areas. This is so you can easily go back and forth between the two sides while you answer questions. If you want to focus more on one side, you can move the dividing line left or right by using the arrow buttons in the top right corner of the item."

SAY: "There are also some resources/tools you may find helpful to use during the test. Zoom can be used to make words and pictures on the screen bigger or smaller. Press the zoom out button to decrease the size of the words and pictures. Press the zoom in button to increase the size of the words and pictures on the screen."

"You may select Mark for Review from the context menu to mark a question you want to return to at a later time. Anything you have marked for review can be seen from the Review screen."

Appendix

Please note: To return to the page in this manual that you were on before clicking a link to this appendix, use one of the following keyboard shortcuts: ***Alt*** *+* ***Left Arrow*** *(for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or* ***Command*** *+* ***Left Arrow*** *(for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

A

Alert Messages

The Utah State Board of Education can send statewide alerts that appear as pop-up messages on the TA Site.

1. In the banner, click **Alerts** (see Figure 98). The ***Alerts*** window appears listing all the active alert messages (see Figure 99).

2. Click **Close** to close the window and return to the TA Site.

Figure 98. Alerts Button

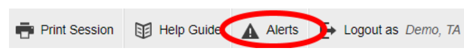
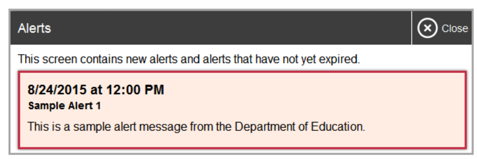


Figure 99. Record of Alerts



E

Expiration Rules for Test Opportunities

Opportunities refer to the number of times a student can take a test within a range of dates. Tests may have one opportunity or multiple opportunities. A student's test opportunity remains active until the student submits the test or until the opportunity expires. Once a test opportunity expires, the student cannot complete or review the test.

K

Keyboard Commands in the Student Testing Site

Students can use keyboard commands to navigate between test elements, features, and resources/tools. Some important things to note about keyboard commands are:

Keyboard commands require the use of the primary keyboard, so please do not use keys in a numeric keypad. Some keyboard commands (such as the commands for using the Line Reader) may not work when testing on iOS devices connected to an external keyboard.
When Permissive Mode is enabled for a test, keyboard commands are blocked and will not work.

Keyboard Commands for Sign-In Pages and In-Test Pop-ups

Table 9 lists keyboard commands for selecting options on the sign-in pages or pop-up windows that appear during a test.

Table 9. Keyboard Commands for Sign-In Pages and Pop-Up Windows

Function	Keyboard Commands
Move to the next option	• **Tab**
Move to the previous option	• **Shift** + **Tab**
Select the active option	• **Enter**
Mark checkbox	• **Space**
Scroll through drop-down list options	• **Arrow Keys**
Close pop-up window	• **Esc**

Keyboard Commands for Test Navigation

Table 10 lists keyboard commands for navigating tests and responding to questions.

Table 10. Keyboard Commands for Test Navigation

Function	Keyboard Commands
Scroll up	• **Up Arrow**
Scroll down	• **Down Arrow**
Scroll to the right	• **Right Arrow**
Scroll to the left	• **Left Arrow**
Move to the next element	• **Tab**
Move to the previous element	• **Shift** + **Tab**
Select an answer option	• **Space**
Go to the next test page	• **Ctrl** + **Right Arrow**
Go to the previous test page	• **Ctrl** + **Left Arrow**
Open the global menu	• **Ctrl** + **G**
Open a context menu	• **Ctrl** + **M**

Keyboard Commands for Global and Context Menus

Students can use keyboard commands to access resources/tools in the global and context menus. For more information about resources/tools in these menus, see the How Students Use Testing Resources/Tools section of this manual.

*Please note: To return to this page after following this link, use one of the following keyboard shortcuts: **Alt** + **Left Arrow** (for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or **Command** + **Left Arrow** (for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

Global Menu

1. To access the global menu resources/tools using keyboard commands, press **Ctrl** + **G**. The global menu list opens.
2. To move between options in the global menu, use the **Up** or **Down** arrow key.
3. To select an option, press **Enter**.
4. To close the global menu without selecting an option, press **Esc**.

Context Menus

1. To open the context menu for an element (question, answer options, or stimulus), navigate to the element using the **Tab** or **Shift** + **Tab** command.
2. Press **Ctrl** + **M**. The context menu for the selected element opens.
3. To move between options in the context menu, use the **Up** or **Down** arrow keys.
4. To select an option, press **Enter**.
5. To close the context menu without selecting an option, press **Esc**.

Keyboard Commands for Highlighting Selected Regions of Text

This section explains how to use keyboard commands to select a text excerpt (such as a word in a passage) and highlight it. These instructions only apply to students using the Secure Browser.

1. To select text and highlight it, navigate to the element containing the text you want to select.
2. Press **Ctrl** + **M** to open the context menu and navigate to **Enable Text Selection**.
3. Press **Enter**. A flashing cursor appears at the upper-left corner of the active element.
4. To move the cursor to the beginning of the text you want to select, use the arrow keys.
5. Press **Shift** and an arrow key to select your text. The text you select appears shaded.
6. Press **Ctrl** + **M** and select **Highlight Selection**.

Keyboard Commands for Grid Questions

Questions with the grid response area may have up to three main sections – an answer space, which is the grid area where students enter the response; an object bank, which is a panel containing objects you can move to the answer space; and a button row, which appears above the answer space and may include **Delete**, **Add Point**, **Add Arrow**, **Add Line**, **Add Circle**, **Add Dashed Line**, and **Connect Line** buttons. See Figure 100.

To move between the main sections, do the following:

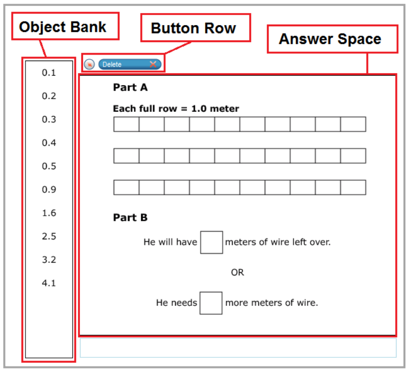
– To move clockwise, press Tab. To move counter-clockwise, press Shift + Tab.

To add an object to the answer space**,** do the following:

a. With the object bank active, use the arrow keys to move between objects. The active object has a blue background.

b. To add the active object to the answer space, press **Space**.

Figure 100. Grid Question



To use the action buttons, do the following:

c. With the button row active, use the left and right arrow keys to move between the buttons. The active button is white.

d. To select a button, press **Enter**, and then press **Space** to apply the point, arrow, or line to the answer space.

To move objects and graph elements in the answer space, do the following:

e. With the answer space active, press **Enter** to move between the objects, and then press **Space**. The active object displays a blue border.

f. Press an arrow key to move the object. To move the object in smaller increments, hold **Shift** while pressing an arrow key.

Keyboard Commands for Equation Questions

Equation questions allow students to use keyboard commands to open a menu listing the special characters they can insert into the response area.

1. To insert special characters in the response area, with the focus in the text field of the response area, press **Alt** + **7**. The ***Special Characters*** window opens.

2. To move between options in the context menu, use the **Up** or **Down** arrow keys.

3. To add the selected option to the response area, press **Enter**.

L

Login Information for the TA Site

To be able to access the TA Site, your TIDE administrator must first create your account in TIDE. Once your account is created, you receive an account activation email. You can sign in to the TA Site after activating your account.

1. Navigate to the RISE Portal (UtahRISE.org).
2. Select the appropriate TA Site:
   a. To access the TA Interface, click **Test Administration** (see Figure 101).
   b. To access the TA Training Site, click **Take the Training and Practice Tests**, then select **TA Training and Practice Site**. See Figure 102.
3. The ***Login*** page appears. Enter your email address and password.
4. Click **Secure Login**. The selected TA Site appears with login fields (see Figure 103).
   a. If you have not logged in using this browser before, or if you have cleared your browser cache, the ***Enter Code*** page appears (see Figure 104) and an email containing an authentication code is sent to your address.
      - In the *Enter Emailed Code* field, enter the emailed code.
      - Click **Submit** to view the TA Site.

   Note: You must use the authentication code within 15 minutes of the email being sent. If the code has expired, click **Resend Code** to request a new code.

Figure 101. Card for TA Interface

Figure 102. Cards for TA Training Site

Figure 103. Login Page

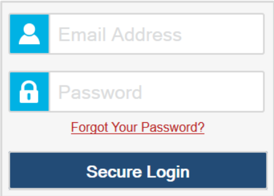
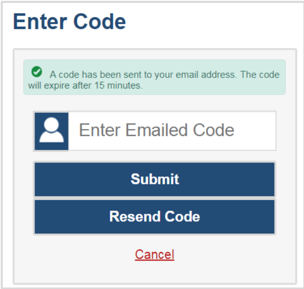


Figure 104. Enter Code Page



5. If you are associated with multiple institutions that have testing windows set, a pop-up message prompts you to select a testing institution. Select your institution from the drop-down list and click **Go**. To change the institution, you must log out and then log back in.

P

Pause and Test Timeout Rules

Pause Rules

TAs and students can pause a test in order to temporarily log the student out of the test session. Students cannot review or modify answered questions after their test pauses for more than 20 minutes, even if they marked questions for review. The only exceptions to this rule are if a student pauses the test before answering all of the questions on the current page, if this is a writing test, or if you submit an appeal in TIDE.

These pause rules apply regardless of whether the student or the TA pauses the test or a technical issue logs the student out.

Test Timeout Rules

A warning message displays after 20 minutes of test inactivity. Students who do not click **OK** within 30 seconds after this message appears are logged out. This timeout automatically pauses the test.

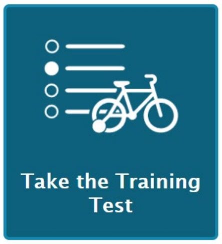
Training Test Site Student Sign-in Process

The Student Training Site allows students to take training and science practice cluster tests. Aside from the sign-in process, the Training and grade 4-8 Science Cluster Practice Test Site has the same appearance and functionality as the Student Testing Site.

Students can take training and grade 4-8 Science Cluster practice tests in proctored sessions created in the TA Training Site or in non-proctored/guest sessions. Students also have the option to sign in to the test sessions with their real identities to take tests specific to their grades or sign in as guests to take tests for any grade level.

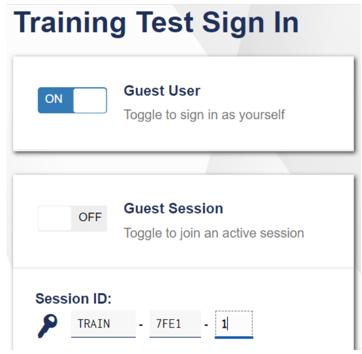
1. To access the Student Training Site, do one of the following:
   - From the RISE Portal (www.UtahRISE.org), select the **Take the Training Test** card (see Figure 105).
   - In the Secure Browser, select the **Take the Training Test** button.
2. To sign in, students do the following:
   - To sign in as a guest, students set the Guest User toggle to **On**. Otherwise, to use their real credentials, students set the Guest User toggle to **Off** and then enter their first name and SSID.

Figure 105. Student Training Test Card



– To join a guest session, students set the Guest Session toggle to **On**. Or else, to join a proctored session, students set the Guest Session toggle to **Off** and enter the Session ID from the TA Training Site. See Figure 106.

Figure 106. Student Training Site Login Page

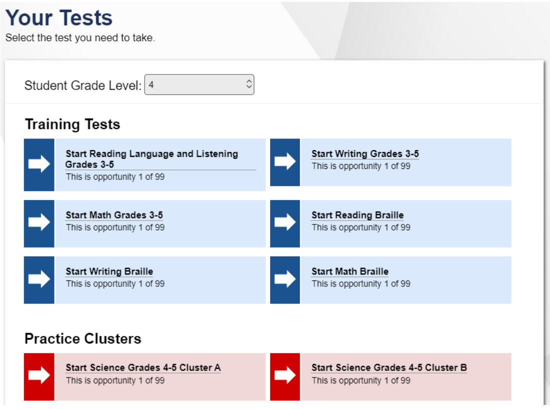


– Students select **Sign In**.

- If signed in with their real identities, the ***Is This You?*** page appears. Students verify their information and click **Yes** to proceed to the ***Your Tests*** page.

- If signed in as guest users, students are directly taken to the ***Your Tests*** page (see Figure 107).

Figure 107. Your Tests Page



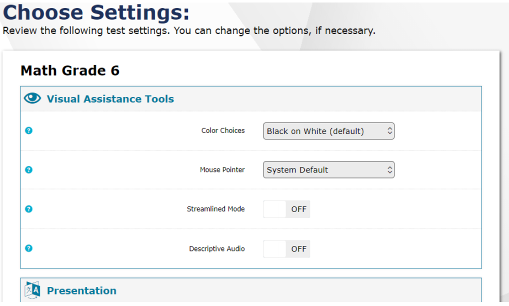
3. On the ***Your Tests*** page, students do one of the following:

– If signed in with their real identities, students select a test from the ones available for their grade.

– Students signed in as guests select their grade level from the drop-down list to view the tests available for that grade and then select a test.

4. If the students signed in to a guest session, they must select the test settings they wish to use from the ***Choose Settings*** page (see Figure 108) and then select the **Select** button. When selecting the color of the text and background, mouse-pointer, and print size settings, students can see a live preview of their selected settings.

Figure 108. Choose Settings Page



5. If the test includes audio content or text-to-speech settings, the ***Audio/Video Checks*** page appears displaying the functionality checks that need to be performed. Students must follow the instructions on this page to ensure their device is working properly.

6. On the final sign-in page, students may review the help guide, their test settings, and the additional test information, then select **Begin Test Now** to start or resume their test opportunity.

Print Session Information

You can print a snapshot of the TA Site as it currently appears if you wish to keep a hard-copy record of the Session ID or list of approved students. Please note that federal law prohibits the release of students' personally identifiable information. All printouts must be securely stored and then destroyed when no longer needed.

1. In the banner, click **Print Session**. The computer's print dialog window appears.

2. Click **OK**.

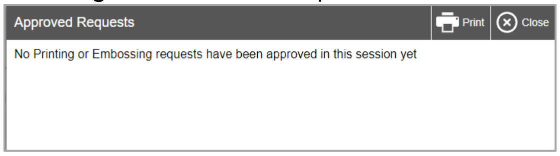
Print Approved Requests Information

You can view and print a list of every print request you approved for students during the current session.

1. In the banner, click **Approved Requests**. The ***Print Requests*** window appears listing all the approved print requests (see Figure 109).

2. Select **Print** to print the list.

Figure 109. Print Requests Window



S

Secure Browser

The Secure Browser ensures test security by prohibiting access to external applications and navigation away from the test. When the Secure Browser launches, it checks for other applications running on the device. If it detects a forbidden application, it displays a message listing the offending application and prevents the student from testing. This also occurs if a forbidden application launches while the student is already in a test.

In most cases, a detected forbidden application is a scheduled or background job, such as anti-virus scans or software updates. The best way to prevent forbidden applications from running during a test is to schedule such jobs outside of planned testing hours.

Some additional measures you can implement to ensure the test environment is secure are:

Close External User Applications

Before launching the Secure Browser, or prior to administering the online tests, close all non-required applications on testing devices, such as word processors and web browsers.

Avoid Testing with Dual Monitors

Students should not take online tests on computers connected to more than one monitor. Systems that use a dual monitor setup typically display an application on one screen while another application is accessible on the other screen.

Disable Screen Savers and Timeout Features

On all testing devices, be sure to disable any features that display a screen saver or log out users after a period of inactivity. If such features activate while a student is testing, the Secure Browser logs the student out of the test.

Using the Secure Browser with Accessibility Software

For students with special needs or administrators seeking to accommodate students using accessibility features, the Secure Browser provides the option for assessments to be taken in less restrictive environments. This feature is known as Permissive Mode.

Assistive Technology Mode (also called Permissive Mode) is an accommodation option that allows students to use accessibility software in addition to the Secure Browser. Offered on Mac OS and Windows, students testing in Permissive Mode can have moderated access to the system outside of the Secure Browser. This allows students who need accessibility resources/tools to seamlessly navigate between the browser and approved applications that suit their test-taking needs.

Please note that accessibility software must be certified for use with the Online Testing System and forbidden applications will still not be allowed to run. For information about supported operating systems, see the *Quick Guide for Setting Up Your Online Technology*.

Assistive Technology Mode activates when the student is approved for testing. Students who have the Assistive Technology Mode setting enabled should not continue with the sign-in process until their accessibility software is correctly configured.

To use accessibility software with the Secure Browser:

1. Open the required accessibility software.

2. Open the Secure Browser. Begin the normal sign-in process up to the TA approval step.

3. When a student is approved for testing, the Secure Browser allows the operating system's menu and task bar to appear.

   – **Windows**: On Windows, the Secure Browser resizes, and the taskbar remains visible inside the test in its usual position. Students can execute the keyboard shortcut ALT+TAB to switch between the Secure Browser and accessibility applications, such as JAWS and NVDA, that they are permitted to use in their test session. Please note that when using Windows 8 and above, the task bar remains on-screen throughout the test after enabling accessibility software. However, forbidden applications are still prohibited.

   – **Mac**: On Mac OS, the Secure Browser resizes, and students can view the dock in its usual position inside the test. If the dock is set to autohide, no resizing occurs, and the dock is only visible when the mouse is moved toward the bottom of the screen. Students can execute the keyboard shortcut CMD+TAB to switch between the Secure Browser and permitted accessibility applications.

4. The student must immediately switch to the accessibility software that is already open on the computer so that it appears over the Secure Browser. The student cannot click within the Secure Browser until the accessibility software is configured.
   - **Windows:** To switch to the accessibility software application, click the application in the task bar.
   - **Mac:** To switch to the accessibility software application, click the application in the dock.
5. The student configures the accessibility software settings as needed.
6. After configuring the accessibility software settings, the student returns to the Secure Browser. At this point, the student can no longer switch back to the accessibility software. If changes need to be made, the student must sign out and then sign in again.
7. The student continues with the sign-in process.

As soon as Assistive Technology Mode is turned off, the Secure Browser reoccupies the whole screen so that the taskbar or dock is no longer visible, and the student's ability to switch between any applications and the Secure Browser is suppressed.

Accessing the Secure Browser on Mobile Devices

Tablets and Chromebooks should be configured for testing before you provide them to students. For more information, see the *Configuration, Troubleshooting and Advanced Secure Browser Installation Guides* on the RISE Portal under Technology Resources.

To configure iOS devices:

Tap the **SecureTestBrowser** Secure Browser icon.

To configure Chromebooks:

From the **Apps** link on the Chrome OS login screen, select **SecureTestBrowser** Secure Browser.

Closing the Student Testing Site on Tablets

After a test session ends, close the **SecureTestBrowser** application on student tablets.

To close the Student Testing Site on iOS devices:

1. Double-tap the Home button. The multitasking bar appears.
2. Locate the **SecureTestBrowser** application preview and slide it upward.

To close the Student Testing Site on Chromebooks:

Click **Close Secure Browser** in the upper-right corner.

Force-Quitting the Secure Browser

In the rare event that the Secure Browser or test becomes unresponsive, you can force-quit the Secure Browser. Please note that the Secure Browser hides features such as the Windows task bar or Mac OS X dock. If the Secure Browser is not closed correctly, then the task bar or dock may not reappear correctly, requiring you to reboot the device. Avoid using a force-quit command if possible.

To force the Secure Browser to close, use the keyboard command for your operating system as shown in Table 11. This action logs the student out of the test. When the browser is opened again, the student logs back in to resume testing.

Table 11. Force-Quit Secure Browser Keyboard Commands

Operating System	Key Combination
Windows*	• **Ctrl** + **Alt** + **Shift** + **F10**
Mac OS X*	• **Ctrl** + **Alt** + **Shift** + **F10**. The **Ctrl** key may appear as **Control**, **Ctrl**, or **^**
Linux	• **Ctrl** + **Alt** + **Shift** + **Esc**

*If you are using an Apple keyboard, you may need to press **Ctrl** + **Shift** + **Option** + **F10.** If you are using a laptop or notebook, you may also need to press **Function** before pressing **F10**.

Force-quit commands do not exist for the Secure Browser for iOS and Chrome OS.

iOS: Double-tap the Home button, then close the app as you would any other iOS app.
Chrome OS: To exit the Secure Browser from the sign-in screens, press **Ctrl** + **Shift** + **S**. You cannot force-quit once the test begins.

Student Lookup Feature

You can use the student lookup feature in the TA Site to perform a quick or advanced search for student information. This is useful if students signing in to your test session cannot remember their login information.

1. To perform a quick search:

a. In the banner, select **Student Lookup**.

b. Enter a student's full SSID and click **Submit SSID**. Search results appear below the search field. See Figure 110.

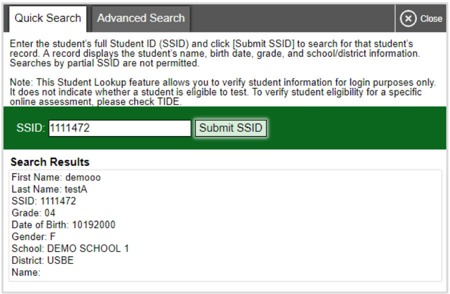
2. To perform an advanced search:

a. In the banner, select **Student Lookup,** and then select **Advanced Search** (see Figure 111).

b. Select the appropriate LEA and school from the drop-down lists.

c. Select the appropriate grade.

Figure 110. Student Lookup: Quick Search

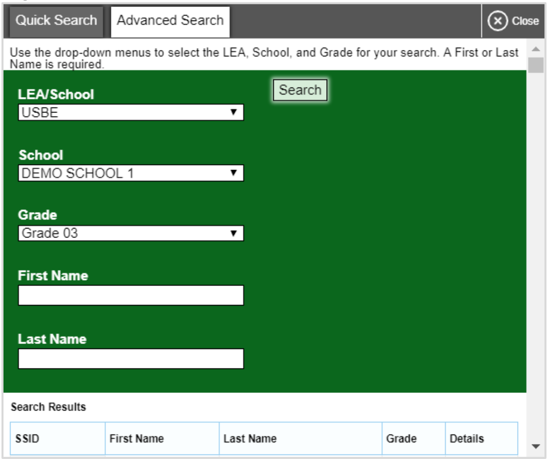


d. *Optional:* Enter a student's exact first or last name. Partial names are not allowed.

e. Click **Search**. Search results appear below the search fields.

f. To view a student's information, click  in the Details column.

Figure 111. Student Lookup: Advanced Search



T

Essay Response Questions

For essay-response item types in the Student Testing Site, students can use a formatting toolbar (see Figure 109). This toolbar is available above the response field for text response questions (see Figure 112) and also appears whenever students right-click anywhere in the text area. The formatting toolbar allows students to apply styling to text and use standard word-processing features. The lower-right corner of the response field displays the word count and character count for the student's response. Table 12 provides an overview of the formatting resources/tools available

Figure 112. Essay Response Question with Formatting Toolbar

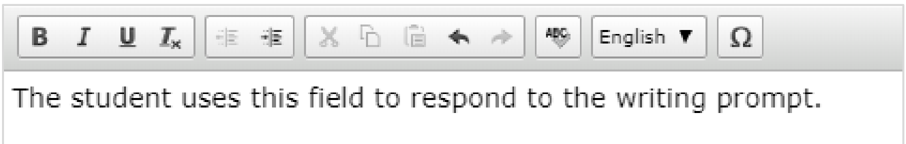


Table 12. Description of Formatting resources/tools

Tool	Description of Function
B I U	• Bold, italicize, or underline selected text.
I_x	• Remove formatting that was applied to the selected text.
	• Indent a line of selected text.
	• Decrease indent of text.
	• Cut selected text.
	• Copy selected text.
	• Paste copied or cut text.
	• Undo the last edit to text or formatting in the response field.
	• Redo the last undo action.
ABC English	• Use spell check to identify potentially misspelled words in the response field.
Ω	• Add special characters in the response field.
	• Speak the text entered in the response field.

Spell Check Feature

The spell check tool identifies words in the response field that may be misspelled.

Figure 113. Spell Check Drop-Down List

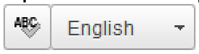
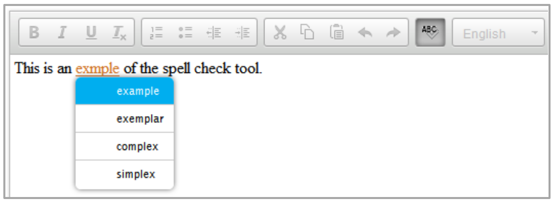


Figure 114. Spell Check Tool



1. Select a language for the spell check tool from the Spell Check drop-down list, if necessary (see Figure 113).
2. In the toolbar, select . Potentially incorrect words change color and become underlined.
3. Select a misspelled word. A list of suggestions appears (see Figure 114).
4. Select a replacement word from the list. If none of the replacement words are correct, close the list by clicking anywhere outside it.
5. To exit spell check, select again.

Special Characters Feature

Students can add mathematical, accented, and other symbols.

1. To add a special character, in the toolbar, select Ω.
2. In the window that pops up, select the required character.

Transfer a Test Session

You can transfer an active test session from one device or browser to another without stopping the session or interrupting in-progress tests. This is useful in scenarios when your computer malfunctions or if you accidentally close the browser while a session is in progress. Please note that to transfer a test session, you must enter the active Session ID.

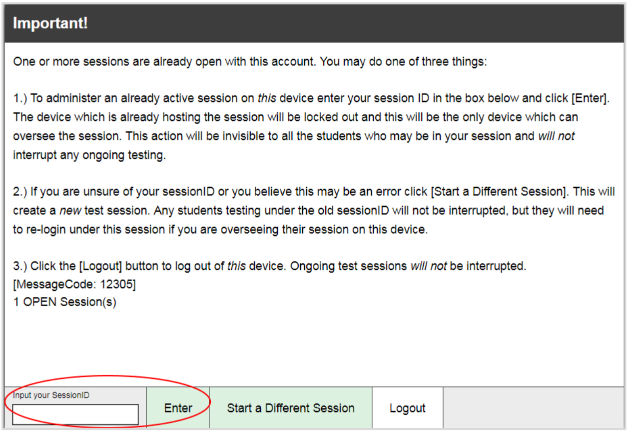
Your session remains open until it times out. If you do not return to the active session within 20 minutes and there is no student activity during that time, the Online Testing System logs you out and pauses the students' tests.

The Online Testing System ensures that you can administer only a test session from one browser at a time. If you move a test session to a new device, you cannot simultaneously administer the session from the original browser or device.

1. While the session is still active on the original device or browser, sign in to the TA Site on the new device or browser. A Session ID prompt appears (see Figure 115).

2. Enter the active Session ID in the text box and click **Enter**. The TA Site appears, allowing you to continue monitoring your students' progress. The test session on the previous computer or browser automatically closes.

Figure 115. Session ID Prompt



Please note that the Session ID prompt appears any time you access the TA Site during an active session. If you do not wish to return to the active session, you can click **Start a Different Session** to create a new session or **Logout** to close the active session and log out of the TA Site.

U

User Support and Troubleshooting Information

User Support

For information and assistance in using the Online Testing System, contact the RISE Helpdesk. The Helpdesk is open Monday–Friday 7:00 a.m. to 4:00 p.m. Mountain Standard Time (except holidays or as otherwise indicated on the RISE Portal).

RISE Assessment Program Helpdesk

Toll-Free Phone Support: 877-269-4966

Email Support: RISEhelpdesk@cambiumassessment.com

Online Chat: https://utahrise.org/chat.stml

Please provide the Helpdesk with a detailed description of your problem, as well as the following:

Test Administrator name
If the issue pertains to a student, provide the student's SSID and associated LEA or school. Do not provide the student's name.
If the issue pertains to a TIDE user, provide the user's full name and email address.
Any error messages and codes that appeared, if applicable.
Affected test ID and question number, if applicable.
Operating system and browser version information, including version numbers (for example, Windows 10 and Firefox 60 or Mac OS 10.14 and Safari 11).
Information about your network configuration, if known:

- Secure Browser installation (to individual devices or network)
- Wired or wireless internet network setup

Usernames and Password Issues

Your username for logging in to the TA Site is the email address associated with your account in TIDE. When you are added to TIDE, you receive an activation email containing a temporary link to the ***Reset Your Password*** page. To activate your account, you must set up your password within 15 minutes of the email being sent.

If your first temporary link expired:

In the activation email you received, click the second link provided and proceed to request a new temporary link.

If you forgot your password:

On the ***Login*** page, click **Forgot Your Password?** and then enter your email address in the *Email Address* field. You will receive an email with a new temporary link to reset your password.

If you did not receive an email containing a temporary link or authentication code:

Check your spam folder to make sure your email program did not categorize it as junk mail. If you still do not have an email, contact your School or District Test Coordinator to make sure you are listed in TIDE.

Additional help:

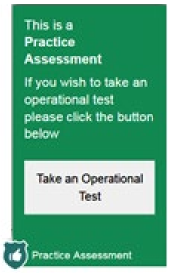
If you are unable to sign in, contact the RISE Helpdesk for assistance. You must provide your name and email address. Contact information is available in the User Support section of this user guide.

Common Student Sign-in Errors

The Online Testing System generates an error message if a student cannot sign in. The following are the most common student sign-in issues:

Session does not exist:

Figure 116. Testing Type Message



The student entered the Session ID incorrectly or signed in to the wrong site. Verify that the student correctly entered the active Session ID. Also, verify that both you and the student are using the correct sites. For example, students signed in to the Student Training Site cannot access sessions created in the TA Interface. A message displayed in the bottom-left corner of the ***Student Sign-In*** page indicates which site the student is on (see Figure 116). If a student is on the wrong site, the student can select the button included in the message to proceed to the correct site.

Student information is not entered correctly:

Verify that the student correctly entered the SSID. If this does not resolve the error, use the Student Lookup tool to verify the student's information.

Session has expired:

The Session ID corresponds to a closed session. Ensure that the student enters the correct Session ID and verify that your session is open. For more information about test sessions, see the section Selecting Tests and Starting a Test Session.

Resolving Secure Browser Error Messages

This section provides possible resolutions for the following messages that students may receive when signing in to tests using the Secure Browser.

You cannot log in with this browser:

This message occurs when the student is not using the correct Secure Browser. To resolve this issue, ensure the latest version of the Secure Browser is installed, and that the student launched the Secure Browser instead of a standard web browser. If the latest version of the Secure Browser is already running, then log the student out, restart the device, and try again.

Looking for an internet connection…:

This message appears when the Secure Browser cannot connect with the Online Testing System. This can occur if there is a network-related problem. Make sure that either the network cable is plugged in (for wired connections) or the Wi-Fi connection is live (for wireless connections). Also check if the Secure Browser must use specific proxy settings; if so, those settings must be specified as options when configuring the Secure Browser. If connection issues persist, contact a network technician.

Test Environment Is Not Secure:

This message can occur when the Secure Browser detects a forbidden application running on the device. If this message appears on an iPad, ensure that either Autonomous Single App Mode or Automatic Assessment Configuration is enabled.

Appendix 5-B

Configuration, Troubleshooting, and Advanced Secure Browser Installation Guides

Configurations, Troubleshooting, and Advanced Secure Browser Installation Guide for Windows

For Technology Coordinators

2020-2021

Published August 12, 2020

Prepared by Cambium Assessment, Inc.

Table of Contents

Configurations, Troubleshooting, and Advanced Secure Browser Installation for Windows

This document contains configurations, troubleshooting, and advanced Secure Browser installation instructions for your network and Windows workstations.

How to Configure Windows Workstations for Online Testing

This section contains additional configurations for Windows.

How to Disable Fast User Switching

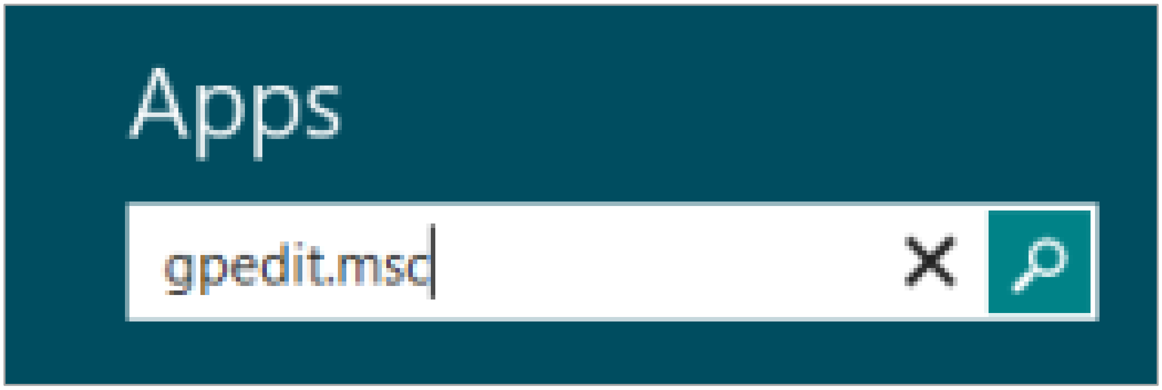
Fast User Switching is a feature in Windows 8, 8.1, and 10 that allows for more than one user to be logged in at the same time. If Fast User Switching is not disabled and students try to access it during a test, the Secure Browser will pause the test. The following sections describe how to disable Fast User Switching for different versions of Windows.

How to Disable Fast User Switching in Windows 8 and 8.1

The following procedure describes how to disable Fast User Switching under Windows 8 and 8.1.

1. In the Search charm, type `gpedit.msc`. Double-click the gpedit icon in the Apps pane. The Local Group Policy Editor window opens.

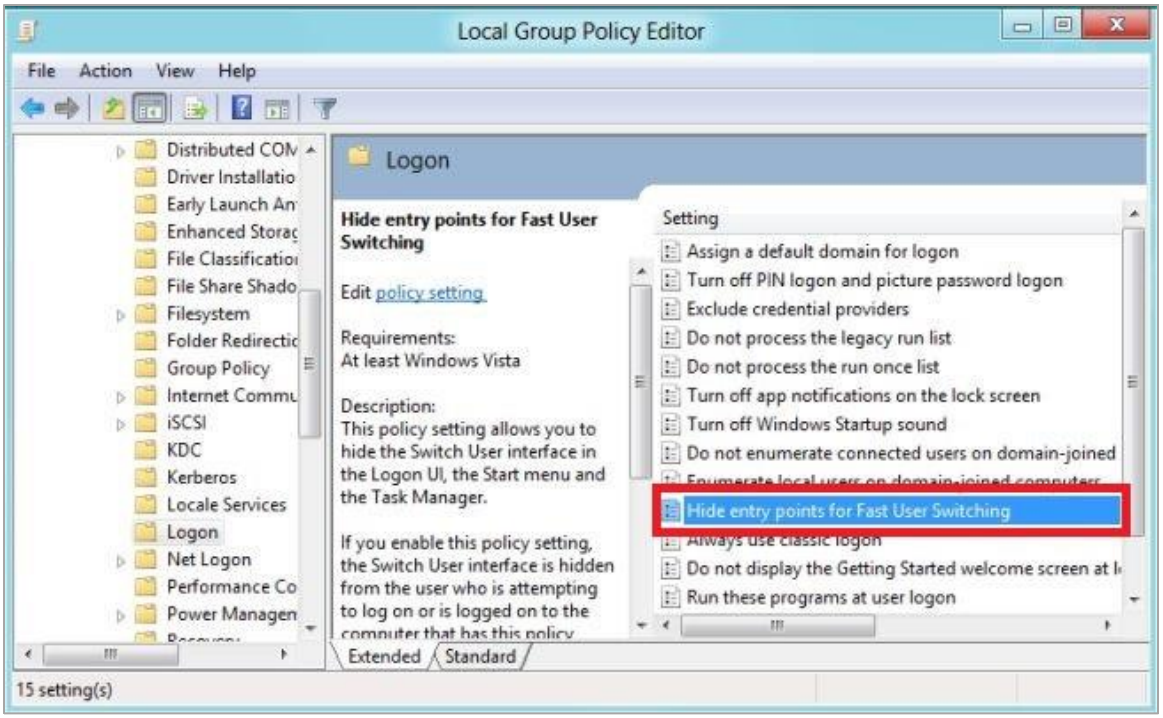
Figure 1. Search Charm



2. Navigate to Computer Configuration > Administrative Templates > System > Logon.

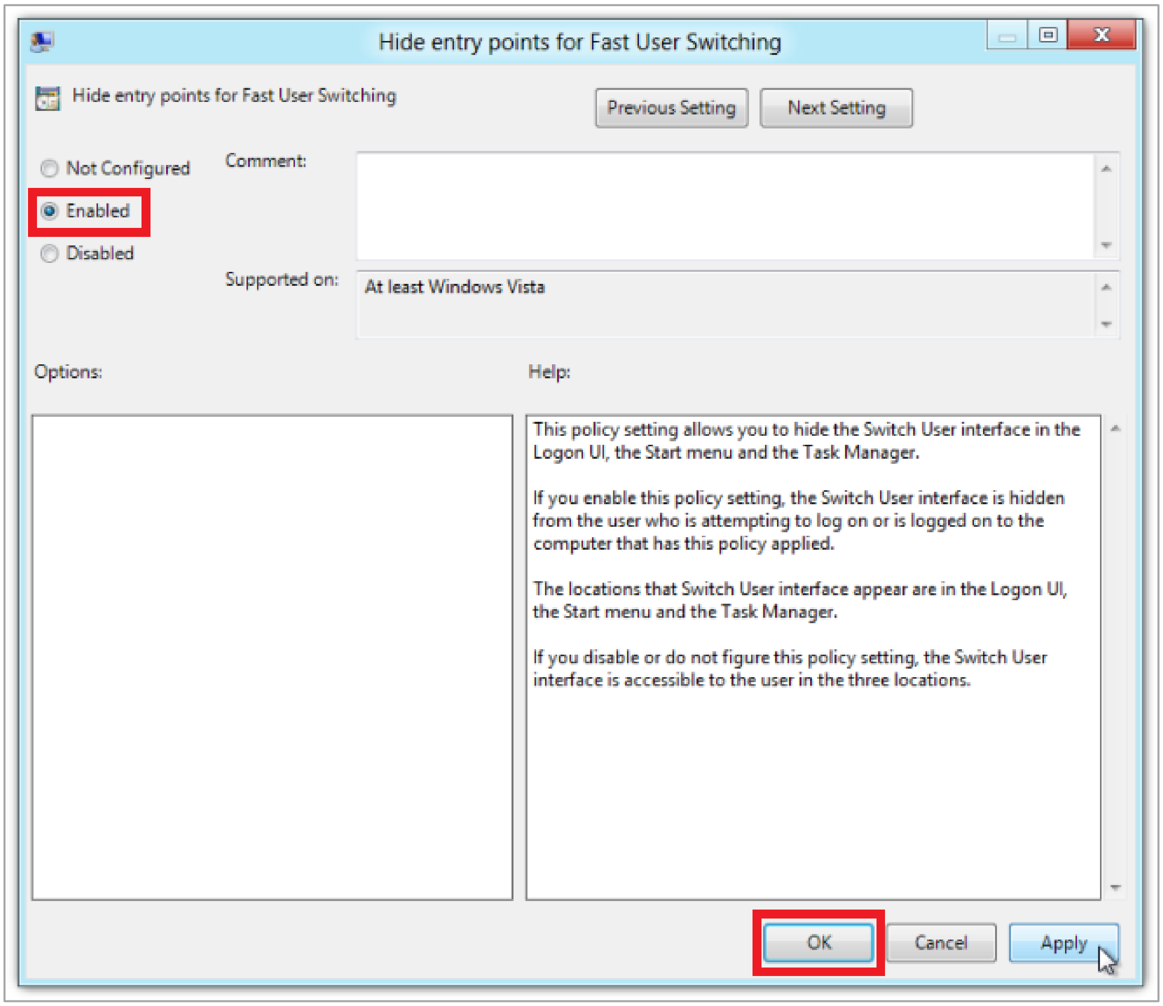
3. In the Setting pane, double-click **Hide entry points for Fast User Switching**.

Figure 2. Local Group Policy Editor



4. Select **Enabled** and then click **OK**.

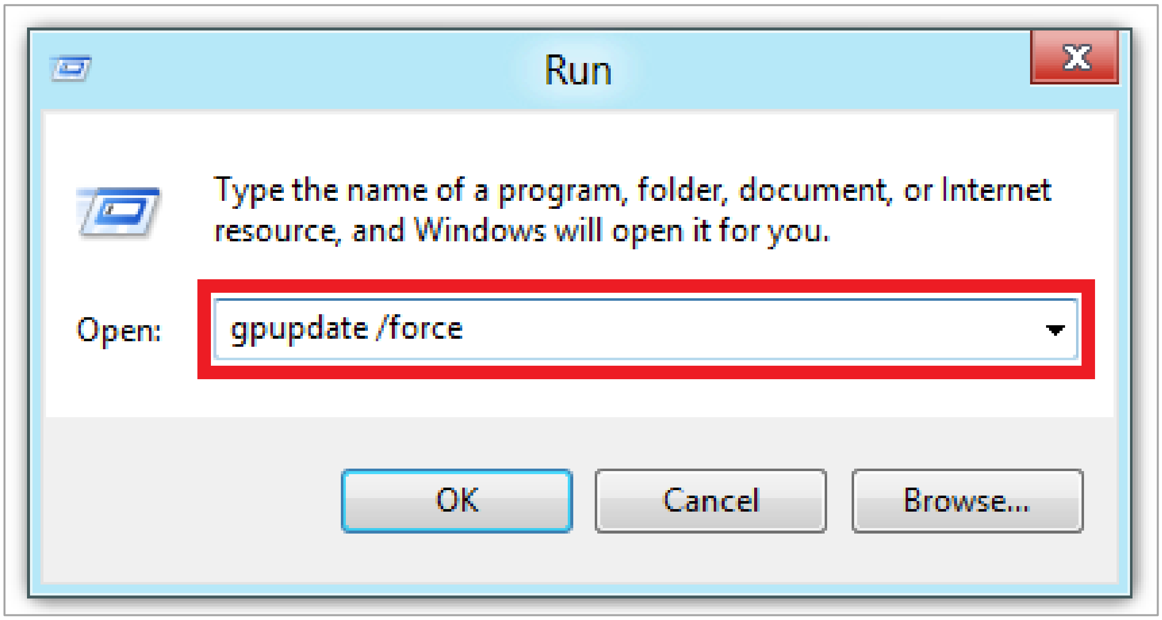
Figure 3. Hide entry points for Fast User Switching



5. In the Search charm, type **run**. The ***Run*** dialog box opens.

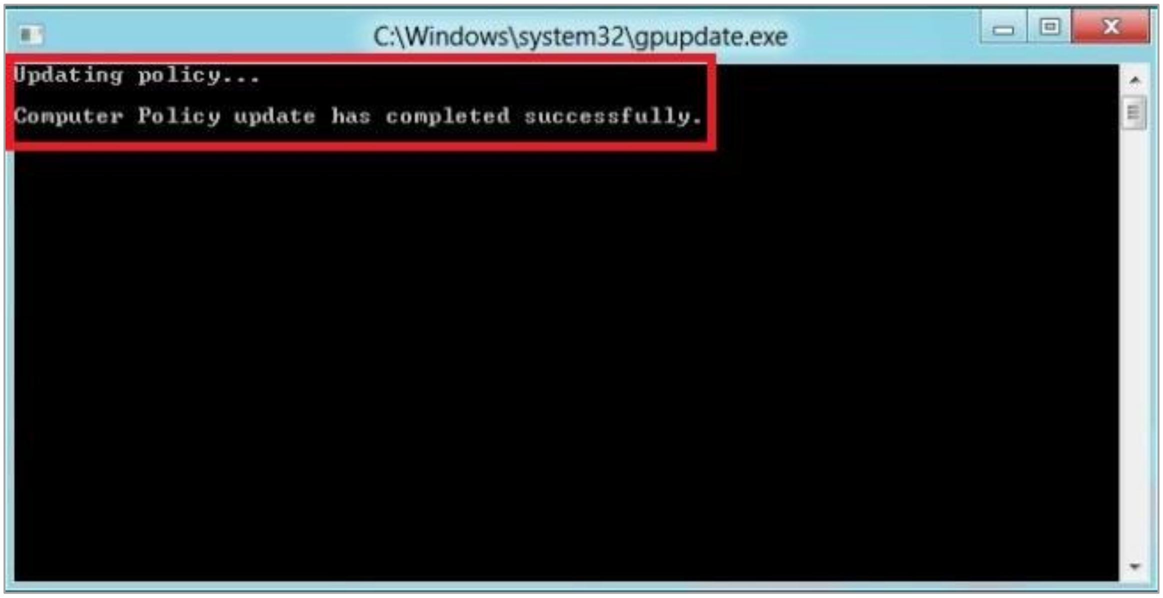
6. Enter the command `gpupdate /force` into the text box and then click **OK**. (Note the space before the forward slash.)

Figure 4. Run



7. The command window opens. When you see the message Computer Policy update has completed successfully, this will be your notification that Windows has successfully disabled Fast User Switching.

Figure 5. Command Window



How to Install the Secure Browser for Windows Using Advanced Methods

This document contains additional installation instructions for installing the Secure Browser for Windows under a variety of deployment scenarios. One scenario describes installing the Secure Browser on a shared network drive, from which students would then run the Browser. However, there are significant drawbacks in this method. Running the Secure Browser from a shared network drive creates contention among the students' client machines for two resources: LAN bandwidth and shared drive I/O. This performance impact can be avoided by installing the Secure Browser locally on each machine. **CAI strongly discourages the use of network shared drive installation for the Secure Browser, as this setup can compromise the stability and performance of the browser, especially during peak testing times.**

How to Install the Secure Browser via the Command Line

In this scenario, a user with administrator rights installs the Secure Browser from the command line. If you do not have administrator rights, refer to the "How to Install the Secure Browser Without Administrator Rights" section below.

If you are not signed on to the computer as an administrator, obtain the administrator password.

If you installed a previous version of the Secure Browser by copying its directory from one computer to another, manually uninstall the Secure Browser by deleting the installation folder and the desktop shortcut. (If you installed the Secure Browser using the Windows installation program, the installation package automatically removes it.)

1. Navigate to the **Download Secure Browsers** page of the Utah RISE Assessment portal at https://utahrise.org/. Click the **Windows** tab, then click **Download Browser**. A dialog window opens.
2. Save the file on the computer (this step may vary depending on the browser you are using):
    a. If presented with a choice to **Run** or **Save** the file, click **Save**, and save the file to a convenient location.
    b. If presented only with the option to **Save**, save the file to a convenient location.
3. Note the full path and filename of the downloaded file, such as `c:\temp\UTSecureBrowser-Win.msi`.
4. Open a command prompt as the administrator by doing the following:
    a. Click **Start**, and locate the Command Prompt application. (In some versions of Windows the application is under **All Programs > Accessories > Command Prompt**.)
    b. Right-click **Command Prompt**, and select **Run as Administrator**.
    c. As necessary, type the administrator password for the computer. The command prompt opens.

(You need to do step 4 only once for the current login. The next time you open the command prompt, Windows retains the administrator role.)

5. Run the command `msiexec /I <Source> [/quiet] [INSTALLDIR=<Target>]`

   `<Source>` Path to the installation file, such as `C:\temp\UTSecureBrowser-Win.msi`.

   `<Target>` Path to the location where you want to install the Secure Browser. If absent, installs to the directory described in step 7. The installation program creates the directory if it does not exist.

   `/I` Perform an install.

   `[/quiet]` Quiet mode, no interaction.

   For example, the command

```
msiexec /I c:\temp\UTSecureBrowser-Win.msi /quiet
INSTALLDIR=C:\AssessmentTesting\BrowserInstallDirectory
```

   installs the Secure Browser from the installation package at `C:\temp\UTSecureBrowser-Win.msi` into the directory `C:\AssessmentTesting\BrowserInstallDirectory` using quiet mode.

6. Follow the instructions in the setup wizard. When prompted for setup type, click **Install**.

7. Click **Finish** to exit the setup wizard. The following items are installed:

   a. The Secure Browser to the default location `C:\Program Files (x86)\UTSecureBrowser\` (64-bit) or `C:\Program Files\UTSecureBrowser\` (32-bit).

   b. A shortcut `UTSecureBrowser` to the desktop.

8. Ensure all background jobs, such as virus scans or software updates, are scheduled outside of test windows. For example, if your testing takes place between 8:00 a.m. and 3:00 p.m., schedule background jobs outside of these hours.

9. Run the browser by double-clicking the `UTSecureBrowser` shortcut on the desktop. The Secure Browser opens displaying the student login screen. The browser fills the entire screen and hides the task bar.

10. To exit the browser, click **CLOSE SECURE BROWSER** in the upper-right corner of the screen.

How to Install the Secure Browser Without Administrator Rights

In this scenario, you copy the Secure Browser from one machine where it is installed onto another machine on which you do not have administrator rights.

1. Log on to a machine on which the Secure Browser is installed.

2. Copy the entire folder where the browser was installed (usually `C:\Program Files (x86)\UTSecureBrowser`) to a removable drive or shared network location.

3. Copy the entire directory from the shared location or removable drive to any directory on the target computer.

4. In the folder where you copied the Secure Browser, right-click UTSecureBrowser.exe and select **Send To > Desktop (create shortcut)**.

5. Ensure all background jobs, such as virus scans or software updates, are scheduled outside of test windows. For example, if your testing takes place between 8:00 a.m. and 3:00 p.m., schedule background jobs outside of these hours.

6. Double-click the desktop shortcut to run the Secure Browser.

How to Copy the Secure Browser Installation Directory to Testing Computers

In this scenario, a network administrator installs the Secure Browser on one machine, and copies the entire installation directory to testing computers.

7. On the computer from where you will copy the installation directory, install the Secure Browser following the directions on your portal. Note the path of the installation directory, such as `C:\Program Files (x86)\UTSecureBrowser`.

8. Identify the directory on the local testing computers to which you will copy the browser file (it should be the same directory on all computers). For example, you may want to copy the directory to `c:\AssesssmentTesting\`. Ensure you select a directory in which the students can run executables.

9. On each local testing computer, do the following:

   a. Ensure all background jobs, such as virus scans or software updates, are scheduled outside of test windows. For example, if your testing takes place between 8:00 a.m. and 3:00 p.m., schedule background jobs outside of these hours.

   b. Copy the installation directory used in step 7 from the remote machine to the directory you selected in step 8. For example, if the target directory is `c:\AssesssmentTesting\`, you are creating a new folder `c:\AssesssmentTesting\UTSecureBrowser`.

   c. Copy the shortcut `c:\AssesssmentTesting\UTSecureBrowser\UTSecureBrowser.exe - Shortcut.lnk` to the desktop.

d. Run the browser by double-clicking the UTSecureBrowser shortcut on the desktop. The Secure Browser opens displaying the student login screen. The browser fills the entire screen and hides the task bar.

e. To exit the browser, click **CLOSE SECURE BROWSER** in the upper-right corner of the screen.

How to Install the Secure Browser for Use with an NComputing Terminal

In this scenario, a network administrator installs the Secure Browser on a Windows server accessed through an NComputing terminal. Prior to testing day, the testing coordinator connects consoles to the NComputing terminal, logs in from each to the Windows server, and starts the Secure Browser so that it is ready for the students.

This procedure assumes that you already have a working NComputing topology with consoles able to reach the Windows server.

1. Log in to the machine running the Windows server.
2. Install the Secure Browser following the directions on your portal.
3. Open Notepad and type the following command (no line breaks):

```
"C:\Program Files (x86)\UTSecureBrowser\
UTSecureBrowser.exe" -CreateProfile %SESSIONNAME%
```

   If you used a different installation path on the Windows server, use that in the above command.

4. Save the file to the desktop as logon.bat.
5. Create a group policy object that runs the file logon.bat each time a user logs in. For details, see How to Create Group Policy Objects.

*Please note: To return to the page in this manual that you were on before clicking a link to the appendix, use one of the following keyboard shortcuts: **Alt** + **Left Arrow** (for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or **Command** + **Left Arrow** (for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

6. On each NComputing console, create a new UTSecureBrowser desktop shortcut by doing the following (this step is necessary because the default shortcut created by the installation program has an incorrect target):

   a. Connect to the NComputing terminal.

   b. Log in to the Windows server with administrator privileges.

   c. Delete the Secure Browser’s shortcut appearing on the desktop.

d. Navigate to the Secure Browser's installation directory, usually `C:\Program Files (x86)\UTSecureBrowser\`.

e. Right-click the file UTSecureBrowser.exe and select **Send To > Desktop (create shortcut)**.

f. On the desktop, right-click the new shortcut and select **Properties**. The Shortcut Properties dialog box appears.

g. Under the **Shortcut** tab, in the **Target** field, type the following command:

```
"C:\Program Files(X86)\UTSecureBrowser\UTSecureBrowser.exe" -P
%SESSIONNAME%
```

If you used a different installation path on the Windows server, use that in the above command.

h. Click **OK** to close the Properties dialog box.

7. Verify the installation by double-clicking the shortcut to start the Secure Browser.

How to Install the Secure Browser on a Terminal Server or Windows Server

In this scenario, a network administrator installs the Secure Browser on a server—either a terminal server or a Windows server. Testing machines then connect to the server's desktop and run the Secure Browser remotely. This scenario is supported on Windows Server 2012 R2 and 2016 R2.

CAUTION: Testing Quality with Servers Launching a Secure Browser from a terminal or Windows server is typically not a secure test environment, because students can use their local machines to search for answers. Therefore, CAI does not recommend this installation scenario for testing.

1. Log in to the server, and install the Secure Browser by following the directions on your portal. Note the path of the installation directory.

2. Copy and paste the line below into Notepad (no line breaks):

```
"C:\Program Files (x86)\UTSecureBrowser\UTSecureBrowser" -CreateProfile
%SESSIONNAME%
```

If you used a different installation path, use that in the above command.

3. Save the file to the desktop as logon.bat.

4. Create a group policy object that runs the file logon.bat each time a user connects to the server's desktop. For details, see How to Create Group Policy Objects.

Please note: To return to the page in this manual that you were on before clicking a link to the appendix, use one of the following keyboard shortcuts: ***Alt*** *+* ***Left Arrow*** *(for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or* ***Command*** *+* ***Left Arrow*** *(for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note* *that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

5. On each client, create a new UTSecureBrowser desktop shortcut by doing the following (this step is necessary because the default shortcut created by the installation program has an incorrect target):

   a. Connect from the client to the server.

   b. On the desktop provided by the server, delete the Secure Browser's shortcut.

   c. Navigate to the Secure Browser's installation directory, usually `C:\Program Files (x86)\UTSecureBrowser\`.

   d. Right-click the file UTSecureBrowser.exe and select **Send To > Desktop (create shortcut)**.

   e. On the desktop, right-click the new shortcut and select **Properties**. The Shortcut Properties dialog box appears.

   f. Under the **Shortcut** tab, in the **Target** field, type the following command:

```
"C:\Program Files(X86)\UTSecureBrowser\UTSecureBrowser.exe" -P
%SESSIONNAME%
```

   If you used a different installation path on the server, use that in the above command.

   g. Click **OK** to close the Properties dialog box.

6. Verify the installation by double-clicking the shortcut to start the Secure Browser.

How to Share the Secure Browser over a Network

While the Secure Browser can be installed on a server's shared drive and then shared to each testing computer's desktop via a shortcut, CAI strongly discourages this setup as it can compromise the stability and performance of the browser, especially during peak testing times.

How to Uninstall the Secure Browser on Windows

The following sections describe how to uninstall the Secure Browser from Windows or from the command line. Older versions of the Secure Browser will be automatically uninstalled during the installation of a new version.

How to Uninstall the Secure Browser via the User Interface

The following instructions may vary depending on your version of Windows.

1. Navigate to **Settings > System > Apps & features** (Windows 10) or **Control Panel > Add or Remove Programs** or **Uninstall a Program** (previous versions of Windows).

2. Select the Secure Browser program UTSecureBrowser and click **Remove** or **Uninstall**.

3. Follow the instructions in the uninstall wizard.

How to Uninstall the Secure Browser via the Command Line

1. Open a command prompt.
2. Run the command msiexec /X <Source> /quiet

   `<Source>` Path to the executable file, such as `C:\MSI\UTSecureBrowser.exe`.

   `/X` Perform an uninstall.

   `[/quiet]` Quiet mode, no interaction.

For example, the command

```
msiexec /X C:\AssessmentTesting\UTSecureBrowser.exe /quiet
```

uninstalls the Secure Browser installed at `C:\AssessmentTesting\` using quiet mode.

How to Install the Secure Browser on Windows Mobile Devices

The procedure for installing the Secure Browser on Windows mobile devices is the same for installing it on desktops. See your portal for details.

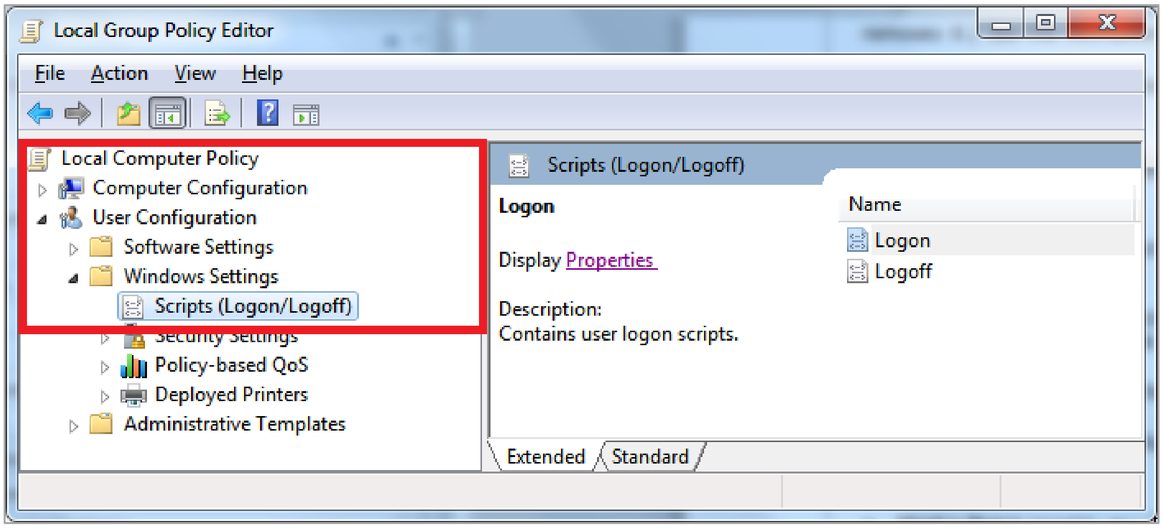
How to Create Group Policy Objects

Many of the procedures listed above refer to creating a group policy object. These are objects that Windows executes upon certain events. The following procedure explains how to create a group policy object that runs a script when a user logs in. The script itself is saved in a file `logon.bat`.

For additional information about creating group policy objects, see https://technet.microsoft.com/en-us/library/cc754740(v=ws.11).aspx.

1. In the task bar (Windows 10), or in **Start > Run** (previous versions of Windows), enter `gpedit.msc`. The Local Group Policy Editor appears.

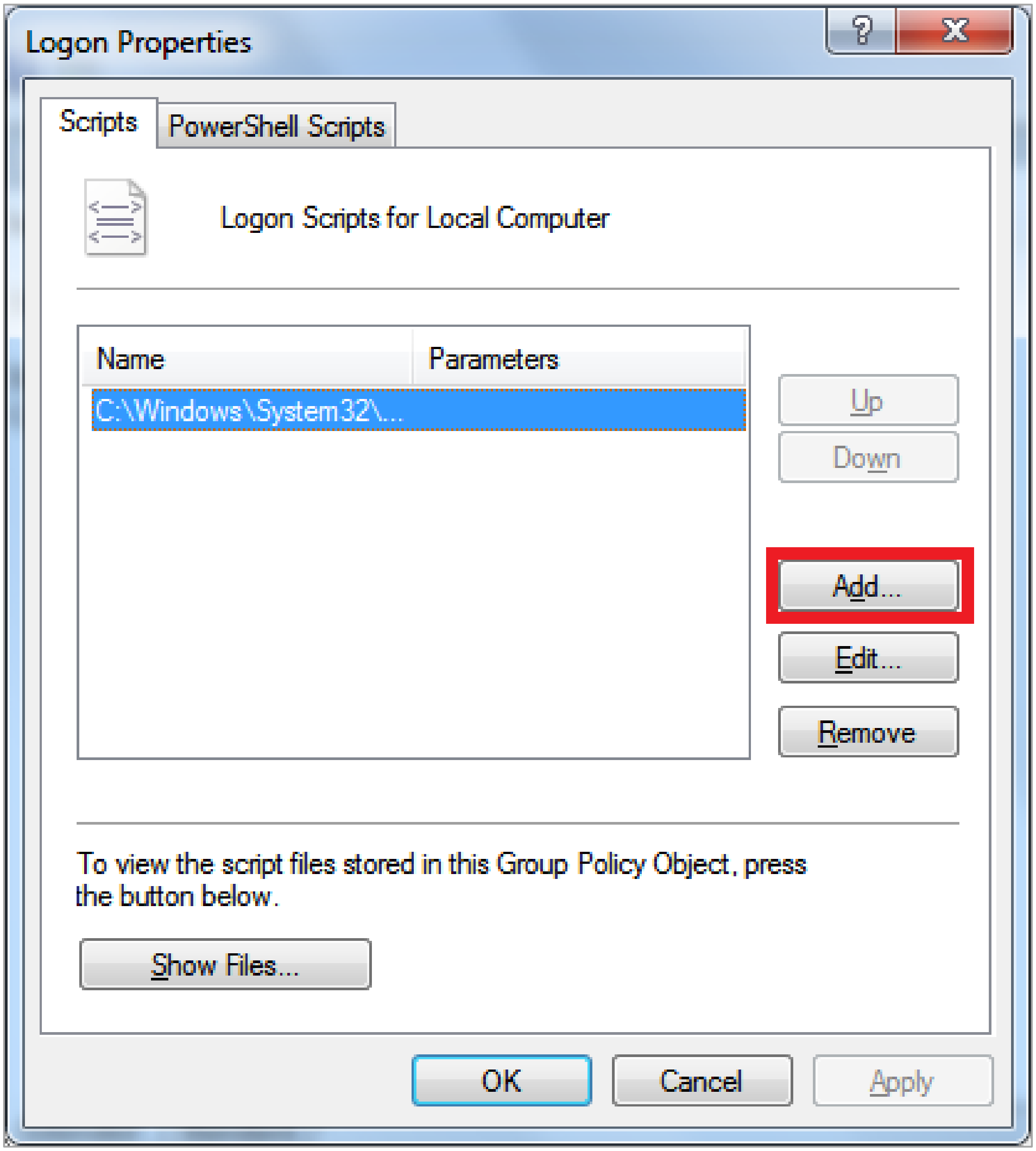
Figure 6. Local Group Policy Editor



2. Expand **Local Computer Policy > User Configuration > Windows Settings > Scripts (Logon/Logoff)**.

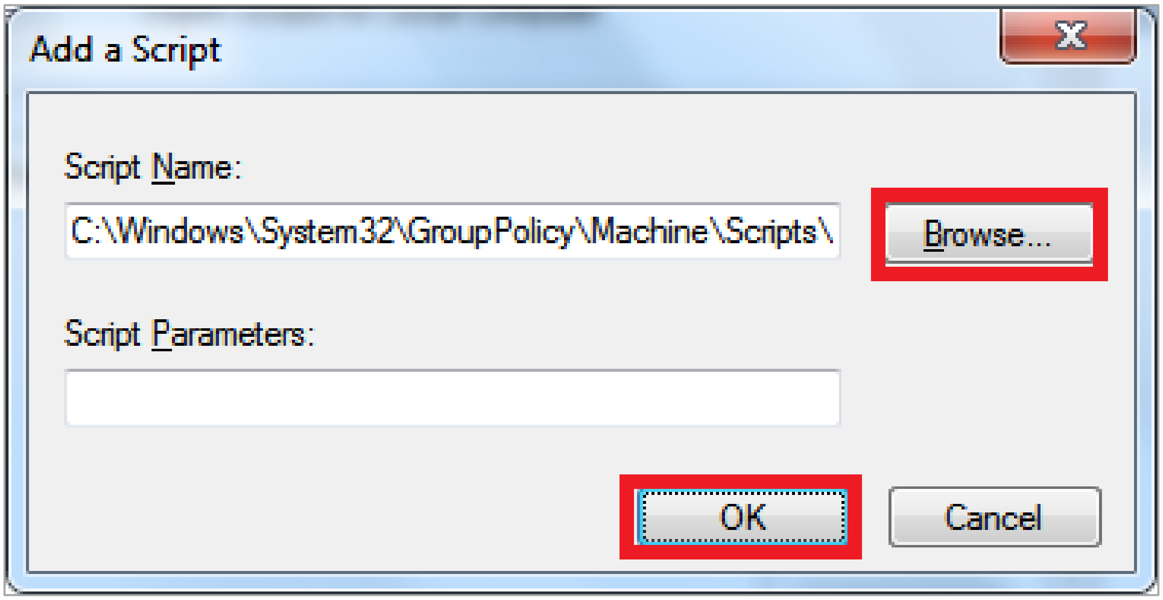
3. Select **Logon** and click **Properties**. The ***Logon Properties*** dialog box appears.

Figure 7. Logon Properties



4. Click **Add**. The ***Add a Script*** dialog box appears.

Figure 8. Add a Script



5. Click **Browse…**, and navigate to the logon.bat you want to run.
6. Click **OK**. You return to the ***Logon Properties*** dialog box.
7. Click **OK**. You return to the Local Group Policy Editor.
8. Close the Local Group Policy Editor.

How to Troubleshoot Windows Workstations

This section contains troubleshooting tips for Windows.

How to Reset Secure Browser Profiles on Windows

If the Helpdesk advises you to reset the Secure Browser profile, use the instructions in this section.

1. Log on as an admin user or as the user who installed the Secure Browser, and close any open Secure Browsers.

2. Delete the contents of the following folders:

`C:\Users\username\AppData\Local\CAI\`

`C:\Users\username\AppData\Roaming\CAI\`

where username is the Windows user account where the Secure Browser is installed. (Keep the CAI\ folders, just delete their contents.)

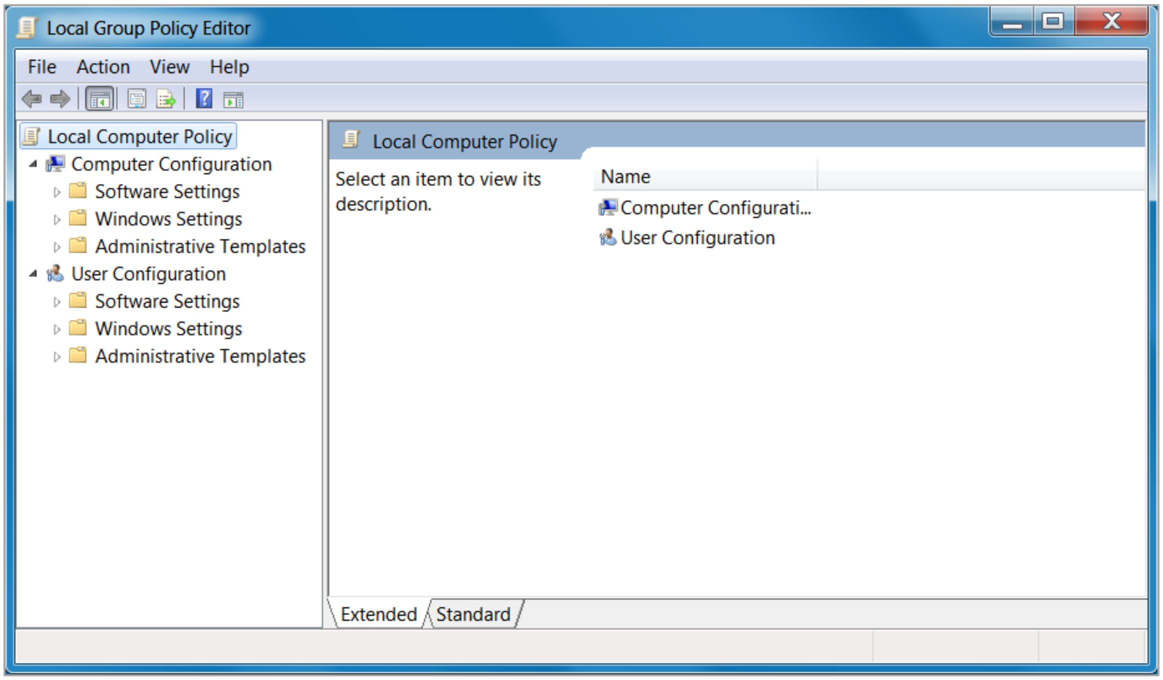
3. Start the Secure Browser.

How to Block Device Touch Input Using the Group Policy Editor

Some tablets and devices have Touch features that may need to be disabled before testing. The following procedure describes how to disable the Touch feature on these devices using the Group Policy Editor:

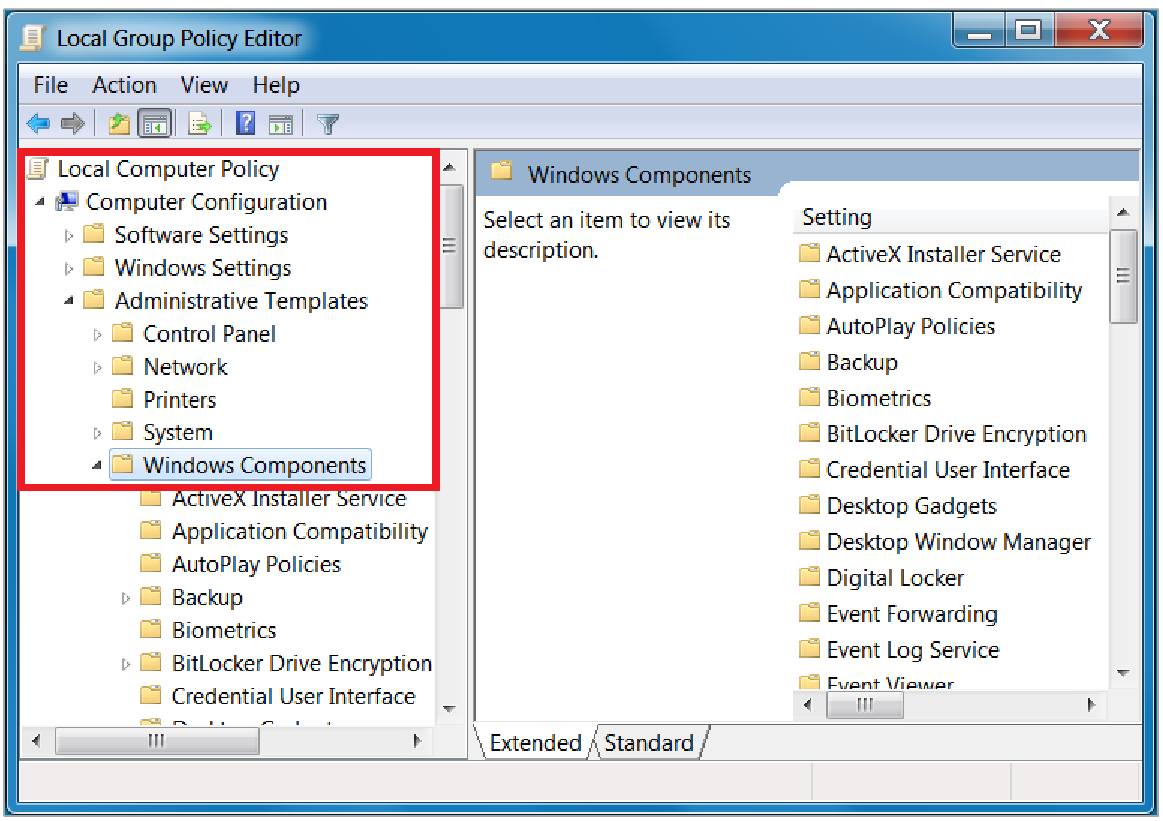
1. Type `gpedit.msc` in the *Search* box on the **Start** menu. The ***Local Group Policy Editor*** window appears.

Figure 9. Local Group Policy Editor



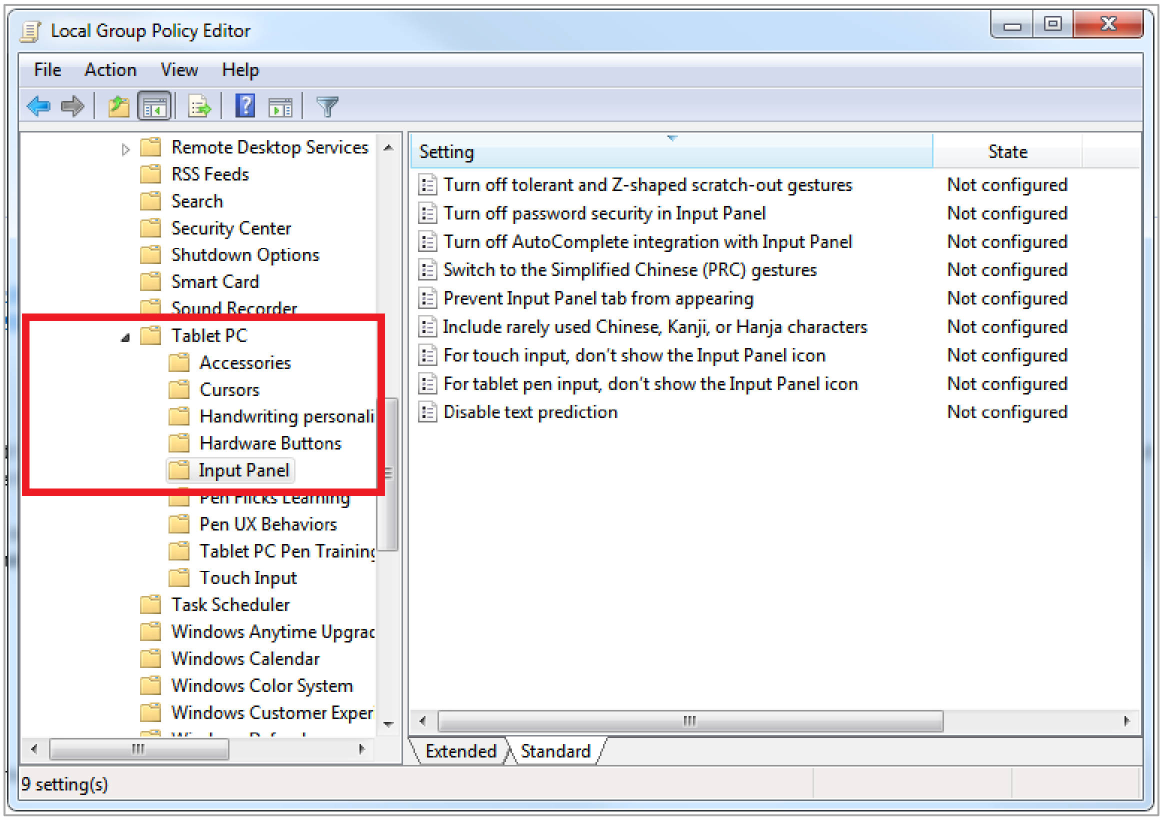
2. Navigate to **Computer Configuration\Administrator Templates\Windows Components.**

Figure 10. Windows Components



3. Scroll down to the **Tablet PC** folder, then select **Input Panel**. The following screen displays.

Figure 11. Input Panel



4. Enable the following items in the *Setting* column:

a. Turn off AutoComplete integration with Input Panel

b. Prevent Input Panel tab from appearing

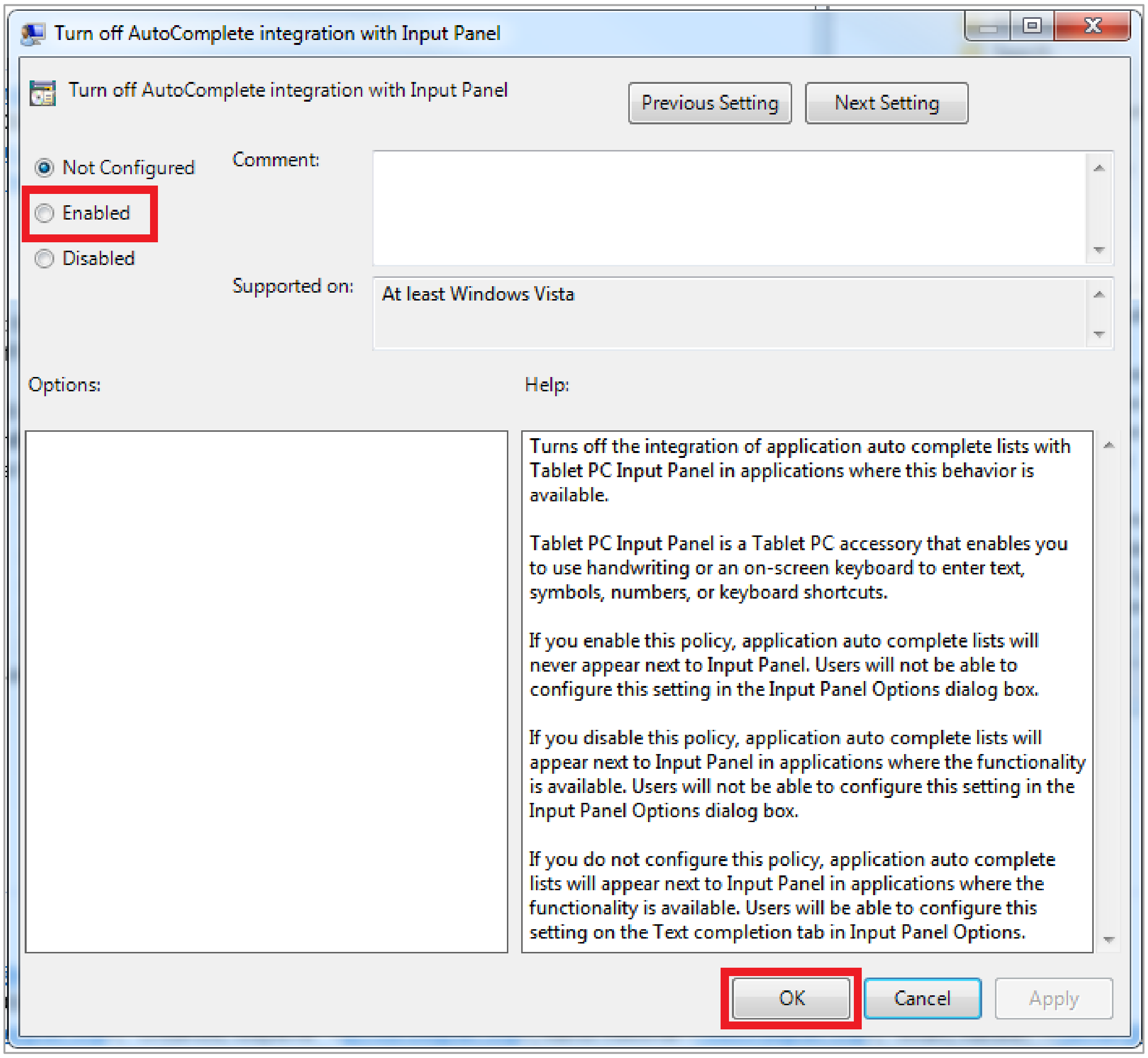
c. For tablet pen input, don’t show the Input Panel icon

d. For touch input, don’t show the Input Panel icon

e. Disable text prediction

5. To enable an item in the *Setting* column, double-click on that item. The following screen will display that will allow you to enable or disable your selected item as required.

Figure 12. Turn off AutoComplete integration with Input Panel



6. Select **Enabled**, and click **OK**.

7. Close the ***Local Group Policy Editor*** window.

How to Install Windows Media Pack for Windows 8.1 N and KN

Some versions of Windows 8.1 are not shipped with media software installed. As a result, you may need to install software to enable students to listen to and record audio as well as watch videos.

Microsoft provides additional information as well as a download package for computers with the following Windows 8.1 versions:

- Windows 8.1 N
- Windows 8.1 N/K with Bing
- Windows 8.1 Enterprise N
- Windows 8.1 Pro N
- Windows 8.1 Pro N/K for EDU

CAI encourages downloading this software and ensuring it works with sample websites and video and audio files prior to installing the Windows Secure Browser. Installation instructions are provided on Microsoft's download page.

Microsoft Resources:

- About the Media Feature Pack for Windows 8.1 N and Windows 8.1 KN Editions: April 2014 (http://support.microsoft.com/kb/2929699/en-us)
- Download Media Feature Pack for N and KN Versions of Windows 8.1 (http://www.microsoft.com/en-us/download/details.aspx?id=42503)

How to Configure ZoomText to Recognize the Secure Browser

When displaying a test with a print-size accommodation above 4× magnification, the Secure Browser automatically enters streamlined mode. If you want to retain the standard layout of a test but display it with a print magnification above 4×, then consider using ZoomText—a magnification and screen-reading software that you can use with the Secure Browser. Use the following procedure to ensure ZoomText recognizes the Secure Browser.

1. If ZoomText is running, close it.
2. In the Windows Explorer, go to the installation directory for your version of ZoomText. For example, if you have ZoomText version 10.1:

   Go to `C:\Program Files (x86)\ZoomText 10.1\` (Windows 64-bit)

   Go to `C:\Program Files\ZoomText 10.1\` (Windows 32-bit).
3. In a text editor, open the file ZoomTextConfig.xml.
4. Search for line containing the D2DPatch property, similar to the following:

   `<Property name="D2DPatch" value ="*,~dwm,~firefox,~thunderbird"/>`

5. In the value attribute, add the prefix for your state's Secure Browser:

   <Property name="D2DPatch" value ="*,~dwm,~firefox,~ UTsecurebrowser,~thunderbird"/>

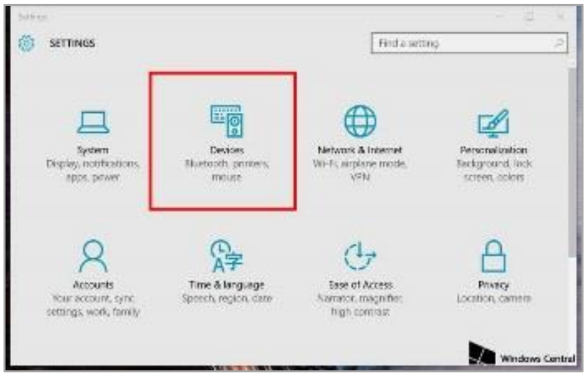
6. Save the file, and restart ZoomText.

How to Set the Touch Keyboard on Microsoft Surface Pro Tablet to Appear

Some Surface Pro users accessing the touch keyboard are seeing the touch keyboard disappear when they click outside a text box or when they type an answer into a text box and then click next. The keyboard fails to reappear when users click back inside the next text box. To avoid these issues, users must set the touch keyboard to automatically show up.

1. Go to **Settings** (keyboard shortcut: **Windows + I**)

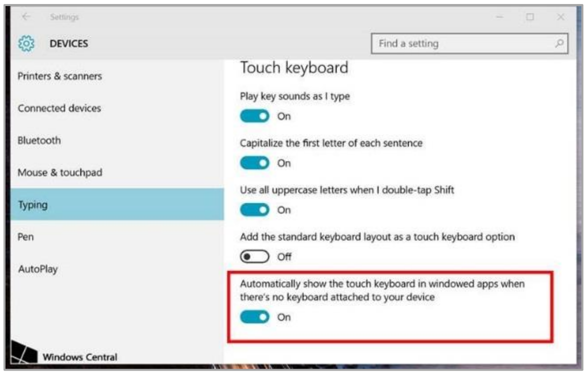
Figure 13. Settings



2. Go to **Devices** > **Typing**.

3. Scroll down and toggle on: *Automatically show the touch keyboard in windowed apps when there's no keyboard attached to your device*.

Figure 14. Typing

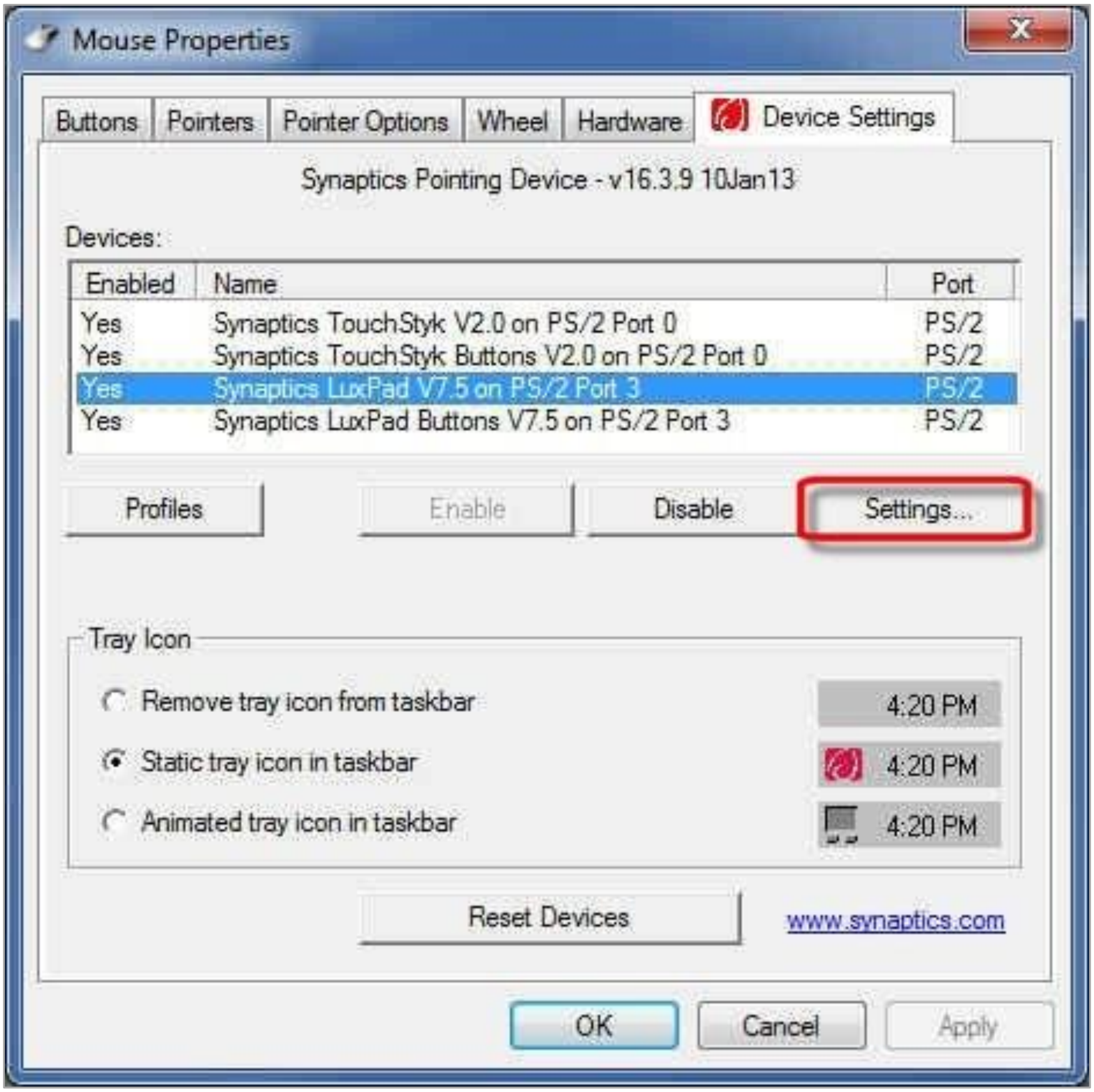


How to Disable Two-finger Scrolling in HP Notebooks with Synaptics TouchPad

The trackpad software on the HP stream notebooks can cause the Secure Browser to close and display an “environment not secure” error. This can occur when a student tries to use the advanced trackpad features such as scrolling gesture with the trackpad. The Synaptics Touchpad driver is the driver that allows full use of all features of the trackpad. To avoid this error and the closing of the Secure Browser, disable the TouchPad two-finger scrolling Feature.

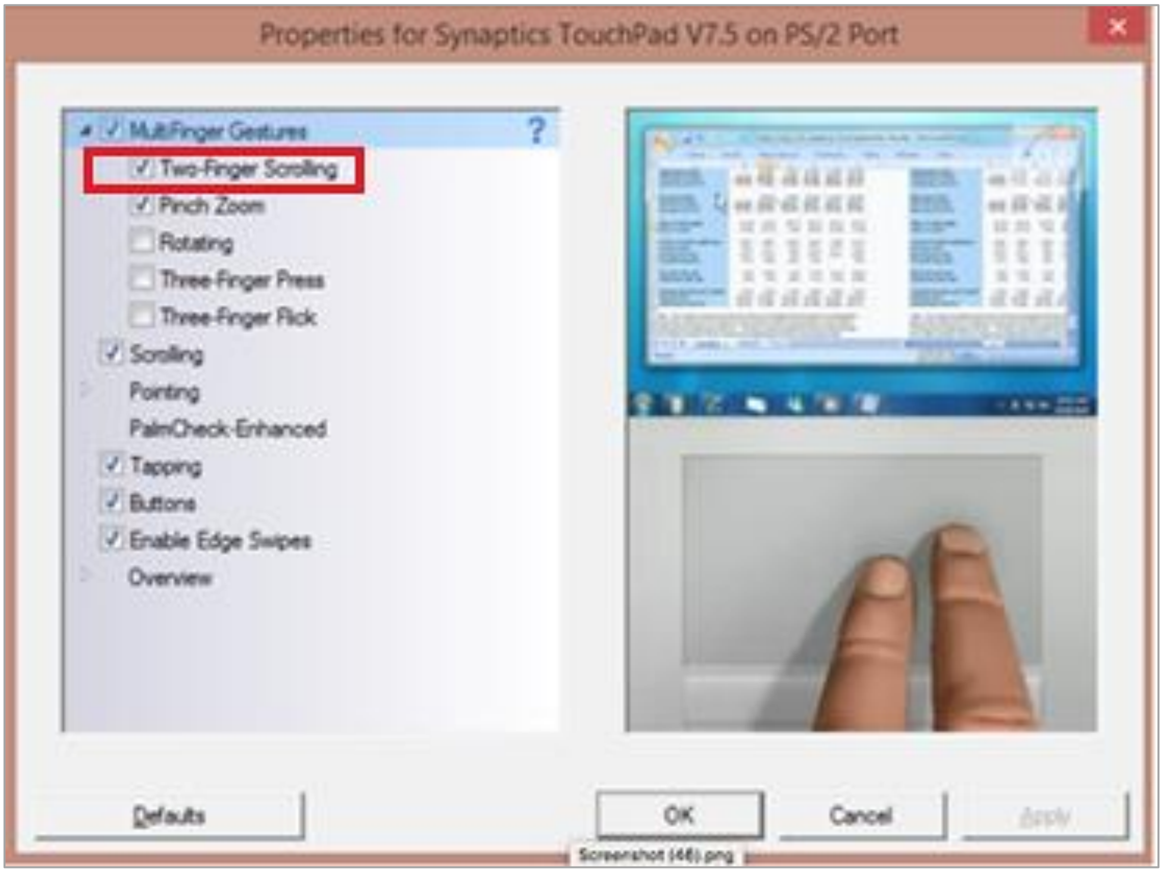
1. Click the **Start** menu (), and then type **mouse** in the search field.
2. Select **Mouse** from the list of options.
3. Click the **Device Settings** tab.
4. From the **Devices** list, select **Synaptics LuxPad V7.5**, and then click **Settings...**.

Figure 15. Mouse Properties



5. Uncheck **Two-Finger Scrolling**.

Figure 16. Properties for Synaptics TouchPad



6. Click **Close**, and then click **OK**.

7. In the **Mouse Properties** window, click **Apply**.

How to Disable Automatic Volume Reduction

A feature in Windows automatically lowers or mutes the volume of some apps if Windows detects audio recording. This section describes how to disable automatic volume reduction.

1. Open the **Start Menu**.

2. Open the **Control Panel**.

3. Select **Sound**. The **Sound** window will open.

4. Select the **Communications** tab.

5. By default, the option to "Reduce the volume of other sounds by 80%" is selected. Change this to **Do nothing**.

6. Select **OK**.

How to Run NVDA Screen Reader 2018.1.1 with Take a Test App

Users running the Take a Test app and NVDA screen reader version 2018.1.1 at the same time on Windows 10 and 10 in S Mode with RS v1709 and v1803 are experiencing the Take a Test app crashing before a test is started. To keep the Take a Test app from crashing while running the NVDA screen reader 2018.1.1, you should update Windows 10 and 10 in S Mode to at least RS v1809. Windows Updates can be accessed through the Control Panel.

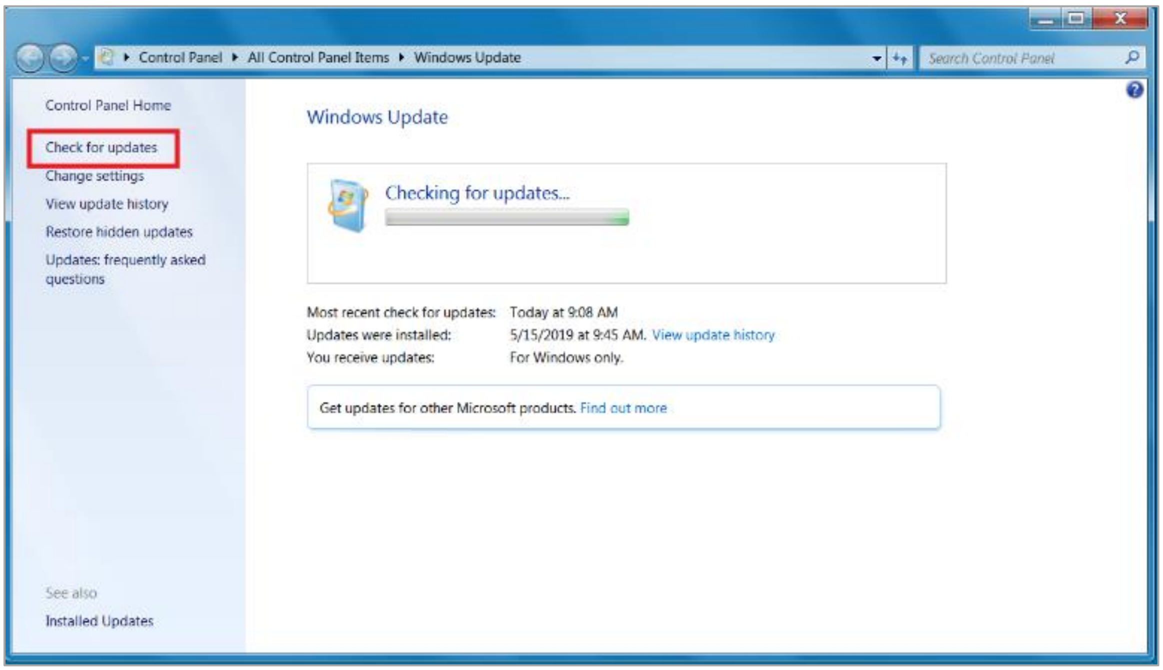
1. Open the **Start Menu.**

2. Type **Windows Update** in the search charm and hit enter. The ***Windows Update*** window appears.

3. Select **Check for Updates**.

4. Select **Install Updates** to install all available updates.

Figure 17. Windows Update



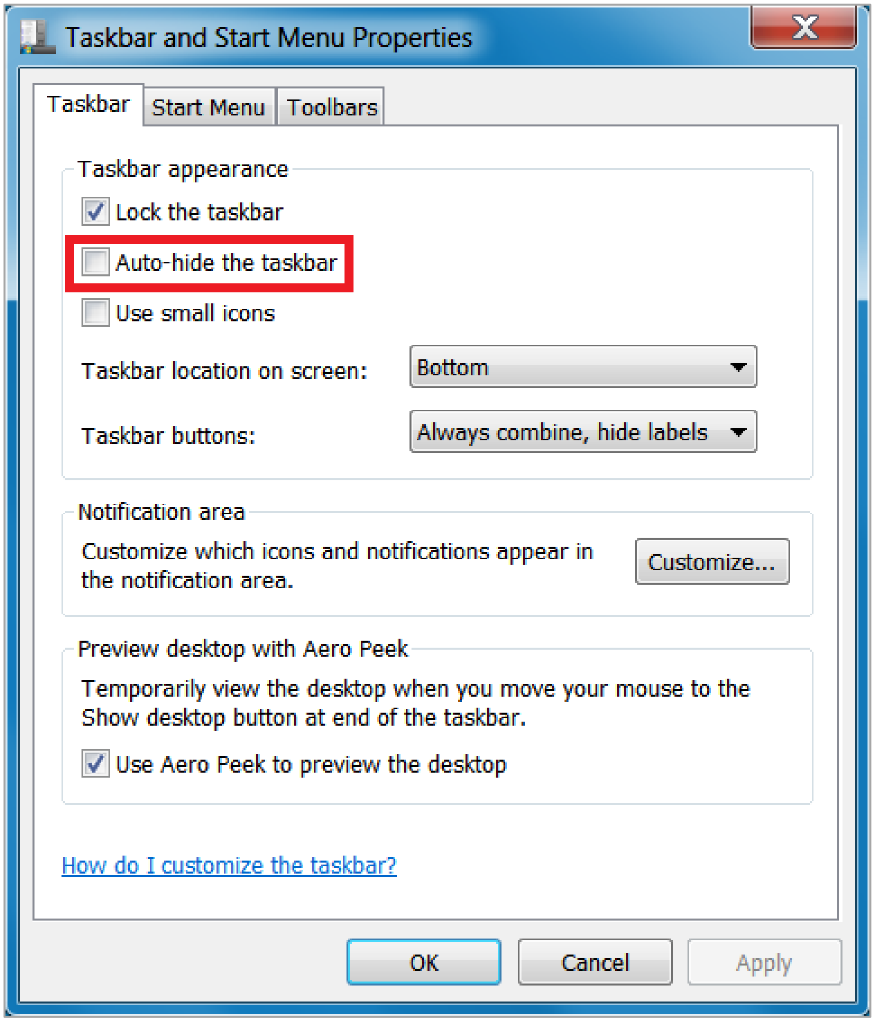
How to View the Windows Taskbar in Permissive Mode

In Permissive Mode, the Windows taskbar should appear when a user hovers their mouse pointer near the bottom of the screen. In Windows 8, 8.1, and 10, the taskbar does not appear as intended. The following sections describe how to view the Windows taskbar in Permissive Mode by turning off the auto-hide feature in the Taskbar Properties. These instructions differ slightly depending on your version of Windows. This procedure must be completed before the Secure Browser is launched on the student workstation.

How to View the Taskbar in Permissive on Windows 8 and 8.1

1. Right-click on the taskbar.
2. Click **Properties**. The ***Taskbar and Start Menu Properties*** window appears. (See Figure 18.)
3. Uncheck the **Auto-hide the taskbar** checkbox.
4. Click **OK**.

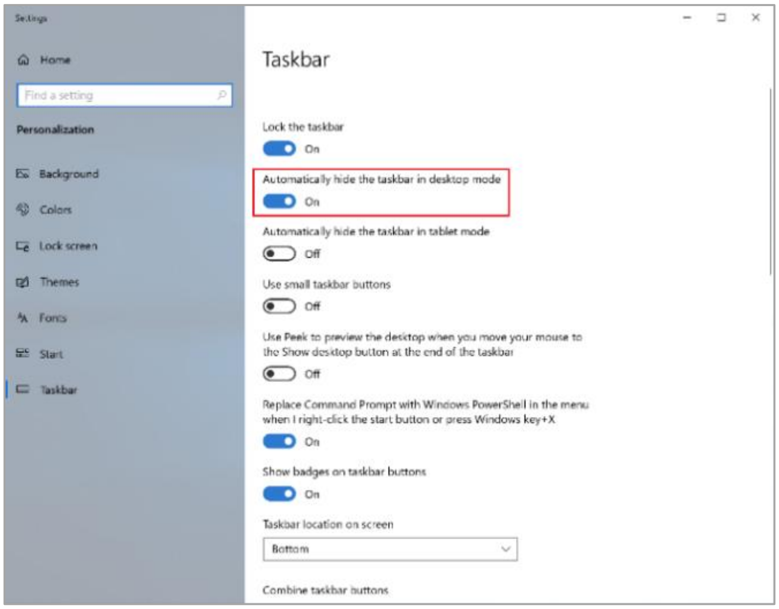
Figure 18. Taskbar and Start Menu Properties



How to View the Taskbar in Permissive Mode on Windows 10

1. Right-click on the taskbar.
2. Click **Properties**. The *Taskbar* window appears. (See Figure 19.)
3. Toggle **Automatically hide the taskbar in desktop mode** to **Off**.
4. Close the *Taskbar* window.

Figure 19. Taskbar



How to Configure Networks for Online Testing

This section contains additional configurations for your network.

Resources to Add to your Allowlist for Online Testing

This section presents information about the URLs that CAI provides. Ensure your network's firewalls are open for these URLs. If your testing network includes devices that perform traffic shaping, packet prioritization, or Quality of Service, ensure these URLs have high priority.

URLs for Non-Testing Sites to Add to your Allowlist

Table 1 lists URLs for non-testing sites, such as Test Information Distribution Engine and Online Reporting System.

Table 1. CAI URLs for Non-Testing Sites

System	URL
Portal and Secure Browser installation files	https://utahrise.org/
Single Sign-On System	https://sso2.cambiumast.com/auth/realms/utah/account
Test Information Distribution Engine	https://ut.tide.cambiumast.com/
Reporting System	https://ut.reports.cambiumast.com/

URLs for TA and Student Testing Sites to Add to your Allowlist

Testing servers and satellites may be added or modified during the school year to ensure an optimal testing experience. As a result, CAI strongly encourages you to add these URLs to your allowlist at the root level. This requires using a wildcard.

Table 2. CAI and AIR URLs for Testing Sites

System	URL
TA and Student Testing Sites Assessment Viewing Application For 2020-2021, users should add both Cambium and AIR URLs listed in this table to their allowlist.	*.cambiumast.com *.tds.cambiumast.com *.cloud1.tds.cambiumast.com *.cloud2.tds.cambiumast.com *.airast.org *.tds.airast.org *.cloud1.tds.airast.org *.cloud2.tds.airast.org

URLs for Online Dictionary and Thesaurus to Add to your Allowlist

Some online assessments contain an embedded dictionary and thesaurus provided by Merriam-Webster. The Merriam-Webster URLs listed in Table 3 should be added to your allowlist to ensure that students can use them during testing.

Table 3. CAI URLs for Online Dictionaries and Thesauruses

Domain Name	IP Address
media.merriam-webster.com	64.124.231.250
www.dictionaryapi.com	64.124.231.250

Ports and Protocols Required for Online Testing

Table 4 lists the ports and protocols used by the Test Delivery System. Ensure that all content filters, firewalls, and proxy servers are open accordingly.

Table 4. Ports and Protocols for Test Delivery System

Port/Protocol	Purpose
80/TCP	HTTP (initial connection only)
443/TCP	HTTPS (secure connection)

How to Configure Filtering Systems

If the school's filtering system has both internal and external filtering, the URLs for the testing sites (see Table 2) must be added to allowlists in both filters. Ensure your filtering system is not configured to perform packet inspection on traffic to CAI servers. Please see your vendor's documentation for specific instructions. Also, be sure to add these URLs to your allowlist in any multilayer filtering system (such as local and global layers). Ensure all items that handle traffic to *.tds.cambiumast.com and *.tds.airast.org have the entire certificate chain and are using the latest TLS 1.2 protocol.

How to Configure for Domain Name Resolution

Table 1 and Table 2 list the domain names for CAI's testing and non-testing applications. Ensure the testing machines have access to a server that can resolve those names.

How to Configure Network Settings for Online Testing

Local Area Network (LAN) settings on testing machines should be set to automatically detect network settings.

1. Open **Control Panel**.
2. Open **Internet Options**.
3. Open **Connections** tab.
4. Open **LAN Settings**.

5. Mark the **Automatically detect settings** checkbox.

6. Click **OK** to close the ***Local Area Network (LAN) Settings*** window.

7. Click **OK** to close the ***Internet Properties*** window.

8. Close the **Control Panel**.

How to Configure the Secure Browser for Proxy Servers

By default, the Secure Browser attempts to detect the settings for your network's web proxy server. However, users of web proxies should execute a proxy command once from the command prompt. This command does not need to be added to the Secure Browser shortcut. Table 5 lists the form of the command for different settings and operating systems. To execute these commands from the command line, change to the directory containing the Secure Browser's executable file.

Note: Domain names in commands The commands in Table 5 use the domain proxy.com. When configuring for a proxy server, use your actual proxy server hostname.

Table 5. Specifying proxy settings using the command line

Description	System	Command
Use the browser without any proxy	Windows	UTSecureBrowser.exe -proxy 0 aHR0cHM6Ly91dC50ZHMuY2FtYml1bWFzdC5jb20vc3R1ZGVudA==
Set the proxy for HTTP requests only	Windows	UTSecureBrowser.exe -proxy 1:http:proxy.com:8080 aHR0cHM6Ly91dC50ZHMuY2FtYml1bWFzdC5jb20vc3R1ZGVudA==
Set the proxy for all protocols to mimic the "Use this proxy server for all protocols" of Firefox	Windows	UTSecureBrowser.exe -proxy 1:*:proxy.com:8080 aHR0cHM6Ly91dC50ZHMuY2FtYml1bWFzdC5jb20vc3R1ZGVudA==
Specify the URL of the PAC file	Windows	UTSecureBrowser.exe -proxy 2:proxy.com aHR0cHM6Ly91dC50ZHMuY2FtYml1bWFzdC5jb20vc3R1ZGVudA==
Auto-detect proxy settings	Windows	UTSecureBrowser.exe -proxy 4 aHR0cHM6Ly91dC50ZHMuY2FtYml1bWFzdC5jb20vc3R1ZGVudA==
Use the system proxy setting (default)	Windows	UTSecureBrowser.exe -proxy 5 aHR0cHM6Ly91dC50ZHMuY2FtYml1bWFzdC5jb20vc3R1ZGVudA==

Configurations, Troubleshooting, and Advanced Secure Browser Installation Guide for Chrome OS

For Technology Coordinators

2020-2021

Published August 12, 2020

Prepared by Cambium Assessment, Inc.

Table of Contents

Configurations, Troubleshooting, and Advanced Secure Browser Installation for Chrome OS

This document contains configurations, troubleshooting, and advanced Secure Browser installation instructions for your network and Chrome OS workstations.

How to Configure Chrome OS Workstations for Online Testing

This section contains additional configurations for Chrome OS.

How to Manage Chrome OS Auto-Updates

This section describes how to manage Chrome OS auto-updates. CAI recommends disabling Chrome OS auto-updates or limiting updates to a specific version used successfully before summative testing begins.

How to Disable Auto-Updates for Chrome OS

This section describes how to disable auto-updates for Chrome OS.

1. Display the Device Settings page by following the procedure in ***Manage device settings***, https://support.google.com/chrome/a/answer/1375678. The steps in that procedure assume that your Chromebooks are managed through the admin console.
2. From the *Auto Update* list, select **Stop auto-updates**.
3. Select **Save**.

How to Limit Chrome OS Updates to a Specific Version

This section describes how to limit Chrome OS updates to a specific version.

1. Display the Device Settings page by following the procedure in ***Manage device settings***, https://support.google.com/chrome/a/answer/1375678. The steps in that procedure assume that your Chromebooks are managed through the admin console.
2. From the *Auto Update* list, select **Allow auto-updates**.
3. From the *Restrict Google Chrome version to at most* list, select the required version.
4. Select **Save**.

How to Install the Secure Browser for Chrome OS Using Advanced Methods

This document contains additional installation instructions for installing the Secure Browser for Chrome OS.

Note: Chromebooks manufactured in 2017 or later must have an Enterprise or Education license to run in kiosk mode, which is necessary to run the Secure Browser.

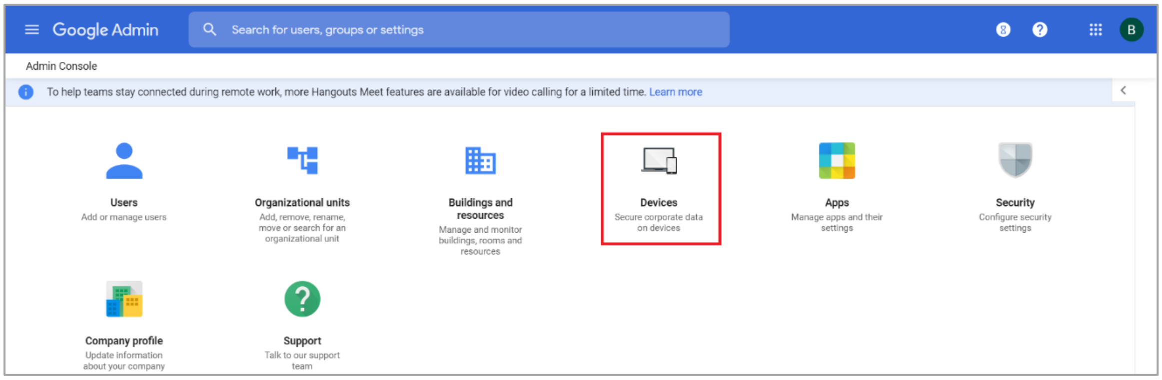
How to Install SecureTestBrowser (formerly AIRSecureTest) as a Kiosk App on Managed Chromebooks

These instructions are for installing the SecureTestBrowser (formerly AIRSecureTest) Secure Browser as a kiosk app on domain-managed Chromebook devices. The steps in this procedure assume that your Chromebooks are already managed through the admin console.

SecureTestBrowser (formerly AIRSecureTest) is not compatible with public sessions.

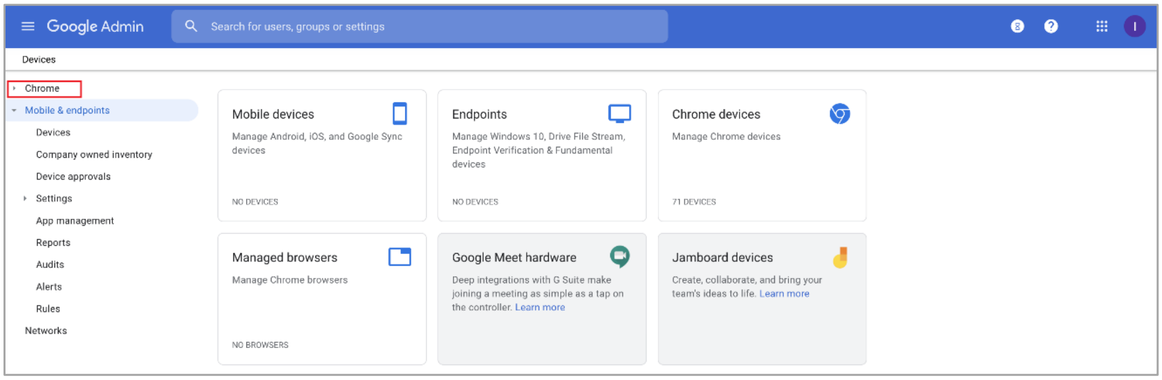
1. As the Chromebook administrator, log in to your admin console (https://admin.google.com)

Figure 1. Google Admin Console



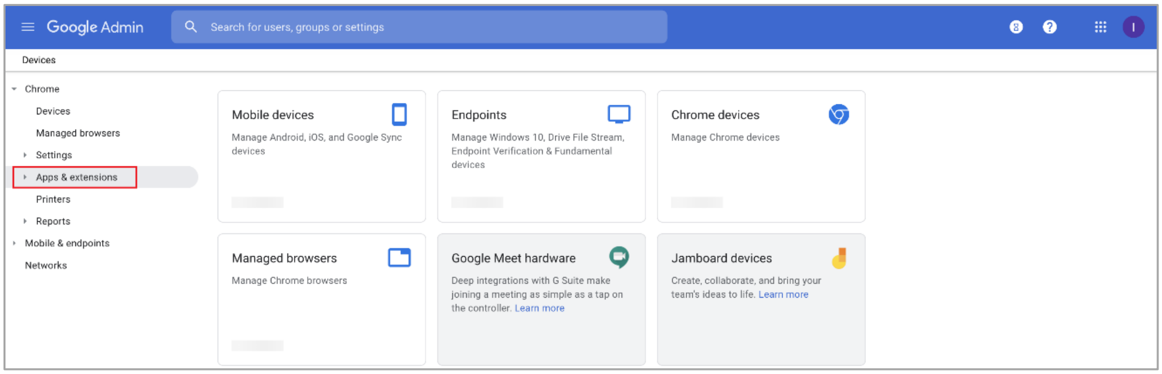
2. Select **Devices**. The ***Devices*** page appears.

Figure 2. Devices Page



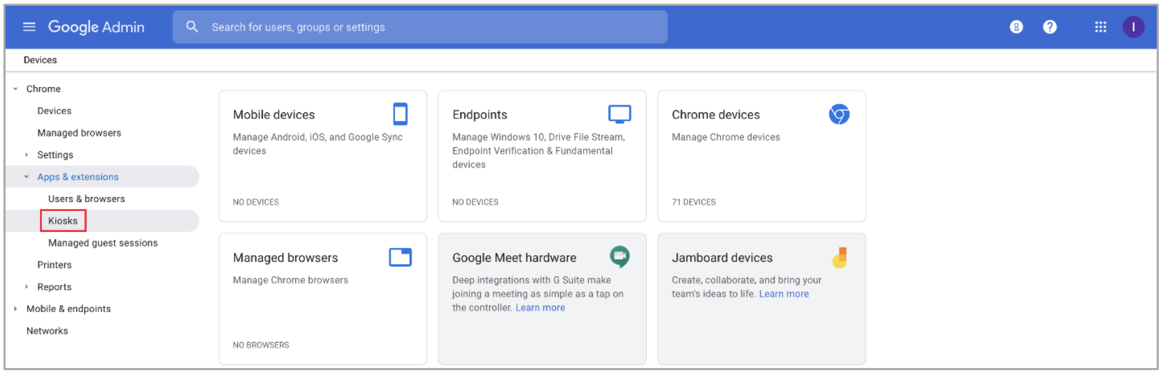
3. Select **Chrome**. The *Chrome* drop-down list appears.

Figure 3. Chrome Drop-down List



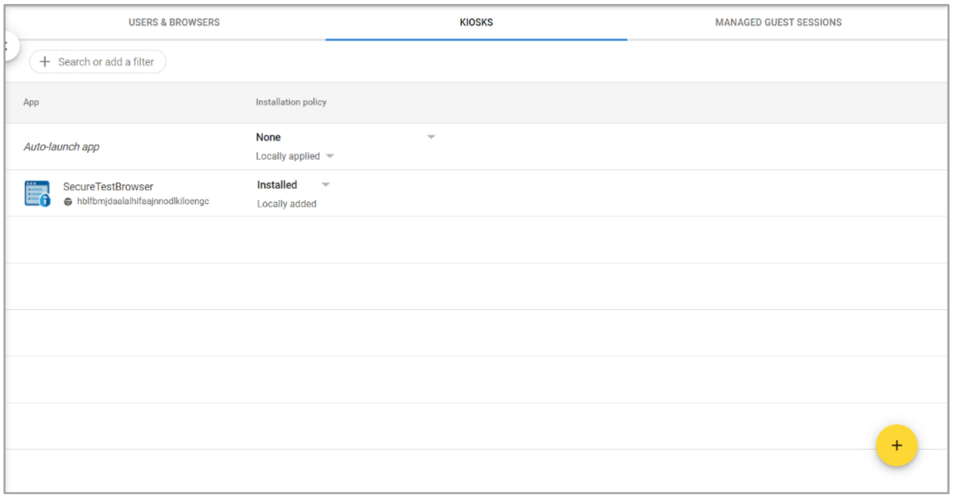
4. From the *Chrome* drop-down list, select **Apps & extensions**. The *Apps & extensions* drop-down list appears.

Figure 4. Apps & extensions Drop-down List



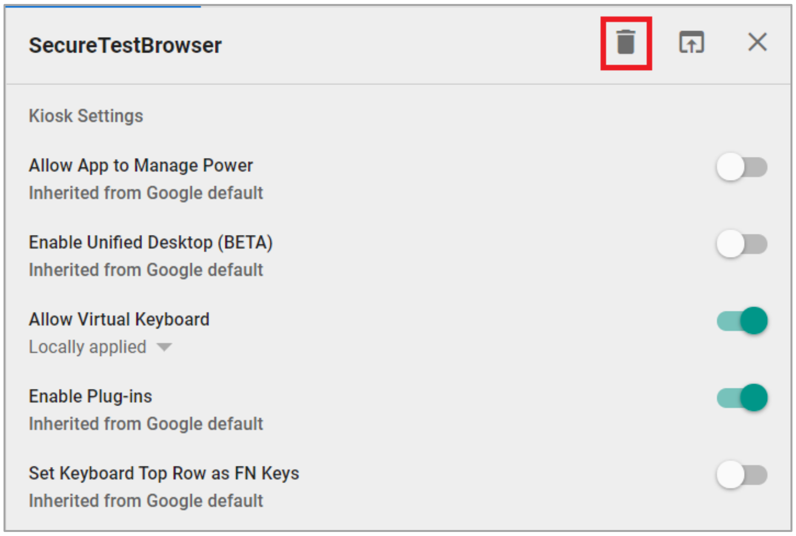
5. From the *Apps & extensions* drop-down list, select **Kiosks**. The *Apps & Extensions* page appears, displaying the *Kiosks* tab.

Figure 5. Apps & extensions page – Kiosks tab



6. Remove any previous versions of the apps that appear by selecting the app name to display the app settings and then selecting . These may appear as SecureTestBrowser or AIRSecureTest.

Figure 6. App Settings



7. Close app settings.

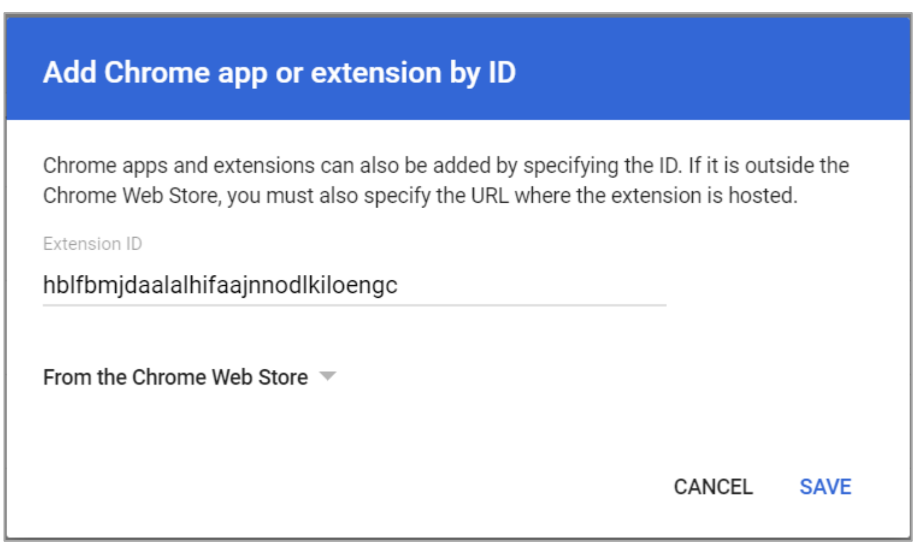
8. Hover over to display options to add a new app.

9. Select to add a Chrome app or extension by ID. The ***Add Chrome app or extension by ID*** window appears.

10. Enter `hblfbmjdaalalhifaajnnodlkiloengc` in the *Extension ID* field.

11. Ensure **From the Chrome Web Store** is selected from the drop-down list.

Figure 7. Add Chrome app or extension by ID



12. Select **Save**. The SecureTestBrowser (formerly AIRSecureTest) app appears in the app list.

13. Ensure **Installed** is selected from the *Installation Policy* drop-down list.

The SecureTestBrowser (formerly AIRSecureTest) app will be installed on all managed devices the next time each managed device is turned on.

How to Configure Networks for Online Testing

This section contains additional configurations for your network.

Resources to Add to your Allowlist for Online Testing

This section presents information about the URLs that CAI provides. Ensure your network's firewalls are open for these URLs. If your testing network includes devices that perform traffic shaping, packet prioritization, or Quality of Service, ensure these URLs have high priority.

URLs for Non-Testing Sites to Add to your Allowlist

Table 1 lists URLs for non-testing sites, such as Test Information Distribution Engine and Online Reporting System.

Table 1. CAI URLs for Non-Testing Sites

System	URL
Portal and Secure Browser installation files	https://utahrise.org/
Single Sign-On System	https://sso2.cambiumast.com/auth/realms/utah/account
Test Information Distribution Engine	https://ut.tide.cambiumast.com/
Reporting System	https://ut.reports.cambiumast.com/

URLs for TA and Student Testing Sites to Add to your Allowlist

Testing servers and satellites may be added or modified during the school year to ensure an optimal testing experience. As a result, CAI strongly encourages you to add these URLs to your allowlist at the root level. This requires using a wildcard.

Table 2. CAI and AIR URLs for Testing Sites

System	URL
TA and Student Testing Sites Assessment Viewing Application For 2020-2021, users should add both Cambium and AIR URLs listed in this table to their allowlist.	*.cambiumast.com *.tds.cambiumast.com *.cloud1.tds.cambiumast.com *.cloud2.tds.cambiumast.com *.airast.org *.tds.airast.org *.cloud1.tds.airast.org *.cloud2.tds.airast.org

URLs for Online Dictionary and Thesaurus to Add to your Allowlist

Some online assessments contain an embedded dictionary and thesaurus provided by Merriam-Webster. The Merriam-Webster URLs listed in Table 3 should be added to your allowlist to ensure that students can use them during testing.

Table 3. CAI URLs for Online Dictionaries and Thesauruses

Domain Name	IP Address
media.merriam-webster.com	64.124.231.250
www.dictionaryapi.com	64.124.231.250

Required Ports and Protocols for Online Testing

Table 4 lists the ports and protocols used by the Test Delivery System. Ensure that all content filters, firewalls, and proxy servers are open accordingly.

Table 4. Ports and Protocols for Test Delivery System

Port/Protocol	Purpose
80/TCP	HTTP (initial connection only)
443/TCP	HTTPS (secure connection)

How to Configure Filtering Systems

If the school's filtering system has both internal and external filtering, the URLs for the testing sites (see Table 1) must be added to your allowlist in both filters. Ensure your filtering system is not configured to perform packet inspection on traffic to CAI servers. Please see your vendor's documentation for specific instructions. Also, be sure to add these URLs to your allowlist in any multilayer filtering system (such as local and global layers). Ensure all items that handle traffic to *.tds.cambiumast.com and *.tds.airast.org have the entire certificate chain and are using the latest TLS 1.2 protocol.

How to Configure for Domain Name Resolution

Table 1 and Table 2 list the domain names for CAI's testing and non-testing applications. Ensure the testing machines have access to a server that can resolve those names.

Please note: To return to the page in this manual that you were on before clicking a link, use one of the following keyboard shortcuts: ***Alt*** *+* ***Left Arrow*** *(for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or* ***Command*** *+* ***Left Arrow*** *(for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

Configurations, Troubleshooting, and Advanced Secure Browser Installation Guide for Mac

For Technology Coordinators

2020-2021

Published August 12, 2020

Prepared by Cambium Assessment, Inc.

Table of Contents

Configurations, Troubleshooting, and Advanced Secure Browser Installation for Mac

This document contains configurations, troubleshooting, and advanced Secure Browser installation instructions for your network and Mac workstations.

How to Configure Mac Workstations for Online Testing

This section contains additional configurations for Mac.

Mac workstations require the following configurations be performed before testing begins:

- Download and install the Secure Profile
- Disable iTunes updates
- Disable third-party app updates
- Disable fast user switching

Instructions for these configurations appear below.

How to Download and Install the Mac Secure Profile

The Secure Profile is a configuration profile that can be used to configure Mac workstations for online testing. It can be downloaded from your portal’s Secure Browser page and must be installed, along with the Secure Browser, before testing begins.

The Secure Profile disables the hot keys for enabling Mission Control, Spaces, Screenshots, and Dictation and the trackpad gestures for accessing Lookup, App Exposé, Launchpad, and Show Desktop. It also sets function keys to standard functions for all users of the Mac to which it is deployed, disables Voice Control, and disables the menu pop-up that appears when triple-tapping the power button on Touch Bar-enabled devices. If you do not install the Secure Profile, the features listed in this paragraph must be disabled manually. Even if you do install the Secure Profile, the features listed in the bullet points above must still be disabled manually.

Because the Secure Profile configures the operating system regardless of the operating system’s current settings, there is no way for CAI to create a configuration profile to roll back the changes. Before you install the Secure Profile, you should back up your device profile’s preferences and settings. Once the device is no longer used for testing, the profile can be removed, and your original settings can be reapplied.

To revert configurations made by the Secure Profile if you did not create a backup of your device profile’s preferences and settings prior to installation, the features listed in the paragraph above must be re-enabled manually. These features can be re-enabled through System Preferences.

2020-2021 Update: The Secure Profile has been updated for 2020-2021 to disable Voice Control and the menu pop-up that appears when triple-tapping the power button on Touch Bar-enabled devices. If you have previously installed an older version of the Secure Profile, you must download and install the new version from the link on your portal.

1. Click the **Download the Secure Profile** link on the Mac tab of your portal's Secure Browser's page to download the Mac Secure Profile.

Figure 1. Download Mac Secure Profile

2. Run the Mac Secure Profile installer.

3. Upon installation, restart your computer.

How to Disable Updates to Third-Party Apps

Updates to third-party apps may include components that compromise the testing environment. This section describes how to disable updates to third-party apps.

The following instructions are based on OS X 10.9; similar instructions apply for other versions of Mac OS.

1. Log in to the student's account.

2. Choose Apple menu > **System Preferences**. The ***System Preferences*** dialog box opens.

3. Click **App Store**. The ***App Store*** window opens.

Figure 2. App Store Window

4. Mark **Automatically check for updates**.

5. Clear **Download newly available updates in the background**.

6. Clear **Install app updates**.

7. Mark **Install system data files and security updates**.

How to Disable Updates to iTunes

You must disable updates to iTunes prior to testing. If iTunes updates pop up during a test, the Secure Browser will pause the test and the student will be kicked out of the testing session.

The following instructions are based on OS X 10.9; similar instructions apply for other versions of Mac OS.

1. Log in to the student's account.

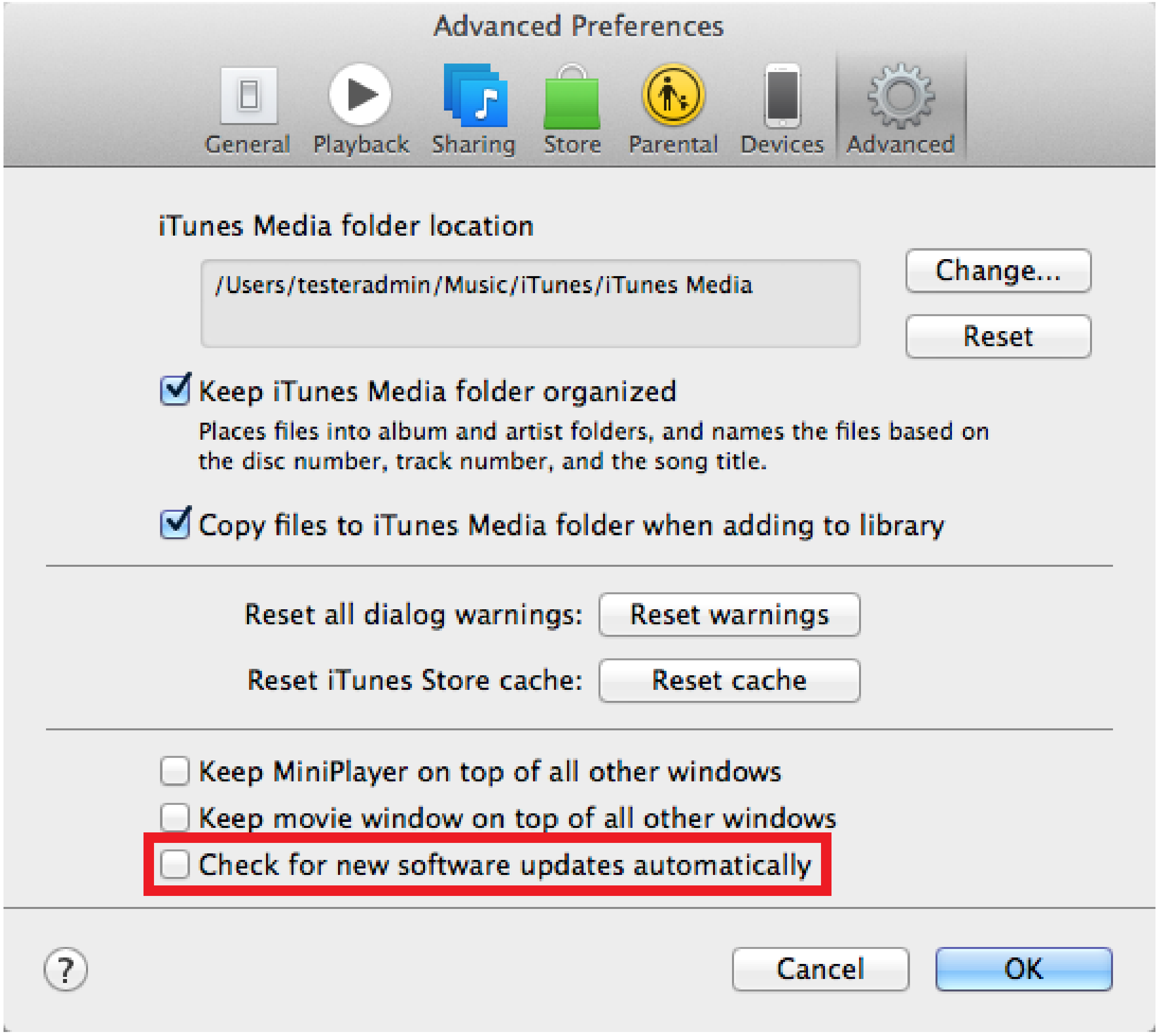
2. Start iTunes.

3. Select **iTunes > Preferences**.

4. Under the **Advanced** tab, clear **Check for new software updates automatically**.

5. Click **OK**.

Figure 3. Advanced Preferences

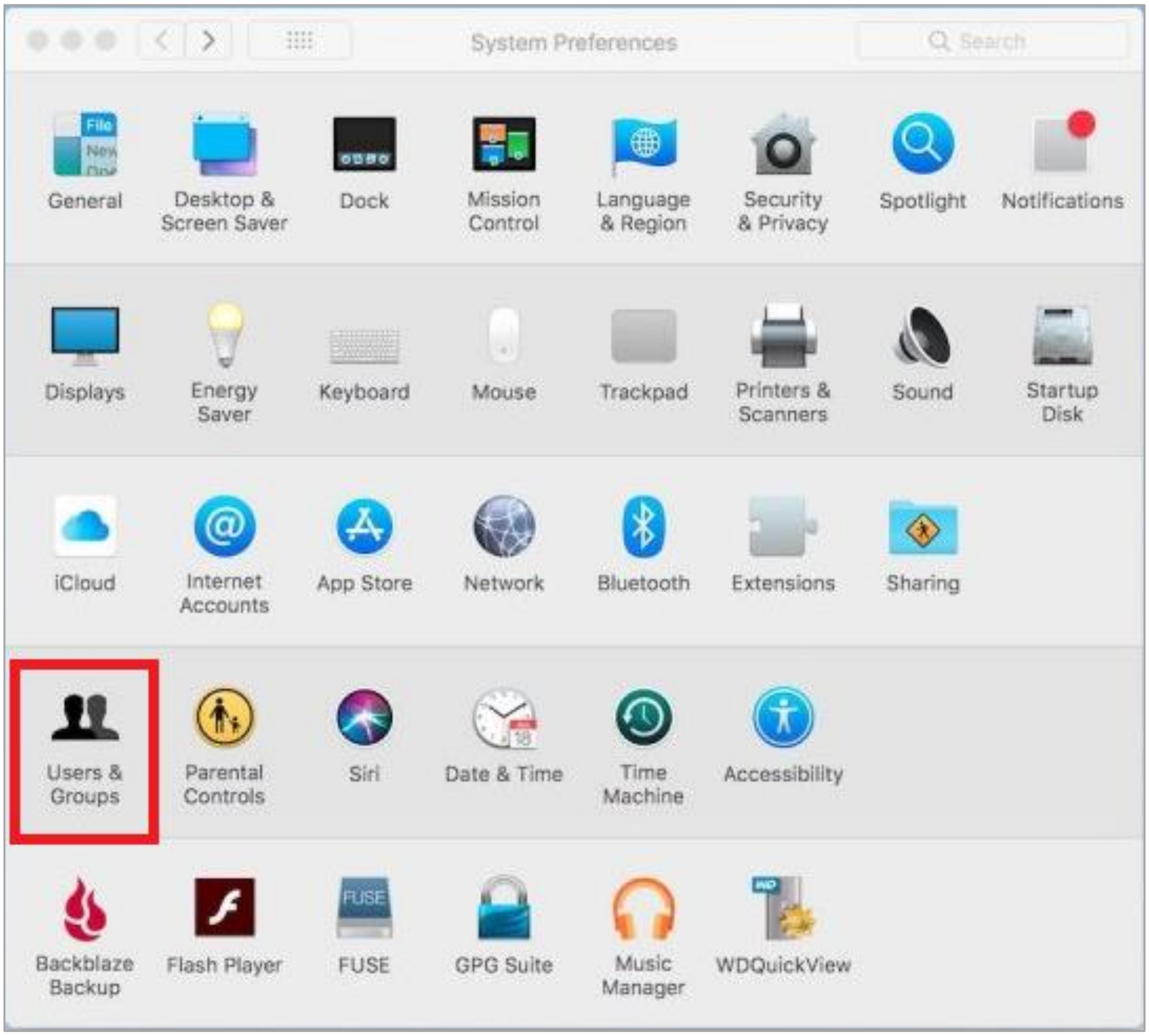


How to Disable Fast User Switching

Fast User Switching is a feature in Mac OS X 10.11 and higher that allows for more than one user to be logged in at the same time. If Fast User Switching is not disabled and students try to access it during a test, the Secure Browser will pause the test. The following instructions describe how to disable Fast User Switching.

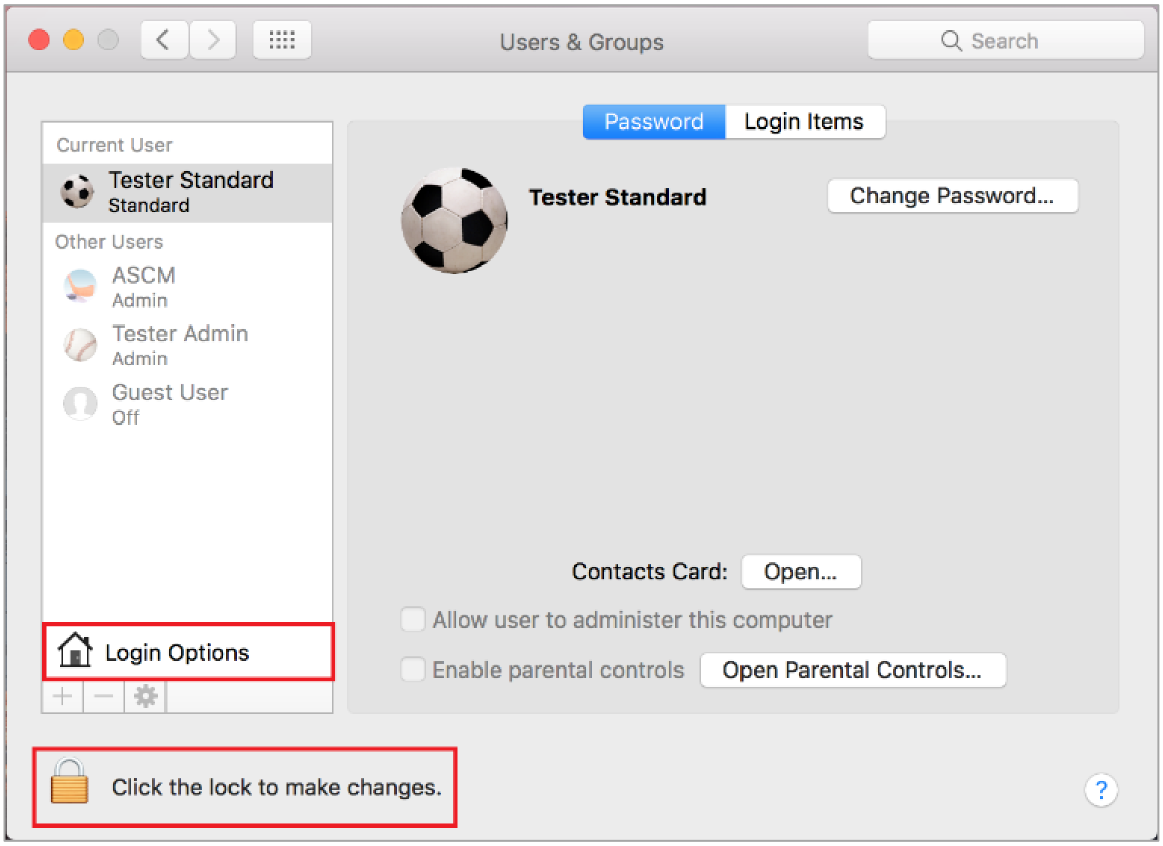
1. Choose Apple menu > **System Preferences**.

Figure 4. System Preferences > Users & Groups



2. In System Preferences, click **Users & Groups**. The ***Users & Groups*** window opens.
3. If the padlock in the lower left corner is locked, click it and authenticate with administrator credentials.

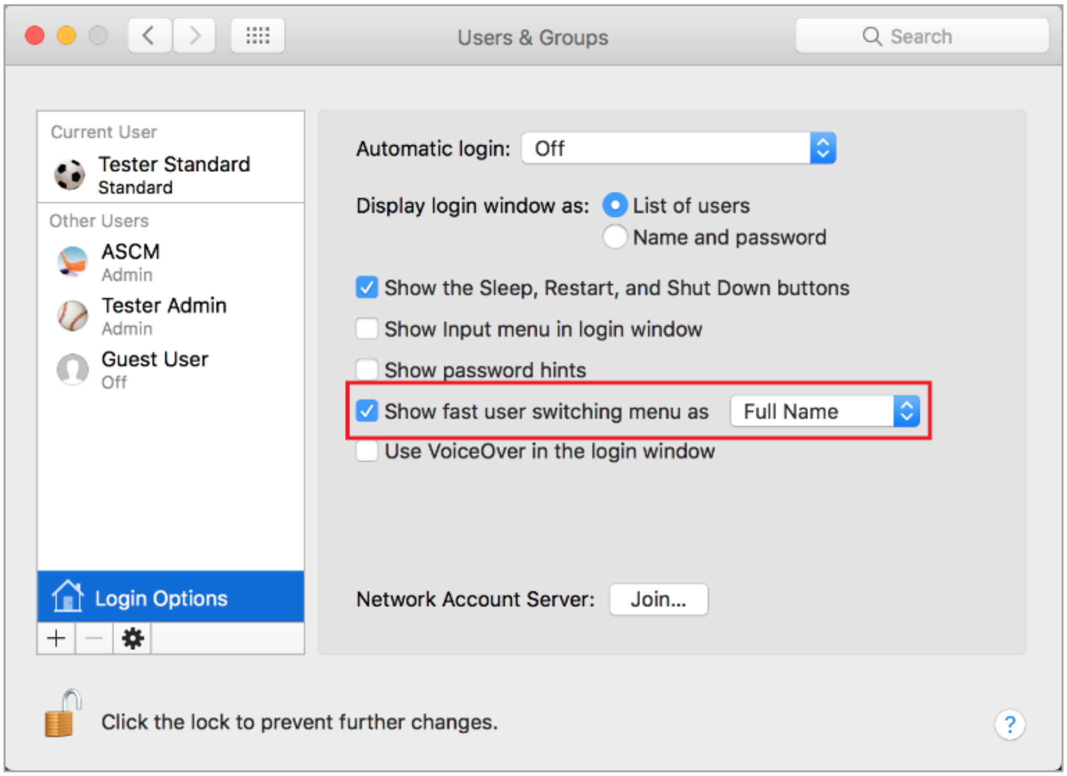
Figure 5. Users & Groups



4. Click **Login Options**. The ***Login Options*** window opens.

5. Uncheck the **Show fast user switching menu as...** checkbox.

Figure 6. Login Options



Fast User Switching is now disabled. The Fast User Switching icon no longer appears in the menu bar.

Figure 7. Menu Bar

How to Install the Secure Browser for Mac Using Advanced Methods

This section contains additional installation instructions for installing the Secure Browser for Mac.

How to Clone the Secure Browser Installation to Other Macs

Depending on your networking and permissions, it may be faster to install the Secure Browser onto a single Mac, take an image of the disk, and copy the image to other Macs.

1. On the computer from where you will clone the installation, install the Secure Browser following the directions on your portal. Be sure to run and then close the Secure Browser after the installation.
2. Clone the image.
3. Deploy the image to the target Macs.

How to Uninstall the Secure Browser on Mac

To uninstall a Mac Secure Browser, drag its folder to the Trash.

How to Troubleshoot Mac Workstations

This section contains troubleshooting tips for Mac.

How to Reset Secure Browser Profiles on Mac

If the Helpdesk advises you to reset the Secure Browser profile, use the instructions in this section.

1. Log on as an admin user or as the user who installed the Secure Browser and close any open Secure Browsers.
2. Start **Finder**.
3. While pressing **Option**, select **Go > Library**. The contents of the Library folder appear.
4. Returning to the Library, open the **Caches** folder, and delete the Secure Browser's folder.
5. Restart the Secure Browser.

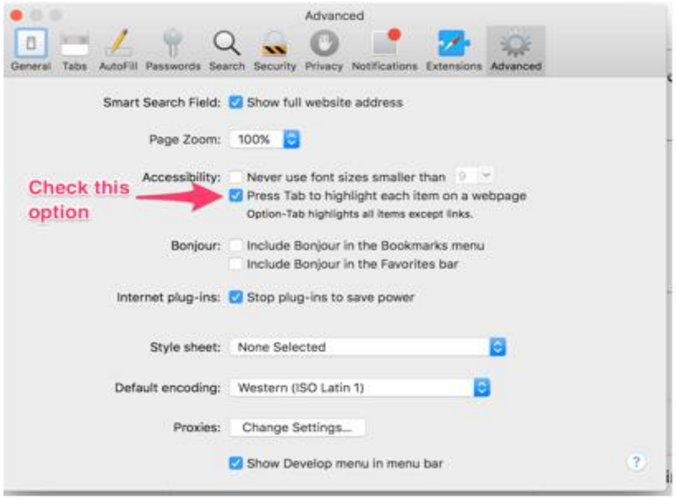
How to Navigate to the Tool Menu with the Keyboard Using a Safari Browser

Students can use any supported public browser for practice tests, and navigate to the Tool menu using standard methods, with the exception of Safari. To access the Tool menu using Safari, enable the "Press tab to highlight each item on a webpage" option in Safari Preferences, as shown below.

NOTE: Students who have text-to-speech (TTS) accommodation enabled for practice tests will need to use the Secure Browser.

1. Open Safari, and from the Safari menu, click **Preferences**.
2. Click **Advanced**.
3. Mark the checkbox **Press tab to highlight each item on a webpage**.

Figure 8. Advanced Safari Preferences



How to Disable Text-to-Speech Keyboard Shortcut

A feature in macOS 10.12 and later allows users to have any text on the screen read aloud by selecting the text and hitting a preset key or set of keys on the keyboard. By default, this feature is disabled and must remain disabled so as not to compromise test security. This section describes how to toggle this feature.

1. From the Apple menu, select **System Preferences**.
2. Select **Accessibility**.
3. Select **Speech**.
4. To enable this feature, check the **Speak selected text when the key is pressed** checkbox. To disable, deselect the checkbox.

How to Configure Networks for Online Testing

This section contains additional configurations for your network.

Resources to Add to your Allowlist for Online Testing

This section presents information about the URLs that CAI provides. Ensure your network's firewalls are open for these URLs. If your testing network includes devices that perform traffic shaping, packet prioritization, or Quality of Service, ensure these URLs have high priority.

URLs for Non-Testing Sites to Add to your Allowlist

Table 1 lists URLs for non-testing sites, such as Test Information Distribution Engine and Online Reporting System.

Table 1. CAI URLs for Non-Testing Sites

System	URL
Portal and Secure Browser installation files	https://utahrise.org/
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Test Information Distribution Engine	https://ut.tide.cambiumast.com/
Reporting System	https://ut.reports.cambiumast.com/

URLs for TA and Student Testing Sites to Add to your Allowlist

Testing servers and satellites may be added or modified during the school year to ensure an optimal testing experience. As a result, CAI strongly encourages you to add these URLs to your allowlist at the root level. This requires using a wildcard.

Table 2. CAI and AIR URLs for Testing Sites

System	URL
TA and Student Testing Sites Assessment Viewing Application For 2020-2021, users should add both Cambium and AIR URLs listed in this table to their allowlist.	*.cambiumast.com *.tds.cambiumast.com *.cloud1.tds.cambiumast.com *.cloud2.tds.cambiumast.com *.airast.org *.tds.airast.org *.cloud1.tds.airast.org *.cloud2.tds.airast.org

URLs for Online Dictionary and Thesaurus to Add to your Allowlist

Some online assessments contain an embedded dictionary and thesaurus provided by Merriam-Webster. The Merriam-Webster URLs listed in Table 3 should be added to your allowlist to ensure that students can use them during testing.

Table 3. CAI URLs for Online Dictionaries and Thesauruses

Domain Name	IP Address
media.merriam-webster.com	64.124.231.250
www.dictionaryapi.com	64.124.231.250

Ports and Protocols Required for Online Testing

Table 4 lists the ports and protocols used by the Test Delivery System. Ensure that all content filters, firewalls, and proxy servers are open accordingly.

Table 4. Ports and Protocols for Test Delivery System

Port/Protocol	Purpose
80/TCP	HTTP (initial connection only)
443/TCP	HTTPS (secure connection)

How to Configure Filtering Systems

If the school's filtering system has both internal and external filtering, the URLs for the testing sites (see Table 2) must be added to your allowlist in both filters. Ensure your filtering system is not configured to perform packet inspection on traffic to CAI servers. Please see your vendor's documentation for specific instructions. Also, be sure to add these URLs to your allowlist in any multilayer filtering system (such as local and global layers). Ensure all items that handle traffic to *.tds.cambiumast.com and *.tds.airast.org have the entire certificate chain and are using the latest TLS 1.2 protocol.

How to Configure for Domain Name Resolution

Table 1 and Table 2 list the domain names for CAI's testing and non-testing applications. Ensure the testing machines have access to a server that can resolve those names.

How to Configure Network Settings for Online Testing

Local Area Network (LAN) settings on testing machines should be set to automatically detect network settings.

1. Open **System Preferences**.
2. Open **Network**.
3. Select **Ethernet** for wired connections or **WiFi** for wireless connections.
4. Click **Advanced**.

5. Click **Proxies** tab.
6. Click **Auto Proxy Discovery** checkbox.
7. Click **OK** to close window.
8. Click **Apply** to close **Network** window.
9. Close **System Preferences**.

How to Configure the Secure Browser for Proxy Servers

By default, the Secure Browser attempts to detect the settings for your network's web proxy server. However, users of web proxies should execute a proxy command once from the command prompt. This command does not need to be added to the Secure Browser shortcut. Table 5 lists the form of the command for different settings and operating systems. To execute these commands from the command line, change to the directory containing the Secure Browser's executable file.

Note: Domain names in commands The commands in Table 5 use the domain proxy.com. When configuring for a proxy server, use your actual proxy server hostname.

Table 5. Specifying proxy settings using the command line

Description	System	Command
Use the browser without any proxy	Mac	./UTSecureBrowser -proxy 0 aHR0cHM6Ly91dC50ZHMuY2FtYml1bWFzdC5jb20vc3R1ZGVudA==
Set the proxy for HTTP requests only	Mac	./UTSecureBrowser -proxy 1:http:proxy.com:8080 aHR0cHM6Ly91dC50ZHMuY2FtYml1bWFzdC5jb20vc3R1ZGVudA==
Set the proxy for all protocols to mimic the "Use this proxy server for all protocols" of Firefox	Mac	./UTSecureBrowser -proxy 1:*:proxy.com:8080 aHR0cHM6Ly91dC50ZHMuY2FtYml1bWFzdC5jb20vc3R1ZGVudA==
Specify the URL of the PAC file	Mac	./UTSecureBrowser -proxy 2:proxy.com aHR0cHM6Ly91dC50ZHMuY2FtYml1bWFzdC5jb20vc3R1ZGVudA==
Auto-detect proxy settings	Mac	./UTSecureBrowser -proxy 4 aHR0cHM6Ly91dC50ZHMuY2FtYml1bWFzdC5jb20vc3R1ZGVudA==
Use the system proxy setting (default)	Mac	./UTSecureBrowser -proxy 5 aHR0cHM6Ly91dC50ZHMuY2FtYml1bWFzdC5jb20vc3R1ZGVudA==

Configurations for iPads

For Technology Coordinators

2020–2021

Published July 31, 2020

Prepared by Cambium Assessment, Inc.

Table of Contents

Configurations for iPads

This document contains configurations for your network and iPads.

How to Configure iPads for Online Testing

This section contains configurations for iPads.

About Assessment Mode

A feature in iOS/iPadOS called Assessment Mode (AM) (formerly known as Automatic Assessment Configuration (AAC)) works with CAI's Secure Browser to lock down an iPad for online testing. Users in the field need to do nothing to set up AM. Once the Secure Browser is launched on an iPad, AM kicks in automatically.

For more information about AM, including a list of features it disables, please visit https://support.apple.com/en-us/HT204775.

In addition to AM disabling features listed at the URL above, there are a few additional features in iOS/iPadOS that must be disabled prior to the administration of online testing. These features, which are listed below, should not be available to students without an accommodation and AM does not currently block them.

About Mobile Device Management (MDM) Software

Some configurations listed below may be possible through third-party mobile device management (MDM) software. If you use MDM software and your MDM software is capable of these configurations, you are welcome to use it to configure iPads that will be used to administer online testing. For more information, please consult the documentation for your specific MDM software.

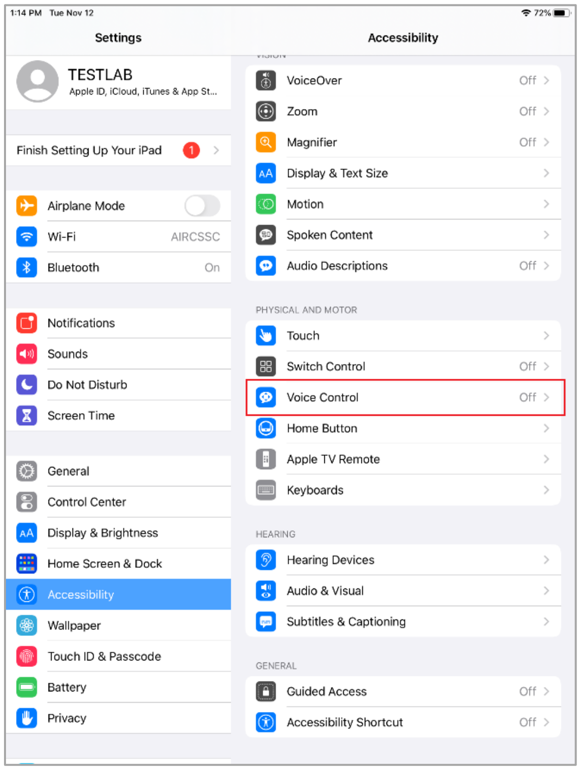
How to Disable Voice Control

iPads have access to a feature called Voice Control that is not automatically disabled by Assessment Mode (AM) (formerly known as Automatic Assessment Configuration (AAC)). Voice Control allows iPad users to control an iPad using voice commands. If this feature is enabled on iPads that are used for testing, students may be able to access unwanted apps, such as web browsers, during a test.

Voice Control is disabled by default. If it has never been enabled on an iPad, you have nothing to do. If it has been enabled, you must disable it before a student takes a test.

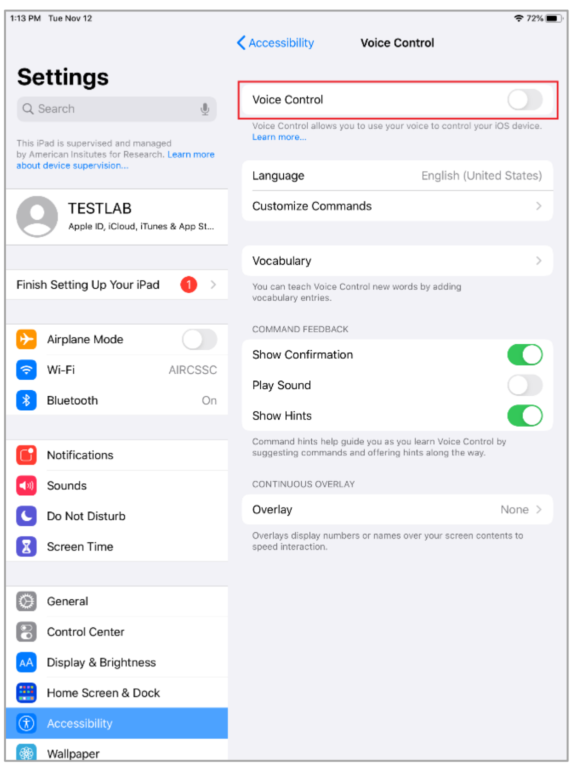
1. Select **Settings**.
2. Select **Accessibility**.
3. Select **Voice Control**.

Figure 1. Accessibility Settings – Voice Control



4. Toggle the **Voice Control** switch to the left to disable Voice Control.

Figure 2. Voice Control Settings

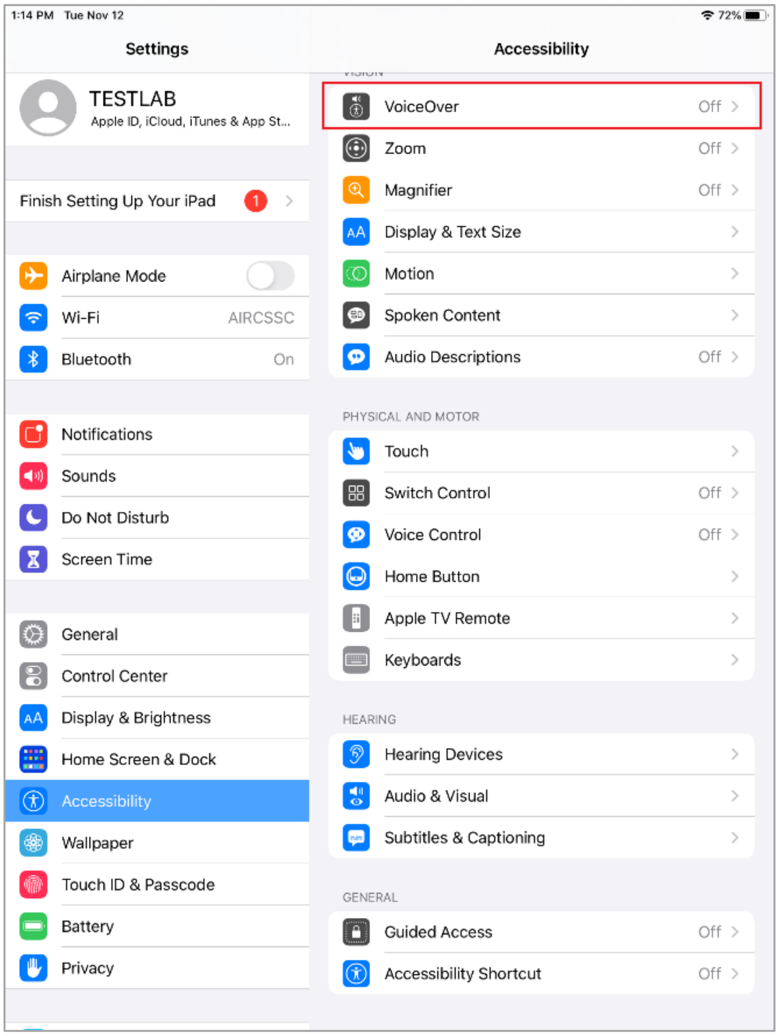


How to Disable VoiceOver

iPads have access to a feature called VoiceOver that is not automatically disabled by Assessment Mode (AM) (formerly known as Automatic Assessment Configuration (AAC)). VoiceOver is a gesture-based screen reader that allows users to receive audible descriptions of what is on the screen of their iPad. VoiceOver also changes touchscreen gestures to have different effects and adds additional gestures that allow users to move around the screen and control their iPads. If VoiceOver is not disabled on iPads that are used for testing, students may be able to access unwanted apps during a test. This feature should not be available to students without an accommodation.

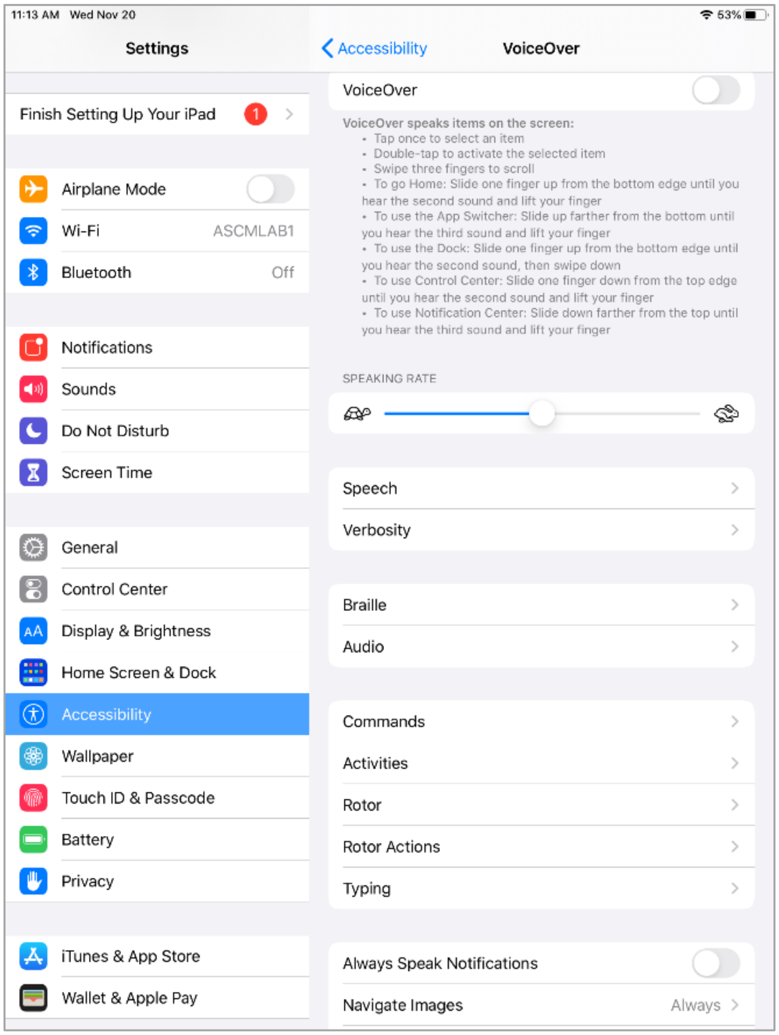
1. Select **Settings**.
2. Select **Accessibility**.
3. Select **VoiceOver**.

Figure 3. Accessibility Settings - VoiceOver



4. Toggle the **VoiceOver** switch to the left to disable VoiceOver.

Figure 4. VoiceOver Settings

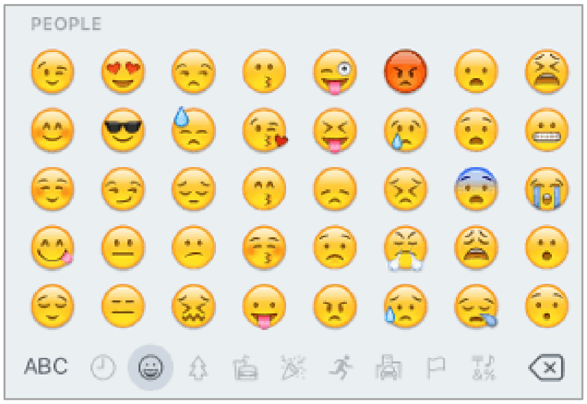


How to Disable the Emoji Keyboard

Emoticons are characters that express an emotion or represent a facial expression, such as a smile or a frown. Some text messaging apps replace sequences of characters with an emoticon, such as replacing `:-)` with ☺.

iOS/iPadOS has an Emoji keyboard that contains emoticons. This keyboard, if activated, can be confusing for test-takers or scorers. Use the following procedure to remove the emoji keyboard from an iPad.

Figure 5. Emoji Keyboard



1. Select **Settings**.
2. Navigate to **Keyboard** > **General**.
3. Select **Keyboards**.
4. Delete `Emoji` from the list by sliding it to the left and selecting **Delete**.

Figure 6. Keyboards

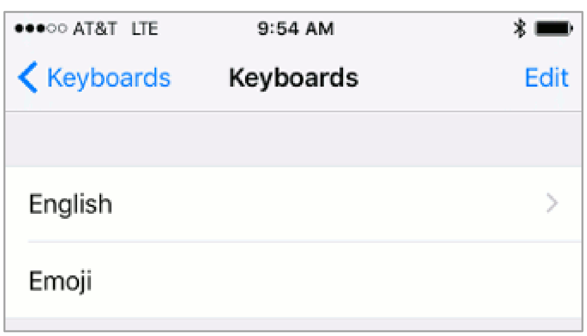


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Table 4. Ports and Protocols for Test Delivery System

Port/Protocol	Purpose
80/TCP	HTTP (initial connection only)
443/TCP	HTTPS (secure connection)

How to Configure Filtering Systems

If the school's filtering system has both internal and external filtering, the URLs for the testing sites (see Table 1) must be added to your allowlist in both filters. Ensure your filtering system is not configured to perform packet inspection on traffic to CAI servers. Please see your vendor's documentation for specific instructions. Also, be sure to add these URLs to your allowlist in any multilayer filtering system (such as local and global layers). Ensure all items that handle traffic to *.tds.cambiumast.com and *.tds.airast.org have the entire certificate chain and are using the latest TLS 1.2 protocol.

How to Configure for Domain Name Resolution

Table 1 and Table 2 list the domain names for CAI's testing and non-testing applications. Ensure the testing machines have access to a server that can resolve those names.

*Please note: To return to the page in this manual that you were on before clicking a link, use one of the following keyboard shortcuts: **Alt** + **Left Arrow** (for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or **Command** + **Left Arrow** (for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

Configurations and Troubleshooting for Linux

For Technology Coordinators

2020-2021

Published August 12, 2020

Prepared by Cambium Assessment, Inc.

Table of Contents

Configurations and Troubleshooting for Linux

This document contains configurations and troubleshooting for your network and Linux workstations.

How to Configure Linux Workstations for Online Testing

This section contains additional configurations for Linux.

Required Libraries & Packages to Install

The following libraries and packages are required to be installed on all 32-bit and 64-bit Linux workstations:

- GTK+ 2.18 or higher
- GLib 2.22 or higher
- Pango 1.14 or higher
- X.Org 1.0 or higher (1.7+ recommended)
- libstdc++ 4.3 or higher
- libreadline6:i386 (required for Ubuntu only)
- GNOME 2.16 or higher

The following libraries and packages are recommended to be installed on all 32-bit and 64-bit Linux workstations:

- NetworkManager 0.7 or higher
- DBus 1.0 or higher
- HAL 0.5.8 or higher

The following libraries and packages are required to be installed on all 64-bit Linux workstations:

- Sox
- Net-tools

How to Add Verdana Font

Some tests have content that requires the Verdana TrueType font. Therefore, ensure that Verdana is installed on Linux machines used for testing. The easiest way to do this is to install the Microsoft core fonts package for your distribution.

- Fedora—Follow the steps in the "How to Install" section of the following website: http://corefonts.sourceforge.net/.
- Ubuntu—In a terminal window, enter the following command to install the msttcorefonts package:

  sudo apt-get install msttcorefonts

How to Disable the On-Screen Keyboard

Fedora and Ubuntu feature an on-screen keyboard that should be disabled before online testing. This section describes how to disable the on-screen keyboard.

1. Open **System Settings**.
2. Select **Universal Access**.
3. In the *Typing* section, toggle **Screen Keyboard** to **Off**.

How to Uninstall the Secure Browser on Linux

This section contains instructions to uninstall the Secure Browser for Linux.

How to Uninstall the Secure Browser on Linux

To uninstall a Secure Browser, delete the folder from the installation directory.

How to Troubleshoot Linux Workstations

This section contains troubleshooting tips for Linux.

How to Reset Secure Browser Profiles on Linux

If the Helpdesk advises you to reset the Secure Browser profile, use the instructions in this section.

1. Log on as a superuser or as the user who installed the Secure Browser, and close any open Secure Browsers.
2. Open a terminal, and delete the contents of the following directories:

   /home/username/.cai

   /home/username/.cache/cai

   where `username` is the user account where the Secure Browser is installed. (Keep the directories, just delete their contents.)
3. Restart the Secure Browser.

How to Configure Networks for Online Testing

This section contains additional configurations for your network.

Resources to Add to your Allowlist for Online Testing

This section presents information about the URLs that CAI provides. Ensure your network's firewalls are open for these URLs. If your testing network includes devices that perform traffic shaping, packet prioritization, or Quality of Service, ensure these URLs have high priority.

URLs for Non-Testing Sites to Add to your Allowlist

Table 1 lists URLs for non-testing sites, such as Test Information Distribution Engine and Online Reporting System.

Table 1. CAI URLs for Non-Testing Sites

System	URL
Portal and Secure Browser installation files	https://utahrise.org/
Single Sign-On System	https://sso2.cambiumast.com/auth/realms/utah/account
Test Information Distribution Engine	https://ut.tide.cambiumast.com/
Reporting System	https://ut.reports.cambiumast.com/

URLs for TA and Student Testing Sites to Add to your Allowlist

Testing servers and satellites may be added or modified during the school year to ensure an optimal testing experience. As a result, CAI strongly encourages you to add these URLs to your allowlist at the root level. This requires using a wildcard.

Table 2. CAI and AIR URLs for Testing Sites

System	URL
TA and Student Testing Sites Assessment Viewing Application For 2020-2021, users should add both Cambium and AIR URLs listed in this table to their allowlist.	*.cambiumast.com *.tds.cambiumast.com *.cloud1.tds.cambiumast.com *.cloud2.tds.cambiumast.com *.airast.org *.tds.airast.org *.cloud1.tds.airast.org *.cloud2.tds.airast.org

URLs for Online Dictionary and Thesaurus to Add to your Allowlist

Some online assessments contain an embedded dictionary and thesaurus provided by Merriam-Webster. The Merriam-Webster URLs listed in Table 3 should be added to your allowlist to ensure that students can use them during testing.

Table 3. CAI URLs for Online Dictionaries and Thesauruses

Domain Name	IP Address
media.merriam-webster.com	64.124.231.250
www.dictionaryapi.com	64.124.231.250

Ports and Protocols Required for Online Testing

Table 4 lists the ports and protocols used by the Test Delivery System. Ensure that all content filters, firewalls, and proxy servers are open accordingly.

Table 4. Ports and Protocols for Test Delivery System

Port/Protocol	Purpose
80/TCP	HTTP (initial connection only)
443/TCP	HTTPS (secure connection)

How to Configure Filtering Systems

If the school's filtering system has both internal and external filtering, the URLs for the testing sites (see Table 1) must be added to your allowlist in both filters. Ensure your filtering system is not configured to perform packet inspection on traffic to CAI servers. Please see your vendor's documentation for specific instructions. Also, be sure to add these URLs to your allowlist in any multilayer filtering system (such as local and global layers). Ensure all items that handle traffic to *.tds.cambiumast.com and *.tds.airast.org have the entire certificate chain and are using the latest TLS 1.2 protocol.

How to Configure for Domain Name Resolution

Table 1 and Table 2 list the domain names for CAI's testing and non-testing applications. Ensure the testing machines have access to a server that can resolve those names.

How to Configure Network Settings for Online Testing

Local Area Network (LAN) settings on testing machines should be set to automatically detect network settings.

To set LAN settings to auto-detect on Linux machines:

1. Open **System Settings**.
2. Open **Network**.
3. Select **Network Proxy**.

4. From the **Method** dropdown, select **None**.

5. Close the **Network** window.

How to Configure the Secure Browser for Proxy Servers

By default, the Secure Browser attempts to detect the settings for your network's web proxy server. However, users of web proxies should execute a proxy command once from the command prompt. This command does not need to be added to the Secure Browser shortcut. Table 5 lists the form of the command for different settings and operating systems. To execute these commands from the command line, change to the directory containing the Secure Browser's executable file.

Note: Domain names in commands The commands in Table 5 use the domain proxy.com. When configuring for a proxy server, use your actual proxy server hostname.

Table 5. Specifying proxy settings using the command line

Description	System	Command
Use the browser without any proxy	Linux	./UTSecureBrowser.sh -proxy 0 aHR0cHM6Ly91dC50ZHMuY2FtYml1bWFzdC5jb20vc3R1ZGVudA==
Set the proxy for HTTP requests only	Linux	./UTSecureBrowser.sh -proxy 1:http:proxy.com:8080 aHR0cHM6Ly91dC50ZHMuY2FtYml1bWFzdC5jb20vc3R1ZGVudA==
Set the proxy for all protocols to mimic the "Use this proxy server for all protocols" of Firefox	Linux	./UTSecureBrowser.sh -proxy 1:*:proxy.com:8080 aHR0cHM6Ly91dC50ZHMuY2FtYml1bWFzdC5jb20vc3R1ZGVudA==
Specify the URL of the PAC file	Linux	./UTSecureBrowser.sh -proxy 2:proxy.com aHR0cHM6Ly91dC50ZHMuY2FtYml1bWFzdC5jb20vc3R1ZGVudA==
Auto-detect proxy settings	Linux	./UTSecureBrowser.sh -proxy 4 aHR0cHM6Ly91dC50ZHMuY2FtYml1bWFzdC5jb20vc3R1ZGVudA==
Use the system proxy setting (default)	Linux	./UTSecureBrowser.sh -proxy 5 aHR0cHM6Ly91dC50ZHMuY2FtYml1bWFzdC5jb20vc3R1ZGVudA==

Configurations and Troubleshooting for Android

For Technology Coordinators

2019-2020

Published June 10, 2020

Prepared by Cambium Assessment, Inc.

Table of Contents

Configurations and Troubleshooting for Android

This document contains configurations and troubleshooting for your network and Android workstations.

How to Configure Networks for Online Testing

This section contains additional configurations for your network.

Which Resources to Whitelist for Online Testing

This section presents information about the URLs that CAI provides. Ensure your network's firewalls are open for these URLs. If your testing network includes devices that perform traffic shaping, packet prioritization, or Quality of Service, ensure these URLs have high priority.

Which URLs for Non-Testing Sites to Whitelist

Table 1 lists URLs for non-testing sites, such as Test Information Distribution Engine and Online Reporting System.

Table 1. CAI URLs for Non-Testing Sites

System	URL
Portal and Secure Browser installation files	https://utahrise.org/
Single Sign-On System	https://sso2.cambiumast.com/auth/realms/utah/account
Test Information Distribution Engine	https://ut.tide.cambiumast.com/
Online Reporting System	https://ut.reports.cambiumast.com/

Which URLs for TA and Student Testing Sites to Whitelist

Testing servers and satellites may be added or modified during the school year to ensure an optimal testing experience. As a result, CAI strongly encourages you to whitelist at the root level. This requires using a wildcard.

Table 2. CAI and AIR URLs for Testing Sites

System	URL
TA and Student Testing Sites Assessment Viewing Application	*.cambiumast.com *.tds.cambiumast.com *.cloud1.tds.cambiumast.com *.cloud2.tds.cambiumast.com *.airast.org *.tds.airast.org *.cloud1.tds.airast.org *.cloud2.tds.airast.org

Which URLs for Online Dictionary and Thesaurus to Whitelist

Some online assessments contain an embedded dictionary and thesaurus provided by Merriam-Webster. The Merriam-Webster URLs listed in Table 3 should be whitelisted to ensure that students can use them during testing.

Table 3. CAI URLs for Online Dictionaries and Thesauruses

Domain Name	IP Address
media.merriam-webster.com	64.124.231.250
www.dictionaryapi.com	64.124.231.250

Which Ports and Protocols are Required for Online Testing

Table 4 lists the ports and protocols used by the Test Delivery System. Ensure that all content filters, firewalls, and proxy servers are open accordingly.

Table 4. Ports and Protocols for Test Delivery System

Port/Protocol	Purpose
80/TCP	HTTP (initial connection only)
443/TCP	HTTPS (secure connection)

How to Configure Filtering Systems

If the school's filtering system has both internal and external filtering, the URLs for the testing sites (see Table 1) must be whitelisted in both filters. Please see your vendor's documentation for specific instructions. Also, be sure to whitelist these URLs in any multilayer filtering system (such as local and global layers).

How to Configure for Domain Name Resolution

Table 1 and Table 2 list the domain names for CAI's testing and non-testing applications. Ensure the testing machines have access to a server that can resolve those names.

How to Configure for Certificate Revocations

CAI's servers present certificates to the clients. The following sections discuss the methods used to check those certificates for revocation.

How to Use the Online Certificate Status Protocol

To use the Online Certificate Status Protocol (OCSP), ensure your firewalls allow the domain names listed in Table 5. The values in the Patterned column are preferred because they are more robust.

Table 5. Domain Names for OCSP

Patterned	Fully Qualified
*.thawte.com	ocsp.thawte.com
*.geotrust.com	ocsp.geotrust.com
*.ws.symantec.com	ocsp.ws.symantec.com

If your firewall is configured to check only IP addresses, do the following:

1. Get the current list of OCSP IP addresses from Symantec. The list is available at https://www.symantec.com/content/en/us/enterprise/other_resources/OCSP_Upgrade_-_New_IP_Addresses.txt.

2. Add the retrieved IP addresses to your firewall's whitelist. Do not replace any existing IP addresses.

How to Configure Android Workstations for Online Testing

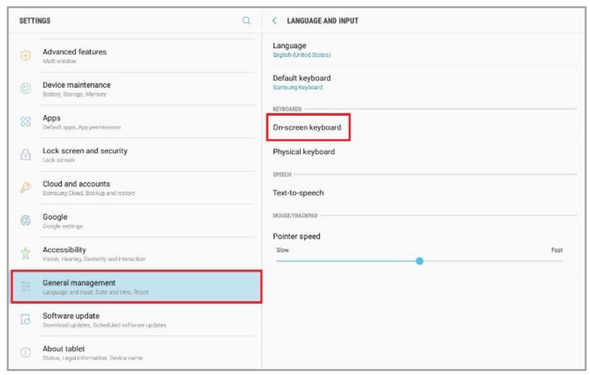
This section contains additional configurations for Android.

How to Enable the Secure Browser Keyboard

The default keyboard for the Android allows predictive text, which may provide students with hints for answers to tests. For this reason, the Secure Browser for Android requires that a mobile Secure Browser keyboard be configured for the Secure Browser itself. The Secure Browser keyboard is a basic keyboard, with no row for predictive text functionality.

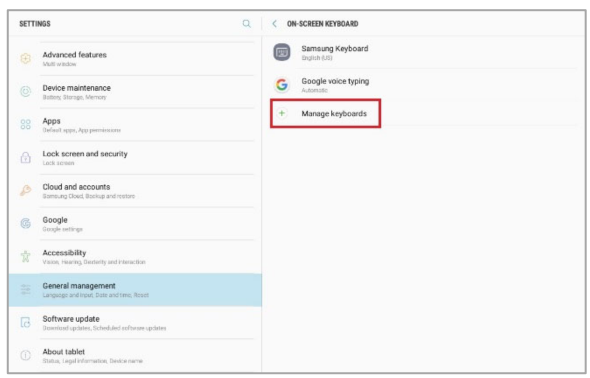
1. Open **Settings**.
2. Open **General management**.
3. Open **Language and input**.
4. Open **On-screen keyboard**.

Figure 1. Language and input



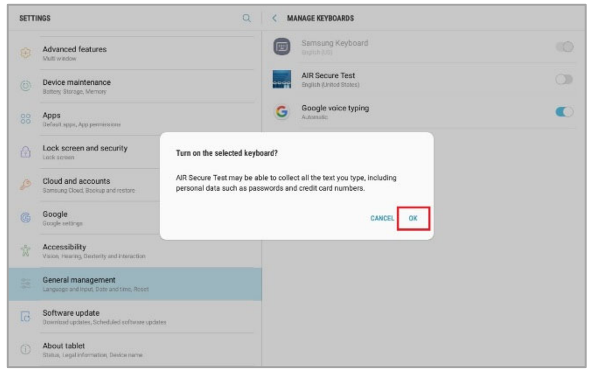
5. Select **Manage keyboards**.

Figure 2. On-screen keyboard



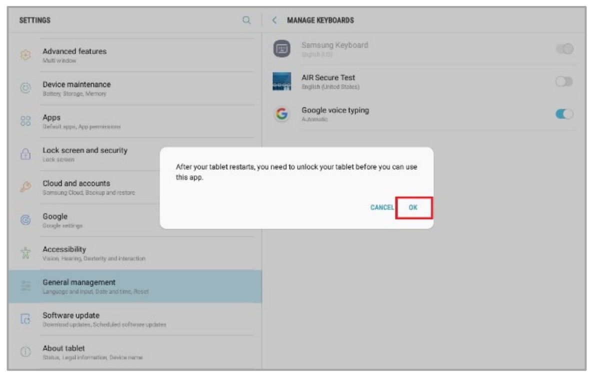
6. Set **AIR Secure Test** to **On**. A popup will appear.

Figure 3. Turn on the selected keyboard Pop-up



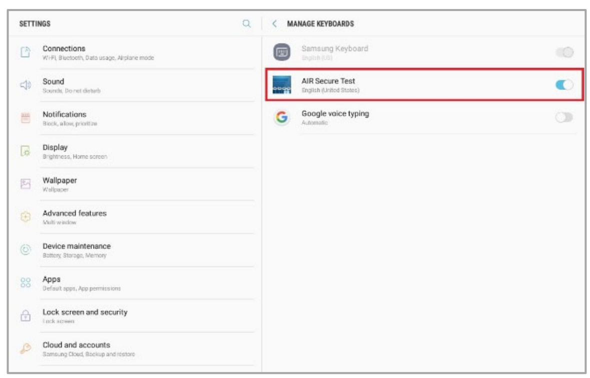
7. Select **OK**. Another popup will appear.

Figure 4. After your tablet restarts Pop-up



8. Select **OK**. The AIR Secure Test keyboard is now enabled.

Figure 5. After your tablet restarts Pop-up



How to Troubleshoot Android Workstations

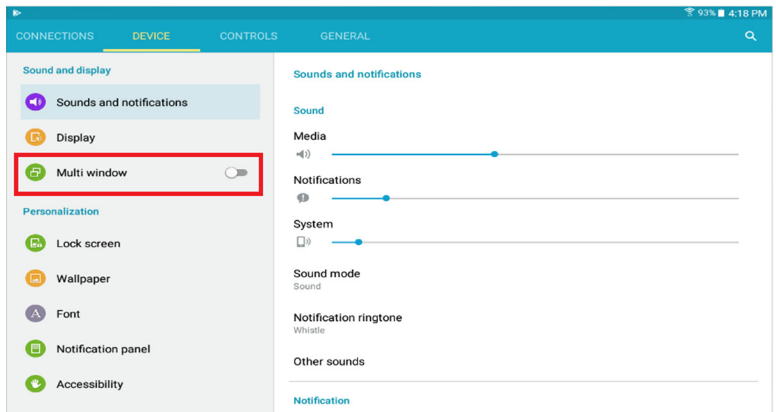
This section contains troubleshooting tips for Android.

How to Disable the Multi-Window on Samsung Tablets

Samsung tablets are equipped with a multi-window feature to display app launchers. Depending on the available app launchers, the multi-window can compromise testing security. To avoid this scenario, disable the multi-window on Samsung tablets.

1. Tap **Settings**.
2. Navigate to **Device** > **Sound and display**.
3. Turn off **Multi window**.

Figure 6. Sound and display

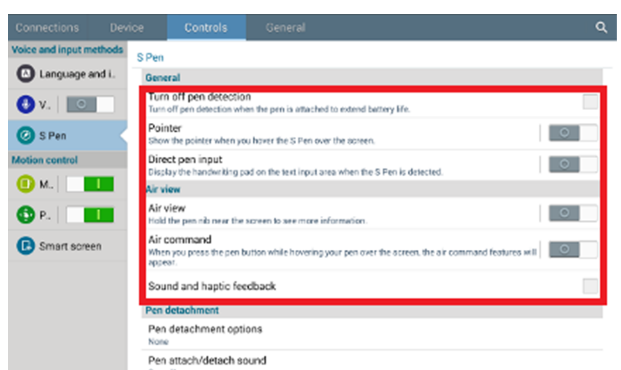


How to Disable the Stylus on Samsung Galaxy Note

The Samsung Galaxy Note stylus is capable of launching apps—a situation that can compromise testing security. To avoid this scenario, disable the stylus feature.

1. Tap **Settings**.
2. Navigate to **Controls** > **Voice and input methods**.
3. Tap **S Pen**.
4. Disable all of the available features.

Figure 7. S Pen Controls



Appendix 5-C

Assistive Technology Manual

Assistive Technology Manual

2020-2021

Published August 12, 2020

Prepared by Cambium Assessment, Inc.

Table of Contents

Overview of Testing with Assistive Technology

This manual provides an overview of the embedded and non-embedded assistive technology tools that can be used to help students with special accessibility needs complete online tests in the Test Delivery System (TDS). It includes lists of supported devices and applications for each type of assistive technology that students may need, as well as setup instructions for the assistive technologies that require additional configuration in order to work with TDS.

- Embedded assistive technology tools include the built-in test tools in TDS, such as the Text-to-Speech tool. These tools can be accessed without third-party software or hardware and do not require Assistive Technology to be turned on in TDS.
- Non-embedded assistive technology tools are the third-party hardware and accessibility software that students use to help them complete tests in TDS. These tools require Assistive Technology to be turned on in TDS and may require additional configuration steps prior to testing.

Students who use assistive technologies to interact with a standard web browser should be able to use those same technologies with TDS, unless they are web-based applications or browser extensions. The best way to test compatibility with assistive technologies is to take a training test in the Secure Browser with those technologies turned on. If they do not work, refer to the additional configuration instructions in this manual as required. If you still have questions about the assistive technology tools covered in this guide, please contact the Helpdesk.

The guide includes the following sections:

- Testing with Speech-to-Text Technology
- Testing with Alternative Computer Input Technology
- Testing with Assistive Keyboard and Mouse Input Technology
- Testing with Screen Magnifier Technology
- Testing with Text-to-Speech
- Testing with Assistive Technology for Braille Tests

Using Assistive Technology

Assistive Technology is a TDS accommodation that allows students to use non-embedded assistive technology to complete tests in the Secure Browser. It must be turned on for any students testing with third-party assistive technology tools. When Assistive Technology is turned on, the Secure Browser's security settings will be partially lowered to allow students to use tools that would otherwise be blocked. This accommodation should be assigned to students in TIDE before they begin testing.

Please note that using assistive technology requires state approval so that applications can be removed from the forbidden applications list in the Secure Browser.

Assistive Technology is available only for computers running supported desktop Windows and Mac operating systems. When using Windows 8 and above, the task bar remains on-screen throughout the test after enabling accessibility software. However, forbidden applications are still prohibited.

When Assistive Technology is turned on, standard keyboard navigation in the Secure Browser will be disabled in order to accommodate any potential keyboard commands associated with the assistive technology the student may be using. For information about standard keyboard commands in the Secure Browser, see the *Test Administrator User Guide*.

How to Use Assistive Technology

Assistive Technology activates when students are approved for testing in TDS. The student's assistive technology should already be set up for use with TDS when they begin testing with Assistive Technology.

1. Open the required accessibility software.
2. Open the Secure Browser. Begin the normal sign-in process up to the proctor approval step.
3. When a student is approved for testing, the Secure Browser allows the operating system's menu and task bar to appear.
   - **Windows:** On Windows, the Secure Browser resizes, and the taskbar remains visible inside the test in its usual position. Students can press **Alt+Tab** to switch between the Secure Browser and accessibility applications that they are permitted to use in their test session.
   - **Mac:** On MacOS, the Secure Browser resizes, and students can view the dock in its usual position inside the test. If the dock is set to autohide, no resizing occurs, and the dock is only visible when the mouse moves toward the bottom of screen. Students can press **Cmd+Tab** to switch between the Secure Browser and permitted accessibility applications.
4. The student must immediately switch to the accessibility software that is already open on the computer so that it appears over the Secure Browser. The student cannot click within the Secure Browser until the accessibility software is configured.
   - **Windows:** Click the accessibility software application in the task bar.
   - **Mac:** Click the accessibility software application in the dock.
5. The student configures the accessibility software settings as needed.
6. After configuring the accessibility software settings, the student returns to the Secure Browser and continues the sign-in process. At this point, the student can no longer switch back to the accessibility software. If changes need to be made, the student must sign out and then sign in again.

Once Assistive Technology is turned off, the Secure Browser reoccupies the whole screen, and the student's ability to use assistive technologies or switch between any other applications and the Secure Browser is suppressed.

Testing with Speech-to-Text Technology

Speech-to-text (STT) technology transcribes a student's spoken words into text for item responses in TDS. Students with the appropriate accommodations may use STT assistive technology while taking tests. RISETDS currently supports several non-embedded STT tools.

Table 1 on the next page provides a list of third-party STT applications that can be used in TDS. In addition to the applications listed in this table, students will need to use a headset while testing. Any wired headset with a 3.5 mm or USB connection should work.

Some applications listed in Table 1 on the next page require additional configuration to prepare for use during online testing. Necessary configurations are described staring on page 5. Some applications send data to the cloud for processing by default. Where noted, this should be disabled to ensure the security of test data.

After you configure an application, CAI strongly recommends testing that application on the training test administered through the Secure Browser prior to using it for operational testing.

Please note: This manual includes links for users to jump to various sections within the document; if you wish to return to the page in this manual you were on before clicking the link to another section, use one of the following keyboard shortcuts: ***Alt*** *+* ***Left Arrow*** *(for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or* ***Command*** *+* ***Left Arrow*** *(for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

Table 1. Third-Party STT Applications

Product	System Requirements	Additional Details
Dragon Naturally Speaking—Windows • Supported Versions: 15 Professional	• Windows 8.1, 10; Server 2008 R2, 2012 R2	• Requires additional setup before use in TDS (see configuration instructions) • TDS cannot confirm appropriate configurations are in use during exam, so students may be able to access prohibited features.
Windows built-in Speech Recognition • Supported Versions: 8.0	• Windows 8, 8.1, 10; Server 2012 R2, 2016 R2	• Requires additional setup before use in TDS (see configuration instructions) • TDS cannot confirm appropriate configurations are in use during exam, so students may be able to access prohibited features. • Requires state approval to be removed from the forbidden applications list in the Secure Browser.
Read&Write—Windows • Supported Versions: 12.0.45	• Windows 8, 8.1, 10; Server 2012 R2, 2016 R2	• Exam Mode must be enabled before students begin testing (this mode is not available on Read&Write for Mac). • Also includes text prediction features that must be turned off prior to testing.
Mac built-in Enhanced Dictation •	• Mac 10.11–10.14	• Requires additional setup before use in TDS (see configuration instructions)
iOS built-in Dictation • Supported Versions: iOS 12.4, 13.4	• iOS 12.4, 13.4	• Cannot be used with the Secure Browser. ▪ Students must dictate into a secondary iPad set in Airplane Mode and the proctor enters the student's response into testing device.

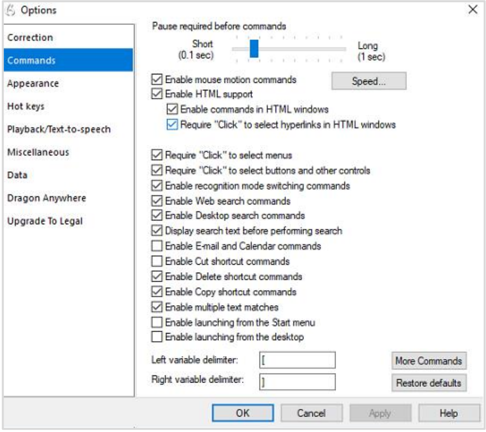
Configuring Speech-to-Text Applications

Dragon Naturally Speaking 15 Home or Professional Individual for Windows

Necessary configurations for Dragon Naturally Speaking can be made from the **Options** dialog box, which is accessed from the **Tools** drop-down list on the DragonBar.

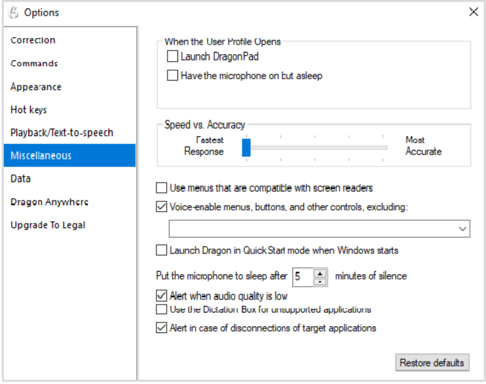
- From the **Commands** tab, uncheck the following settings:
  - **Enable launching from the Start Menu**
  - **Enable launching from the desktop**
  - **Enable E-Mail and Calendar commands**
  - **Enable Cut shortcut commands**

Figure 1. Dragon Commands Tab



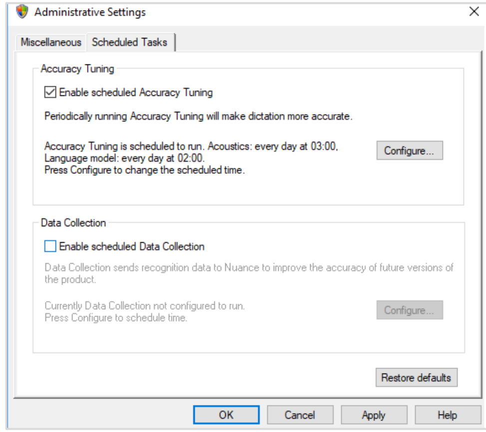
- From the **Miscellaneous** tab, uncheck **Use Dictation Box for unsupported application**.

Figure 2. Dragon Miscellaneous Tab



- From the **Scheduled Tasks** tab in Administrative Settings, uncheck **Enable scheduled Data Collection**.

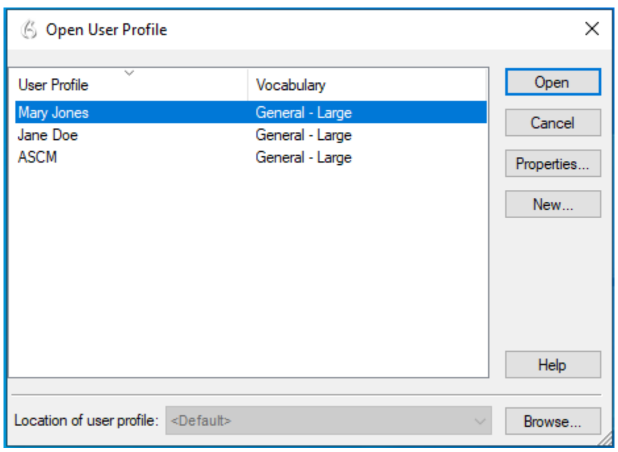
Figure 3. Admin Settings Schedule Tasks Tab



Setting Up User Profiles for Students

Dragon Naturally Speaking requires each student to use a specific User Profile. You will need to create User Profiles and ensure that Dragon Naturally Speaking is set to the proper profile for each student prior to testing. When creating a profile, you can select the student's age range, language, and accent, as well as set the audio input devices. Students will then read aloud prompts that Dragon Naturally Speaking uses to learn their voice. After creating profiles, you can select **Profiles** in the Dragon toolbar, then click **Open User Profile…** to switch between User Profiles (see Figure 4). For more information about creating User Profiles, see the **Dragon Naturally Speaking—Windows** website.

Figure 4. Dragon Naturally Speaking—Open User Profiles



Windows Speech Recognition

Prior to the testing day, the Windows built-in Speech Recognition application must be set up on each testing device that will be used by students who require STT. The application can be set up through the Windows Control Panel. Users should set the device to not send data to Microsoft for improvement so that secure test data is not sent to the cloud. During setup, Speech Recognition Voice Training must be completed by the student for optimal performance.

- To prevent Windows from sending data to the cloud, go to **Start** > **Settings** > **Privacy** > **Diagnostics & Feedback** and mark the **Basic** radio button in the Diagnostic Data section. Then select the **Speech** tab and set the **Online Speech Recognition** toggle to **Off**.

Read & Write (Windows)

Read and Write has an Exam Mode that can be used to turn off features for a single student on their particular testing device. When exam mode is enabled, the student will have access to only the selected features on the toolbar and certain speech settings, including voice selection, speed, pitch and Speak As I Type (the full settings menu will not be accessible).

To use Exam mode, run Read and Write and click on the settings button in the upper-right corner and then click **Show more settings**. in the *Find a Setting* field, type *adminsettings*. You will be asked to enter and confirm a password to grant access on this computer. When logged into administrator settings, click the **Select your features** tab and select which features you'd like to be enabled on the student's toolbar. Enable the **Use Exam Mode now** toggle to start Exam Mode, then close the Read and Write menu to start the exam.

Mac Enhanced Dictation

Mac workstations that will be used for dictation should be opted out of Apple's Diagnostic and Usage program so that no secure test data is stored on the device for analysis. Macs can be opted out of this program by disabling Analytics through the Mac's security and privacy settings.

When you enable Enhanced Dictation on a testing device, you must also enable a language and keyboard shortcut through the device's keyboard settings. Once Enhanced Dictation is enabled, the device must be connected to the internet to download the offline models that allow speech to be transcribed without sending it to the cloud for processing.

iOS Dictation

Due to the way iPads are secured for assessments, there is currently no third-party application that can provide STT. However, students who need STT can dictate into the built-in dictation application on a secondary iPad and a proctor or test administrator can then enter the student's response verbatim into the testing device.

The secondary iPad must be a 5th or 6th Generation iPad or iPad Pro running at least iOS 11.4. It must be placed in Airplane Mode so that no secure test data is transmitted to the cloud for processing. Also, it must be opted out of Apple's Diagnostic and Usage program so that no secure test data is stored on the device for analysis.

Dictation can be enabled through the iPad's keyboard settings. Airplane Mode can be enabled through the iPad's main settings. iPads can be opted out of Apple's Diagnostic and Usage program by disabling Analytics through the iPad's privacy settings.

Prior to testing day, the secondary iPad must be connected to the Internet once to download the offline models that allow speech to be transcribed offline. This is done automatically once dictation is enabled and the device is connected to the Internet. No manual download is necessary. After the device is connected to the Internet once, CAI recommends users test offline dictation by enabling Airplane Mode and dictating into the Notes app or another similar app on the iPad. If it works, you are ready for testing day. If it does not work, disable Airplane Mode and reconnect the iPad to the Internet to finish downloading the offline STT models.

On testing day, enable Airplane Mode on the secondary iPad and allow the student to dictate their responses into it. A proctor or test administrator must then enter the responses verbatim into the student's testing device.

After testing is completed, be sure to delete any secure test data on the secondary iPad.

Testing with Alternative Computer Input Technology

Alternative Computer Input (ACI) assistive tools allow students with various impairments (such as physical and visual impairments) to interact with a computer without using a traditional mouse and keyboard setup. For instance, ACI technology such as PCEye Mini tracks students' eye movement, while Dwell Clicker 2 allows students to use a mouse without having to click the left or right mouse buttons.

TDS does not include any embedded alternative computer input tools, but it supports several third-party alternative computer input technologies.

Table 2 provides a list of third-party ACI devices that can be used in TDS. Please note that this list includes only the devices that CAI has thoroughly tested against the Secure Browser, but there may be additional supported ACI devices that have not been tested yet. If your students need to use an ACI device not listed here, please test it out in a training test first to ensure there are no issues with it.

*Please note: If you wish to return to the page in this manual you were on before clicking the link to another section, use one of the following keyboard shortcuts: **Alt** + **Left Arrow** (for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or **Command** + **Left Arrow** (for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

Table 2. Third-Party ACI Devices

Product	System Requirements	Additional Details
PCEye Mini with Windows Control	• Windows 8.1, 10	• Requires additional setup before use in TDS (see configuration instructions)
Dwell Clicker 2 • Supported Versions: 2.0.40	• Windows 8, 10; Server 2012 R2, 2016 R2	• Requires additional setup before use in TDS (see configuration instructions)
HeadMouse Nano	• Windows 8, 8.1, 10; Server 2012 R2, 2016 R2 • Mac 10.11–10.14	• Requires additional setup before use in TDS (see configuration instructions)
Access Switch	• Windows 8, 8.1, 10; Server 2012 R2, 2016 R2 • Mac 10.11–10.14	• N/A
Swifty • Supported Versions: SW2	• Windows 8, 8.1, 10; Server 2012 R2, 2016 R2 • Mac 10.11–10.14	• Requires additional setup before use in TDS (see configuration instructions)

Configuring PCEye Mini with Windows Control on Student Devices

To configure the PCEye Mini, it should be plugged in to a computer that uses Windows Control software and should be installed by following the product's installation instructions manually.

For students using PCEye Mini with Windows Control Software, the Word Prediction feature should be disabled by opening the application and navigating to **Settings**>**Keyboard**.

Configuring Dwell Clicker 2

To configure Dwell Clicker 2 settings, open the application and select the keyboard icon, then click the **Options** key. In the window that pops up, make sure the **Use Text Prediction** checkbox is not checked.

Configuring HeadMouse Nano

To configure HeadMouse Nano when using the SofType keyboard, open the SofType application and select **View**>**Word Bar** from the menu. Then make sure the **Prediction** radio button is not marked.

Configuring HeadMouse Nano for OSX

The HeadMouse Nano on OSX can be used to mimic mouse clicking movements only in conjunction with an Access Switch device (such as an AbleNet Switch) and the regular Apple on-screen keyboard. When completing a test with a Switch, students can left click, drag and drop, double click and right click (right-clicking would require an additional Switch).

To configure HeadMouse Nano when using the Apple on-screen keyboard, open **System Preferences** > **Keyboard** > **Text**. Then make sure the following checkboxes are not marked:

- Add period with double-space
- Capitalize words automatically
- Correct spelling automatically

Configuring Swifty: SW2

To configure Swifty Switch Access according to the student's needs, the following DIP Switches should be set when using Switch. After you modify DIP Switch settings, unplug and re-plug Swifty to activate the settings.

Switch 1	Switch 2	USB Device	Interface Actions
ON	ON	Mouse	Left, Right, Middle
OFF	ON	Joystick	Btn1, Btn2, Btn3
ON	OFF	Keyboard (For iPad)	Enter, Space, Tab
ON	OFF	Keyboard	1,2,3

Testing with Assistive Keyboard and Mouse Input Technology

Assistive Keyboard and Mouse Input tools provide additional support to students with physical impairments who need to use a keyboard and mouse in order to respond to test items. These include keyboards with larger keys, computer mice with trackballs, and other tools that make it easier for students with limited movement abilities to use a computer.

TDS does not include any embedded assistive keyboard and mouse input tools, as these tools typically involve the use of special hardware, but TDS does support several third-party assistive keyboard and mouse input tools.

Table 3 provides a list of third-party assistive keyboard and mouse input tools that can be used in TDS. Please note, there may be additional supported assistive keyboards and mouse input tools that have not been tested yet. If your students need to use a device not listed here, please test it out in a training test first to ensure there are no issues with it.

Some third-party assistive keyboards have special function keys that put the computer to sleep. If pressed, the computer will go to sleep and the student will be kicked out of the test and will have to sign back in to resume testing.

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Table 3. Third-Party Assistive Keyboard and Mouse Input Technology

Product	System Requirements	Additional Details
Keys-U-See Keyboard	• Windows 8, 10; Server 2012 R2, 2016 R2	• N/A
BigKeys Keyboard • Supported Versions: Plus, XL	• Windows 8, 8.1, 10; Server 2012 R2, 2016 R2 • Mac 10.11–10.15	• N/A
BigTrack2 Trackball	• Windows 8, 8.1, 10; Server 2012 R2, 2016 R2 • Mac 10.11–10.15	• N/A

Testing with Screen Magnifier Technology

Screen magnifier assistive technology enlarges the content displayed on the computer screen in order to assist students with visual impairments. Although TDS supports some non-embedded screen magnifier tools from third parties, CAI strongly recommends students use the embedded zoom tools in TDS. These embedded tools were designed to magnify test content in the most intuitive and user-friendly manner for students. Embedded zoom tools can also be tracked by RISE when gathering data about students' tool use.

The embedded zoom tools in the Secure Browser allow students to magnify test content to the following levels (any zoom levels of 5X and greater require the streamlined mode test setting in TDS to be turned on, which will arrange test content vertically):

- 1X
- 1.5X
- 1.75X
- 2.5X
- 3X
- 5X
- 10X
- 15X
- 20X

Table 4 on the next page provides a list of third-party screen magnifier tools that can be used in TDS. The non-embedded screen magnifier tools listed below come with an increased risk of interoperability issues, require students to manually pan the magnification tool across the screen, and can include unwanted features that should not be used while testing. These non-embedded tools also cannot be tracked by RISE when gathering data about students' tool use.

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Table 4. Third-Party Screen Magnifier Applications

Product	System Requirements	Additional Details
ZoomText Magnifier (with optional text-to-speech) • Supported Versions: 2019.1904.80, 2020	• Windows 8.1, 10; 2012 R2, 2016 R2	• ZoomText includes a SpeakIt text-to-speech tool that could be used to read aloud passages, which is not permitted on ELA tests. Students testing with ZoomText should use the magnification features only. It is recommended that students requiring text-to-speech support use the Secure Browser's embedded TTS tools, and that students requiring screen readers use JAWS or Fusion.
Fusion Professional (combines JAWS screen reader with zoom text) • Supported Versions: 2019, 2020	• Windows 8.1, 10; 2012 R2, 2016 R2	• Requires additional setup before use with TDS (see configuration instructions for JAWS).
Magic Magnifier (with optional text-to-speech) • Supported Versions: 14.0.1512	• Windows 8.1, 10; 2012 R2, 2016 R2	• TDS cannot confirm appropriate configurations are in use during exam, so students may be able to access prohibited features.

Testing with Text-to-Speech

Text-to-Speech (TTS) tools read aloud text that appears on the screen for all students. TDS includes embedded TTS tools that can be turned on for students. In order for students to test with TTS tools, a supported voice pack will need to be installed on their device before testing begins, if the device does not already include a built-in voice pack. Students testing with TTS should also have a supported headset or headphones.

TTS is available on all operating systems supported by TDS (for a full list of supported operating systems, see the *Quick Guide for Setting up Your Online Testing Technology*). However, text-to-speech tracking does not function correctly on Linux OS. If students require the use of this accommodation (TTS with tracking), they must use a different operating system.

Table 5 lists the voice packs supported for students testing with TTS. If students need to use a voice pack not listed in this table, you should test it out in a training test to ensure there are no issues. Students using text-to-speech for the training tests must log in using a supported Secure Browser. Students can also verify that text-to-speech works on their computers by logging in to a training test session and selecting a test for which text-to-speech is available.

Table 5. Technology Requirements for Students Testing with TTS

Technology Type	Product
Supported Voice Packs	• Windows built-in voice packs • Mac built-in voice packs • iOS built-in voice packs • Chromebook built-in voice packs • Heather Infovox iVox HQ (macOS only) Rosa Infovox iVox HQ (macOS only)

Note: CAI strongly encourages schools to test the text-to-speech settings before students take operational tests. You can check these settings through the diagnostic page. From the student training test login screen, click the **Run Diagnostics** link, and then click the **Text-to-Speech Check** button.

How the Secure Browser Selects Voice Packs

This section describes how CAI’s Secure Browsers select which voice pack to use.

Voice Pack Selection on Mobile Versions of Secure Browsers

The Mobile Secure Browser uses either the device’s native voice pack or a voice pack embedded in the Secure Browser. Additional voice packs downloaded to a mobile device are not recognized by the Mobile Secure Browser.

Text-to-Speech and Mobile Devices

Text-to-speech (TTS) in Windows, Mac, and iPads includes a feature that allows students to pause and then resume TTS in the middle of a passage. On Chromebooks, however, students should highlight the desired text to be read as the pause feature does not allow students to pause and resume the reading again.

Testing with Assistive Technology for Braille Tests

Braille tests administered in TDS require the use of multiple assistive technology devices and applications, including the Refreshable Braille Displays (RBDs) and JAWS screen readers used by students to read and navigate test content and the embossers used by Test Administrators to print test content.

RBDs are used to read text-only content on ELA tests, while Braille embossers are needed to read any content with images in ELA tests, as well as advanced content in Mathematics and Science tests. RBDs must be properly setup before they can be used by students. For information about installing and setting up RBDs, refer to the product's provided instructions and manuals.

TDS includes several embedded tools that facilitate Braille testing, such as Braille presentation settings, various print tools for embossing content, and streamlined mode, which arranges test content vertically.

Table 6 on the next page provides a list of supported screen reader software that students can use in TDS. **Please note that only JAWS may be used on ELA and Reading tests, as this is the only supported screen reader that can effectively mute reading passages.** Screen readers other than JAWS must not be used on ELA and Reading tests, as they would allow students to listen to passages instead of reading them, compromising the ability to assess their reading comprehension skills.

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Table 6. Screen Readers Supported for Student Computers

Screen Reader	System Requirements	Additional Details
Braille Technology for Student Computers		
JAWS–Professional • Supported Versions: 2018, 2019	• **Operating Systems**: Windows 8, 8.1, 10 ▪ **Minimum Requirements**: 1.5 GHz Processor, 2 GB RAM (for 32-bit), 4 GB RAM (for 64-bit)	• Requires additional setup before use with TDS (see configuration instructions) • Test Presentation setting must be set to Braille, whether or not student is a Braille user.
Fusion Professional • Supported Versions: 2019	• **Operating Systems**: Windows 8, 8.1, 10 ▪ **Minimum Requirements**: 2.0 GHz i3 dual core processor, 4 GB RAM	• Requires additional setup before use with TDS (see configuration instructions for JAWS) • Test Presentation setting must be set to Braille, whether or not student is a Braille user.
NVDA • **Supported Versions: 2019-2020**	• Windows 8, Windows 8.1, Windows 10, and all Server Operating Systems starting from Windows Server 2008 R2. ▪ For Windows Server 2008 R2, NVDA requires Service Pack 1 or higher.	• Students cannot use NVDA for ELA tests, as the read-aloud of passages cannot be suppressed in this product. • If using an older version, use the training test to ensure functionality.

Table 7 on the next page provides a list of supported refreshable Braille displays (RBDs) that students can use to read Braille content. Please note that if students wish to use RBDs not mentioned in this table, they should test them on a training test to ensure there are no issues before using them on an operational test. Additionally, RBDs not listed here may include unwanted features that students should not use while testing, so students may need to be monitored if they use such RBDs.

Table 7. Refreshable Braille Displays Supported for Student Computers

RBD	System Requirements	Additional Details
• Brailliant 40 Cell	• Windows 8, 8.1, 10	• CAI recommends RBDs with at least 40 cells, but students may use displays with fewer cells if preferred. • Students should not use the HumanWare Brailliant BI 14 RBD. It can automatically synchronize notes typed internally with a mail application, potentially violating test security.
QBraille XL	• Windows 8, 8.1, 10	• Students using the QBraille XL in TDS must be monitored to ensure they are not accessing unwanted internal applications, such as the calculator and notepad.
Active Braille	• Windows 8, 8.1, 10	• Device is equipped with an SD card that should be taken out before student takes a test. • Device has Notepad, Scheduler, Alarm, Calculator, and Clock features that cannot be disabled. Students must be monitored to ensure they are not using them.
Braille Edge 40	• Windows 8, 8.1, 10	• Device is equipped with an SD card that should be taken out before student takes a test • Device has Notepad, Scheduler, Alarm, Calculator, Stopwatch, Countdown Timer, and Clock features that cannot be disabled. Students must be monitored to ensure they are not using them.
Focus 40 Blue 5th Generation	• Windows 8, 8.1, 10	• Device is equipped with an SD card that should be taken out before student takes a test. • Device has Scratchpad with BRF Bookreader, Calendar, and Clock features that cannot be disabled. Students must be monitored to ensure they are not using them.
BrailleNote Touch 32 Cell	• Windows 8, 8.1, 10	• Students using this product in TDS must be monitored to ensure they are not accessing prohibited features. Student can only use this device in Braille Terminal mode. Students cannot take tests on the tablet of this device. • Device equipped with SD card which should be taken out before student takes a test • Other applications present include a Word processor, Email, Internet, Contacts, Planner, File Manager, Calculator, Victor-Reader, Play Store, and KNFB Reader.

Table 8 provides a list of embossers and embossing software supported for TA computers. Embossers must be used to print any test content that cannot be read by RBDs, this includes all content on Mathematics and Science tests, and some of the content on ELA tests. Different embossing software is required for printing PRN and BRF file types. The printed file types depend on the content being embossed.

Table 8. Embossers and Embossing Software Supported for TA Computers

Embosser / Embossing Software	System Requirements	Additional Details
Duxbury Braille Translator • Supported Versions: 11.1, 11.2, 11.3,12.1, or 12.2	• **Operating Systems**: Windows 8, 8.1, 10 • **Minimum Requirements**: 1 GHz Processor, 1 GB RAM (for 32-bit), 2 GB RAM (for 64-bit)	• Requires additional setup before use with TDS (see configuration instructions) • Used for embossing BRF files (from print requests containing only text or formatted tables)
Tiger Software Suite **(Tiger Designer and Tiger Viewer)** • **Supported Versions: 4.2, 5, 6, 7**	• Version 4.2: Windows 8 • Versions 5, 6, & 7: Windows 8, 8.1, 10	• Used for embossing both PRN files (from print requests with tactile or spatial components, such as images) and BRF files. However, formatting errors may occur when embossing BRF files. • You should download Tiger Designer prior to testing, as some PRN files will need to be converted in this program before embossing. • Please see PRN conversion instructions for more details. • Tiger Software Suite is included with all ViewPlus embossers and its license can be used on up to two devices.
ViewPlus Max Embosser, ViewPlus Premier Embosser, **Viewplus Columbia Embosser**, or ViewPlus Columbia 2 Embosser	• Windows 8, 8.1, 10	• Requires additional setup before use with TDS (see configuration instructions) • Used for embossing both BRF and PRN files PRN files are formatted for a specific printer driver. Thus, you may need to convert the PRN file in Tiger Designer for your specific embosser (see PRN conversion instructions for more details).
ViewPlus Desktop Embosser (driver for ViewPlus Embossers)	• Windows 8, 8.1, 10	• Download and install your embosser driver prior to embossing any files.

Specifications for TAs Using Screen Readers

If a TA requires the use of a screen reader (JAWS, NVDA) to set up or administer test sessions in the TA Site, CAI recommends they do so using the most recent Firefox or Chrome browser. If issues occur while updating browsers, please contact your network administrator/IT office.

Configuring JAWS Screen Readers on Student Computers Before Testing Begins

This section includes instructions for the additional JAWS configuration steps that Technology Coordinators must follow before students use JAWS for online testing. Optional voice adjustments in JAWS can also be made from the **Options**>**Voices**>**Voice Adjustment** window in JAWS. To ensure JAWS is properly configured, students should take training tests using JAWS before taking operational tests.

The configuration instructions in this section apply to JAWS 2018, JAWS 2019, and JAWS 2020 as well as Fusion Professional.

Configuring JAWS to Recognize the Secure Browser

You must edit the JAWS configuration file so that the software recognizes the secure browser. The examples below are for JAWS 2018 installed to the default location. If your version is installed to a different location, navigate to the appropriate directory.

1. To modify the configuration file, open the JAWS ConfigNames.ini file. This file may appear in two folders. Depending on how JAWS is installed on your computer, you may need to modify both files:
   - Required: Start > All Programs > JAWS 2018 > Explore JAWS > Explore Shared Settings
   - Optional: Start > All Programs > JAWS 2018 > Explore JAWS > Explore My Settings
2. In the ConfigNames.ini file, locate the line of text containing **`firefox:3=firefox`**. At the end of this line, press **Enter** and type **`UTSecureBrowser12.0=firefox`**
3. Save the file.
   a. If you receive an error that you don't have permission to save the .ini file to this location, save the file to your desktop as `ConfigNames.ini`. Then copy the updated .ini file to the folder containing the original .ini file referenced in step 1.

Applying Settings for Contracted Braille

In order for students to use contracted literary Braille with their RBD, the correct JAWS settings must be applied prior to launching the secure browser.

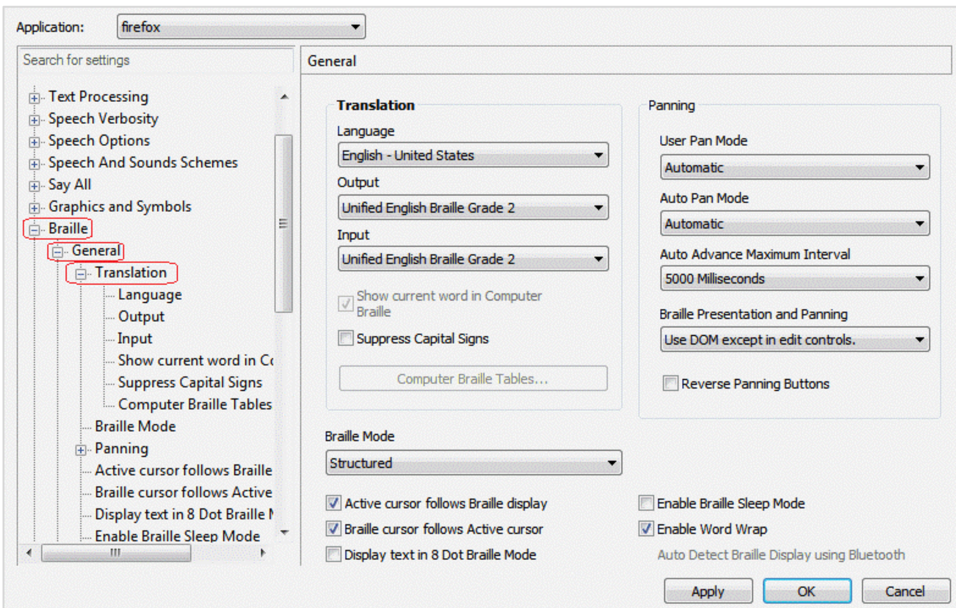
1. To apply the correct JAWS settings, open JAWS and go to **Utilities** > **Settings Center**. The ***Settings Center*** window opens.
2. From the **Application** drop-down list at the top of the window, select **firefox**.

3. Expand the *Braille* settings, *General* sub-settings, and *Translation* sub-settings in the *Search for settings* panel on the left. The ***Settings Center*** window displays the options for Braille Translation (see Figure 5).

    a. In the *Translation* section, verify the **Language** drop-down list is set to **English – United States**. Select **Unified English Braille Grade 2** from the **Output** and **Input** drop-down lists.

        i. For tests presented in the EBAE Braille type, select **US English Grade 2** from the **Output** and **Input** drop-down lists.

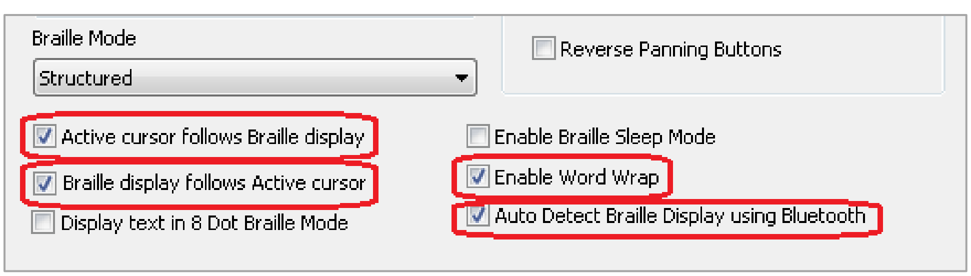
Figure 5. JAWS Settings Center Window



4. In the *Braille Mode* section (see Figure 6), ensure that only the following settings are checked:

    - Active cursor follows Braille display
    - Braille display follows Active cursor
    - Enable Word Wrap
    - Auto Detect Braille Display using Bluetooth (if available)

Figure 6. Braille Mode Section



5. Click **Apply**, and then click **OK**.

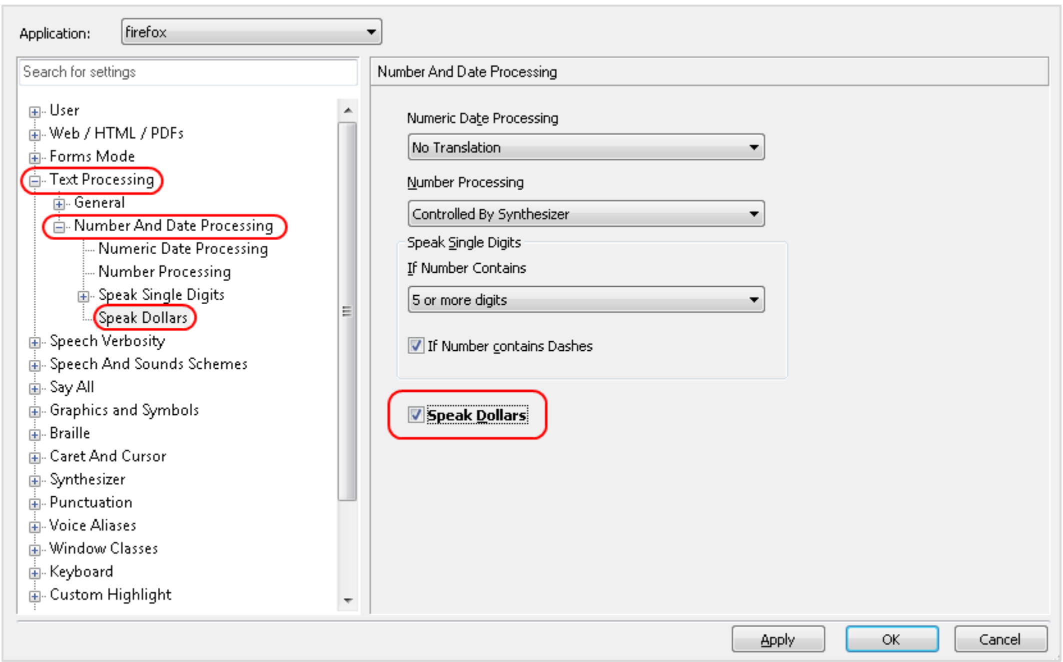
Configuring JAWS to Speak "Dollars"

If a test includes content with the dollar symbol ($), you should configure JAWS to correctly speak this symbol.

1. Open JAWS and go to **Utilities** > **Settings Center**. The ***Settings Center*** window opens.

2. In the *Search for settings* panel on the left, expand the *Text Processing* settings and *Number And Date Processing* sub-settings. Click **Speak Dollars**. The ***Settings Center*** window displays the *Number And Date Processing* options (see Figure 7).

Figure 7. Number and Date Processing



3. Mark the **Speak Dollars** checkbox.

4. Click **Apply**, and then click **OK**.

JAWS Unified Keyboard Settings

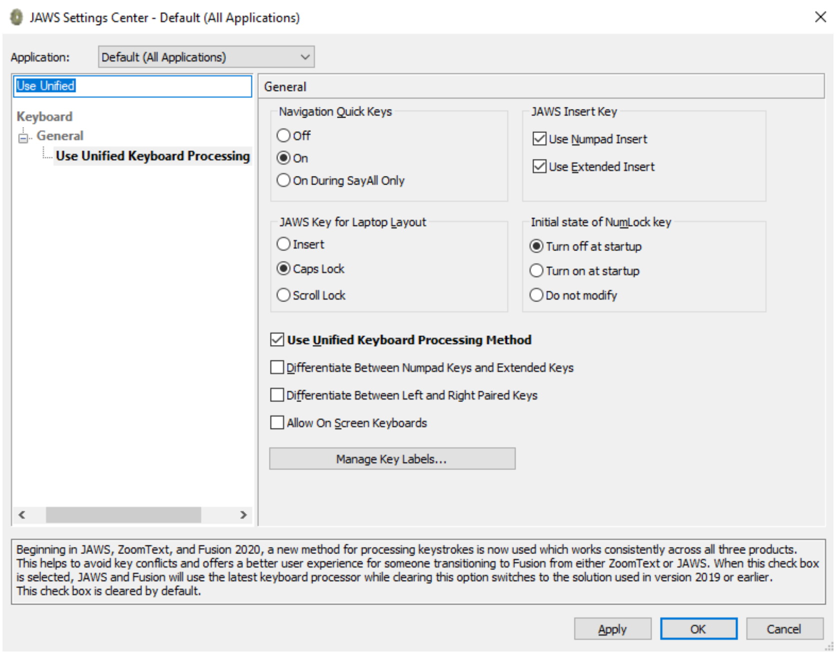
JAWS 2020 includes a unified keyboard setting that allows students to use **Alt+Tab** to return to the Secure Browser when Assistive Technology is turned on. If students are using JAWS 2019 or earlier, TAs may need to help students return focus to the Secure Browser by manually clicking it. Students using a full-sized keyboard may also be able to press the backslash key on the numpad to return focus to the test.

The unified keyboard settings is turned on by default in JAWS 2020, but you should still verify it is enabled for students using JAWS 2020 before they begin testing.

1. Open JAWS 2020 and navigate to **Utilities > Setting Center**.

2. Search in the Settings Center for "Unified Keyboard" and mark the **Use Unified Keyboard Processing Method** checkbox (see Figure 8).

Figure 8. Use Unified Keyboard Processing Setting



Optional JAWS Voice Adjustment Settings

Prior to launching the secure browser, you can adjust JAWS voice settings for students based on their individual needs. You must set the Voice Profile, Speaking Rate, and Punctuation settings prior to administering assessments. Students should take training tests using JAWS so they can determine whether these settings need to be adjusted.

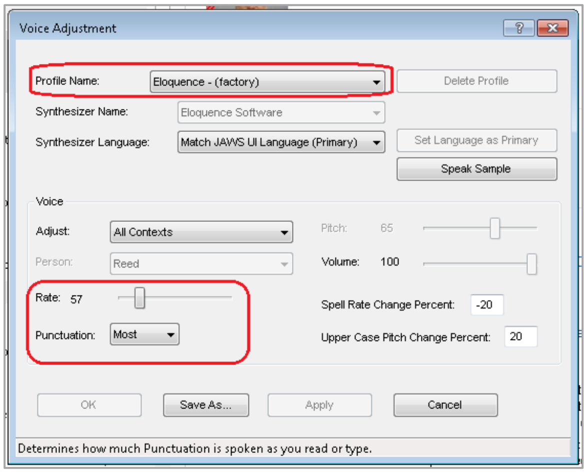
1. To adjust JAWS voice settings, open JAWS and go to **Options** > **Voices** > **Voice Adjustment**. The ***Voice Adjustment*** window opens (see Figure 9).

2. To adjust the voice profile, in the *Profile* section, select a voice profile from the **Profile Name** drop-down list. Click **Apply**.

3. To adjust the voice rate, in the *Voice* section, drag the **Rate** slider to the desired rate speed (the lower the rate, the slower the words are read aloud). Click **Apply**.

4. To adjust the punctuation, click the **Punctuation** drop-down list. Select from the following options: **None**, **Some**, **Most**, or **All**. Click **Apply**.

Figure 9. JAWS Voice Adjustment



5. When all settings are saved, click **OK**.

Configuring Embossing Software on TA Computers Before Testing Begins

TDS allows students to emboss test material with TA approval. The software that sends print requests to the Braille embosser must be installed on computers that TAs use for test sessions.

The embossed output for student print requests depends on the file type associated with a test question. TAs must ensure that students have the Braille Type test setting prior to approving the student for testing, as this determines which file type is used for printing. There are two types of files:

- **Braille Ready File (BRF)**: BRF file types are used for print requests containing only text (including formatted tables). The Tiger Software Suite or Duxbury Braille Translator software handles BRF files.
- **Printer Output File (PRN)**: PRN file types are used for print requests containing tactile or spatial components (such as images). The ViewPlus software handles PRN files.

Upon approving a print request, the TA sends the file to the embosser using either Duxbury or ViewPlus software. Instructions for embossing files are located in the section Embossing Braille Print Requests.

Configuring BRF Files with Duxbury Braille Translator

This section contains instructions for opening BRF files with Duxbury Braille Translator (DBT) and setting default embossing preferences. The DBT software must be installed before performing these steps.

ViewPlus software can also be used to emboss BRF files (though this may result in formatting errors). If you will use ViewPlus software for BRF files, follow the instructions in the section Configuring PRN and BRF Files with instead.

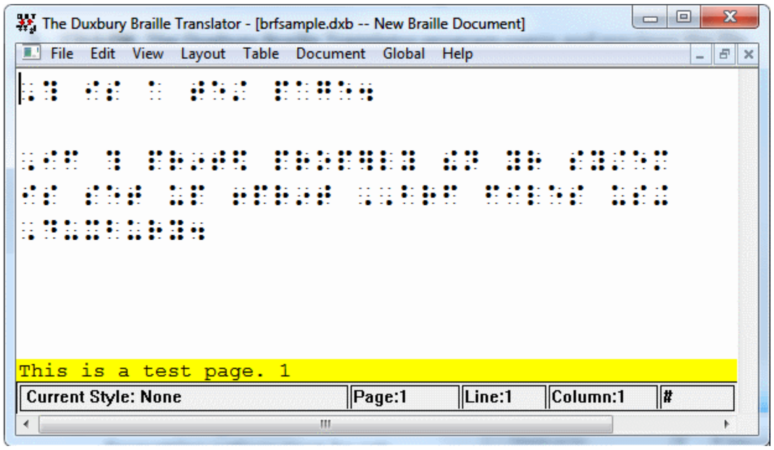
1. In the TA Site, click **Help Guide** at the top of the page. The online *TA User Guide* opens.
   a. Sample Braille files can be accessed from the help guide → Appendices → Sample Braille Files.
2. Click **Sample BRF File**. The file dialog window opens.
3. Do one of the following:
   - From the **Open with** drop-down list, select **Duxbury Braille Translator**. Click **OK**. The Duxbury Braille Translator program opens and previews the file (see Figure 10).
   - If the Duxbury Braille Translator is not available as a selectable program, do the following (otherwise skip to step 4):
     i. Click **Browse**. The ***Choose Helper Application*** window opens.
     ii. Navigate to the Duxbury folder and open it.
     iii. Open the DBT folder and select **dbtw.exe**.

iv. In the ***Open with*** window, select **Duxbury Braille Translator** and mark the **Do this automatically for files like this from now on** checkbox.

v. Click **OK**. The Duxbury Braille Translator program opens and previews the file (see Figure 8).

- If the ***Import File*** window appears, set the Template to either `English (American) – Standard Literary Format` (for Duxbury 11.2 or earlier) or `English (BANA Pre-UEB) – Literary Format` (for Duxbury 11.3 or later), and set the Import Filter to `Formatted Braille`.

Figure 10. Duxbury Braille Translator Window



4. In the ***Duxbury Braille Translator*** window, go to **Global** > **Embosser Setup**. The ***Global: Embosser Setup*** window appears. To add a new embosser, do the following:

   a. Click **New**. The ***Embosser Setup – Untitled Configuration*** window appears.

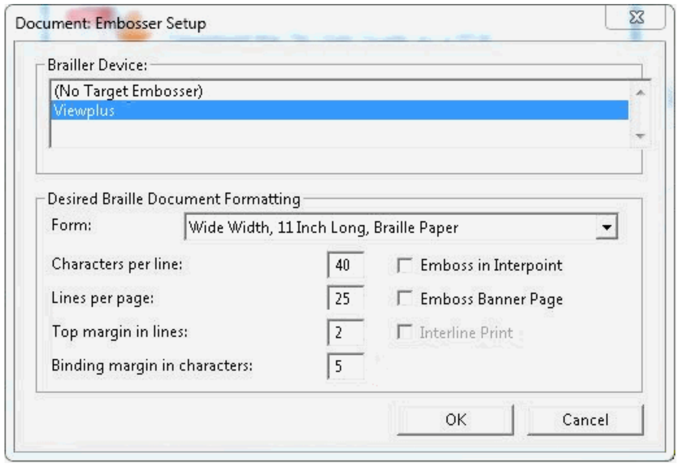
   b. From the **Embosser Model** drop-down list, select the required embosser type.

   c. From the **Send to Printer** drop-down list, select the required embosser's name and click **OK**.

   d. In the ***Global: Embosser Setup*** window, click **OK**.

5. In the ***Duxbury Braille Translator*** window, go to **Document** > **Embosser Setup**. The ***Document: Embosser Setup*** window opens (see Figure 11).

Figure 11. Document: Embosser Setup Window



6. In the ***Document: Embosser Setup*** window, ensure the following are selected:
   - *Brailler Device*: **ViewPlus Max** (or whichever supported ViewPlus embosser you are using)
   - The following *Braille Document Formatting* options must be set:
     - **Emboss in Interpoint** checkbox is blank
     - Top margin in lines: 2
     - Binding margin in characters: 5
   - When you are done, click **OK**.
7. In the ***Duxbury Braille Translator*** window, go to **Global** > **Formatted Braille Importer**.
   a. In the ***Global: Formatted Braille Importer*** window that appears, mark the **Read formatted Braille without interpretation** checkbox and click **OK**.
8. In the ***Duxbury Braille Translator*** window, go to **File** > **Emboss**. The ***File: Emboss…*** window opens.
9. In the ***File: Emboss…*** window, ensure that only one copy is being printed and that the page range is set to **All**.
10. Click **OK**.

Configuring PRN and BRF Files with Tiger Software Suite

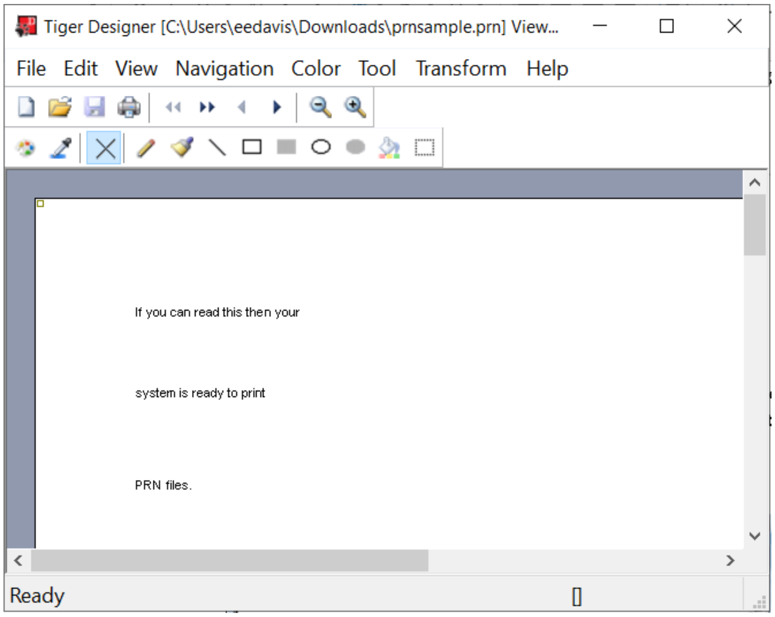
This section contains instructions for opening PRN and BRF files with ViewPlus software and setting default embossing preferences. The ViewPlus Tiger Software Suite must be installed before performing these steps. These instructions are for setting Tiger Designer as the default application for printing PRN and BRF files. You may also use Tiger Viewer as the default application for PRN files, but it cannot convert files if there are any issues printing them.

Although ViewPlus software may be used for embossing BRF files, Duxbury Braille Translator is recommended (as embossing BRF files in ViewPlus software may result in formatting errors). If you will use Duxbury Braille Translator for BRF files, see the instructions in the section Configuring BRF Files with Duxbury Braille Translator instead.

1. In the TA Site, click **Help Guide** at the top of the page. The online *TA User Guide* opens.
    a. Sample Braille files can be accessed from the help guide → Appendices → Sample Braille Files.
2. Click **Sample PRN File** or **Sample BRF File**. The file dialog window opens.
    - Do one of the following:
        - From the **Open with** drop-down list, select **Tiger Designer** and click **OK**. The Tiger Designer program opens and previews the file (see Figure 12

If Tiger Designer is not available as a selectable program, click **Browse** and select Tiger Designer from the folder where it is installed on your computer. Mark the **Do this automatically for files like this from now on** checkbox and click **OK**.

Figure 12. Tiger Designer Window



1. Go to **File** > **Print**. The ***Print*** window opens.
2. Ensure that the printer is set to **ViewPlus Max** (or whichever supported ViewPlus embosser you are using) and that only one copy is being printed.
3. Click **Print**.

- If the option to print is disabled, you may need to convert the PRN file. To do this, go to **File**>**Save As** and save the file as a Tiger Designer Documents file type (TDSX), then click **Save**. You should now be able to print the file.

Administering Braille Tests

This section explains how TAs set up the test settings for Braille tests and emboss Braille print requests from students. It also provides information about how students navigate the Secure Browser with JAWS.

Setting Up Braille Test Sessions

TAs must make sure that students have the correct test settings applied before approving them to take Braille tests. Any test settings that cannot be changed from the TA Site or Secure Browser will need to be set in TIDE. Please note that some test settings may vary between Practice and Operational tests.

For more detailed instructions about starting test sessions, see the Test Administration User Guide.

1. To administer Braille tests, the TA logs in to the appropriate TA Site and starts a test session.
2. The TA opens JAWS (or another supported screen reader) on the student testing devices.
3. The TA opens the secure browser on the student testing devices.
4. Students sign in to the test session and select their tests.
5. The TA reviews the student's test settings and verifies the following:
   - *Braille* is set to **ON**. This should be set for any students testing with JAWS, regardless of whether or not those students are Braille users. Setting the Presentation to Braille will automatically enable streamlined mode, which arranges test content vertically.
   - *Print on Request* is set to the appropriate option for the selected test.
   - *Braille Type* is set to the student's preferred Braille option. Students may choose from the following options, depending on the test:
     - UEB Contracted with Nemeth Math
     - UEB Contracted with UEB Math
   - *Mute System Volume* is set to the appropriate option for the student and the screen reader that the student is using. This setting prevents JAWS from reading aloud passages on ELA tests.
   - *Assistive Technology* is turned on. This setting must be enabled in order for students to use the keyboard commands associated with JAWS.
6. When all the correct settings are applied, the TA approves students for testing.

Embossing Braille Print Requests

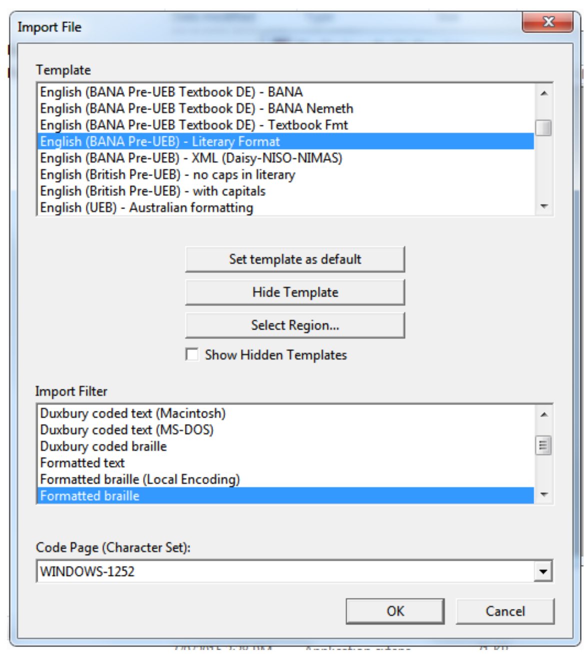
As students' progress through their tests, emboss requests will be sent to the TA Site, either automatically or manually, depending on the test settings. TAs must review and approve these emboss requests in order to send the files to the embossers. The process for embossing print requests is slightly different for BRF and PRN file types. This section provides instructions for embossing each file type.

TAs should be aware of the following notes when embossing print requests for Braille tests:

- Always plug the embosser into the same USB port used when it was first set up. Otherwise, the computer may identify the embosser as a new device and require you to set it up again.
- If a student testing with auto-emboss pauses their test before you print all their queued print requests, the student must send manual print requests for any unprinted items that were previously in the queue when they resume testing.
- When the test session is over, you must delete and discard all test materials. This may require you to remove files from the web browser download archive.

Sending BRF Files to the Embosser with Duxbury Braille Translator

Figure 13. Import File Window



1. When you approve a print request that prints in BRF format, a print dialog window opens. Select **Open with** from this window.
   a. In the drop-down list, select **Duxbury Braille Translator**.
   b. Click **OK**. The ***Import File*** window opens.
2. Ensure that the following are selected:
   - Template:
     - For Duxbury 11.2 or earlier: **English (American) – Standard Literary Format**
     - For Duxbury 11.3 or later: **English (BANA Pre-UEB) – Literary Format**
   - Import Filter: **Formatted braille**
3. Click **OK**. The ***Duxbury Braille Translator*** preview window opens.
4. Go to **File** > **Emboss**. The ***File: Emboss*** window opens.
5. Ensure that only one copy is being printed, the page range is set to **All**, and the Brailler Device is set to **ViewPlus Max** (or other ViewPlus embosser). Then click **OK**.

Sending BRF Files to the Embosser with Tiger Software Suite

Embossing BRF files with Tiger Software Suite may result in formatting errors. It is recommended that you use Duxbury Braille Translator for BRF files instead. However, if Tiger Software Suite is the only embossing software available, you may follow the instructions below to emboss BRF files.

1. When you approve a print request that prints in BRF format, a print dialog window opens. Select to **Save** the file to your computer.

2. Do one of the following:

   - *Using Tiger Viewer*: Right-click the downloaded BRF file, select **Open With** and choose **Tiger Viewer**.

   - *Using Tiger Designer*: Launch Tiger Designer and select **File** > **Open**. Select the downloaded BRF file (you may need to set the file type to *BRF* in the bottom-right dropdown). Ensure the Paper Size is set to *11.5 x 11* and increase the left margin to *.5* inches. Click **OK**.

3. Select **File** > **Print**. Ensure that only one copy is being printed and the Printer Name is set to **ViewPlus Max** (or whichever supported ViewPlus embosser you are using), then click **Print**.

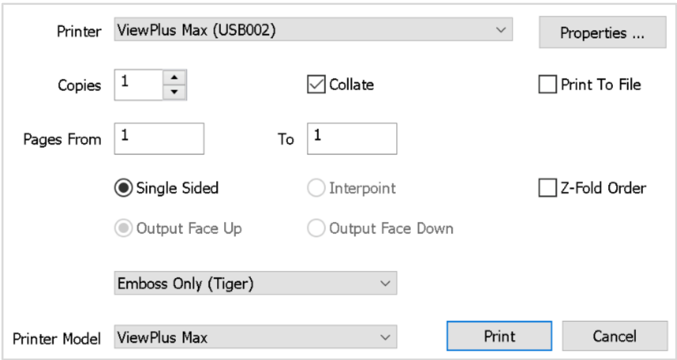
Sending PRN Files to the Embosser and Converting them for Printing

4. When you approve a print request that prints in PRN format, a print dialog window opens. Select to **Save** the file to your computer.

5. Locate the saved PRN file and open it:

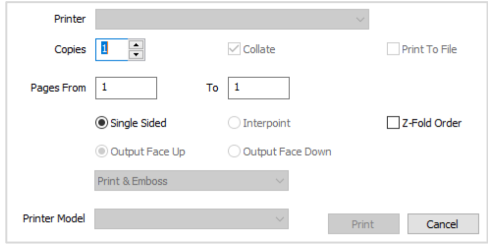
   a. If Tiger Designer is set as the default program for PRN files, a ***Print*** window appears. Ensure that only one copy is being printed and the Printer Name is set to **ViewPlus Max** (or whichever supported ViewPlus embosser you are using), then click **Print**.

Figure 14. Tiger Designer Print Window



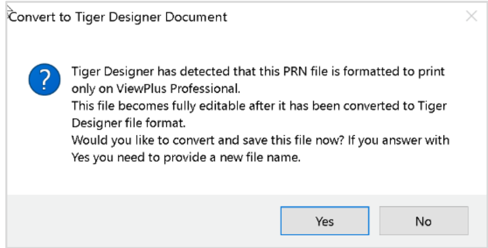
b. If the option to print is grayed out, you will need to convert the file by following the steps below:

Figure 15. Grayed-Out Print Button



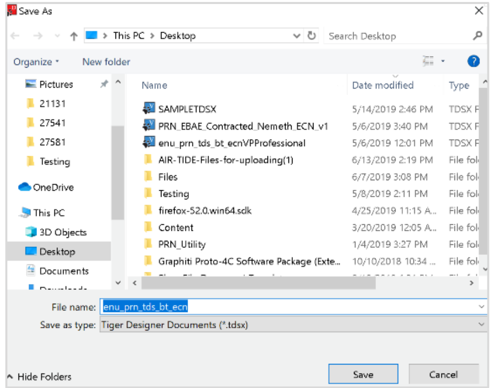
i. If a popup message appears indicating that the file needs to be converted, click **Yes** in this message. If this popup message does not appear, then go to **File**>**Save As** to convert the file manually.

Figure 16. Convert File Message



ii. Save the file as a Tiger Designer Documents file type (.TDSX) and click **Save**. You should now be able to print the print request file by clicking **Print** (see Figure 12).

Figure 17. Saving as a TDSX File



Removing Files from the Web Browser Download Archive

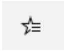
Most supported web browsers automatically save downloaded files. If your computer saves the BRF and PRN files from print requests, you must delete all test-related files from your browser's download archive, for security purposes.

To remove files in Google Chrome:

1. Open the Chrome menu ⋮ icon in the upper-right corner.
2. Select **Downloads**. The ***Downloads*** page opens.
3. Remove all test-related files by doing one of the following:
   - For each file, click **X**.

- Click **Clear all** in the upper-right corner. Files saved to your computer are not deleted.

To remove files in Edge:

1. Open the Edge Hub (Favorites, reading list, bookmarks and downloads)  icon in the upper-right corner.
2. Select **Downloads** from within the downloads list.
3. Select each file and click **X** to delete it.

To remove files in Mozilla Firefox:

1. Open the **Tools** menu and select **Downloads**. The ***Library*** window opens.
2. Delete all test-related files by doing one of the following:
    - Select each file and press **Delete** on your keyboard.
    - Click **Clear Downloads** at the top of the window (if available). Files saved to your computer are not deleted.

Navigating the Student Testing Site with JAWS

JAWS allows students to use keyboard commands to navigate the Student Testing Site. Students using RBDs with router keys may also press the router key above the text for a button to move the cursor to that button. They can press the router key again to select that button instead of using the provided keyboard commands.

The actions associated with each JAWS keyboard command depend on the context in which the students presses the key. In other words, the same key may have different effects depending on whether the student is on the Sign-In pages, the test pages, or within the items and stimuli of the test pages.

Table 9 on the next page provides an overview of how to use JAWS keyboard commands in each context. In order for students to use these keyboard commands, Assistive Technology must be enabled for them in TDS. If JAWS enters Forms Mode, these keyboard commands may not work. In order to exit Forms Mode, press **NUM PAD PLUS**.

Table 9. Overview of JAWS Keyboard Commands in the Student Testing Site

Key	Action
Navigating the Sign-In Pages with JAWS Keyboard Commands	
Insert **+** F10 **(standard keyboard)** Space **+** S **(Perkins Braille keyboard)**	Returns the focus to the Secure Browser if the student navigates to the JAWS application window while signing in. Keyboard layouts may vary by device. Please refer to the manual provided by the device manufacturer for more information.
Tab	Moves the focus to the next field or button on the page
Shift **+** Tab	Moves the focus to the previous field or button on the page
Down Arrow	Reads the next line on the page
Up Arrow	Reads the previous line on the page
Enter	Selects the button that is currently in focus

Table 10. Overview of JAWS Keyboard Commands in the Student Testing Site

Key	Action
	Navigating Test Pages with JAWS Keyboard Commands

R	Navigates to the next landmark region on the test page. A test page has up to three primary landmark regions:
	• **Banner Region**: The banner contains the test information row. This row displays the current question numbers, test name, student name, test settings button, pause button, and help button.
	• **Navigation and Test Tools Region**: This region displays the navigation and tool buttons.
	• **Test Content Region**: This region consists of the *Stimulus* section and the *Question* section:
	  ○ *Stimulus Section*: Contains the stimulus title, stimulus context menu, and stimulus content.
	  ○ *Question Section*: Contains a question number, question labels (labels that appear when you mark an item for review, print an item, or enter a note for an item), question context menu, question prompt, and the response area.

H	Jumps to the next heading on the page. In general, the following test components are defined with a heading: • Test name (H1) • Student name (H2) • Passage title (H3) • Question number (H3) On test pages that have multiple questions, students can jump directly from one question to the next. To do so, press H and then press the Down arrow twice. The question stem is read aloud.
Shift **+** R	Jumps to the previousregion on the page.
Shift + HH	Jumps to the previous heading on the page.
Tab	Moves to the next component on the page. In general, the following test elements are components: • Navigation and tool buttons • Question number (and associated prompt text) • Context menu • Response options
Shift **+** Tab	Moves to the previous component on the page
Enter	Selects a button or response option or open a context menu.
Down Arrow	Moves to the next line on the page
Up Arrow	Moves to the previous line on the page
Insert **+** Down Arrow	Reads everything on the page (from the current point of focus)
Ctrl **or** Space	Stops JAWS from reading

Table 11. Overview of JAWS Keyboard Commands in the Student Testing Site

Key	Action
Opening and Using Context Menus with JAWS Keyboard Commands	
Enter	Pressing **Enter** when JAWS reads "Menu button" will open the context menu. This is the only way to open the context menu when streamlined mode is turned on.
Down Arrow	Moves the focus to the next option in the menu. JAWS will read this option aloud.
Up Arrow	Moves the focus to the previous option in the menu. JAWS will read this option aloud.
Space	Selects the menu option currently in focus
Esc	Closes the context menu without selecting any options
Responding to Items with JAWS Keyboard Commands	
Tab	• Students can use the **Tab** key to navigate to the item prompt, which JAWS will read aloud. • After JAWS reads the prompt aloud, students can press **Tab** again to navigate to the response area. They may need to press **Tab** multiple times depending on the item type and whether any question labels appear for the item. • In the response area for an item, students can press **Tab** to navigate between each answer option, text box, selectable text field, keypad button, or check box, depending on the item type.
Shift + Tab	Navigates to the previous answer option, text box, selectable text field, keypad button, or check box, depending on the item type.
Up **and** Down **Arrow Keys**	• For multiple choice and multi-select items, pressing the arrow keys will move between each answer option. • For edit task choice items, pressing the arrow keys will move between each line of text in the item. After users open an edit menu by pressing **Space**, the arrow keys can be used to move between the answer options in the drop-down list.
Space	• For multiple choice and multi-select items, pressing **Space** will select the answer option in focus. • For edit task items, pressing **Space** will open the edit menu in which students type or select a response. • For table match items, pressing **Space** will mark the checkbox in focus.
Enter	• For hot text items, pressing **Enter** will choose the selectable text area in focus as the answer option. • For edit task choice items, pressing **Enter** will select an answer option from the drop-down list in the edit menu. • For equation items, pressing **Enter** will select the keypad button in focus.
Alt **+** 7	• For equation items, pressing **Alt** + **7** will open a popup menu with special characters. Students can use the arrow keys to move between the special characters in the list and then press **Enter** to insert a special character in the response area.

Appendix 5-D

Operating System Support Plan

Assessment Program

Operating System Support Plan for Test Delivery System

2020–2021

Published June 17, 2020

Prepared by Cambium Assessment, Inc.

Table of Contents

Introduction

A supported operating system is one for which Cambium Assessment, Inc. (CAI) provides updates to the Secure Browser for that operating system. CAI actively tests the Secure Browser with supported operating systems to ensure compatibility and provides Secure Browser updates as needed when the supported operating systems are updated or as bugs in the Secure Browser are detected and fixed.

This document describes CAI's plan for supporting operating systems during the upcoming test administration and following years. This plan helps districts and schools manage operating system deployments based on the support timelines.

Support Plan for Operating Systems

Table 1 lists the operating systems and the anticipated end-of-support dates. The shaded cells in Table 1 indicate the following:

- Yellow shading—CAI ends support for operating systems after the 2020–2021 school year.
- *Gray shading*—CAI ends support for operating systems after the 2021–2022 school year.

Table 1. Supported Operating Systems

Supported Operating System	Release Date	Anticipated End-of-Support Date	Notes
Windows[a]			
8 (Professional & Enterprise)	*Oct. 2012*	*End of 2021-2022 School Year*	CAI's support for Windows operating systems ends ten school years after its release date. For the most part, this coincides with Microsoft's official end-of-life policies for its operating systems.
8.1 (Professional & Enterprise)	Oct. 2013	End of 2022-2023 School Year	
10, 10 in S mode (Educational, Professional, & Enterprise (Versions 1809-2004[b])	July 2015; rolling	End of 2024-2025 School Year	
Server 2012 R2	Oct. 2013	End of 2022-2023 School Year	
Server 2016 R2	Oct. 2016	End of 2025-2026 School Year	

Mac[a]			
10.11	Sept. 2015	End of 2020-2021 School Year	As long as Apple continues to release new versions of macOS annually, CAI will support the six latest versions in 2020-2021. By Fall 2022, CAI will transition to a support policy of four active versions of macOS.
10.12	Sept. 2016	End of 2020-2021 School Year	
10.13	*Sept. 2017*	*End of 2021-2022 School Year*	
10.14	*Sept. 2018*	*End of 2021-2022 School Year*	
10.15	Oct. 2019	End of 2022-2023 School Year	
10.16[b]	Oct. 2020	End of 2022-2023 School Year	

Linux[c]			
Fedora 30 LTS (Gnome)	April 2019	End of 2022-2023 School Year	Official Fedora support typically ends one to two years after a release.
Fedora 31 LTS (Gnome)[b]	Oct. 2019	End of 2023-2024 School Year	
Ubuntu 16.04 LTS (Gnome)	April 2016	End of 2020-2021 School Year	Ubuntu typically supports long term support (LTS) distributions for five years after a release.
Ubuntu 18.04 LTS (Gnome)	April 2018	End of 2022-2023 School Year	
Ubuntu 20.04 LTS (Gnome)	April 2020	End of 2023-2024 School Year	

iOS/iPadOS			
12.4 13.4 14[b]	Sept. 2018; rolling	CAI supports the three most recent major releases of iOS.	Supported iPads: All 9.7” or larger iPads running a supported version of iOS/iPadOS.

Chrome OS[d]			
84+	June 2020; rolling	For any given school year CAI will support the latest version of Chrome OS available during the summer months and all subsequent versions until the following summer. For example; if Chrome 84 is released in July, it and all versions of Chrome after it will be supported until July of the following year.	Google releases new versions of Chrome OS every six weeks. Support may require updating the Chrome kiosk application.

a If Microsoft or Apple ends support for an operating system sooner than six years after its release, then CAI will stop supporting that system one full school year after support ends.

b Support for this version is anticipated upon the completion of testing following its release.

c For Linux distributions, CAI will end support at the end of a full school year after the official distributor’s announced end-of-life support date.

d CAI will support any device that Google actively supports for auto-update. CAI will not support any device that Google does not support for auto-update. Information on Google's auto-update policy, including currently supported devices, can be found at https://support.google.com/chrome/a/answer/6220366.

Appendix 5-E

Quick Guide for Setting Up Your Online Testing Technology

Quick Guide for Setting Up Your Online Testing Technology

CAI's Test Delivery System (TDS) has two components: the **Test Administrator (TA) Interface** and the **Student Interface**.

- Test administrators use the TA Interface to create and manage test sessions from any web browser.
- Students access and complete their tests through the Student Interface via the Secure Browser.

This document explains in 4 steps how to set up technology in your schools and district:

Step 1. Setting up the test administrator workstation
Step 2. Setting up student workstations
Step 3. Configuring your network for online testing
Step 4. Configuring assistive technologies

STEP 1: SETTING UP THE TEST ADMINISTRATOR WORKSTATION

It is unlikely that any setup is required for your TA workstations. Nearly any modern device, including mobile devices like tablets and phones, with any modern browser can be used to access the TA Interface and administer a testing session. The TA Interface is a website. Any device you already use to check your email, browse Facebook, read news articles, or watch YouTube should be capable of administering tests.

If your school uses a firewall or other networking equipment that blocks access to public websites, you may need to add AIR and CAI websites to your allowlist. For a list of websites you should add to your allowlist, see the "Resources to Add to your Allowlist for Online Testing" section below.

TAs can print test session information or test items for students with the print-on-request accommodation. To be able to print, TA workstations must be connected to a printer.

Resources to Add to your Allowlist for Online Testing

This section presents information about the URLs that CAI provides. Ensure your network's firewalls are open for these URLs. If your testing network includes devices that perform traffic shaping, packet prioritization, or Quality of Service, ensure these URLs have high priority.

URLs for Non-Testing Sites to Add to your Allowlist

The table below lists URLs for non-testing sites, such as Test Information Distribution Engine and Online Reporting System.

Table 1. CAI URLs for Non-Testing Sites

System	URL
Portal and Secure Browser installation files	https://utahrise.org/
Single Sign-On System	https://sso2.cambiumast.com/auth/realms/utah/account
Test Information Distribution Engine	https://ut.tide.cambiumast.com/
Reporting System	https://ut.reports.cambiumast.com/

URLs for TA and Student Testing Sites to Add to your Allowlist

Testing servers and satellites may be added or modified during the school year to ensure an optimal testing experience. As a result, CAI strongly encourages you to add these URLs to your allowlist at the root level. This requires using a wildcard.

CAI and AIR URLs for Testing Sites

System	URL
TA and Student Testing Sites Assessment Viewing Application For 2020-2021, users should add both Cambium and AIR URLs listed in this table to their allowlist.	*.cambiumast.com *.tds.cambiumast.com *.cloud1.tds.cambiumast.com *.cloud2.tds.cambiumast.com *.airast.org *.tds.airast.org *.cloud1.tds.airast.org *.cloud2.tds.airast.org

URLs for Online Dictionary and Thesaurus to Add to your Allowlist

Some online assessments contain an embedded dictionary and thesaurus provided by Merriam-Webster. The Merriam-Webster URLs listed below should be added to your allowlist to ensure that students can use them during testing.

CAI URLs for Online Dictionaries and Thesauruses

Domain Name	IP Address
media.merriam-webster.com	64.124.231.250
www.dictionaryapi.com	64.124.231.250

STEP 2: SETTING UP STUDENT WORKSTATIONS

In order for students to access online tests, each student workstation needs CAI's Secure Browser installed on it. The Secure Browser is CAI's customized web browser designed to keep tests secure by locking down the student desktop and preventing the student from accessing anything except their test. Unlike conventional web browsers, the Secure Browser displays the student application in full-screen mode with no user interface to the browser itself. It has no back button, next button, refresh button, or URL bar. Students open the Secure Browser and are taken exactly where they need to go.

To get started setting up your student workstations, you should first make sure your device is supported. Please note the Secure Browser is not supported for use within a virtual machine.

For a list of supported desktops and laptops and related hardware requirements, see the following table:

Desktops & Laptops		
Supported Operating Systems	**Minimum Requirements**	**Recommended Specifications**
Windows **8, 8.1 (Professional and Enterprise)** **10, 10 in S Mode (Educational, Professional, and Enterprise)** **(Versions 1809-2004**[a]) **Server 2012 R2, 2016 R2 (thin client)**	1 GHZ Processor 1 GB RAM (32-bit) 2 GB RAM (64-bit) 16 GB hard drive (32-bit) 20 GB hard drive (64-bit)	**1.4 GHZ Processor** **2 or more GB RAM** **20 or more GB hard drive space**
Mac OS X/macOS **10.11-10.16**[a]	1 GHZ Processor 1 GB RAM (32-bit) 2 GB RAM (64-bit) 16 GB hard drive (32-bit) 20 GB hard drive (64-bit)	**1.4 GHZ Processor** **2 or more GB RAM** **20 or more GB hard drive space**
Linux (64-bit or 32-bit)[b] **Fedora 30-31**[a] LTS (Gnome) **Ubuntu 16.04 LTS (Gnome)**	1 GHZ Processor 1 GB RAM (32-bit) 2 GB RAM (64-bit) 16 GB hard drive (32-bit) 20 GB hard drive (64-bit) Required libraries/packages: GTK+ 2.18 or higher GLib 2.22 or higher Pango 1.14 or higher X.Org 1.0 or higher (1.7+ recommended) libstdc++ 4.3 or higher libreadline6:i386 (required for Ubuntu only) GNOME 2.16 or higher	**1.4 GHZ Processor** **2 or more GB RAM** **20 or more GB hard drive space** **Recommended libraries/packages:** **In addition to the required libraries listed under minimum requirements, the following should be installed:** **NetworkManager 0.7 or higher** **DBus 1.0 or higher** **HAL 0.5.8 or higher**
Linux (64-bit only)[b] **Ubuntu 18.04, 20.04 LTS**[a] **(Gnome)**	**1 GHZ Processor** **2 GB RAM** **20 GB hard drive space** **In addition to all libraries and packages listed above, Ubuntu 18.04**	**1.4 GHZ Processor** **2 or more GB RAM** **20 or more GB hard drive space**

	LTS (Gnome) also requires the following libraries: **Sox** **Net-tools**	

a Support for this version is anticipated upon the completion of testing following its release.

b ARM-powered devices such as the Raspberry Pi are not supported for online testing.

For a list of supported tablets and Chromebooks, see the following table:

Tablets and Chromebooks	
Supported Operating Systems	**Supported Tablets**
iOS/iPadOS (iPads) 12.4, 13.4, 14[a]	All 9.7" or larger iPads running a supported version of iOS/iPadOS.
Windows 8, 8.1 (Professional & Enterprise) 10 (Educational, Professional, & Enterprise)	CAI supports any tablet running these versions of Windows, but has done extensive testing only on Surface Pro, Surface Pro 3, Asus Transformer, and Dell Venue.
Chrome OS 84+	For a full list of supported Chromebooks, see https://support.google.com/chrome/a/answer/6220366. Chromebooks manufactured in 2017 or later must have an Enterprise or Education license to run in kiosk mode, which is necessary to run the Secure Browser. Chromebooks running in Tablet Mode and tablets running Chrome OS are not supported. Touchscreen features can be used on Chromebooks when available. CAI only supports versions of Chrome OS released on Google's stable channel.

a Support for this version is anticipated upon the completion of testing following its release.

For a list of supported NComputing solutions for Windows, see the following table:

NComputing		
Supported Server Host	**Supported Server Software**	**Supported Terminal**
Windows Server 2012 R2 Windows Server 2016 R2 Windows 10	vSpace PRO 10	L300, L350, firmware version 1.13.xx

For a list of supported terminal servers for Windows, see the following table:

Terminal Servers	
Supported Terminal Server	**Supported Thin Client**
Windows Server 2012 R2, 2016 R2	Any thin client that supports a Windows server. Thin clients allow access only to the program running on the host machine. Zero clients, which allow access to other programs on the client machine, are not supported. Please note using a terminal services or remote desktop connection to access a Windows Server or workstation that has the Secure Browser installed is typically not a secure test environment.

Devices running CloudReady NeverWare are also supported. For information on supported devices and installation instructions, please visit https://www.neverware.com.

All supported computers, laptops, tablets, and approved testing devices must meet the following requirements:

Testing Device	Requirement
Screen Dimensions	Screen dimensions must be 10" or larger (iPads with a 9.7" display are included).
Monitors & Displays	All devices must meet the minimum resolution of **1024 x 768**. Larger resolutions can be applied as appropriate for the monitor or screen being used. For the best experience, your device's display scale should be set to 100% to keep the amount of usable screen real estate within the 1024x768 minimum resolution for TDS. A secure testing environment can only be guaranteed when using a single display. A multi-monitor configuration is not supported.
Keyboards	The use of external keyboards is highly recommended for tablets that will be used for testing.
Mice	Wired two- or three-button mice can be used on desktops or laptops. Mice with "browser back" buttons should not be used.
Headphones & Headsets	Wired headphones or headsets with a 3.5 mm connector or USB headphones.

Installing the Secure Browser

Once you have made sure your device is supported, you are ready to download and install the Secure Browser. This section explains where you can go to download the Secure Browser and how to install it.

The Secure Browser is available for all major operating systems listed above. You can download the Secure Browser from your portal. Your portal also contains basic installation instructions.

If you are a Technology Coordinator and it is your responsibility to manage a large number of machines across your school or district, you can likely use the same tools you are already familiar with to push the Secure Browser out to all of your machines at scale. For example, the Secure Browser ships as an MSI package which enables use of MSIEXEC.

If you are from a small school, you can follow the basic installation instructions on your portal to install the Secure Browser. The Secure Browser is installed the same way as most other software. You will be asked to download a file, open that file, and follow prompts along the way to install the Secure Browser. If you are familiar with installing software, install the Secure Browser the same way.

For iPads and Chromebooks, the SecureTest (formerly AIRSecureTest) app is CAI's mobile version of the Secure Browser. It is available in each app store to download and install. The first time you open this app, it will ask you to choose your state and assessment program. Your choice is saved and from then on, the Mobile Secure Browser works just like the desktop version, allowing you to access operational tests, practice tests, and the network diagnostic tool. You can also use any mobile device management utility to install the Secure Browser on multiple managed devices and configure those devices.

Windows 10 and Windows 10 in S Mode come with Microsoft's Take a Test app, which enforces a locked-down, secure testing environment identical to CAI's Secure Browser. Users of the Take a Test app do not need to install the CAI Secure Browser on the testing machine. Instructions for configuring the Take a Test app can be found on your portal.

For schools and districts seeking advanced installation instructions for Windows, Mac, or Chrome OS, including instructions on how to install the Secure Browser on multiple devices, see the following document for your operating system:

- *Configurations, Troubleshooting, and Advanced Secure Browser Installation for Windows*
- *Configurations, Troubleshooting, and Advanced Secure Browser Installation for Mac*
- *Configurations, Troubleshooting, and Advanced Secure Browser Installation for Chrome OS*

Other Configurations

For devices running Windows, Mac, Linux, iOS, or Chrome OS, there are a few additional configurations that need to be made before secure testing can begin.

Several necessary configurations for Mac workstations can be performed by installing the Mac Secure Profile. For more information, see the section titled "Installing the Mac Secure Profile."

A feature built into iOS/iPadOS called Assessment Mode (AM) (formerly known as Automatic Assessment Configuration (AAC)) handles many necessary configurations to prepare iPads for online testing. For more information on AM, including a list of features it disables, please visit https://support.apple.com/en-us/HT204775. In addition to AM disabling features listed at the URL above, there are a few additional features in iOS/iPadOS that must be disabled prior to the administration of online testing. These features, which are listed below, should not be available to students without an accommodation and AM does not currently block them.

Disabling Fast User Switching for Windows

Fast User Switching is a feature in Windows 8, 8.1, and 10 that allows for more than one user to be logged in at the same time. If Fast User Switching is not disabled and students try to access another user account during a test, the Secure Browser will pause the test.

Fast User Switching can be disabled using the Local Group Policy Editor or Registry Editor. For instructions on how to disable Fast User Switching, see the "How to Disable Fast User Switching" section in the document titled *Configurations, Troubleshooting, and Advanced Secure Browser Installation for Windows*.

Disabling App Pre-launching for Windows

Application Prelaunch is a feature in Windows 10 that allows Universal Windows Platform apps, such as the Photos app or Edge web browser, to prelaunch and run in the background even if a user didn't open the apps themselves. Users will be unable to start the Take a Test app with these apps running in the background and will be kicked out of a test if the apps launch while the user is running the Take a Test app. This does not affect users running the CAI Secure Browser.

App pre-launching can be disabled by using a PowerShell command and editing the registry. For instructions on how to disable app pre-launching, see this page from Microsoft's Online Windows Support.

Installing the Mac Secure Profile

To configure Mac workstations, begin by

downloading the Mac Secure Profile from your portal and then install it. The profile, upon installation, disables the hot keys for enabling Mission Control, Spaces, Screenshots, and Dictation and the trackpad gestures for accessing Lookup, App Exposé, Launchpad, and Show Desktop. It also sets function keys to standard functions, for all users of the Mac to which it is deployed, disables Voice Control, and disables the menu pop-up that appears when triple-tapping the power button on Touch Bar-enabled devices. Upon installing the profile, the Mac should immediately be restarted so that all settings can take effect. The Secure Profile has been updated for 2020-2021. If you have previously installed an older version of the Secure Profile, you must download and install the new version from the link on your portal. Instructions for installing the Secure Profile are in the document titled *Configurations, Troubleshooting, and Advanced Secure Browser Installation for Mac*.

Disabling Third-party App Updates for Mac

Updates to third-party apps may include components that compromise the testing environment. These updates can be disabled through System Preferences. For instructions on how to disable updates to third-party apps, see the “How to Disable Updates to Third-Party Apps” section in the document titled *Configurations, Troubleshooting, and Advanced Secure Browser Installation for Mac*.

Disabling iTunes Updates for Mac

Updates to iTunes may pop up during a test. If updates to iTunes are not disabled and they pop up during a test, the Secure Browser will pause the test.

Updates to iTunes can be disabled through System Preferences. For instructions on how to disable updates to iTunes, see the “How to Disable Updates to iTunes” section in the document titled *Configurations, Troubleshooting, and Advanced Secure Browser Installation for Mac*.

Disabling Fast User Switching for Mac

Fast User Switching is a feature in Mac OS X 10.11 and higher that allows for more than one user to be logged in at the same time. If Fast User Switching is not disabled and students try to access another user account during a test, the Secure Browser will pause the test.

Fast User Switching can be disabled through System Preferences. For instructions on how to disable Fast User Switching, see the “How to Disable Fast User Switching” section in the document titled *Configurations, Troubleshooting, and Advanced Secure Browser Installation for Mac*.

Disabling On-Screen Keyboard for Linux

Ubuntu and Fedora feature an on-screen keyboard that should be disabled before you administer online tests. If the on-screen keyboard is not disabled, the keyboard might pop up on a touchscreen device and, if it does, it may provoke the Secure Browser to pause the test.

The on-screen keyboard can be disabled through System Settings. For instructions on how to disable the on-screen keyboard, see the “How to Disable On-Screen Keyboard” section in the document titled *Configurations and Troubleshooting for Linux*.

Adding Verdana Font for Linux

Some test content requires the Verdana TrueType font, which is not included in builds of Fedora or Ubuntu. For instructions on how to add the Verdana font, see the “How to Add Verdana Font” section in the document titled *Configurations and Troubleshooting for Linux.*

Disabling Voice Control for iPads

iPads running any supported version of iOS/iPadOS have access to a feature called Voice Control that is not automatically disabled by Assessment Mode (AM) (formerly known as Automatic Assessment

Configuration (AAC)). Voice Control allows iPad users to control an iPad using voice commands. If this feature is enabled on iPads that are used for testing, students may be able to access unwanted apps, such as web browsers, during a test.

Voice Control is disabled by default. If it has never been enabled on an iPad, you have nothing to do. If it has been enabled, you must disable it before a student takes a test. Voice Control can be disabled through accessibility settings. For instructions on how to disable Voice Control, see the “How to Disable Voice Control” section in the document titled *Configurations for iPads*.

Disabling VoiceOver for iPads

iPads running any supported version of iOS/iPadOS have access to a feature called VoiceOver that is not automatically disabled by Assessment Mode (AM) (formerly known as Automatic Assessment Configuration (AAC)). VoiceOver is a gesture-based screen reader that allows users to receive audible descriptions of what is on the screen of their iPad. VoiceOver also changes touchscreen gestures to have different effects and adds additional gestures that allow users to move around the screen and control their iPads. If VoiceOver is not disabled on iPads, students may be able to access unwanted apps during a test. This feature should not be available to students without an accommodation.

VoiceOver can be disabled through accessibility settings. For instructions on how to disable VoiceOver, see the “How to Disable VoiceOver” section in the document titled *Configurations for iPads*.

Disabling Emoji Keyboard for iPads

iPads running any supported version of iOS/iPadOS have an emoji keyboard enabled by default. If the emoji keyboard is not disabled, students will be able to enter emoticons into a test, which can be confusing for scorers.

The emoji keyboard can be disabled through keyboard settings. For instructions on how to disable the emoji keyboard, see the “How to Disable the Emoji Keyboard” section in the document titled *Configurations for iPads*.

Managing Chrome OS Auto-Updates

New versions of Chrome OS are released regularly and tested by CAI to ensure no new features pose a risk for online testing. However, bugs or unintentional features do sometimes show up in the latest release. Because of this, CAI recommends disabling Chrome OS auto-updates or limiting auto-updates to a version used successfully before summative testing begins to ensure Chromebooks remain stable during testing season.

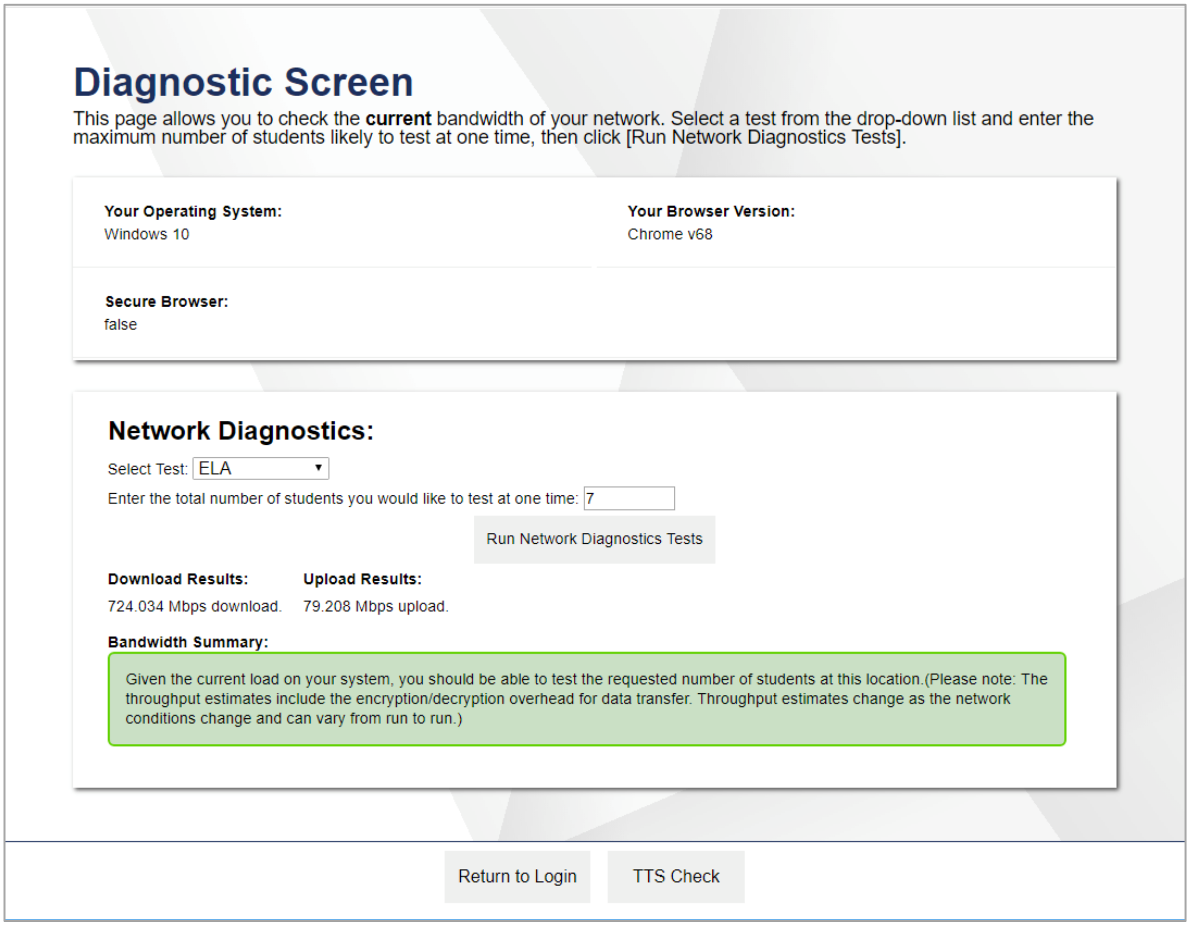
You can disable or limit Chrome OS updates through the Device Settings page on your Chromebook. From this page, you can stop auto-updates or allow auto-updates but only to a specific version. For more detailed instructions on how to disable or limit Chrome OS auto-updates, see the “How to Manage Chrome OS Auto-Updates” section in the document titled *Configurations, Troubleshooting, and Advanced Secure Browser Installation for Chrome OS*.

STEP 3: CONFIGURING YOUR NETWORK FOR ONLINE TESTING

In this section, we provide some tools and recommendations to help configure your network for online testing. To ensure a smooth administration, CAI recommends network bandwidth of at least 20 kilobits per second for each student being concurrently tested.

The Network Diagnostic Tool

CAI provides a network diagnostic tool to test your network's bandwidth to ensure it can handle administering online tests. The network diagnostic tool can be accessed through the Secure Browser or from your portal or practice test site through a conventional browser.



Once you are in the network diagnostic tool, enter the number of students you will test at peak volume and the tool will indicate if your network can handle testing. The goal of the network diagnostic tool is to determine if your network bandwidth can handle the number of students you hope to test at peak volume. If the tool indicates you should test with fewer students, try running a third-party network speed test like speedtest.net. If a third-party tool also indicates you lack proper bandwidth, determine if other activity on your network is drawing bandwidth away from the machine attempting to take the test. If it is, try to prioritize bandwidth for CAI's websites during online testing.

Proxy Servers

If your Technology Coordinator has set up a proxy server at your school, you may need to configure the Secure Browser's proxy settings. For instructions on how to configure the Secure Browser's proxy settings, see the "How to Configure the Secure Browser for Proxy Servers" section in the configuration guide for your operating system.

Proxy servers must be configured to not cache data received from servers.

Session timeouts on proxy servers and other devices should be set to values greater than the typically scheduled testing time. For example, if test sessions are scheduled for 60 minutes, consider session timeouts of 65–70 minutes.

Traffic Shaping, Packet Prioritization, & Quality of Service

If your testing network includes devices that perform traffic shaping, packet prioritization, or Quality of Service, ensure CAI URLs have high priority. For a list of websites you should give high priority, see the "Which Resources to Add to your Allowlist for Online Testing" section in the configuration guide for your operating system.

STEP 4: CONFIGURING ASSISTIVE TECHNOLOGIES

CAI's Test Delivery System is a website that is accessed through a Secure Browser.

Students who use assistive technologies with a standard web browser should be able to use those same technologies with the Test Delivery System. The best way to test compatibility with assistive technologies is by taking a practice test with those technologies turned on. For a list of supported technologies and configuration instructions, see the document titled *Assistive Technology Manual*.

Assistive technologies must be launched on student workstations prior to launching the Secure Browser.

Supported Embedded Features

Embedded features are built into the Test Delivery System and can be accessed through settings. They can be accessed without additional third-party software. To use these embedded features, students need an accommodation.

Text-to-Speech

Text-to-speech (TTS) reads text on the screen aloud. Using TTS requires at least one voice pack to be installed on the student workstation. Voice packs that ship with the operating systems out of the box for Windows, Mac, and iOS/iPadOS are fully compatible with the Secure Browser. The Secure Browser works with voice packs that ship out of the box for Chrome OS devices, but the pause feature does not work properly on these devices. For students who need the use of TTS, CAI recommends using a desktop, laptop, or tablet running Windows, OS X/macOS, or iOS/iPadOS. If a Chromebook is being used, there is a workaround that allows students to highlight a passage of text and have TTS read just that passage, eliminating the need for the pause feature.

For a full list of voice packs that have been tested and are allowed by the Secure Browser and for instructions about configuring TTS settings, see the document titled *Assistive Technology Manual*.

Speech-to-Text

Speech-to-text (STT) allows a student to speak into a headset and have their speech converted into text that becomes the response that is entered into the Test Delivery System. The Test Delivery System (TDS) now offers an embedded Speech-to-Text (STT) solution. This embedded tool is supported on Windows, Mac, Linux, iOS/iPadOS, and Chrome OS. Third-party (non-embedded) STT solutions are also still supported, but the embedded tool should be used whenever possible. For more information about embedded STT, see the document titled *Assistive Technology Manual*.

Supported Non-Embedded Features

Non-embedded features require the use of other hardware and/or software to make certain functionality available to students within the Test Delivery System. Non-embedded features require settings be set to permissive mode. This mode, found in TIDE as a student test setting, temporarily lowers the security settings of the Secure Browser so that the student can interoperate with other software on the device, like JAWS or ZoomText, while they are taking the test. Permissive mode is supported on Windows and Mac. Permissive mode is not available for Linux, iPads, or Chromebooks. Users of these devices who need assistive technology supports should use CAI's embedded tools.

Screen Readers

Screen readers allow students to read text displayed on a screen with a speech synthesizer and a refreshable braille display. Screen reading requires software to be installed on the student workstation. For a list of supported screen readers and configuration instructions, see the document titled *Assistive Technology Manual*.

Braille Embossers

Braille embossers are needed to access content with images in ELA and Social Sciences tests, as well as all content in Mathematics and Science tests. The Test Delivery System (TDS) allows students to emboss test material with TA approval. The software that sends print requests to the Braille embosser must be installed on computers that TAs use for test sessions. For more information about configuring supported Braille embossers, see the document titled *Assistive Technology Manual*.

Refreshable Braille Displays

Refreshable Braille Displays (RBDs) are used to read text-only content on ELA, Mathematics, and Social Sciences tests, while Braille embossers are needed to read any content with images in ELA and Social Sciences tests, as well as advanced content in Mathematics and Science tests. RBDs must be properly setup before they can be used by students. For information about installing and setting up RBDs, refer to the product's provided instructions and manuals.

Speech-to-Text

Speech-to-text (STT) allows a student to speak into a headset and have their speech converted into text that becomes the response that is entered into the Test Delivery System. CAI offers an embedded STT feature, and this should be used before third-party software. STT is also available through third-party software for Windows and Mac through Dragon Naturally Speaking or other similar software. Users should verify the security and privacy policies of any third-party software before deciding to use that software. Many STT providers send a student's audio recording to the cloud for processing. This should be disabled before use so sensitive testing data is not sent to third parties. Users should have a clear understanding of what third-party providers do and do not do with student information. For more information regarding STT and possible solutions for other operating systems, see the document titled *Assistive Technology Manual*.

Word Prediction

Word prediction software predicts words as a student types. Currently, CAI does not offer an embedded word prediction feature. Word prediction is available for Windows and Mac through the use of third-party apps like Read&Write and other similar software. For more information about supported third-party apps, see the document titled *Assistive Technology Manual*.

Alternative Computer Inputs

Alternative Computer Input (ACI) tools allow students to interact with a computer without using a traditional mouse and keyboard setup. CAI does not include any embedded alternative computer input tools, but it supports several third-party alternative computer input technologies. For more information about supported third-party alternative computer inputs, see the document titled *Assistive Technology Manual*.

Assistive Keyboard and Mouse Input

Assistive Keyboard and Mouse Input tools provide additional support to students who need to use a keyboard and mouse in order to respond to test items. CAI does not include any embedded assistive keyboard and mouse input tools, as these tools typically involve the use of special hardware, but TDS does support several third-party assistive keyboard and mouse input tools. For more information about supported third-party assistive keyboard and mouse input solutions, see the document titled *Assistive Technology Manual*.

Screen Magnification

Screen magnifier assistive technology enlarges the content displayed on the computer screen in order to assist students who need the content magnified. Although

TDS supports some non-embedded screen magnifier tools from third parties, it is recommended that students use the embedded zoom tools in TDS. For more information about screen magnifier assistive technology, see the document titled *Assistive Technology Manual*.

ADMINISTERING ONLINE TESTS

Before administering an operational test, get comfortable with the system by administering a practice test. Practice tests can be administered on supported devices via the Secure Browser or through modern conventional browsers like Chrome or Firefox.

ADMINISTERING PRACTICE TESTS

To administer a practice test, complete the following steps:

1. TAs should open a web browser, go to the TA Practice Site, and choose a practice test to administer.
2. Students should launch the Secure Browser and click the link for practice tests.
3. TAs should give the students the Session ID.
4. Students should click through the login pages. Students can log in anonymously as a guest or with their real account. In either case, they should use a Session ID from the TA.

For more information about administering practice tests, see

When TAs and students are comfortable using the system, you are ready to administer an operational test.

ADMINISTERING OPERATIONAL TESTS

The steps for administering an operational test are nearly identical to administering a practice test.

1. TAs should open a web browser and go to the TA Site.
2. Students should launch the Secure Browser.
3. TAs should give students the Session ID.
4. Students should enter the Session ID, their first name, and their Student ID.

For more information about administering operational tests, see the *Test Administration Manual.*

Appendix 5-F

Test Information Distribution Engine (TIDE) User Guide

Test Information and Distribution Engine User Guide

2020-2021

Published August 12, 2020

Prepared by Cambium Assessment, Inc.

Table of Contents

Introduction to Test Information and Distribution Engine (TIDE)

This user guide provides instructions on how to use TIDE.

At its core, TIDE is a registration system for users who will access CAI systems and students who will take RISE tests. Users of all CAI systems must be added to TIDE before they can access any CAI system. Students must be added to TIDE before they can test in the Test Delivery System (TDS). Rosters must be added in TIDE so the Reporting System can display scores at the classroom, school, LEA, and state level. During testing, TIDE users can print test tickets, manage appeal requests, and monitor test progress. After testing, TIDE users can clean up data before the testing window has closed

TIDE receives student information and rosters from the Utah State Board of Education UTREx system nightly. Any information provided via the UTREx upload cannot be modified by system users.

TIDE divides tasks by user role. Users with higher roles will have access to more tasks in TIDE than users with lower roles. LEA-level users have access to the most tasks, followed by school-level users, teachers, and test administrators. The structure of this guide is based on user role. It includes the following sections:

- How to Activate Your Account and Log in to TIDE
- How Teachers Perform Tasks in TIDE
- How School-Level Users Perform Tasks in TIDE
- How LEA-Level Users Perform Tasks in TIDE

There is also an Appendix with additional information and instructions.

*Please note: To return to the page in this manual that you were on before clicking a link to the appendix, use one of the following keyboard shortcuts: **Alt** + **Left Arrow** (for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or **Command** + **Left Arrow** (for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

How to Activate Your Account & Log in to & out of TIDE

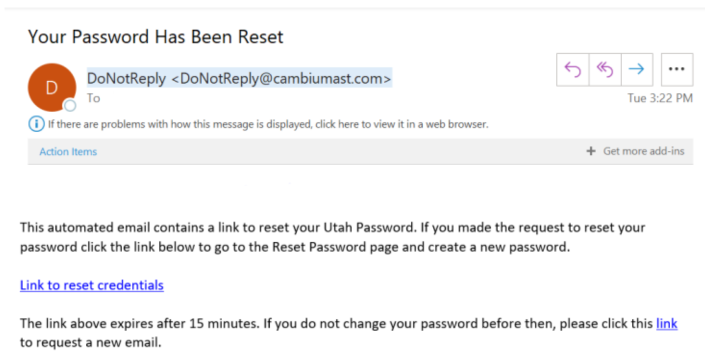
Your TIDE administrator creates your account, and then TIDE sends you an activation email. This email contains a link that takes you to the ***Reset Your Password*** page in TIDE where you can set up your password for logging in to TIDE and other applicable CAI systems. This link expires 15 minutes after the email was sent. If you do not set up your password within 15 minutes, you will need to request a new link as described below:

1. Your username is the email address associated with your account in TIDE. When you are added to TIDE, you receive an activation email containing a temporary link to the ***Reset Your Password*** page. You will receive this email from DoNotReply@cambiumast.com. To activate your account, you must set your password within 15 minutes of the email being sent.

    a. **If your first temporary link expired:**

    In the activation email you received, select the second link provided and proceed to request a new temporary link.

    Figure 1: Password Reset Email

    b. **If you forgot your password:**

    On the ***Login*** page, select **Forgot Your Password?** and then enter your email address in the *Email Address* field. You will receive an email with a new temporary link to reset your password.

    c. **If you did not receive an email containing a temporary link or authentication code:**

    Check your spam folder to make sure your email program did not categorize it as junk mail. Emails are sent from DoNotReply@cambiumast.com, so you may need to add this address to your contact list. If you still do not have an email, contact your School or LEA Administrator to make sure you are listed in TIDE.

    d. **Additional help:** If you are unable to log in, contact the RISE Helpdesk for assistance. You must provide your name and email address. Contact information is available in the User Support section of this user guide.

Please note: To return to the page in this manual that you were on before clicking a link to the appendix, use one of the following keyboard shortcuts: ***Alt*** *+* ***Left Arrow*** *(for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or* ***Command*** *+* ***Left Arrow*** *(for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

At the beginning of a new school year, your CAI system password and security details will be automatically reset. You will receive an email from DoNotReply@cambiumast.com to notify you of this occurrence and to alert you that you will not be able to log in to TIDE or any other CAI system until you reactivate your account for the new school year. Follow the instructions in the section "How to reactivate your account" below to reactivate your account for the new school year.

How to activate your account

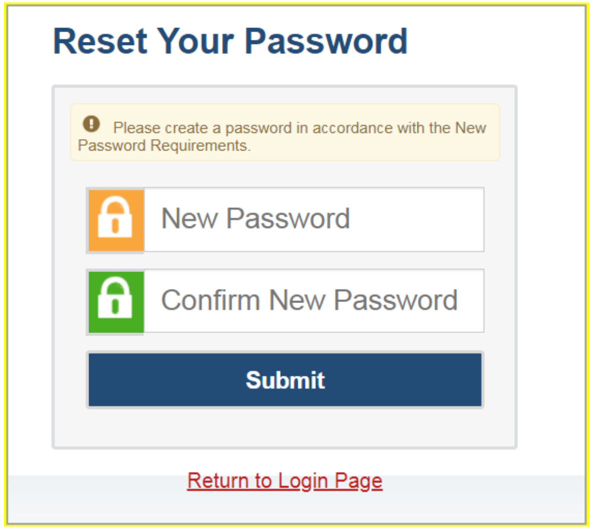
1. Select the link in the activation email. The ***Reset Your Password*** page appears (see Figure 2).

2. In the *New Password* and *Confirm New Password* fields, enter a new password. The password must be at least eight characters long and must include at least one lowercase alphabetic character, one uppercase alphabetic character, one number, and one special character (e.g., %, #, or !).

3. Select **Submit**.

Account activation is complete. You can proceed to TIDE by selecting the **TIDE** card (see Figure 3) in the portal page.

Figure 2: Reset Your Password Page



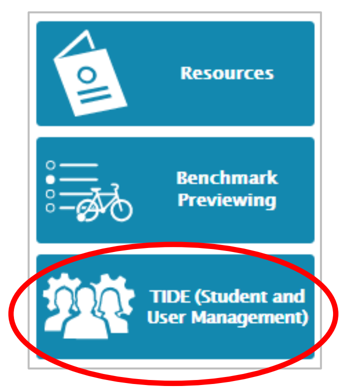
How to reactivate your account at the beginning of the school year

At the beginning of a new school year, your CAI system password and security details will be automatically reset. You will receive an email from DoNotReply@cambiumast.com to notify you of this occurrence and to alert you that you will not be able to log in to TIDE or any other system until you reactivate your account for the new school year.

1. Navigate to the RISE Portal (UtahRISE.org).

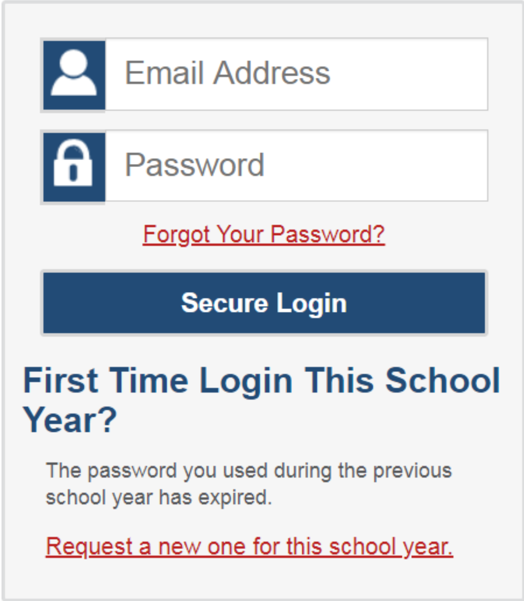
2. Select the TIDE (Student and User Management) card from the RISE Portal (see Figure 3). The ***Login*** page appears (see Figure 4 on the next page).

Figure 3: System Cards on Portal



3. Select **Request a new one for this school year**. The ***Reset Your Password: Find Account*** page appears (see Figure 5).

Figure 4: Login Page



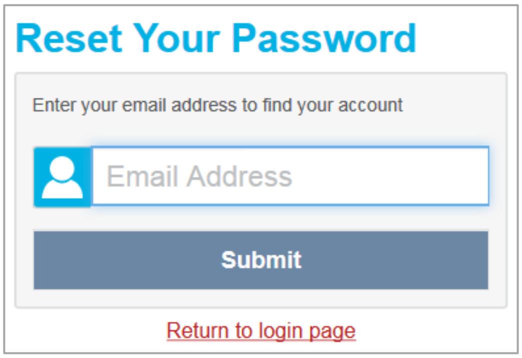
4. Enter your CAI system email address and select **Submit**. CAI sends you an email containing a link to reset your password.

5. Select the link in the activation email. The ***Reset Your Password*** page appears (see Figure 5).

6. In the *New Password* and *Confirm New Password* fields, enter a new password. The password must be at least eight characters long and must include at least one lowercase alphabetic character, one uppercase alphabetic character, one number, and one special character (e.g., %, #, or !).

7. Select **Submit**.

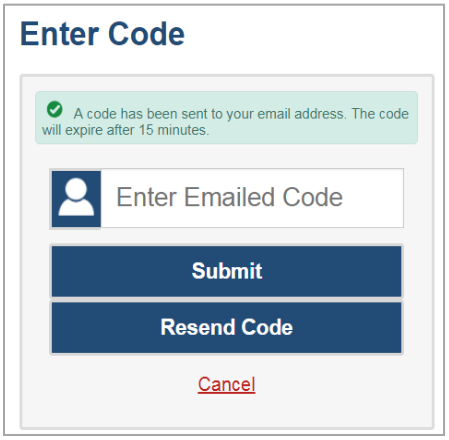
Figure 5: Fields in the Reset Your Password: Find Account Page



During the reactivation process, you will be taken to the ***Enter Code*** (see Figure 6) page and asked to provide the authentication code sent to your email.

- In the *Enter Emailed Code* field, enter the emailed code and select **Submit**.
- You must enter the code within fifteen minutes of the email being sent. If your code expires, you can request for a new code by selecting **Resend Code** on the ***Enter Code*** page.

Figure 6: Enter Code Page



How to log in to TIDE

Do not share your login information with anyone. All RISE systems provide access to student information, which must be protected in accordance with federal privacy laws.

1. Navigate to the RISE Portal (UtahRISE.org).
2. Select **TIDE** (see Figure 7). The ***Login*** page appears (see Figure 8).

Figure 7: TIDE Card

3. On the ***Login*** page, enter the email address and password you use to access all CAI systems.

Figure 8: Login Page

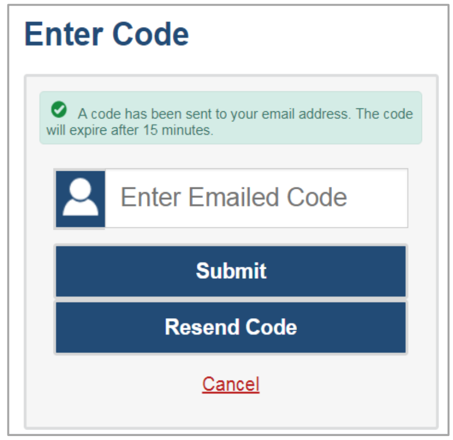
4. Select **Secure Login**.

   a. If you have not logged in using this browser before, or if you have cleared your browser cache, the ***Enter Code*** page appears (see Figure 9) and an email is sent to your address. This applies every time you access TIDE with a new browser. The email contains an authentication code, which you must use within 15 minutes of the email being sent.

      i. In the *Enter Emailed Code* field, enter the emailed code. Select **Submit**.

      ii. If the code has expired, Select **Resend Code** to request a new code.

Figure 9: Enter Code Page



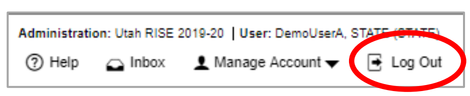
The ***Dashboard*** for your user role appears. Depending on your user role, TIDE may prompt you to select a role, LEA, or school to complete the login.

Working with TIDE in more than one browser tab or window may result in changes in one tab overwriting changes made in another tab. Do not have more than one TIDE browser tab or window open at one time.

How to log out of TIDE

- In the TIDE banner (see Figure 10), select **Log Out**.

Figure 10: Log Out



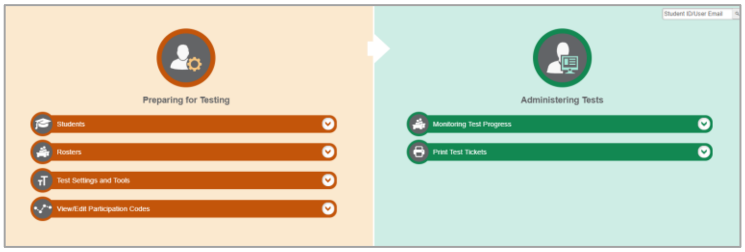
Logging out of TIDE logs you out of all RISE systems.

For example, if you log out of TIDE while administering a test using the TA Interface, your test session will stop and all students in the session will be logged out of their tests. You cannot resume the session. You will have to create a new session, and your students will have to log in to the new session to resume testing.

How Teachers Perform Tasks in TIDE

The TIDE dashboard for teachers has two sections (see Figure 11). These sections give tasks for teachers to do **Before Testing** and **During Testing**.

Figure 11: Teacher TIDE Dashboard



Teachers have access to TIDE under the “TE” role. Teachers have access to some of the same tasks as LEA-level and school-level users and perform these tasks the same way a LEA-level or school-level user performs them. Instructions on these tasks and how to perform them are in the sections below.

How Teachers Perform Tasks in TIDE Before Testing Begins

Before testing begins, teachers can perform the following tasks in TIDE:

- View **user accounts** to verify their own account information.
- View **student accounts** to ensure student details are properly entered into TIDE and edit student test accommodations and test tools, if necessary. If student accounts are not set up in TIDE in the correct test administration before testing begins, those students will not be able to test.
- Set up **rosters** so NextGen Reporting System can display scores at the classroom, school, LEA, and state levels.

How Teachers View User Accounts in TIDE

Teachers can view their own user account information in TIDE by selecting **Manage Accounts** from the banner (see Figure 12).

Figure 12: Manage Account Menu in TIDE Banner

How Teachers Manage Student Information

Teachers can view student accounts and student distribution reports by selecting the **Student** task menu, selecting **View/Edit/Export Students**, filling out the search criteria, and selecting **Search**. Search results can be viewed in TIDE or exported to the inbox.

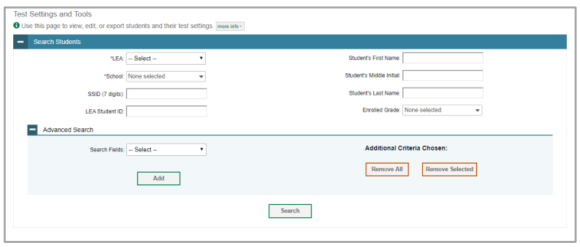
Teachers specify students' accommodations and test tools by following the procedure below.

How teachers specify student accommodations and test tools

A student's test settings and tools include the available accommodations, such as Descriptive Audio, along with test tools, such as color schemes. This section explains how to edit student test settings and tools via an online form or a file upload.

1. From the **Test Settings and Tools** task menu on the TIDE dashboard, select **View/Edit/Export Test Settings and Tools**. The ***View/Edit/Export Test Settings and Tools*** page appears (see Figure 13).

Figure 13: Test Settings and Tools Page

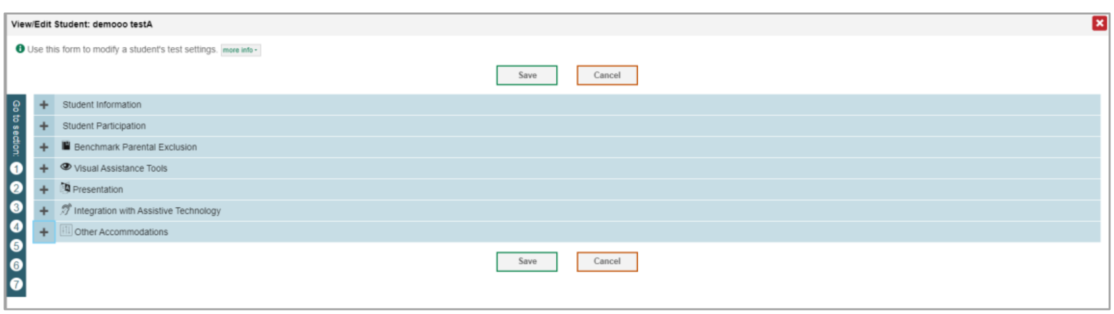


2. Retrieve the student accounts whose settings and tools you want to view or edit by filling out the search fields.

In the list of retrieved students, select for the student whose test settings and tools you want to edit. The ***View/Edit Students: [Student's Name]*** form appears (see Figure 14). Click to expand each section (see

3. Figure 15on the following page).

Figure 14: View/Edit Student Page



4. Modify the student's record as required.

In the available test settings and tools panels, modify the student's test settings, using Table 1 on page 15. The test settings are grouped into categories, such as visual assistance tools, presentation, and other accommodations. The panels display a column for each of the student's tests. You can select different settings for each test, if necessary. It is recommended that students use the training tests to verify accommodations are set correctly and to allow the student time to practice using the testing tool.

Figure 15: View/Edit Student Page

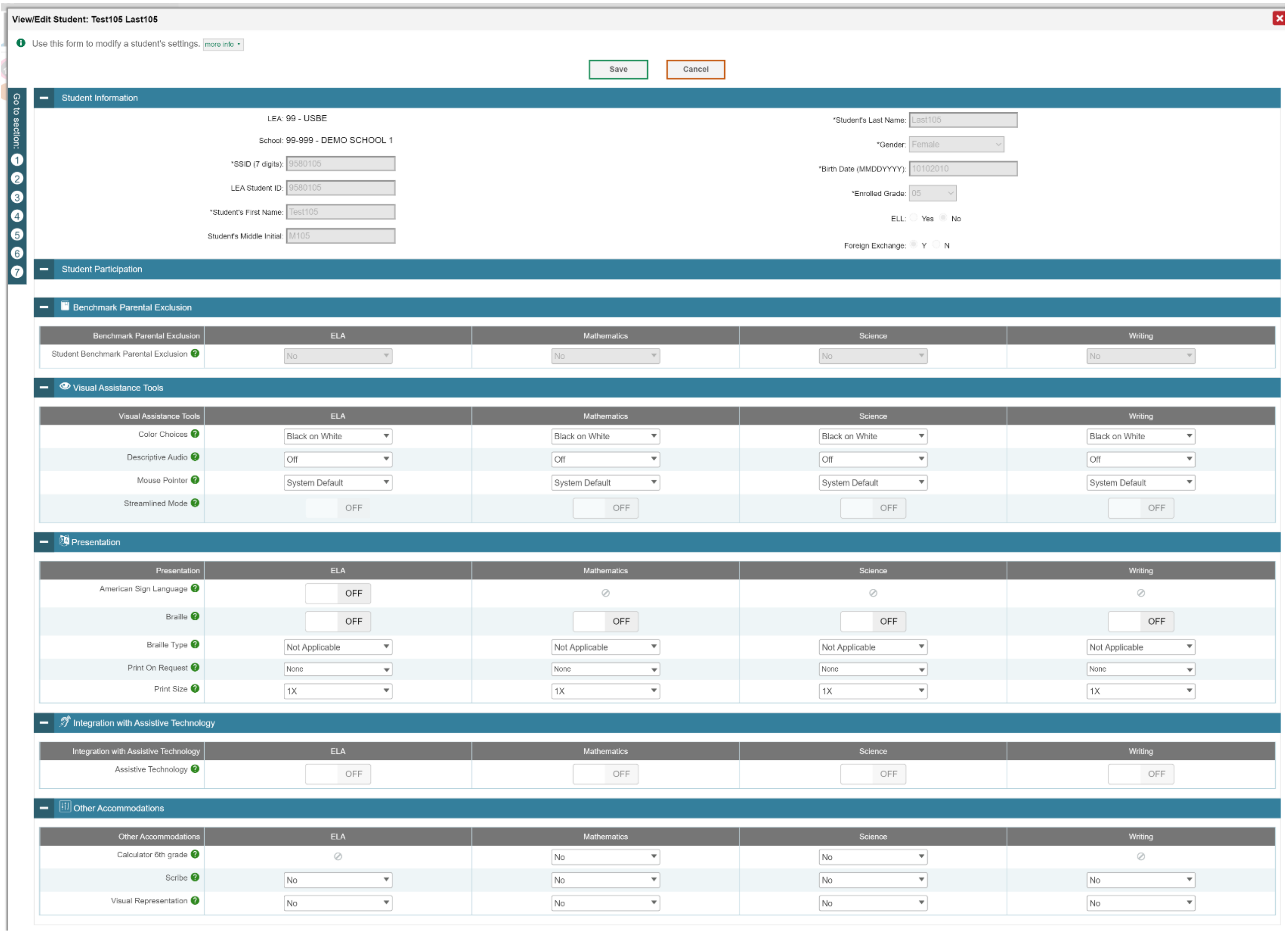


Table 1: Fields in the Test Settings and Tools Panels

Field	Description
Streamlined Mode	Toggles streamlined mode setting on or off, allowing students to view the items from top to bottom and left to right.
Mouse Pointer	List of available Mouse Pointer sizes and colors.
Color Choices	List of available Color Choice settings.
Descriptive Audio	Toggles Descriptive Audio setting on or off, allowing the answer spaces to be read.
Braille with Type	List of available braille settings (UEB or UEB with Nemeth) where available.
Print Size	List of available zoom levels.
Print on Request	List of available Print on Request settings.
American Sign Language	Toggles American Sign Language on or off.
Assistive Technology	Toggles Assistance Technology Mode setting on or off, allowing student to use pre-approved hardware or software with secure browser. Requires USBE approval
Visual Representation	Visual Representations are manipulatives such as cubes, tiles, rods, blocks, models, etc. They may be used on all sections of the mathematics assessment if they are included in the student's IEP or 504.
Calculator 6th grade	For students in grade 6, the use of a handheld calculation device or printable computation table is considered an accommodation and may be provided (based on need documented in the IEP) during the allowed segment of the assessment only.
Scribe	Students dictate their responses to a qualified person who records verbatim what they dictate. Requires USBE approval

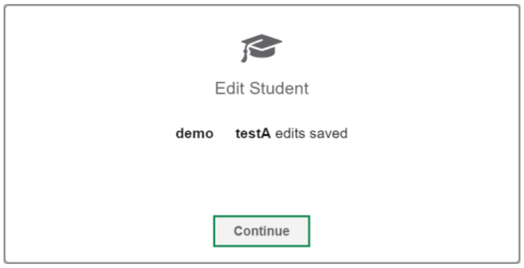
For additional information about Test Settings and Tools, please refer to the *Assistive Technology Manual*.

Changing a test setting in TIDE after the test starts does not update the student's test setting if the same test setting is available in the TA Interface. In this case, you must change the test setting in the TA Interface, although the student will need to log out and resume the test for the settings to be applied.

5. Select **Save**.

6. In the dialog box, select **Continue** to return to the list of student records.

Figure 16: Edit Student Continue



How Teachers Manage Rosters

Rosters are groups of students associated with a teacher in a particular school. Rosters typically represent entire classrooms in lower grades, or individual classroom periods in upper grades. Rosters can also represent special courses offered to groups of students.

The UTREx system populates rosters in TIDE via the nightly upload process. These rosters are called system-defined and cannot be edited by users. These are directly linked to the course codes assigned by LEAs. User-defined rosters can be created to provide additional student groupings for reporting. All rosters are available in NextGen Reporting. The Reporting

System can aggregate test scores at these roster levels. You can also use rosters to print test tickets containing students' login information prior to administering an assessment.

Since teachers are responsible for the growth and development of their student's skills in reading, writing, research, communication, and problem solving, it is important that teachers are able to analyze their student performance data and adjust instructional goals accordingly. For teachers to be able to see student performance data, the students must be included in a roster associated with the teacher. Hence, user-defined rosters may need to be created for all teachers who are responsible for teaching an academic subject, such as Reading/Literacy, Mathematics, Science, Social Studies, and Health.

Teachers can view all rosters but can only add or edit user-defined rosters for students in their school. These rosters are then sent to NextGen Reporting System so those systems can display scores.

If additional user-defined rosters need to be created, it is recommended to follow the guidelines below:

- Rosters should ideally include about 25 – 30 students. If a roster is too large or too small, it may affect the credibility and usefulness of the data.
- One or more rosters may need to be created depending on the subjects taught by a teacher. For example, if a group of Grade 3 students have the same teacher for Reading, Mathematics, and Science, then separate rosters do not need to be created for each subject. However, if different teachers are responsible for teaching different subjects then separate rosters need to be created for each teacher and subject.
- When naming rosters, a clear and consistent naming convention should be used that indicates the grade, class name, teacher, and period as applicable. For example, an elementary school roster may be named 'Gr3Jones20-21' and a secondary school roster may be named 'AikenPeriod3Eng9A20-21'.

You can only create rosters from students associated with your school or LEA.

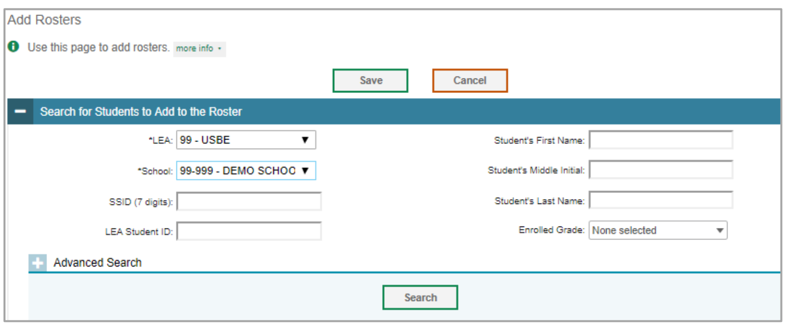
Like LEA- and school-level users, teachers can add or modify user-defined rosters one at a time or all at once through file upload.

How teachers add new user-defined rosters one at a time

1. From the **Rosters** task menu on the TIDE dashboard, select **Add Rosters**. The ***Add Rosters*** form appears (see Figure 17).

2. In the *Search for Students to Add to the Roster* panel, search for students by filling out the search criteria and selecting **Search**.

Figure 17: Add Rosters Form



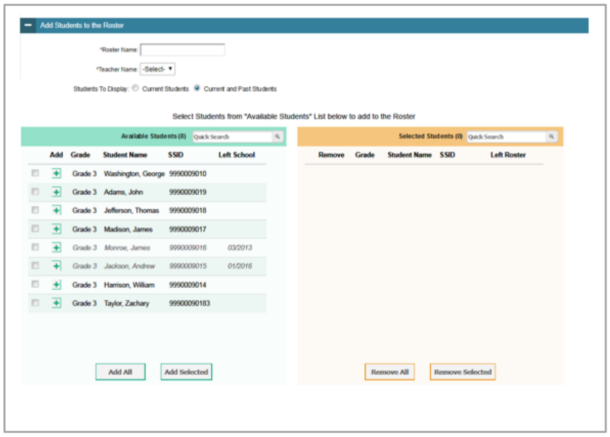
3. In the *Add/Remove Students to the Roster* panel (see Figure 18), do the following:

    a. In the *Roster Name* field, enter the roster name.

    b. From the *Teacher Name* drop-down list, select a teacher or school personnel associated with the roster.

    c. From the *Students To Display* field, select the students you wish to view in the *Available Students* list. The two options are:

Figure 18: Add/Remove Students to Roster Panel: Current and Past Students



- **Current Students**: Displays students who match your search criteria and are currently associated with the school.

- **Current and Past Students**: Displays all the students who match your search criteria from the current year even if they are no longer associated with the school. For example, if a Grade 3 student has left the school and you search for Grade 3 students with the *Students To Display* field set to **Current and Past Students**, the student who has left the school will also be displayed.

When viewing current and past students from the selected year, students who are no longer associated with your school will display the date on which they left the school. You can still add these students to your roster, if desired.

    d. To add students, in the list of available students do one of the following:

- To move one student to the roster, select + for that student.

- To move all the students in the *Available Students* list to the roster, select **Add All**.

- To move selected students to the roster, mark the checkboxes for the students you want to add, then select **Add Selected**.

    e. To remove students, do one of the following in the list of students in the roster:

- To remove one student from the roster, select ✕ for the student.

- To remove all the students from the roster, select **Remove All**.

- To remove selected students from the roster, mark the checkboxes for the students you want to remove, then select **Remove Selected**.

4. Select **Save**, and in the dialog box, select **Continue**.

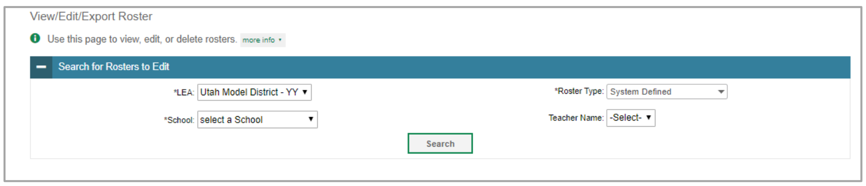
How teachers modify existing user-defined rosters one at a time

You can modify certain rosters, if required. However, whether a roster can be modified or not or the method in which a roster can be modified depends on the roster type. The different types of rosters are:

- User-defined Rosters: These are rosters that you create through the **Add Roster** page or the **Upload Roster** page. You can modify a user-defined roster by changing its name or by adding students or removing students.
- System-defined Rosters: These are rosters that are imported into TIDE via UTREx and cannot be edited.
- You can modify existing rosters by performing the following steps:

1. From the **Rosters** task menu on the TIDE dashboard, select **View/Edit/Export Roster**. The ***View/Edit/Export Roster*** page appears (see Figure 19).

Figure 19: Add Roster Form

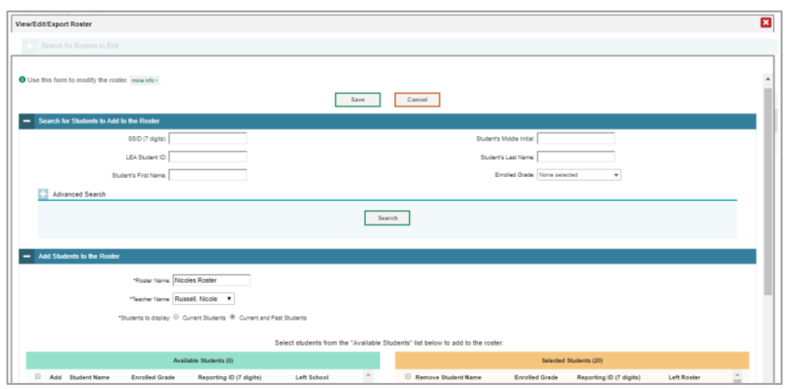


2. Retrieve the roster record you want to view or edit by filling out the search criteria and selecting **Search**.

3. In the list of retrieved rosters, select for the roster whose details you want to view. The ***View/Edit Roster*** form appears (see Figure 20). This form is similar to the form used to add rosters.

4. In the *Search for Students to Add to the Roster* panel, search for students by filling out the search criteria and selecting **Search**.

Figure 20: View/Edit Roster Form

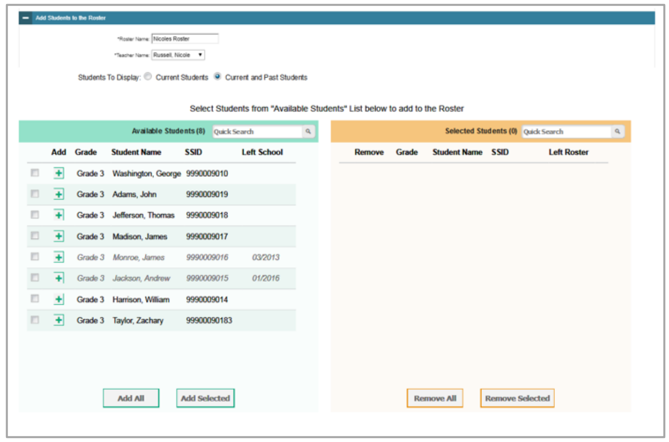


5. In the *Add/Remove Students to the Roster* panel (see Figure 21), do the following:

   a. In the *Roster Name* field, enter the roster name (if different from the one pre-populated).

   b. From the *Students To Display* field, select the students you wish to view in the *Available Students* and *Selected Students* lists. The two options are:

Figure 21: Add/Remove Students to Roster Panel: Current and Past Students

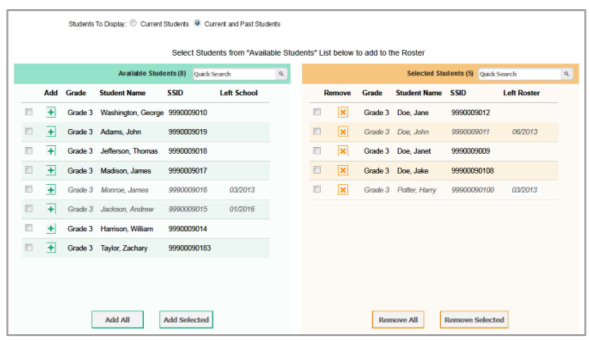


- **Current Students**: Displays students who match your search criteria and are currently associated with you and the roster. The *Available Students* list displays students who are currently associated with you and the *Selected Students* list displays students who are currently associated with the roster.
- **Current and Past Students**: Displays all the students who match your search criteria from the current year even if they are no longer associated with you or the roster. If a student has been removed from the roster, the date on which they were removed from the roster is displayed in the *Selected Students* list. If the student who has been removed from the roster is still associated with you, they are listed in the *Available Students* list as a regular student. However, if they have left the school then their record will appear in the *Available Students* list with the date they left the school.

   c. To add students, from the list of available students, do one of the following:

   - To move one student to the roster, select ➕ for that student.
   - To move all the students in the *Available Students* list to the roster, select **Add All**.
   - To move selected students to the roster, mark the checkboxes for the students you want to add, then select **Add Selected**.

Figure 22: Modifying a Roster: Current and Past Students



   d. To remove students, do one of the following in the list of students in the roster:

   - To remove one student from the roster, select ✖ for the student.
   - To remove all the students from the roster, select **Remove All**.
   - To remove selected students from the roster, mark the checkboxes for the students you want to remove, then select **Remove Selected**.

6. Select **Save**, and in the dialog box select **Continue**.

How teachers add or modify multiple rosters all at once

If you have many rosters to add or modify, you can do so through file upload as shown below.

1. From the **Rosters** task menu on the TIDE dashboard, select **Upload Rosters**. The ***Upload Rosters*** page appears where you can download a template file.

Figure 23: Upload Roster

2. Fill out the template using Table 2 below.

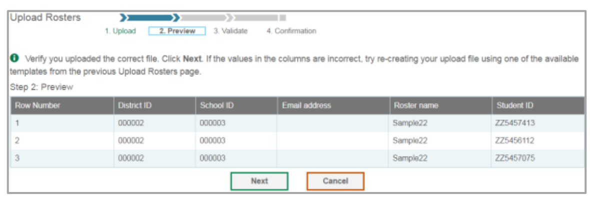
Table 2: Columns in the User-Defined Roster Upload File

Column Name	Description	Valid Values
LEA Number*	LEA associated with the roster.	LEA ID that exists in TIDE. Up to 20 characters.
School Number*	School associated with the roster.	School number that exists in TIDE. Up to 20 characters. Must be associated with the LEA ID.
Email Address*	Email address of the teacher associated with the roster.	Email address of a teacher existing in TIDE or in the Reporting System.
Roster Name*	Name of the roster.	Up to 20 characters.
SSID*	Student's unique identifier within the LEA.	Up to 30 alphanumeric characters.

*Required field.

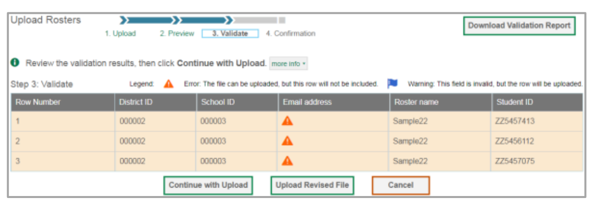
3. Once you've downloaded and filled out the template file, return to the upload screen, select **Browse**, locate the file on your computer, and upload it to TIDE. Select **Next**. The upload preview screen appears.

Figure 24: Upload Roster Preview Page



4. Once you've verified the information on the preview screen, select **Next** again. The validation screen appears.

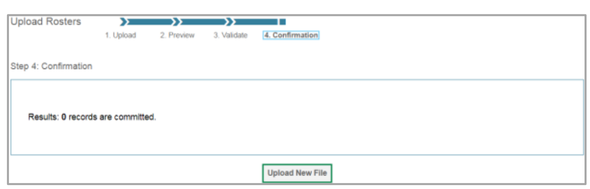
Figure 25: Upload Roster Validation Page



5. The validation screen shows errors or warnings associated with your uploaded file.

6. To continue with the upload despite these errors or warnings, select **Continue with Upload**. The selected file will be uploaded, but the rows with errors will not be included.

Figure 26: Upload Roster Confirmation Page



7. The confirmation page appears, confirming how many records have been committed as a result of your upload. To upload a new file, select **Upload New File**.

How Teachers Use TIDE During Testing

During testing, teachers can perform the following tasks in TIDE:

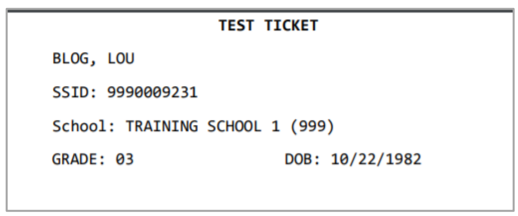
- *Optional:* Print **test tickets** to help students log in to tests.
- View reports of students' current test statuses and test completion rates.

How Teachers Print Test Tickets

Teachers can optionally print test tickets for their students. Test tickets are hard-copy forms that includes a student's username for logging in to a test (see Figure 27).

TIDE generates the test tickets as PDF files that you download with your browser.

Figure 27: Sample Test Ticket


TEST TICKET

BLOG, LOU

SSID: 9990009231

School: TRAINING SCHOOL 1 (999)

GRADE: 03 DOB: 10/22/1982

About Printing Test Tickets for Dual-Enrolled Students

When printing test tickets for a student who has been dual-enrolled, tickets will be printed for the selected LEAs and schools in which the student is enrolled.

The student can use any of the tickets to log in to the Test Delivery System (TDS). When verifying their information after logging in to the TDS, the first school in which the student was enrolled will be displayed by default. It is okay to continue with the verification process as the school information has no impact on the tests that a student is eligible for.

How teachers print test tickets from student lists

1. From the **Print Test Tickets** task menu on the TIDE dashboard, select **Print from Student List**. The ***Print Test Tickets from Student List*** page appears.

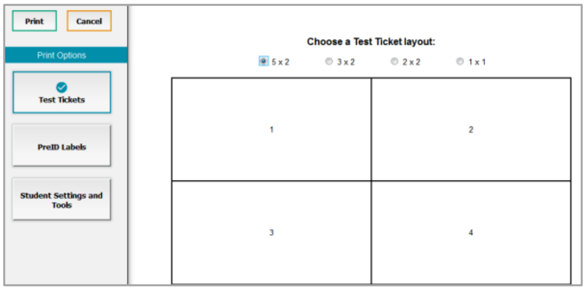
2. Retrieve the students for whom you want to print test tickets by filling out the search criteria and selecting **Search**.

3. Select the column headings to sort the retrieved students in the order you want the test tickets printed.

4. Specify the students for whom test tickets need to be printed:
    - To print test tickets for specific students, mark the checkboxes for the students you want to print.
    - To print test tickets for all students listed on the page, mark the checkbox at the top of the table.
    - To print test tickets for all retrieved students, no additional action is necessary. The option to print all retrieved records is available by default.
5. Select and then select the appropriate action:
    - To print test tickets for selected students, select **My Selected Test Tickets**.
    - To print test tickets for all retrieved students, select **All Test Tickets**.
6. In the new browser window that opens displaying a layout for selecting the printed layout (see Figure 28), verify **Test Tickets** is selected in the *Print Options* section.
7. Select the layout you require, and then select **Print**.

Your browser downloads the generated PDF.

Figure 28: Layout Model for Test Tickets



How teachers print test tickets from roster lists

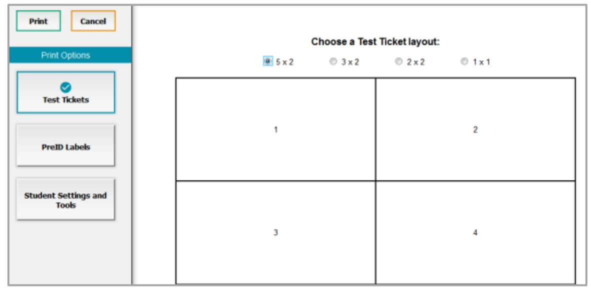
1. From the **Print Test Tickets** task menu on the TIDE dashboard, select **Print from Roster List**. The ***View/Edit Rosters*** page appears.
2. Retrieve the rosters for which you want to print test tickets by filling out the search criteria and selecting **Search**.
3. Select the column headings to sort the retrieved rosters in the order you want the test tickets printed.
4. Do one of the following:
    - Mark the checkboxes for the rosters you want to print.
    - Mark the checkbox at the top of the table to print tickets for all retrieved rosters.

> When printing multiple class groups, the total number of students included in the class groups should not exceed 1000.

5. Select  and then select **Test Tickets**. A layout model appears for selecting the printed layout (see Figure 29).
6. Verify **Test Tickets** is selected in the *Print Options* section.
7. Select the layout you require, and then select **Print**.

Your browser downloads the generated PDF.

Figure 29: Layout Model for Test Tickets



How Teachers Monitor Test Progress

Like LEA- and school-level users, the tasks available in the **Monitoring Test Progress** task menu for teachers allow you to generate various reports that provide information about a test administration's progress.

The following reports are available for teachers in TIDE:

- Plan and Manage Testing Report: Details a student’s test opportunities and the status of those test opportunities. You can generate this report from the ***Plan and Manage Testing*** page or the ***Participation Report by SSID*** page.
- Test Completion Rates Report: Summarizes the number and percentage of students who have started or completed a test.

How teachers view report of students’ current test status

TIDE includes a Plan and Manage Testing report that details all of a student’s test opportunities and the status of those test opportunities.

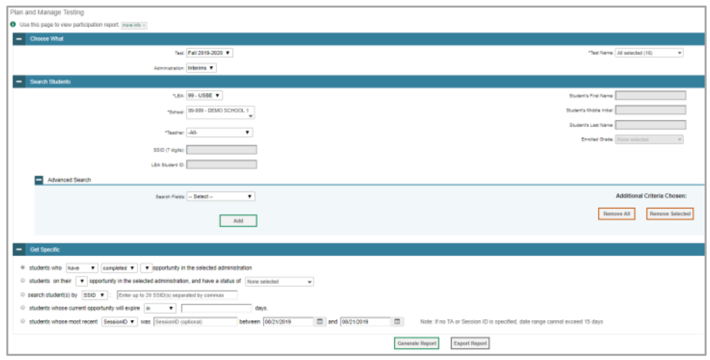
Because the report lists testing opportunities, a student can appear more than once on the report.

1. From the **Monitoring Test Progress** task menu on the TIDE dashboard, select **Plan and Manage Testing**. The ***Plan and Manage Testing*** page appears (see Figure 30).

2. In the *Choose What* panel, select the parameters for which tests to include in your report:

    a. From the **Test** drop-down list, select a test category.

Figure 30: Plan and Manage Testing Page



    b. From the **Administration** drop-down list, select an administration.

    c. *Optional*: From the **Test Name** drop-down list, select the test for which you want to generate the report. You may select one, multiple, or all from this list.

    d. *Optional*: From the **Search Fields** drop-down list, select a specific test accommodation or demographic to filter the report.

        - If you select a test accommodation or demographic, a *Values* field is displayed. Select the required filter criteria from the available options.

3. In the *Search Students* panel, select the parameters for whose information to include in your report:

    a. *Note:* Your **LEA** and **School** will be pre-selected in those drop-down lists.

    b. *Optional:* In the *Student’s Last Name* field, enter a student’s last name.

    c. *Optional:* In the *Student’s First Name* field, enter a student’s first name.

    d. *Optional:* In the *SSID* field, enter a SSID.

    e. *Optional:* From the **Grade** drop-down list, select a grade. You may select one, multiple, or all grades from this list.

4. In the *Get Specific* panel, select the radio button for one of the options and then set the parameters for that option. The following options are available (parameters for each option are listed in {brackets}):

    a. Students who {have/have not} {completed/started} the {1st/2nd/Any} opportunity in the selected administration.

   b. Students on their {1st/2nd/Any} opportunity in the selected administration and have a status of {student test status}.

   c. Search student(s) by {SSID/Name}: {SSID/Student Name}

   d. Students whose current opportunity will expire {in/between} {number/range} days.

   e. If you select “in”, you may enter any number in the displayed text box to determine tests expiring in the specified number of days. You may also enter 0 to see opportunities that expire that day.

   f. If you select “between”, you may enter two numbers in the displayed text boxes to signify a range of days (such as 1–3).

   g. Students whose most recent {Session ID/TA Name} was {Optional Session ID/TA Name} between {start date} and {end date}.

5. Do one of the following:
   a. To view the report on the page, select Generate Report.
   b. To open the report in Microsoft Excel, select Export Report.

For descriptions of the columns in this report, see Table 3 below.

Table 3: Columns in the Plan and Manage Testing Report

Attribute	Description
Name	Student’s legal name (Last Name, First Name).
LEA Name	Name of the LEA associated with the record.
School Name	Name of the school associated with the record.
SSID	Student’s Statewide Student Identifier number.
Enrolled Grade	The grade in which a student is enrolled.
Current LEP	Indicates whether the student is an English Language Learner.
Test	Test name for this student record.
Opportunity	The opportunity number for that student’s specific record.
TA Name	The test administrator who created the session in which the student is currently testing (or in which the student completed the test).
Session ID	The Session ID to which the test is linked.
Total Time Spent	The time it took a student to complete a test.
Status	The status for that specific opportunity.
Results ID	The unique identifier linked to the student’s results for that specific opportunity.
Restarts	The total number of times a student has resumed an opportunity (e.g., if a test has been paused three times and the student has resumed the opportunity after each pause, this column will show three restarts). (This includes Restarts Within Grace Period—see below.)
Restarts Within Grace Period	The total number of times a student has resumed an opportunity within 20 minutes after a test was paused. For example, if a test has been paused three times and the student resumed the opportunity within 20 minutes of two pauses but 25 minutes after the third pause, this column shows two Restarts Within Grace Period). A student has a grace period of 20 minutes to pause the test at a test item and then resume the test at that same item. However, if a test is paused for more than 20 minutes, the test session will expire, and the student will not be able to review any previous answers.
Date Started	The date when the first test item was presented to the student for that opportunity.
Date Completed	The date when the student submitted the test for scoring.
Last Activity	The date of the last activity for that opportunity or record. A completed test can still have activity as it goes through the QA and reporting process.
Expiration Date	The date the test opportunity expires. The following are the set timeframes for each test; if not completed within this timeframe, the tests will expire. Benchmark Modules: 7 days Interims: 14 days Fall Summatives: 21 days Spring Summatives: 60 days

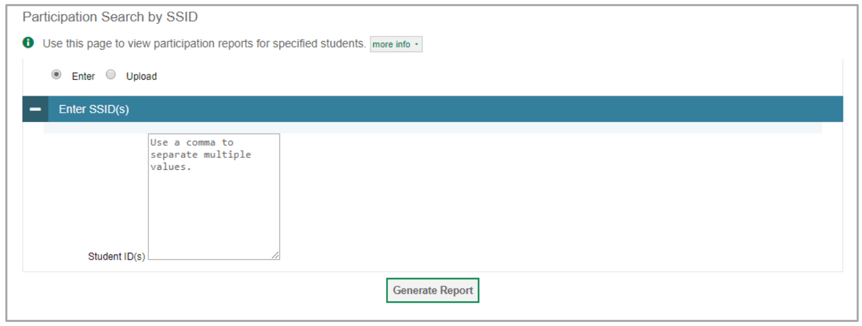
How teachers view report of students' current test status by student ID

You can also generate participation reports for specific students by SSID. This section describes how to generate participation reports for one or more students using students' SSIDs.

Because the report lists testing opportunities, a student can appear more than once on the report.

1. From the **Monitoring Test Progress** task menu on the TIDE dashboard, select **Participation Search by SSID**. The *Participation Search by SSID* page appears (see Figure 31).
2. Do one of the following:
   - To enter students' SSIDs, select **Enter**. Next, enter one or more SSIDs, separated by commas, in the Student IDs field. You can enter up to 1000 SSIDs.
   - To upload SSIDs, select **Upload**. Next, select **Browse** and then use the file browser to select an Excel or CSV file with Student IDs listed in a single column. You can upload up to 1000 SSIDs.

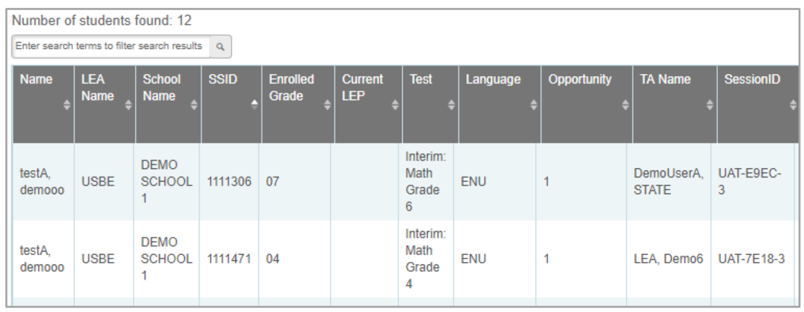
Figure 31: Participation Search by SSID Page



3. Select **Generate Report**. The Participation Report by SSID appears (see Figure 32).

For descriptions of the columns in this report, see Table X on the previous page.

Figure 32: Plan and Manage Testing Report


Number of students found: 12

Enter search terms to filter search results

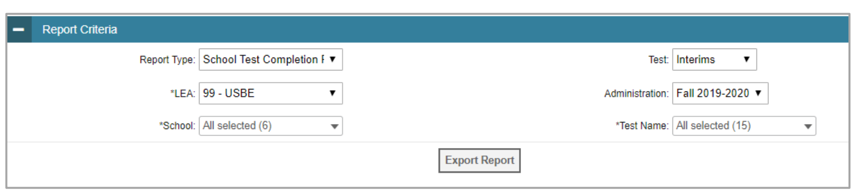
Name	LEA Name	School Name	SSID	Enrolled Grade	Current LEP	Test	Language	Opportunity	TA Name	SessionID
testA, demooo	USBE	DEMO SCHOOL 1	1111306	07		Interim: Math Grade 6	ENU	1	DemoUserA, STATE	UAT-E9EC-3
testA, demooo	USBE	DEMO SCHOOL 1	1111471	04		Interim: Math Grade 4	ENU	1	LEA, Demo6	UAT-7E18-3

How teachers view report of test completion rates

The Test Completion Rate report summarizes the number and percentage of students who have started or completed a test.

1. From the **Monitoring Test Progress** task menu on the TIDE dashboard, select **Test Completion Rates**. The ***Test Completion Rates*** page appears.

Figure 33: Test Completion Rates Search Fields



2. In the *Report Criteria* panel (see Figure 33), select the parameters for which tests to include in your report.

3. To open the report in Microsoft Excel, select **Export Report**. Figure 34 displays a sample Test Completion Rate report.

For a description of the columns in this report, see Table 4.

Figure 34: Test Completion Rate Report

Number of records found: 2

Date	Test Name	Opportunity	Total Student	Total Student Started	Total Student Completed	Percent Started	Percent Completed
02/08/2016	Grade 1 ELPA21 All Domains	1	7842	0	0	0.00%	0.00%
02/08/2016	Grade 1 ELPA21 Listening	03	31	0	0	0.00%	0.00%

Table 4: Columns in the Test Completion Rates Report

Column	Description
Date	Date and time that the file was generated.
Test	Test that is being reported.
Administration	Administration that is being reported.
Test Name	Grade, test, and subject that are being reported.
Opportunity	Test opportunity number that is being reported.
Total Student	Number of students with an active relationship to the school in TIDE.
Total Student Started	Number of students who have started the test.
Total Student Completed	Number of students who have finished the test and submitted it for scoring.
Percent Started	Percentage of students who have started the test out of the total number of students with an active relation to the school in TIDE.
Percent Completed	Percentage of students who have completed the test out of the total number of students with an active relation to the school in TIDE.
LEA Name	The name of the reported LEA.
LEA ID	The ID of the reported LEA.
School Name	The name of the reported school. This column is only included in the school-level report.
School ID	The ID of the reported school. This column is only included in the school-level report.

Overview of Participation Codes

This section addresses the management of participation codes for accountability purposes.

Motivation for Participation Codes

There are circumstances in which a student did not participate in an expected assessment or participated in an assessment but in a non-standard way. In such instances, participation codes control and document how the test record is handled for reporting aggregates and accountability calculations. The ability to add, modify, or delete participation codes is based on role assignment in RISE. All participation codes are verified and approved by the LEA assessment director.

Participation codes are not intended to explain data errors present in UTREx. As per R277-404, Local Education Agencies (LEAs) are responsible for updating local student information systems (SISs) so that UTREx data are accurate.

Once any participation code is marked in TIDE, that participation code persists until it is changed.

When participation codes are used, only one code can be selected. Participation codes are classified as “non-participation” or “participation.” (A student is considered to have attempted a test after answering 6 questions or after responding with any non-blank character to a writing prompt.) For a listing of participation codes, see Table X on page 35.

Policy: Participation codes are audited for appropriate use. ALL student data will be used for scoring, reporting, and accountability.

Management of Participation Codes

Using TIDE, you can view participation codes for students enrolled in your classroom. You can add, modify, or delete participation codes only in TIDE.

Test eligibility is controlled by the course code provided via the nightly UTREx upload. Once an enrolled student has been assigned a RISE assessed course for at least 10 days, the student will either be required to take the RISE test by the end of the testing window or must be assigned a participation code.

A student's participation on a test is defined as a student answering 6 or more questions or entering any non-blank character into one writing prompt.

Users can use TIDE's **View/Edit Participation Codes** tab to add, delete, or modify participation codes for eligible tests. In addition, if a participation code had been assigned prior to eligibility being removed, you can still view and modify the code in TIDE as long as the student is enrolled in the LEA or school by using this tab. The ability to add, delete, or modify participation codes is based on role assignment in RISE. All participation codes are verified and approved by the LEA assessment director.

If you assign a non-participation code prior to testing, TIDE removes the student's eligibility and the student will not be able to start that specific test. In order for a student to take the test, you must remove the participation code in TIDE.

The participation and Test Status Code Reports only display eligible tests. However, if a student had started a test that was later invalidated, that test will be included in the generated reports.

Working with Participation Codes in TIDE

This section describes how to view, modify, and delete participation codes in TIDE. The ability to modify or delete participation codes is based on user role permissions.

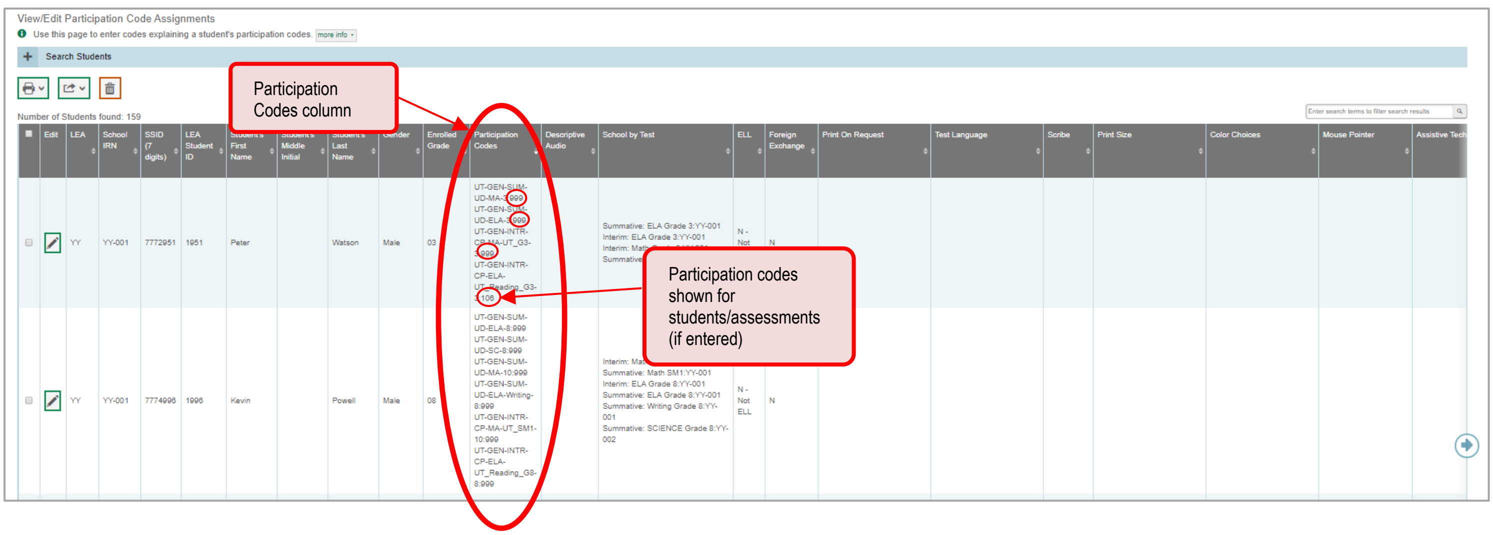
Viewing a Student's Participation Codes

When you search for student records in TIDE, the search results table displays any assigned participation codes. This can be done from the ***View/Edit/Export Students*** tab or the ***View/Edit Participation Codes*** tab.

To view the participation code in TIDE:

1. Click either the ***View/Edit/Export Students*** tab or the ***View/Edit Participation Codes*** tab.
2. Search for students using the available filters. (You can use the **Advanced Search** function to search only for students with participation codes.)
3. Click **Search**. The search results table displays those students who match the search query. The Participation Codes column lists any assigned participation codes (see Figure 35 below).

Figure 35: Participation Codes in TIDE



- Note: The code 999 (shown in Figure 33 above) indicates that a participation code had been assigned and was then removed. This is different from a blank participation code, which means that a partcipation code had never been assigned for that student's test.

If a participation code needs to be changed for a student, do one of the following:

- If the student is still eligible for the test, use the ***View/Edit Participation Codes*** tab in TIDE and follow the procedure in the **Updating a Student's Participation Code** section on the following page.
- If the student is no longer eligible for the test and had attempted the test, use the ***View/Edit Participation Codes*** tab in TIDE and follow the procedure in the **Updating a Student's Participation Code** section on the following page.
- If the student is no longer eligible for the test and had not attempted the test, use the ***View/Edit Participation Codes*** tab in TIDE and follow the procedure in the **Updating a Student's Participation Code** section on the following page.
- If the student is no longer enrolled in the LEA, your LEA assessment director will need to use the Discrepancy Resolution tab in TIDE to clean up the data (i.e., to add the appropriate participation code).

If a participation code needs to be added for a student, do one of the following:

- If the student is still eligible for the test, use the ***View/Edit Participation Codes*** tab in TIDE and follow the procedure in the **Updating a Student's Participation Code** section on the following page.
- If the student is no longer eligible for the test and had attempted the test, your LEA assessment director will need to use the Discrepancy Resolution tab in TIDE to clean up the data (i.e., add the appropriate participation code).
- If the student is no longer eligible for the test and had not attempted the test, your LEA assessment director will need to use the Discrepancy Resolution tab in TIDE to clean up the data (i.e., to add the appropriate participation code).
- If the student is no longer enrolled in the LEA, your LEA assessment director will need to use the Discrepancy Resolution tab in TIDE to clean up the data (i.e., add the appropriate participation code).

Updating a Student’s Participation Codes

You can add or modify a student’s participation codes as long as the student is enrolled in your school or LEA. The ability to add or modify participation codes is based on user role permissions.

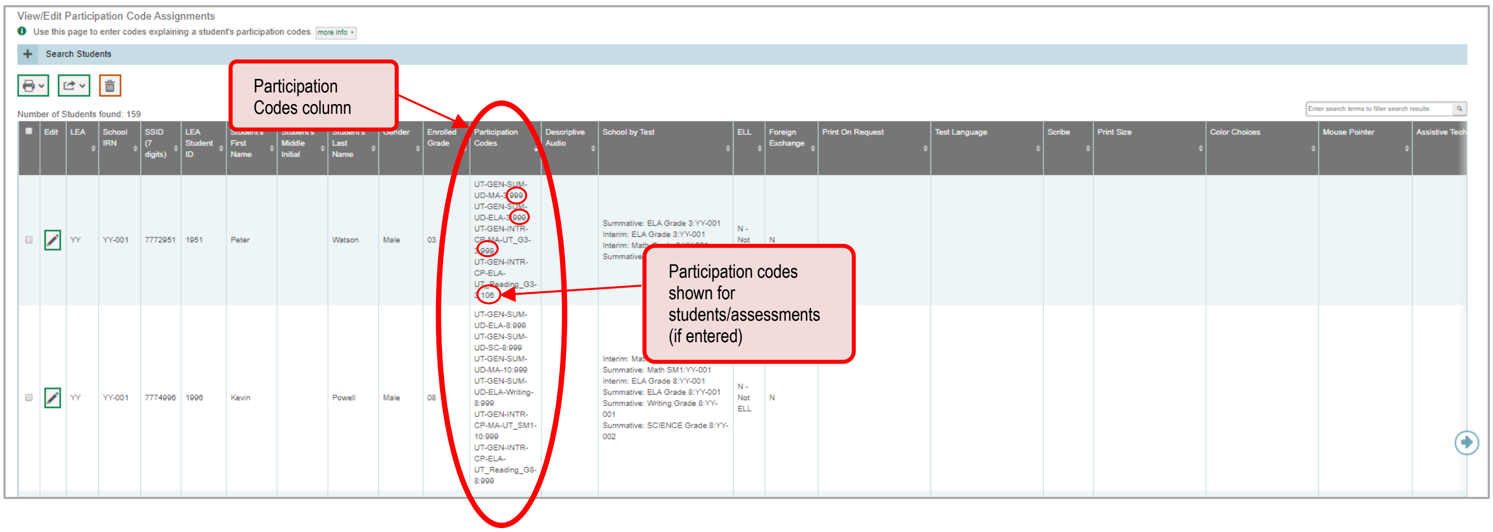
To update a student’s participation codes:

1. Log in to TIDE, and click the ***View/Edit Participation Codes*** tab.

2. Search for students using the available filters. (You can use the **Advanced Search** function to search only for students with participation codes.)

3. Click **Search**. The search results table displays those students who match the search query. The Participation Codes column lists any assigned participation codes (see Figure 36 below).

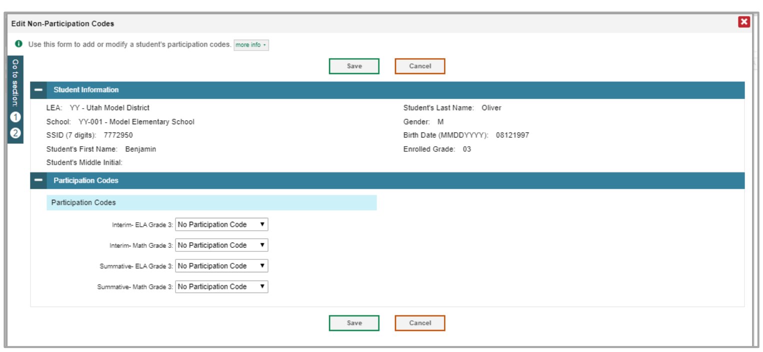
Figure 36: Participation Codes in TIDE



4. In the list of retrieved students, select  for the student whose participation code you want to update.

5. The **Edit Non-Participation Code** page appears. In the ***Participation Codes*** section of the page, use the drop-down menus available for each test the student is eligible for to update the participation code(s) as needed (see Figure 37).

Figure 37: Participation Codes in the Test Information Distribution Engine



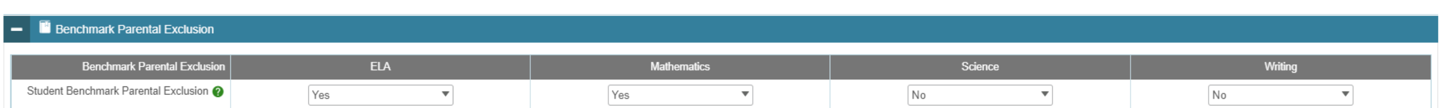
6. Click **Save** when complete.

Table 5 below lists the participation codes and their descriptions.

Table 5: Participation Codes and Their Descriptions

Participation Code	State	Federal	Description
101: Did Not Test	Countable for Participation only	Countable for Participation only	Student was enrolled at the school and eligible to test (with or without reasonable accommodations) but did not test.
103: EL First Year in U.S. April 15 or Later	Not Countable	Not Countable	The student is an English learner (EL) and first enrolled in the U.S. on or after April 15 of current school year. Student is not required to test, but testing is made available.
104: EL First Year in U.S. Before April 15	Counted for Participation only	Counted for Participation only	The student is EL and first enrolled in the U.S. before April 15 of current school year. Student must take ELA, Math, and Science.
205: EL in Second Year of Enrollment	Counted in Participation and Growth	Counted in Participation and Growth	Student is EL and first enrolled in the U.S. during the 2019-2020 school year. Student must take ELA, Math, and Science.
106: Student Refused to Test	Countable	Countable	Student refuses to start the assessment or refuses to complete at least six items of the assessment.
107: Excused for Health Emergency	Not Countable	Not Countable	Student is unable to test during the testing window due to an unanticipated health circumstance.
108: Course Instruction Not Complete	Not Countable	Not Countable	Student will not complete the relevant course instruction during the current academic year. Not available for Utah Aspire Plus.
109: Course Not Provided	Not Countable	Not Countable	Student did not take a course associated with the assessment (E.g. Student is assigned a test for a course they did not take at any time during the current school year).
110: Test Has Already Been Taken	Not Countable	Not Countable	Student has already taken the same assessment during a previous administration year.
111: USBE Excused – Approval Needed	Not Countable	Not Countable	Requires USBE authorization. Used in rare circumstances to capture irregular test circumstances.
112: Student Transferred Before Testing Window	Not Countable	Not Countable	Student transferred out of school before the LEA had a reasonable opportunity to administer the assessment.
200: Standard Participation	Countable	Countable	Student took the assessment under normal circumstances.
201: Accommodated	Countable	Countable	Student took the assessment with allowed accommodation(s).
202: Modified	Counted for Participation only	Counted for Participation Only	Student took the assessment with non-allowed modifications which interfere with the validity/reliability of the test.
203: Invalidated	Not Countable	Not Countable	LEA determines that the test was spoiled or invalid (E.g. Student cheated; test administrator broke protocol).
204: Parental Exclusion*	Not Countable	Countable	A parent or guardian has requested in writing that the student be exempt from the assessment.
208: Test System Irregularity	Not Countable	Not Countable	The test event was interrupted by a system error without reasonable opportunity to reset or re-open the test. USBE Approval required.
209: Incorrect Course Code Assigned	Countable	Countable	An incorrect course code or grade was assigned, triggering an incorrect test. LEA correction of the course code is required.

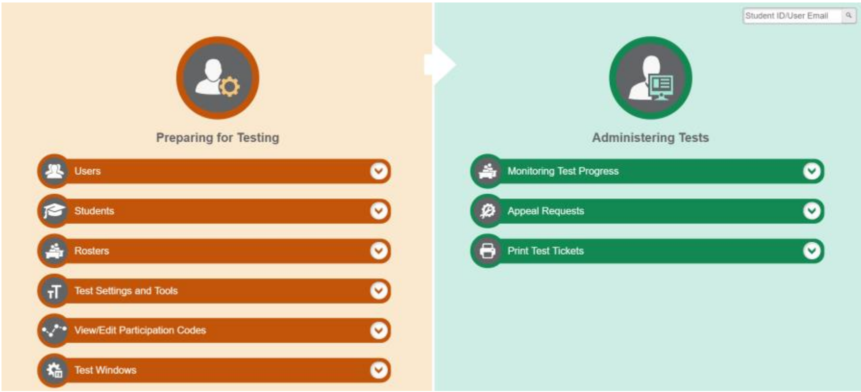
*If the parental exclusion includes benchmark modules, set the Benchmark Parental Exclusion fields in TIDE found on the View/Edit Student page. It is set by subject.



How School-level Users Perform Tasks in TIDE

The TIDE dashboard for school-level users has two sections (see Figure 38).

Figure 38: School-Level User TIDE Dashboard



School-level users are school administrators who have access to TIDE under the “SA” role. Instructions on the tasks users with this role can perform and how to perform them are in the sections below.

How School-level Users Perform Tasks in TIDE Before Testing Begins

Before testing begins, school-level users must perform the following tasks in TIDE:

- Set up **user accounts** for teachers so they can sign in to TIDE and other CAI systems. If teachers do not have accounts set up in TIDE, they will not be able to access any CAI systems or administer tests.
- View and modify **student accounts** so students can take the correct tests with the correct test settings at the correct time. If student accounts are not set up in TIDE in the correct test administration before testing begins, those students will not be able to test.
- Set up user-defined **rosters** so NextGen Reporting System can display scores at the classroom, school, LEA, and state levels.

How School-level Users Set up User Accounts in TIDE

School-level users must set up user accounts in TIDE for teachers. If teachers do not have user accounts set up in TIDE before testing begins, they will not have access to any CAI systems or be able to administer tests.

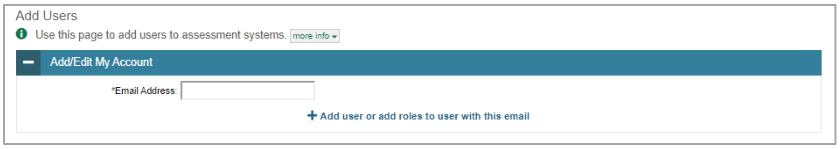
School-level users can add or modify user accounts one at a time or multiple user accounts all at once through file upload.

How school-level users add new user accounts one at a time

You can add users to TIDE one at time by following the steps below:

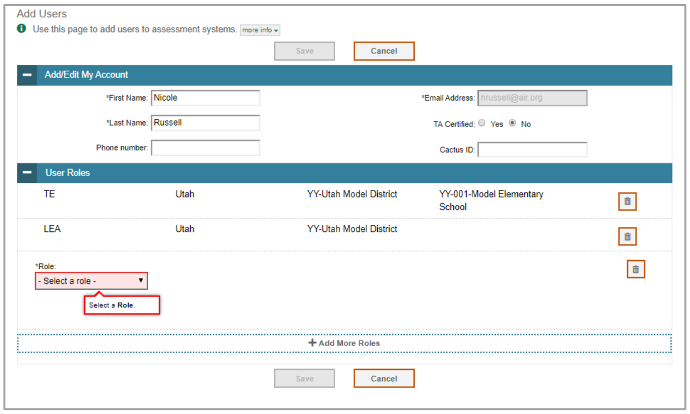
1. From the **Users** task menu, select **Add Users**. The ***Add Users*** page appears.

Figure 39: Add User



2. In the *Email Address* field, enter the new user's email address and select **+Add user or add roles to use with this email**. Additional fields appear.
3. Enter the new user's first and last names in the required fields and other details in the optional fields.

Figure 40: Add User – Additional Fields



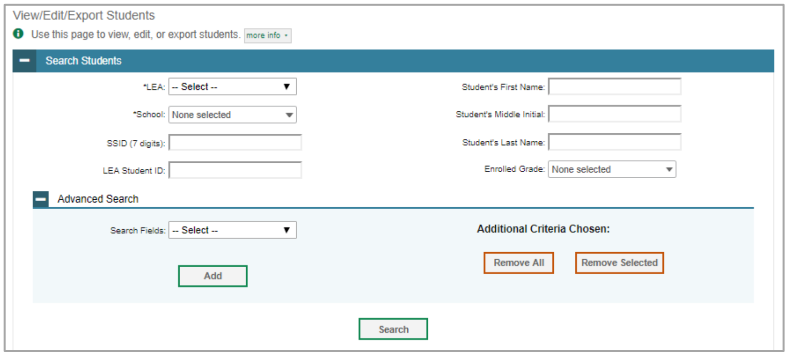
4. From the **Role** drop-down, select a role.
5. *Optional:* To add multiple roles, select **+Add More Roles** and repeat step 4.
6. *Optional:* To delete a role, select next to that role.
7. Select **Save**. In the affirmation dialog box, select **Continue** to return to the ***Add Users*** page. TIDE adds the account and sends the new user an activation email from DoNotReply@cambiumast.com.

How school-level users modify existing user accounts one a time

You can view and modify existing user accounts one at a time or multiple existing user accounts all at once through file export. If a user's information changes after you've added the user to TIDE, you must edit the user account to match the most up-to-date information. If the user's account does not include the most up-to-date information, the user may not be able to access other CAI systems or features within those systems. You can also delete users from TIDE.

1. From the **Users** task menu, select **View/Edit/Export Users**. The ***View/Edit/Export Users*** page appears.
2. Retrieve the individual user account you want to view, edit, export, or delete. Begin by searching for the record you want to modify. Start at the dashboard that appears when you first log in to TIDE, select the task for which you want to search for records, and select **View/Edit/Export**. Fill out the form that appears and select **Search**.

Figure 41: View/Edit/Export Students



3. In the list of retrieved user accounts, select for the user whose account you want to view or edit.

4. Modify the user's details as required, using Table 6 below.

Table 6: Fields in the View/Edit Users [User's Name] Page

Field	Description
First Name	User's first name.
Last Name	User's last name.
Phone Number	User's phone number.
Email Address*	Email address for logging in to TIDE.
CACTUS ID	User's C ACTUS ID.
User Roles*	User role(s). For an explanation of user roles, see the User Role Permissions section of the appendix.
LEA*	LEA associated with the user.
School*	School associated with the user.

*Required field.

Please note: To return to the page in this manual that you were on before clicking a link to the appendix, use one of the following keyboard shortcuts: ***Alt*** *+* ***Left Arrow*** *(for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or* ***Command*** *+* ***Left Arrow*** *(for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

5. *Optional:* To add more roles for this user, select **+Add More Roles** and then follow the steps as described in the section on adding individual users.

6. *Optional:* To delete a role, select next to that role. You can also delete the user's entire account from the search results table.

7. Select **Save**.

8. In the affirmation dialog box, select **Continue** to return to the list of user accounts.

How school-level users add or modify multiple user accounts all at once

You can also add or modify multiple user accounts all at once through file upload by following the steps below:

1. From the **Users** task menu, select **Upload Users**. The ***Upload Users*** page appears where you can download a template file (see Figure 42).

2. To fill out the template, use the information in Table 7 below.

Figure 42: Upload Users Page

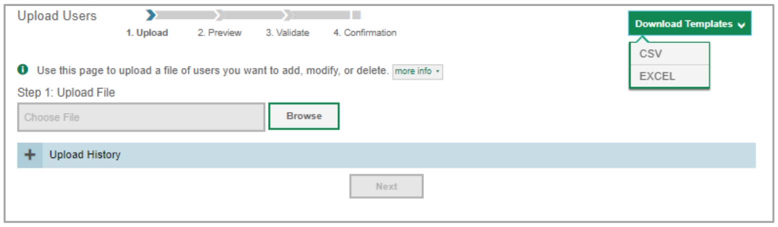


Table 7: Columns in the User Upload File

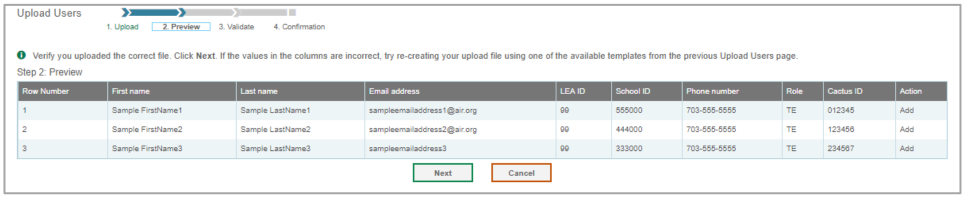
Column	Description	Valid Values
First Name*	User's first name.	Up to 35 characters.
Last Name*	User's last name.	Up to 35 characters.
Email Address*	User's email address.	Any standard email address. Up to 128 characters that are valid for an email address. This is the user's username for logging in to TIDE.
LEA Number*	User's LEA number.	
School Number*	User's School Number.	
Phone Number	User's phone number.	Phone number in xxx-xxx-xxxx format. Extensions allowed.
Role*	User's role. For an explanation of user roles, see the User Role Permissions section of the appendix.	One of the following: LEA—LEA administrator. LRV—LEA Report Viewer. SA—School administrator. SRV—School Report Viewer. TE—Test administrator. PR—Proctor. Must be lower in the hierarchy than the user uploading the file.
CACTUS ID	User's CACTUS ID.	
Action*	Indicates if this is an add, modify, or delete transaction.	One of the following: Add—Add new user or edit existing user record. Delete—Remove existing user record.

*Required field.

*Please note: To return to the page in this manual that you were on before clicking a link to the appendix, use one of the following keyboard shortcuts: **Alt** + **Left Arrow** (for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or **Command** + **Left Arrow** (for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

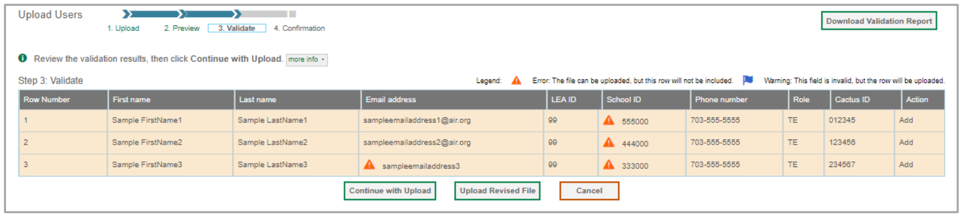
3. Once you've downloaded and filled out the template file, return to the upload screen, select **Browse**, locate the file on your computer, and upload it to TIDE. Select **Next**. The upload preview screen appears.

Figure 43: Upload Users Preview Page



4. Once you've verified the information on the preview screen, select **Next** again. The validation screen appears.

Figure 44: Upload UsersValidation Page



5. The validation screen shows errors or warnings associated with your uploaded file. To revise the file before uploading, select **Upload Revised File**.

6. To continue with the upload despite these errors or warnings, select **Continue with Upload**. The selected file will be uploaded, but the rows with errors will not be included.

7. The confirmation page appears, confirming how many records have been committed as a result of your upload. To upload a new file, select **Upload New File**.

Figure 45: Upload Users Confirmation Page

How School-level Users Register Students for Testing

School-level users can view students registered via the nightly UTREx transfer. If students are not registered for testing, they will not be able to sign in to a test.

School-level users can modify student test settings one at a time or all at once through file upload. School-level users can specify or upload student accommodations and test tools, and view student distribution reports. For detailed information, please refer to the following sections:

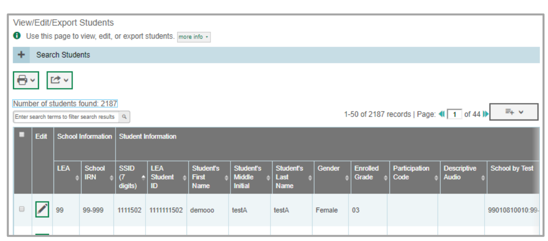
How school-level users modify existing student accounts one at a time

You can view and edit detailed information about a student's record. You can also view a student's test participation report, if available. Note: student information provided via UTREx upload cannot be modified.

a. In the list of retrieved students (see Figure 46), select for the student whose account you want to view. The ***View/Edit Students: [Student's Name]*** form appears (see Figure 47 below).

b. Modify the student's record as required.

Figure 46: View/Edit/Export Students



- In the student information panel, modify the student's record, using Table 8 on the following page.

Figure 47: View/Edit Student Page

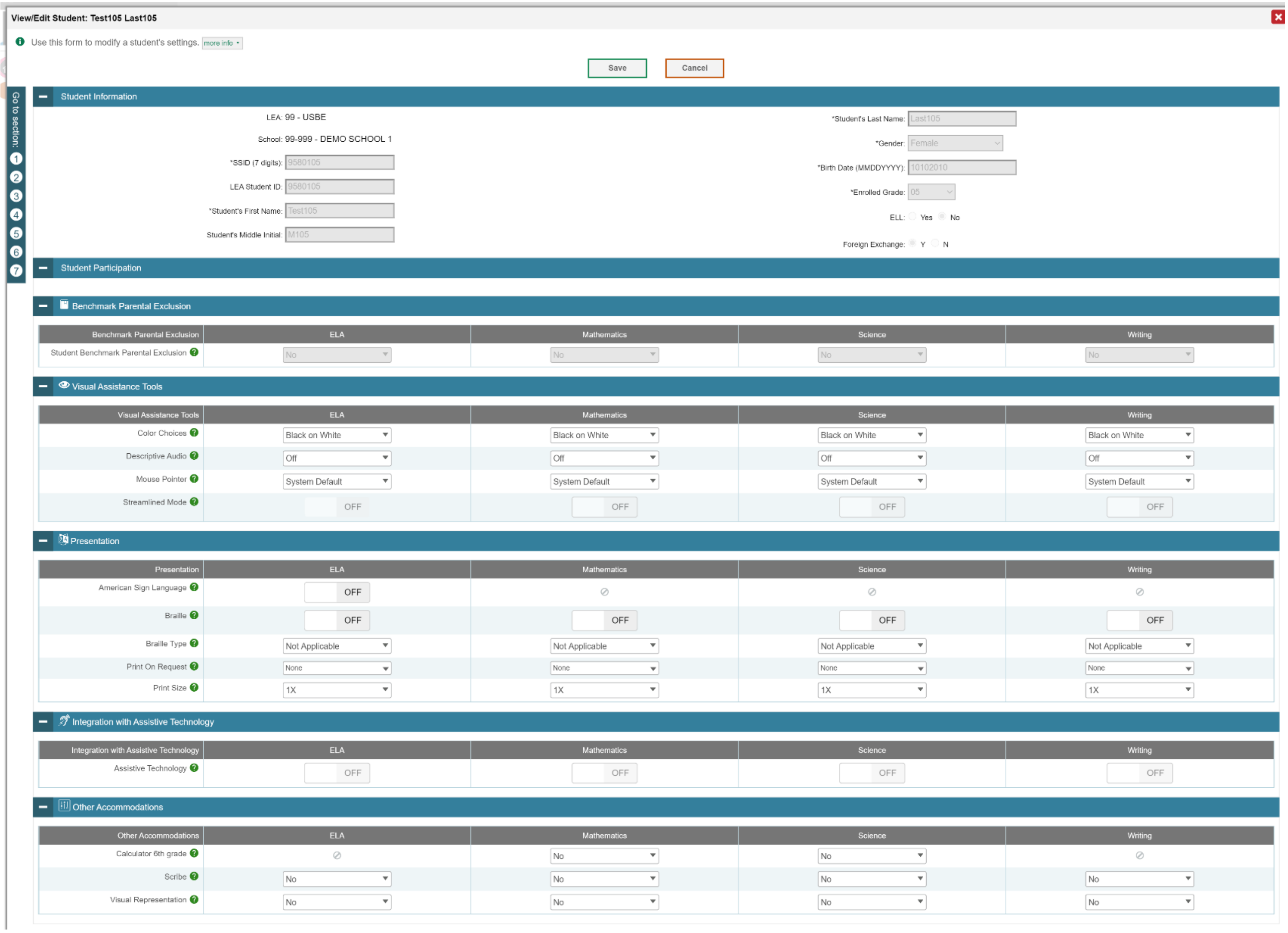


Table 8: Fields in the Student Information Panel

Field	Description
LEA	LEA number and name.
School IRN	School number.
SSID (7 digits)	Student's Statewide Student Identifier (SSID) within the enrolled LEA.
LEA Student ID	LEA ID number.
Student's First Name	Student's first name.
Student's Middle Initial	Initial of student's middle name.
Student's Last Name	Student's last name.
Gender	Student's gender.
Birth Date	Student's date of birth.
Enrolled Grade	Grade in which student is enrolled during the test administration.
Participation Codes	
Descriptive Audio	
School by Test	
ELL	Student's English Language Proficiency level.
Foreign Exchange	Student's foreign exchange status.

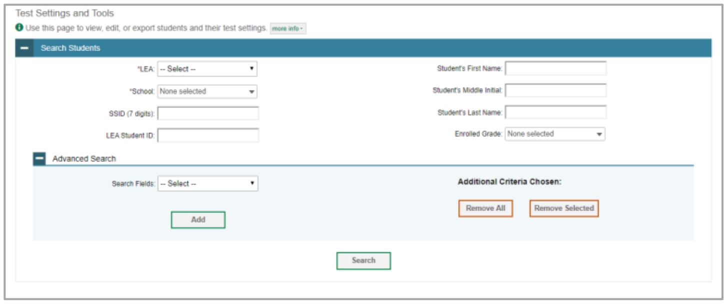
Note: all fields provided by USBE and cannot be modified.

How school-level users specify student accommodations and test tools

A student's test settings and tools include the available accommodations, such as Descriptive Audio, along with test tools, such as color schemes. This section explains how to edit student test settings and tools via an online form or a file upload. For additional information about Test Settings and Tools, please refer to the *Assistive Technology Manual*.

1. From the **Test Settings and Tools** task menu on the TIDE dashboard, select **View/Edit/Export Test Settings and Tools**. The ***View/Edit/Export Test Settings and Tools*** page appears (see Figure 48).

Figure 48: Test Settings and Tools Page



2. Retrieve the student accounts whose settings and tools you want by filling out the search fields and selecting **Search**.

3. In the list of retrieved students (see Figure 46), select  for the student whose test settings and tools you want to edit. The ***View/Edit Students: [Student's Name]*** form appears (see Figure 49). Click  to expand each section (see Figure 50 on the following page).

   a. Modify the student's record as required.

      - In the available test settings and tools panels, modify the student's test settings, using Table 9 on page 43. The test settings are grouped into categories, such as visual assistance tools, presentation, and other accommodations. The panels display a column for each of the student's test subjects. You can select different settings for each test subject, if necessary.

Figure 49: View/Edit Student Page

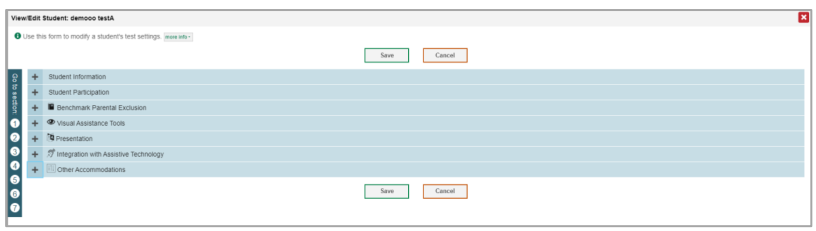


Figure 50: View/Edit Student Page

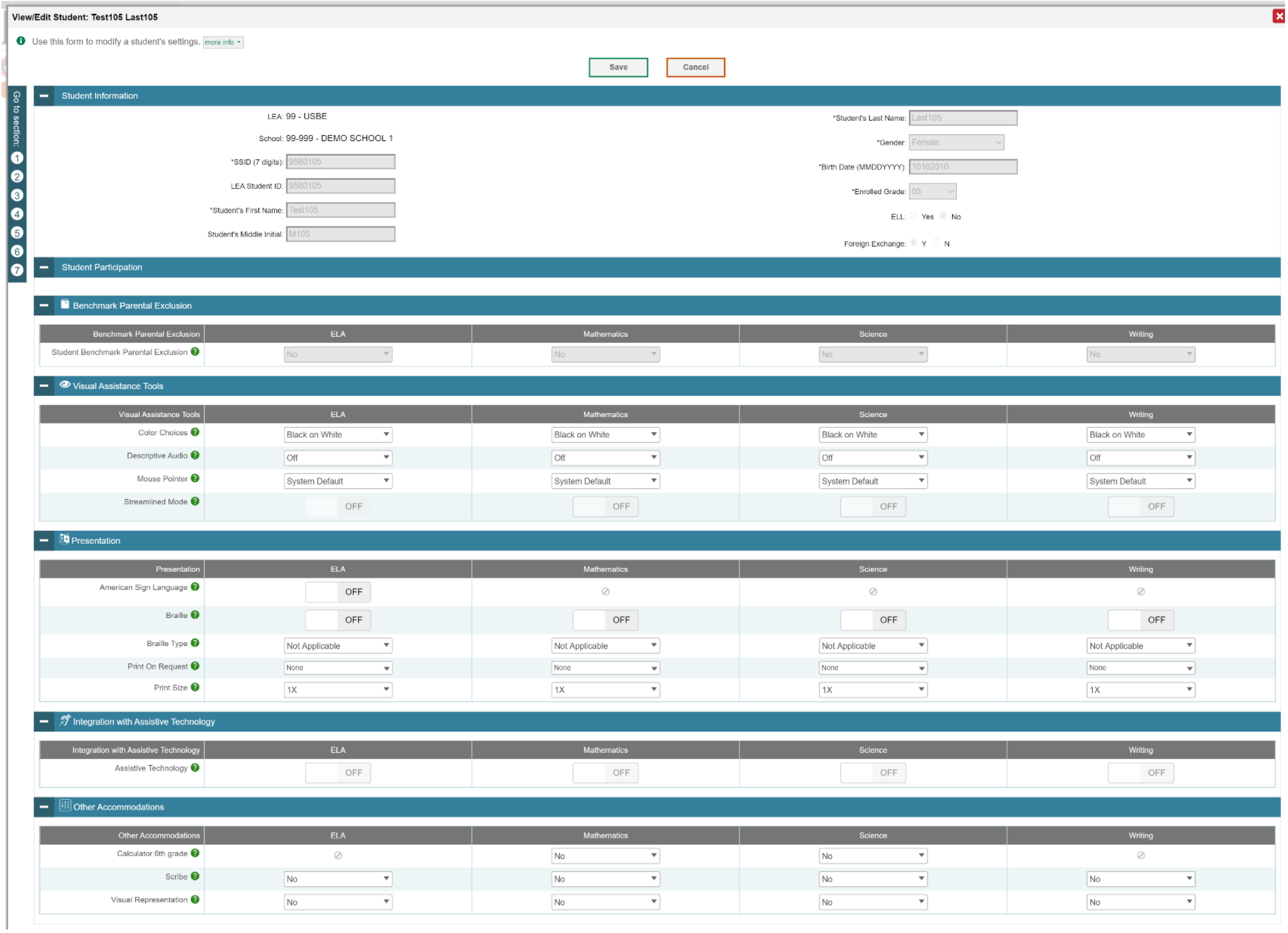


Table 9: Fields in the Test Settings and Tools Panels

Field	Description
Streamlined Mode	Toggles streamlined mode setting on or off, allowing students to view the items from top to bottom and left to right.
Mouse Pointer	List of available Mouse Pointer sizes and colors.
Color Choices	List of available Color Choice settings.
Descriptive Audio	Toggles Descriptive Audio setting on or off, allowing the answer spaces to be read.
Braille with Type	List of available braille settings (UEB or UEB with Nemeth) where available.
Print Size	List of available zoom levels.
Print on Request	List of available Print on Request settings.
American Sign Language	Toggles American Sign Language on or off.
Assistive Technology	Toggles Assistance Technology Mode setting on or off, allowing student to use pre-approved hardware or software with secure browser. Requires USBE approval
Visual Representation	Visual Representations are manipulatives such as cubes, tiles, rods, blocks, models, etc. They may be used on all sections of the mathematics assessment if they are included in the student's IEP or 504.
Calculator 6th grade	For students in grade 6, the use of a handheld calculation device or printable computation table is considered an accommodation and may be provided (based on need documented in the IEP) during the allowed segment of the assessment only.
Scribe	Students dictate their responses to a qualified person who records verbatim what they dictate. Requires USBE approval

For additional information about Test Settings and Tools, please refer to the *Assistive Technology Manual*.

Changing a test setting in TIDE after the test starts does not update the student's test setting if the same test setting is available in the TA Interface. In this case, you must change the test setting in the TA Interface, although the student will need to log out and resume the test for the settings to be applied.

4. Select **Save**.

5. In the dialog box, select **Continue** to return to the list of student records.

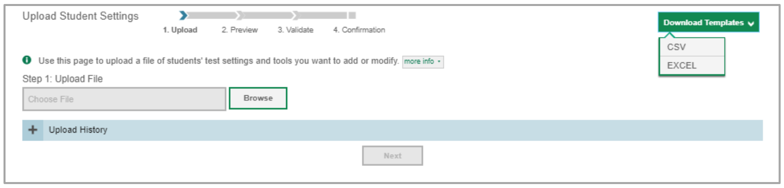
How school-level users modify multiple student accounts all at once

If you have many students to edit all at once (for example, if you need to edit the test settings of multiple students at once), you can do so through file upload as shown below. Note: student information provided via UTREx upload cannot be modified.

1. From the **Students** task menu on the TIDE dashboard, select **Upload Student Settings**. The ***Upload Student Settings*** page appears where you can download a template file (see Figure 51).

2. To fill out the template, use the information in Table 10 on the following page.

Figure 51: Upload Student Settings Page



How school-level users upload student accommodations and test tools

If you have many students for whom you need to apply test settings, it may be easier to perform those transactions through file uploads. This task requires familiarity with composing comma-separated value (CSV) files or working with Microsoft Excel.

1. From the **Test Settings and Tools** task menu on the TIDE dashboard, select **Upload Student Settings**. The ***Upload Student Settings and Tools*** page appears.

2. To fill out the template, use the information in Table 10 below.

Table 10: Columns in the Student Settings Upload File

Column	Description	Valid Values
SSID*	Student's statewide identification number.	Ten digits.
Subject	Subject for which the tool or accommodation applies.	One of the following: ELA Mathematics Science
Tool Name	Name of the tool or accommodation.	See Table 11 on the next page.
Value	Indicates if the tool or accommodation is allowed or disallowed, or the accommodation's appearance.	See Table 11 on the next page.

*Required field.

Table 11: Valid Values for Tool Names in the Test Settings Upload File

Tool Name	Description	Valid Value	Applies to
American Sign Language	Availability of American Sign Language video.	Off	Reading
		On	Reading
Braille		Off	ELA, Math, Science
		On	
Braille Type	Type of Braille in which test items are printed.	Not Applicable	ELA, Math, Science
		Contracted	
Calculator 6th Grade		No	Math
		Yes	
Color Choices	Color of text and background for tests in indicated subject.	One of the available color schemes from the drop- down list.	ELA, Math, Science
Descriptive Audio	Indicates student can listen to audio descriptions of interactive answer spaces in test questions.	One of the available descriptive audio settings from the drop-down list.	ELA, Math, Science
Mouse Pointer		One of the available color and size combinations from the drop-down list.	ELA, Math, Science
Assistive Technology	Assistive Technology setting for tests in the indicated subject. Requires USBE approval	Off	ELA, Math, Science
		On	
Print On Request	Student's print-on- demand (POD) accommodation for tests in the indicated subject.	None	ELA, Math, Science
		Stimuli & Items	
Print Size	Print-size accommodation for tests in the indicated subject.	One of the available magnification options from the drop-down list.	ELA, Math, Science
Scribe	Student scribe setting for tests the indicated subject. Requires USBE approval	No	ELA, Math, Science
		Yes	
Streamlined Mode	Streamlined mode setting for tests in the indicated subject.	Off	ELA, Math, Science
		On	
Visual Representation		No	ELA, Math, Science
		Yes	

For additional information about Test Settings and Tools, please refer to the *Assistive Technology Manual*.

Changing a test setting in TIDE after the test starts does not update the student's test setting if the same test setting is available in the TA Interface. In this case, you must change the test setting in the TA Interface, although the student will need to log out and resume the test for the settings to be applied.

3. Select **Save**.

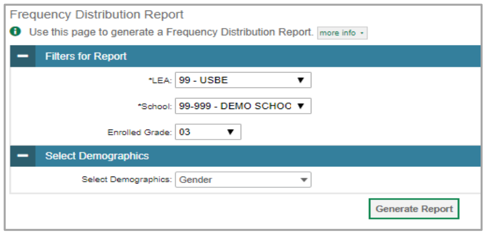
4. In the dialog box, select **Continue** to return to the list of student records.

How school-level users view student distribution report

A frequency-distribution report (FDR) shows the number of occurrences of a particular category, such as the number of male and female students. You can generate FDRs for the students in your school by a variety of demographics and accommodations.

1. From the **Students** task menu on the TIDE dashboard, select **Frequency Distribution Report**. The ***Frequency Distribution Report*** page appears (see Figure 52).

Figure 52: Fields in the Frequency Distribution Report Page



2. In the *Filters for Report* panel, select the report filters:

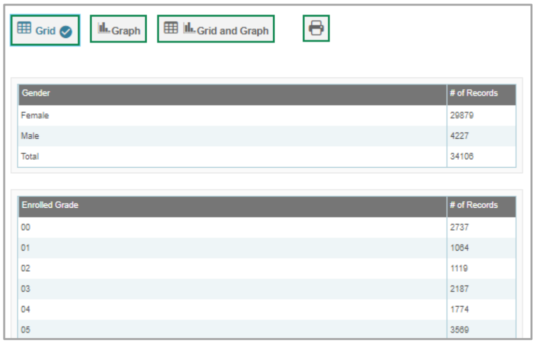
   a. From the **School** drop-down list (if available), select a school.

   b. *Optional:* Select a specific grade or retain the default for all grades.

   c. *Optional:* In the *Select Demographics* sub-panel, mark checkboxes to filter the report for additional demographics and accommodations.

3. Select **Generate Report**. TIDE displays the selected FDRs in grid format (see Figure 53).

Figure 53: Frequency Distribution Reports by Grade and Gender



4. Do one of the following:

    a. To display the FDRs in tabular format, select **Grid**.

    b. To display the FDRs in graphical format, select **Graph**.

    c. To display the FDRs in both tabular and graphical format, select **Grid & Graph**.

    d. To download a PDF file of the FDRs, select , and then select **Print** on the new browser window that opens displaying the report. The generated PDF file displays the report in your selected format of **Grid**, **Graph**, or **Grid & Graph**.

How School-level Users Manage Rosters

Rosters are groups of students associated with a teacher in a particular school. Rosters typically represent entire classrooms in lower grades, or individual classroom periods in upper grades. Rosters can also represent special courses offered to groups of students.

The UTREx system populates rosters in TIDE via the nightly upload process. These rosters are called system-defined and cannot be edited by users. These are directly linked to the course codes assigned by LEAs. User-defined rosters can be created to provide additional student groupings for reporting. All rosters are available in NextGen Reporting. The Reporting System can aggregate test scores at these roster levels. You can also use rosters to print test tickets containing students' login information prior to administering an assessment .

Since teachers are responsible for the growth and development of their student's skills in reading, writing, research, communication, and problem solving, it is important that teachers are able to analyze their student performance data and adjust instructional goals accordingly. For teachers to be able to see student performance data, the students must be included in a roster associated with the teacher. Hence, user-defined rosters may need to be created for all teachers who are responsible for teaching an academic subject, such as Reading/Literacy, Mathematics, Science, Social Studies, and Health.

School-level users can manage rosters for students in their school. These rosters are then sent to the Reporting System so those systems can display scores.

If additional user-defined rosters need to be created, it is recommended to follow the guidelines below:

- Rosters should ideally include about 25 – 30 students. If a roster is too large or too small, it may affect the credibility and usefulness of the data.
- One or more rosters may need to be created depending on the subjects taught by a teacher. For example, if a group of Grade 3 students have the same teacher for Reading, Mathematics, and Science, then separate rosters do not need to be created for each subject. However, if different teachers are responsible for teaching different subjects then separate rosters need to be created for each teacher and subject.
- When naming rosters, a clear and consistent naming convention should be used that indicates the grade, class name, teacher, and period as applicable. For example, an elementary school roster may be named ‘Gr3Jones20-21 and a secondary school roster may be named ‘AikenPeriod3Eng9A20-21-20’.

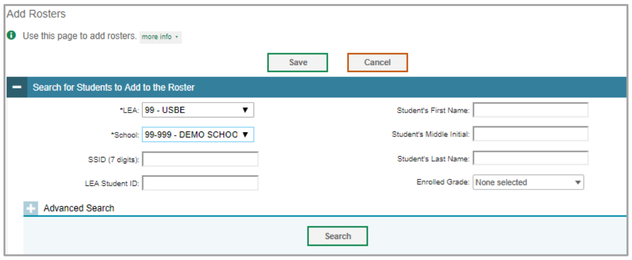
You can only create rosters from students associated with your school or LEA.

School-level users can add or modify user-defined rosters one at a time or all at once through file upload.

How school-level users add new user-defined rosters one at a time

1. From the **Rosters** task menu on the TIDE dashboard, select **Add Rosters**. The ***Add Rosters*** form appears (see Figure 54).

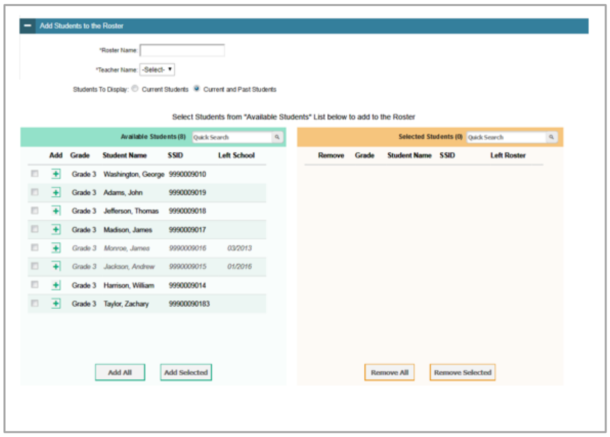
Figure 54: Add Rosters Form



2. In the *Search for Students to Add to the Roster* panel, search for students by filling out the search criteria and selecting **Search**.

3. In the *Add/Remove Students to the Roster* panel (see Figure 55), do the following:

Figure 55: Add/Remove Students to Roster Panel: Current and Past Students



   a. In the *Roster Name* field, enter the roster name.

   b. From the *Teacher Name* drop-down list, select a teacher or school personnel associated with the roster.

   c. From the *Students To Display* field, select the students you wish to view in the *Available Students* list. The two options are:

      - **Current Students**: Displays students who match your search criteria and are currently associated with the school.

- **Current and Past Students**: Displays all the students who match your search criteria from the current year even if they are no longer associated with the school. For example, if a Grade 3 student has left the school and you search for Grade 3 students with the *Students To Display* field set to **Current and Past Students**, the student who has left the school will also be displayed.

When viewing current and past students from the selected year, students who are no longer associated with your school will display the date on which they left the school. You can still add these students to your roster, if desired.

d. To add students, in the list of available students do one of the following:

- To move one student to the roster, select ➕ for that student.
- To move all the students in the *Available Students* list to the roster, select **Add All**.
- To move selected students to the roster, mark the checkboxes for the students you want to add, then select **Add Selected**.

e. To remove students, do one of the following in the list of students in the roster:

- To remove one student from the roster, select ✖ for the student.
- To remove all the students from the roster, select **Remove All**.
- To remove selected students from the roster, mark the checkboxes for the students you want to remove, then select **Remove Selected**.

4. Select **Save**, and in the affirmation dialog box, select **Continue**.

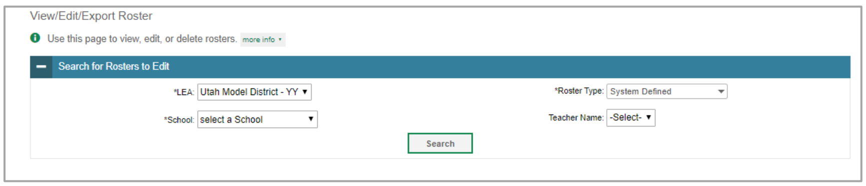
How school-level users modify existing user-defined rosters one at a time

You can modify certain rosters, if required. However, whether a roster can be modified or not or the method in which a roster can be modified depends on the roster type. The different types of rosters are:

- User-defined Rosters: These are rosters that you create through the **Add Roster** page or the **Upload Roster** page. You can modify a user-defined roster by changing its name, associated teacher, or by adding students or removing students.
- System-defined Rosters: These are rosters that are imported into TIDE via UTREx and cannot be edited.
- You can modify existing rosters by performing the following steps:

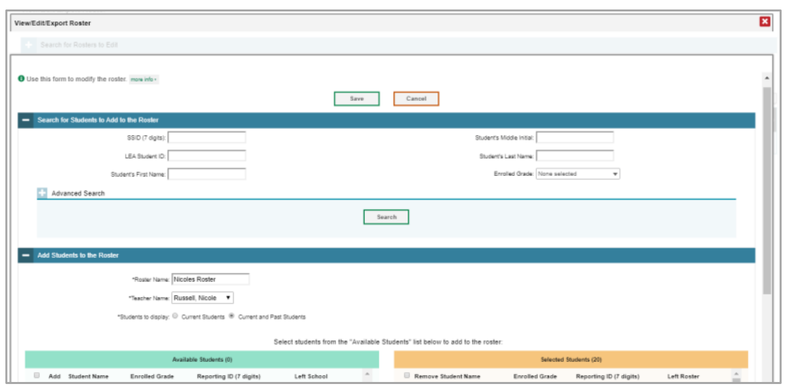
1. From the **Rosters** task menu on the TIDE dashboard, select **View/Edit/Export Roster**. The ***View/Edit/Export Roster*** page appears (see Figure 56).

Figure 56: Add Roster Form



2. Retrieve the roster record you want to view or edit by filling out the search criteria and selecting **Search**.

Figure 57: View/Edit Roster Form



3. In the list of retrieved rosters, select for the roster whose details you want to view. The ***View/Edit Roster*** form appears (see Figure 57). This form is similar to the form used to add rosters.
4. In the *Search for Students to Add to the Roster* panel, search for students by filling out the search criteria and selecting **Search**.

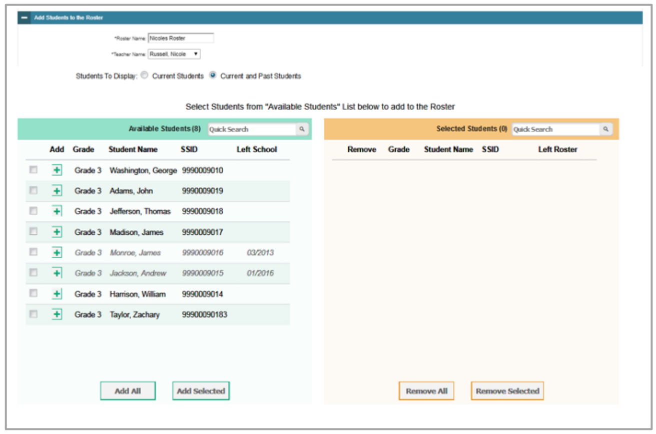
5. In the *Add/Remove Students to the Roster* panel (see Figure 58), do the following:

   a. In the *Roster Name* field, enter the roster name (if different from the one pre-populated).

   b. From the *Teacher Name* drop-down list, select a teacher or school personnel associated with the roster (if different from the one pre-populated).

   c. From the *Students To Display* field, select the students you wish to view in the *Available Students* and *Selected Students* lists. The two options are:

Figure 58: Add/Remove Students to Roster Panel: Current and Past Students

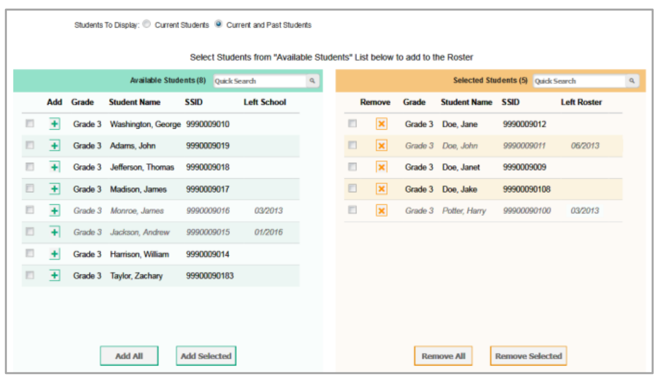


- **Current Students**: Displays students who match your search criteria and are currently associated with the school and roster. The *Available Students* list displays students who are currently associated with your school and the *Selected Students* list displays students who are currently associated with the roster.
- **Current and Past Students**: Displays all the students who match your search criteria from the current year even if they are no longer associated with the school or the roster. If a student has been removed from the roster, the date on which they were removed from the roster is displayed in the *Selected Students* list. If the student who has been removed from the roster is still associated with the school, they are listed in the *Available Students* list as a regular student. However, if they have left the school then their record will appear in the *Available Students* list with the date they left the school.

   d. To add students, from the list of available students, do one of the following:

   - To move one student to the roster, select ➕ for that student.
   - To move all the students in the *Available Students* list to the roster, select **Add All**.
   - To move selected students to the roster, mark the checkboxes for the students you want to add, then select **Add Selected**.

Figure 59: Modifying a Roster: Current and Past Students



   e. To remove students, do one of the following in the list of students in the roster:

   - To remove one student from the roster, select ✖ for the student.
   - To remove all the students from the roster, select **Remove All**.
   - To remove selected students from the roster, mark the checkboxes for the students you want to remove, then select **Remove Selected**.

6. Select **Save**, and in the affirmation dialog box select **Continue**.

How school-level users add or modify multiple rosters all at once

If you have many rosters to add or modify, you can do so through file upload as shown below.

1. From the **Rosters** task menu on the TIDE dashboard, select **Upload Rosters**. The ***Upload Rosters*** page appears where you can download a template file.

Figure 60: Upload Roster

2. Fill out the template using Table 12 below.

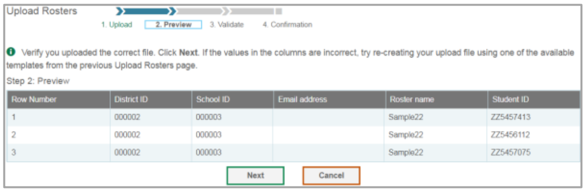
Table 12: Columns in the User-Defined Roster Upload File

Column Name	Description	Valid Values
LEA Number*	LEA associated with the roster.	LEA ID that exists in TIDE. Up to 20 characters.
School Number*	School associated with the roster.	School number that exists in TIDE. Up to 20 characters. Must be associated with the LEA ID.
Email Address*	Email address of the teacher associated with the roster.	Email address of a teacher existing in TIDE or the Reporting System.
Roster Name*	Name of the roster.	Up to 20 characters.
SSID*	Student's unique identifier within the LEA.	Up to 30 alphanumeric characters.

*Required field.

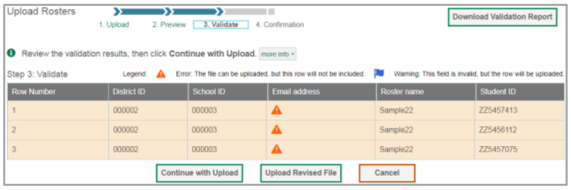
3. Once you've downloaded and filled out the template file, return to the upload screen, select **Browse**, locate the file on your computer, and upload it to TIDE. Select **Next**. The upload preview screen appears.

Figure 61: Upload Roster Preview Page



4. Once you've verified the information on the preview screen, select **Next** again. The validation screen appears.

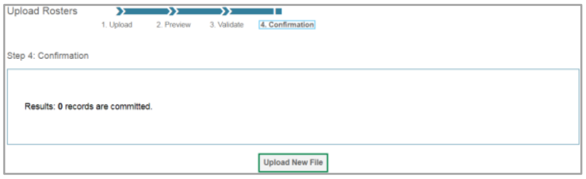
Figure 62: Upload Roster Validation Page



5. The validation screen shows errors or warnings associated with your uploaded file.

6. To continue with the upload despite these errors or warnings, select **Continue with Upload**. The selected file will be uploaded, but the rows with errors will not be included.

Figure 63: Upload Roster Confirmation Page



7. The confirmation page appears, confirming how many records have been committed as a result of your upload. To upload a new file, select **Upload New File**.

How School-level Users Manage Test Windows

School-level users can view test windows for students in their school. If test windows are not properly set, students will not able to test at the proper time.

How school-level users modify existing test windows one at a time

School-level administrators can modify a custom test window only by changing its name and dates, or by adding or removing students within the LEA-designated testing window.

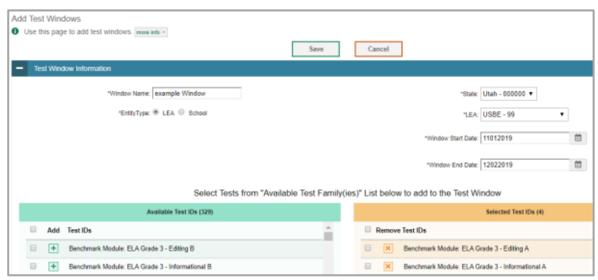
1. From the **Test Windows** task menu on the TIDE dashboard, select **View/Edit/Export Test Windows**. The ***View/Edit/Export Test Window*** page appears.

2. Retrieve the test window you want to view or edit by filling out the search criteria and selecting **Search**.

3. In the list of retrieved test windows, select  for the test window whose details you want to view. The ***View/Edit/Export Test Windows*** form appears. This form is similar to the form used to add test windows (see Figure 64).

4. *Optional*: In the *Test Window Information* panel, do the following:

Figure 64: Fields in the Add Test Windows Page



   a. In the *Window Name* field, enter a new name for the test window. The *Window Name* field only accepts alphanumeric characters. Characters like spaces, dashes, and underscores are not allowed for test window names.

   b. In the *Window Start Date* and *Window End Date* fields, enter the test window's new start and end dates.

   c. Select **Add Test Window**.

5. *Optional*: In the *Add/Remove Tests* section (see Figure 65), do the following:

    a. To add test IDs, from the list of available tests, do one of the following:

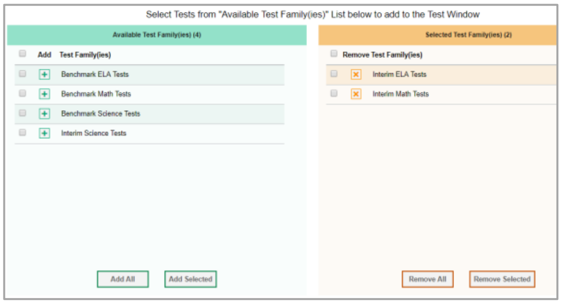
    - To move one test ID to the window, select for that test.
    - To move all the test IDs in the *Available Test Family(ies)* list to the window, select **Add All**.
    - To move selected test IDs to the window, mark the checkboxes for the tests you want to add, then select **Add Selected**.

    b. To remove test IDs, do one of the following in the list of test IDs in the window:

    - To remove one test ID from the window, select for the test ID.
    - To remove all the test IDs from the window, select **Remove All**.
    - To remove selected test IDs from the window, mark the checkboxes for the test IDs you want to remove, then select **Remove Selected**.

6. Select **Save**, and in the affirmation dialog box select **Continue**.

Figure 65: Add/Remove Tests Panel



How School-level Users Use TIDE During Test Administration

During testing, school-level users can perform the following tasks in TIDE:

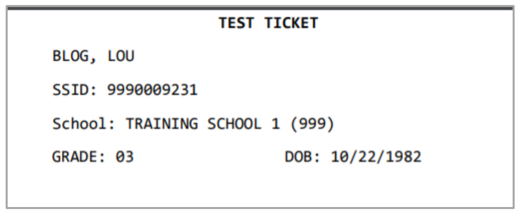
- *Optional:* Print **test tickets** to help students log in to tests.
- Add, modify, and upload appeal requests.
- View reports of students' current test statuses, test completion rates, and test status codes.

How School-level Users Print Test Tickets

A test ticket is a hard-copy form that includes a student's username for logging in to a test (see Figure 66).

TIDE generates the test tickets as PDF files that you download with your browser.

Figure 66: Sample Test Ticket


TEST TICKET

BLOG, LOU

SSID: 9990009231

School: TRAINING SCHOOL 1 (999)

GRADE: 03 DOB: 10/22/1982

About Printing Test Tickets for Dual-Enrolled Students

When printing test tickets for a student who has been dual-enrolled, tickets will be printed for the selected LEAs and schools in which the student is enrolled.

The student can use any of the tickets to log in to the Test Delivery System (TDS). When verifying their information after logging in to the TDS, the first school in which the student was enrolled will be displayed by default. It is okay to continue with the verification process as the school information has no impact on the tests that a student is eligible for.

How school-level users print test tickets from student lists

1. From the **Print Test Tickets** task menu on the TIDE dashboard, select **Print from Student List**. The ***Print Test Tickets from Student List*** page appears.

2. Retrieve the students for whom you want to print test tickets by filling out the search criteria and selecting **Search**.

3. Select the column headings to sort the retrieved students in the order you want the test tickets printed.

4. Specify the students for whom test tickets need to be printed:

   - To print test tickets for specific students, mark the checkboxes for the students you want to print.

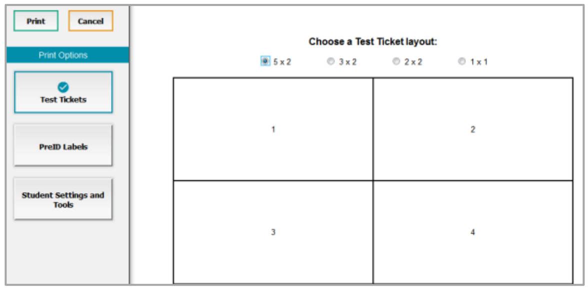
   - To print test tickets for all students listed on the page, mark the checkbox at the top of the table.

- To print test tickets for all retrieved students, no additional action is necessary. The option to print all retrieved records is available by default.

5. Select and then select the appropriate action:
    - To print test tickets for selected students, select **My Selected Test Tickets**.
    - To print test tickets for all retrieved students, select **All Test Tickets**.
6. In the new browser window that opens displaying a layout for selecting the printed layout (see Figure 67), verify **Test Tickets** is selected in the *Print Options* section.
7. Select the layout you require, and then select **Print**.

Your browser downloads the generated PDF.

Figure 67: Layout Model for Test Tickets



How school-level users print test tickets from roster lists

1. From the **Print Test Tickets** task menu on the TIDE dashboard, select **Print from Roster List**. The ***View/Edit Rosters*** page appears.
2. Retrieve the rosters for which you want to print test tickets by filling out the search criteria and selecting **Search**.
3. Select the column headings to sort the retrieved rosters in the order you want the test tickets printed.
4. Do one of the following:
    - Mark the checkboxes for the rosters you want to print.
    - Mark the checkbox at the top of the table to print tickets for all retrieved rosters.

When printing multiple class groups, the total number of students included in the class groups should not exceed 1000.

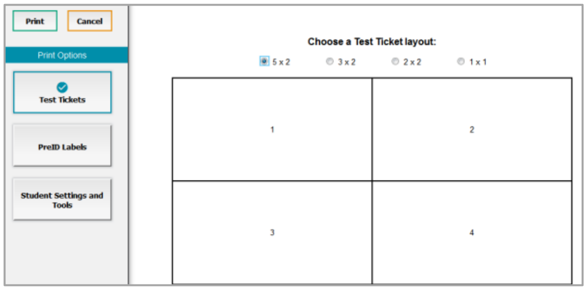
5. Select and then select **Test Tickets**. A layout model appears for selecting the printed layout (see Figure 68).

6. Verify **Test Tickets** is selected in the *Print Options* section.

7. Select the layout you require, and then select **Print**.

Your browser downloads the generated PDF.

Figure 68: Layout Model for Test Tickets



How School-level Users Manage Appeal Requests

In the normal flow of a test opportunity, a student takes the test in TDS and then submits it. Next, TDS forwards the test for scoring, and then the test scores are reported in NextGen Reporting System.

Appeal requests are a way of interrupting this normal flow. A student may need to get back into a segment they incorrectly exited or have a grace period extension if they had to pause their test and didn't have time to review. A test administrator may want to invalidate a test because of a hardware malfunction or an impropriety.

School-level users can create appeal requests for students in their school. Please note that all appeals requests submitted by school-level users will require approval from a LEA-level approver.

School-level users can add an appeal requests one at a time or all at once through file upload.

List of Appeal Request Types

Reset and revert appeal requests must be submitted at least one day prior to the end of a test window so that students can complete their test opportunity. Table 13 lists the types of appeals.

Table 13: Types of Appeals

Type	Description
Invalidate a test	Eliminates the test opportunity, and the student has no further opportunities for the test. You can submit these test invalidations until the end of the test window.
Reset a test	Allows the student to restart a test opportunity (removing all responses on the test). You can submit these appeal requests until the end of the test window.
Re-open a test	Reopens a test that was completed, invalidated, or expired.
Re-open Test Segment	Reopens a previous test segment. This appeal request is useful when a student inadvertently or accidentally leaves a test segment incomplete and starts a new test segment. Students can answer unanswered items and can modify responses to answered items in the reopened segment.
Grace Period Extension (GPE)	Allows the student to review previously answered questions upon resuming a test or test segment after expiration of the pause timer. For example, a student pauses a test, and a 20-minute pause timer starts running. The following scenarios are possible: • If resuming the test within 20 minutes, student can review previously answered questions. • Without a GPE, student resuming the test after 20 minutes cannot review previously answered questions—student can only work on unanswered questions. Upon receiving a GPE, student can review previously answered questions upon resuming the test. The normal pause rules apply to this opportunity.

For a list of appeal request statuses, see Table 14 below.

Table 14: List of Appeal Request Statuses

Appeal Request Status	Description of Status
Error Occurred	An error occurred while the appeal request was being processed.
Pending Approval	Appeal request is pending approval.
Processed	Appeal request was successfully processed and the test opportunity has been updated.
Rejected	Another user rejected the appeal request.
Rejected by System	Test Delivery System was unable to process the appeal request.
Requires Resubmission	Appeal request must be resubmitted.
Retracted	Originator retracted the appeal request.
Submitted for Processing	Appeal request submitted to Test Delivery System for processing.

For a list of available appeal requests by test status, see Table 15 below.

Table 15: List of Appeal Requests by Test Status

Test Status	Invalidate a test	Reset a test	Re-open a test	Re-open Previous Test Segment	Grace Period Extension
Approved		?			
Completed	?	?	?		
Denied	?	?		?	?
Expired	?	?	?		
Paused	?	?		?	?
Pending		?			
Processing		?			
Reported	?	?	?		
Review		?			
Scored	?	?	?		
Started		?			
Submitted	?	?	?		
Suspended		?			
Invalidated		?	?		

How school-level users add new appeal requests one at a time

You can create an appeal request for a given test result.

1. Retrieve the result for which you want to create an appeal request by doing the following:

    a. From the **Appeal Requests** task menu on the TIDE dashboard, select **Create Appeal Requests**. The ***Create Appeal Requests*** page appears (see Figure 69).

    b. Select a request type.

    c. From the drop-down lists and in the text field, enter search criteria.

    d. Select **Search**. TIDE displays the found results at the bottom of the ***Create Appeal Requests*** page (see Figure 70).

2. Mark the checkbox for each result for which you want to create a test invalidation, and then select **Create**.

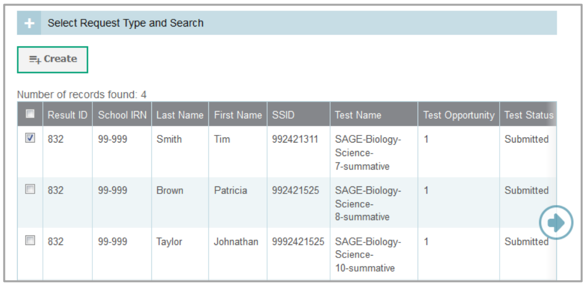
3. From the **Select a reason from the list** drop-down, select a reason for creating the appeal request. The reasons may vary based on the appeal request type.

4. Enter a reason for the request in the window that pops up.

5. Select **Submit**. TIDE displays a confirmation message.

Figure 69: Selection Fields in the Create Appeal Requests Page

Figure 70: Retrieved Test Results

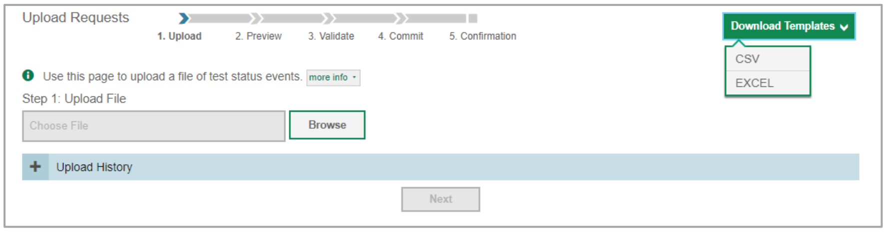


How school-level users add or modify multiple appeal requests all at once

If you have many appeal requests to create, it may be easier to perform those transactions through file uploads. This task requires familiarity with composing comma-separated value (CSV) files or working with Microsoft Excel.

1. From the **Appeals** task menu on the TIDE dashboard, select **Upload Appeals**. The ***Upload Appeals*** page appears where you can download a template file.

Figure 71: Upload Appeals Page



2. Fill out the template using Table 16 below.

Table 16: Columns in the Appeal Request Upload File

Column Name	Description	Valid Values

Type*	Type of appeal request.	One of the following:
		`Invalidate a test`
		`Reset a Test`
		`Re-open a test`
		`Grace Period Extension`
		`Re-open test segment`

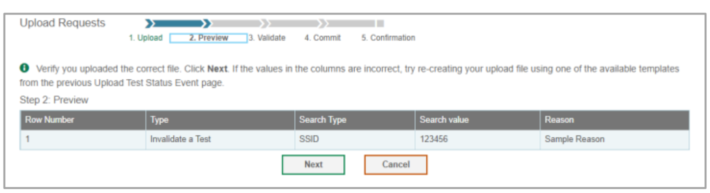
SearchType*	Student field to search.	One of the following:
		`Result ID`
		`SSID`
		`Session ID`

SearchValue*	Search value corresponding to the search type.	Up to 1,000 alphanumeric characters. The value must exist in TDS or TIDE. For example, specifying a result ID of 123456 requires that this result ID exist in TDS.
Reason*	Reason for creating appeal request.	Up to 1,000 alphanumeric characters.

*Required field.

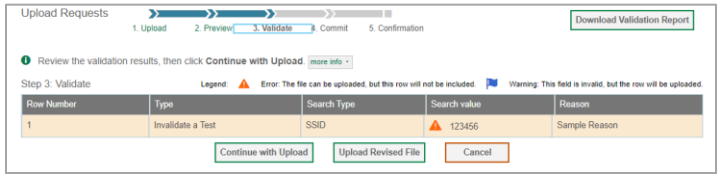
3. Once you've downloaded and filled out the template file, return to the upload screen, select **Browse**, locate the file on your computer, and upload it to TIDE. Select **Next**. The upload preview screen appears.

Figure 72: Upload Appeals Preview Page



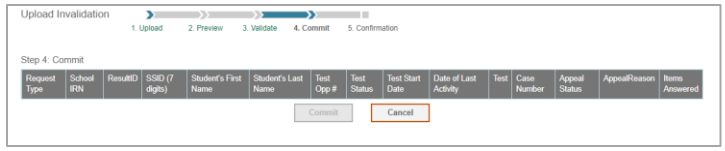
4. Once you've verified the information on the preview screen, select **Next** again. The validation screen appears.

Figure 73: Upload Appeals Validation Page



5. The validation screen shows errors or warnings associated with your uploaded file.

Figure 74: Upload Appeals Committ Page



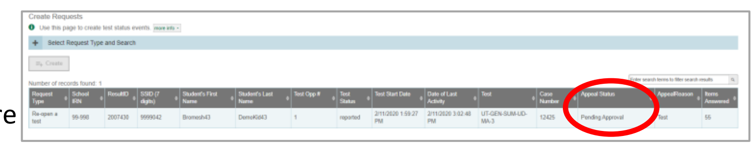
6. To continue with the upload despite these errors or warnings, select **Continue with Upload**. The selected file will be uploaded, but the rows with errors will not be included.

7. The commit page appears, showing how many records will be committed based on your upload file.

8. The confirmation page appears next, confirming how many records have been committed as a result of your upload. To upload a new file, select **Upload New File**.

9. Appeals submitted are sent to your LEA assessment director for approval. Any pending appeal(s) you submitted will be shown when you search for them, with "Pending Approval" listed in the **Approval Status** column (see Figure 75). Once an appeal is approved by your LEA assessment director, it will no longer be shown when you search for it.

Figure 75: Appeals Record List with Appeal Status Shown



How School-level Users Monitor Test Progress

The tasks available in the **Monitoring Test Progress** task menu for school-level users allow you to generate various reports that provide information about a test administration's progress.

The following reports are available for school-level users in TIDE:

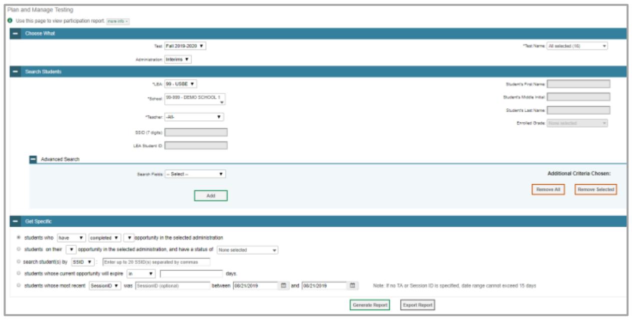
- Plan and Manage Testing Report: Details a student's test opportunities and the status of those test opportunities. You can generate this report from the ***Plan and Manage Testing*** page (see Figure 75) or the ***Participation Report by SSID*** page.
- Test Completion Rates Report: Summarizes the number and percentage of students who have started or completed a test.
- Test Status Code Report: Displays all the participation codes for a test administration.

How school-level users view report of students' current test status

TIDE includes a Plan and Manage Testing report that details all of a student's test opportunities and the status of those test opportunities.

Because the report lists testing opportunities, a student can appear more than once on the report.

Figure 76: Plan and Manage Testing Page



1. From the **Monitoring Test Progress** task menu on the TIDE dashboard, select **Plan and Manage Testing**. The ***Plan and Manage Testing*** page appears (see Figure 76).
2. In the *Choose What* panel, select the parameters for which tests to include in your report:
   a. From the **Test** drop-down list, select a test category.
   b. From the **Administration** drop-down list, select an administration.
   c. *Optional*: From the **Test Name** drop-down list, select the test for which you want to generate the report. You may select one, multiple, or all from this list.
   d. *Optional*: From the **Search Fields** drop-down list, select a specific test accommodation or demographic to filter the report.
      - If you select a test accommodation or demographic, a *Values* field is displayed. Select the required filter criteria from the available options.
3. In the *Search Students* panel, select the parameters for whose information to include in your report:
   a. *Optional*: Choose a teacher from the **Teacher** drop-down list.

About the Teacher Drop-down List

The **Teacher** drop-down list includes all school-level users, such as teachers and the principal associated with the selected school. When you select a person from the **Teacher** drop-down list, TIDE performs a check to see if the person is associated with any roster. If no class groups exist for the selected person, no data is displayed when you generate the report. If the selected person has an associated roster, the plan and manage testing reports shows the test attempts of the students included in the roster.

If you do not select any person from the **Teacher** drop-down list and use the default value of **All** to generate the report, you will see all the tests taken in that school, irrespective of roster associations.

It is important to note that the Test Administrator Name displayed on the Plan and Manage Testing report does not imply the name of the teacher. The TA is the person who conducts the test. This can be the same as the teacher or it can be a different person.

b. *Optional:* In the *Student's Last Name* field, enter a student's last name.

c. *Optional:* In the *Student's First Name* field, enter a student's first name.

d. *Optional:* In the *SSID* field, enter a SSID.

e. *Optional:* From the **Grade** drop-down list, select a grade. You may select one, multiple, or all grades from this list.

4. In the *Get Specific* panel, select the radio button for one of the options and then set the parameters for that option. The following options are available (parameters for each option are listed in {brackets}):

   a. Students who {have/have not} {completed/started} the {1st/2nd/Any} opportunity in the selected administration.

   b. Students on their {1st/2nd/Any} opportunity in the selected administration and have a status of {student test status}.

   c. Search student(s) by {SSID/Name}: {SSID/Student Name}

   d. Students whose current opportunity will expire {in/between} {number/range} days.

   e. If you select "in", you may enter any number in the displayed text box to determine tests expiring in the specified number of days. You may also enter 0 to see opportunities that expire that day.

   f. If you select "between", you may enter two numbers in the displayed text boxes to signify a range of days (such as 1–3).

   g. Students whose most recent {Session ID/TA Name} was {Optional Session ID/TA Name} between {start date} and {end date}.

5. Do one of the following:

   a. To view the report on the page, select Generate Report.

   b. To open the report in Microsoft Excel, select Export Report.

For descriptions of the columns in this report, see Table 17 below.

Table 17: Columns in the Plan and Manage Testing Report

Attribute	Description
Name	Student's legal name (Last Name, First Name).
LEA Name	Name of the LEA associated with the record.
School Name	Name of the school associated with the record.
SSID	Student's Statewide Student Identifier number.
Enrolled Grade	The grade in which a student is enrolled.
Current LEP	Indicates whether the student is an English Language Learner.
Test	Test name for this student record.
Opportunity	The opportunity number for that student's specific record.
TA Name	The test administrator who created the session in which the student is currently testing (or in which the student completed the test).
Session ID	The Session ID to which the test is linked.
Total Time Spent	The time it took a student to complete a test.
Status	The status for that specific opportunity.
Results ID	The unique identifier linked to the student's results for that specific opportunity.
Restarts	The total number of times a student has resumed an opportunity (e.g., if a test has been paused three times and the student has resumed the opportunity after each pause, this column will show three restarts). (This includes Restarts Within Grace Period—see below.)
Restarts Within Grace Period	The total number of times a student has resumed an opportunity within 20 minutes after a test was paused. For example, if a test has been paused three times and the student resumed the opportunity within 20 minutes of two pauses but 25 minutes after the third pause, this column shows two Restarts Within Grace Period). A student has a grace period of 20 minutes to pause the test at a test item and then resume the test at that same item. However, if a test is paused for more than 20 minutes, the test session will expire, and the student will not be able to review any previous answers.
Date Started	The date when the first test item was presented to the student for that opportunity.
Date Completed	The date when the student submitted the test for scoring.
Last Activity	The date of the last activity for that opportunity or record. A completed test can still have activity as it goes through the QA and reporting process.
Expiration Date	The date the test opportunity expires. The following are the set timeframes for each test; if not completed within this timeframe, the tests will expire. Benchmark Modules: 7 days Interims: 14 days Midyear Summatives: 21 days Spring Summatives: 60 days

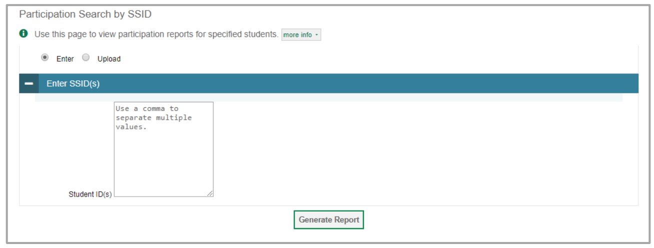
How school-level users view report of students' current test status by student ID

You can also generate participation reports for specific students by SSID. This section describes how to generate participation reports for one or more students using students' SSIDs.

Because the report lists testing opportunities, a student can appear more than once on the report.

1. From the **Monitoring Test Progress** task menu on the TIDE dashboard, select **Participation Search by SSID**. The *Participation Search by SSID* page appears (see Figure 77).

Figure 77: Participation Search by SSID Page



2. Do one of the following:

   - To enter students' SSIDs, select **Enter**. Next, enter one or more SSIDs, separated by commas, in the Student IDs field. You can enter up to 1000 SSIDs.
   - To upload SSIDs, select **Upload**. Next, select **Browse** and then use the file browser to select an Excel or CSV file with Student IDs listed in a single column. You can upload up to 1000 SSIDs.

3. Select **Generate Report**. The Participation Report by SSID appears (see Figure 78).

For descriptions of the columns in this report, see Table X on the previous page.

Figure 78: Plan and Manage Testing Report

Number of students found: 12

Enter search terms to filter search results

Name	LEA Name	School Name	SSID	Enrolled Grade	Current LEP	Test	Language	Opportunity	TA Name	SessionID
testA, demooo	USBE	DEMO SCHOOL 1	1111306	07		Interim: Math Grade 6	ENU	1	DemoUserA, STATE	UAT-E9EC-3
testA, demooo	USBE	DEMO SCHOOL 1	1111471	04		Interim: Math Grade 4	ENU	1	LEA, Demo6	UAT-7E18-3

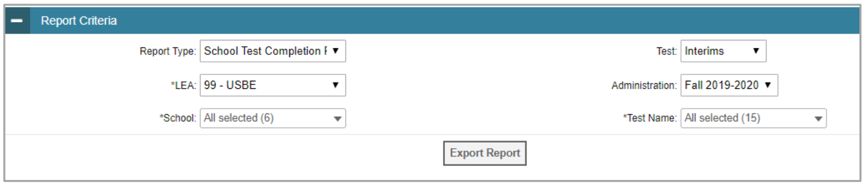
How school-level users view report of test completion rates

The Test Completion Rate report summarizes the number and percentage of students who have started or completed a test.

1. From the **Monitoring Test Progress** task menu on the TIDE dashboard, select **Test Completion Rates**. The ***Test Completion Rates*** page appears.

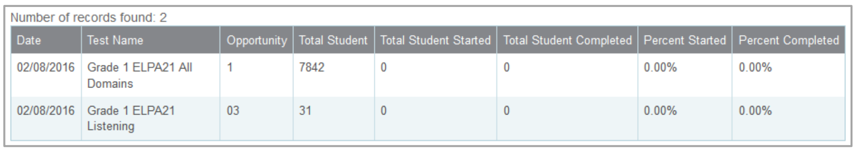
2. In the *Report Criteria* panel (see Figure 79), select the parameters for which tests to include in your report.

Figure 79: Test Completion Rates Search Fields



3. To open the report in Microsoft Excel, select **Export Report**. Figure 80 displays a sample Test Completion Rate report.

Figure 80: Test Completion Rate Report



Number of records found: 2

Date	Test Name	Opportunity	Total Student	Total Student Started	Total Student Completed	Percent Started	Percent Completed
02/08/2016	Grade 1 ELPA21 All Domains	1	7842	0	0	0.00%	0.00%
02/08/2016	Grade 1 ELPA21 Listening	03	31	0	0	0.00%	0.00%

For a description of the columns in this report, see Table 18 below.

Table 18: Columns in the Test Completion Rates Report

Column	Description
Date	Date and time that the file was generated.
Test	Test that is being reported.
Administration	Administration that is being reported.
Test Name	Grade, test, and subject that are being reported.
Opportunity	Test opportunity number that is being reported.
Total Student	Number of students with an active relationship to the school in TIDE.
Total Student Started	Number of students who have started the test.
Total Student Completed	Number of students who have finished the test and submitted it for scoring.
Percent Started	Percentage of students who have started the test out of the total number of students with an active relation to the school in TIDE.
Percent Completed	Percentage of students who have completed the test out of the total number of students with an active relation to the school in TIDE.
LEA Name	The name of the reported LEA.
LEA ID	The ID of the reported LEA.
School Name	The name of the reported school. This column is only included in the school-level report.
School ID	The ID of the reported school. This column is only included in the school-level report.

Overview of Participation Codes

This section addresses the management of participation codes for accountability purposes.

Motivation for Participation Codes

There are circumstances in which a student did not participate in an expected assessment or participated in an assessment but in a non-standard way. In such instances, participation codes control and document how the test record is handled for reporting aggregates and accountability calculations.

Participation codes are not intended to explain data errors present in UTREx. As per R277-404, Local Education Agencies (LEAs) are responsible for updating local student information systems (SISs) so that UTREx data are accurate.

Once any participation code is marked in TIDE, that participation code persists until it is changed.

When participation codes are used, only one code can be selected. Participation codes are classified as "non-participation" or "participation." (A student is considered to have attempted a test after answering 6 questions or after responding with any non-blank character to a writing prompt.) For a listing of participation codes, see Table X on the following page.

Policy: Participation codes are audited for appropriate use. ALL student data will be used for scoring, reporting, and accountability.

Management of Participation Codes

Using TIDE, you can view participation codes for students enrolled in your school. You can add, modify, or delete participation codes only in TIDE.

Test eligibility is controlled by the course code provided via the nightly UTREx upload. Once an enrolled student has been assigned a RISE assessed course for at least 10 days, the student will either be required to take the RISE test by the end of the testing window or must be assigned a participation code.

A student's participation on a test is defined as a student answering 6 or more questions or entering any non-blank character into one writing prompt.

Users can use TIDE's **View/Edit Participation Codes** tab to add, delete, or modify participation codes for eligible tests. In addition, if a participation code had been assigned prior to eligibility being removed, you can still view and modify the code in TIDE as long as the student is enrolled in the school by using this tab.

If you assign a non-participation code prior to testing, TIDE removes the student's eligibility and the student will not be able to start that specific test. In order for a student to take the test, you must remove the participation code in TIDE.

The participation and Test Status Code Reports only display eligible tests. However, if a student had started a test that was later invalidated, that test will be included in the generated reports.

Working with Participation Codes in TIDE

This section describes how to view, modify, and delete participation codes in TIDE.

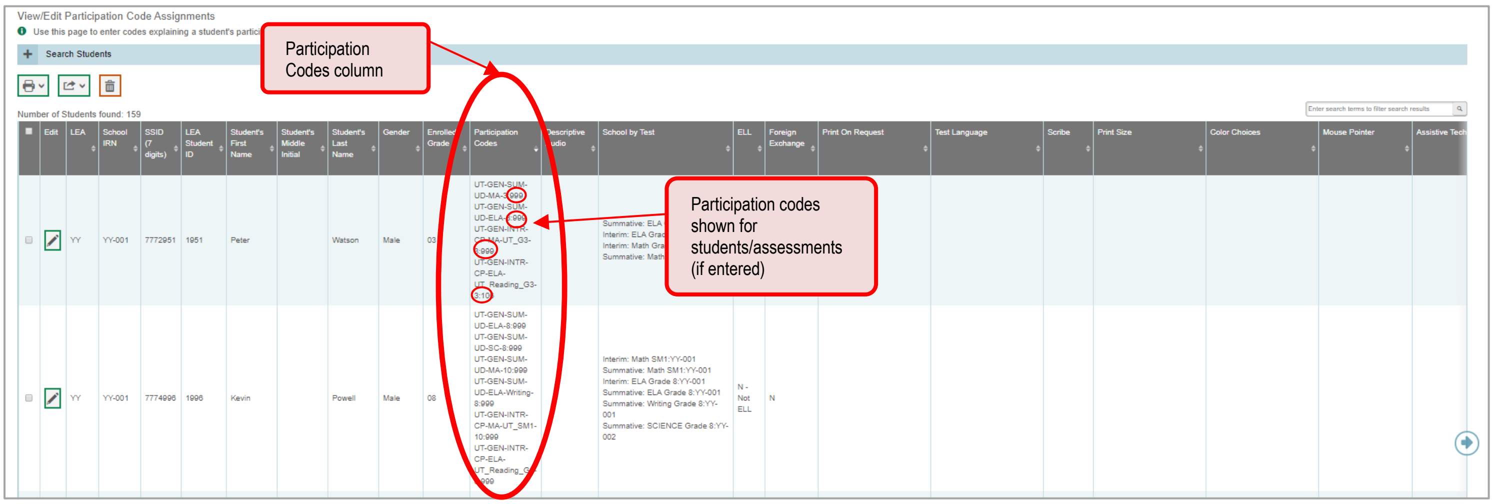
Viewing a Student's Participation Codes

When you search for student records in TIDE, the search results table displays any assigned participation codes. This can be done from the ***View/Edit/Export Students*** tab or the ***View/Edit Participation Codes*** tab.

To view the participation code in TIDE:

1. Click either the ***View/Edit/Export Students*** tab or the ***View/Edit Participation Codes*** tab.
2. Search for students using the available filters. (You can use the **Advanced Search** function to search only for students with participation codes.)
3. Click **Search.** The search results table displays those students who match the search query. The Participation Codes column lists any assigned participation codes (see Figure 81 below).

Figure 81: Participation Codes in TIDE



- Note: The code 999 (shown in Figure 81 above) indicates that a participation code had been assigned and was then removed. This is different from a blank participation code, which means that a partcipation code had never been assigned for that student's test.

If a participation code needs to be changed for a student, do one of the following:

- If the student is still eligible for the test, use the ***View/Edit Participation Codes*** tab in TIDE and follow the procedure in the **Updating a Student's Participation Code** section below.
- If the student is no longer eligible for the test and had attempted the test, use the ***View/Edit Participation Codes*** tab in TIDE and follow the procedure in the **Updating a Student's Participation Code** section on the following page.
- If the student is no longer eligible for the test and had not attempted the test, use the ***View/Edit Participation Codes*** tab in TIDE and follow the procedure in the **Updating a Student's Participation Code** section on the following page.
- If the student is no longer enrolled in the LEA, your LEA will need to use the Discrepancy Resolution tab in TIDE to clean up the data (i.e., to add the appropriate participation code).

If a participation code needs to be added for a student, do one of the following:

- If the student is still eligible for the test, use the ***View/Edit Participation Codes*** tab in TIDE and follow the procedure in the **Updating a Student's Participation Code** section on the following page.
- If the student is no longer eligible for the test and had attempted the test, your LEA assessment director will need to use the Discrepancy Resolution tab in TIDE to clean up the data (i.e., to add the appropriate participation code).
- If the student is no longer eligible for the test and had not attempted the test, your LEA assessment director will need to use the Discrepancy Resolution tab in TIDE to clean up the data.
- If the student is no longer enrolled in the LEA, your LEA assessment director will need to use the Discrepancy Resolution tab in TIDE to clean up the data (i.e., to add the appropriate participation code).

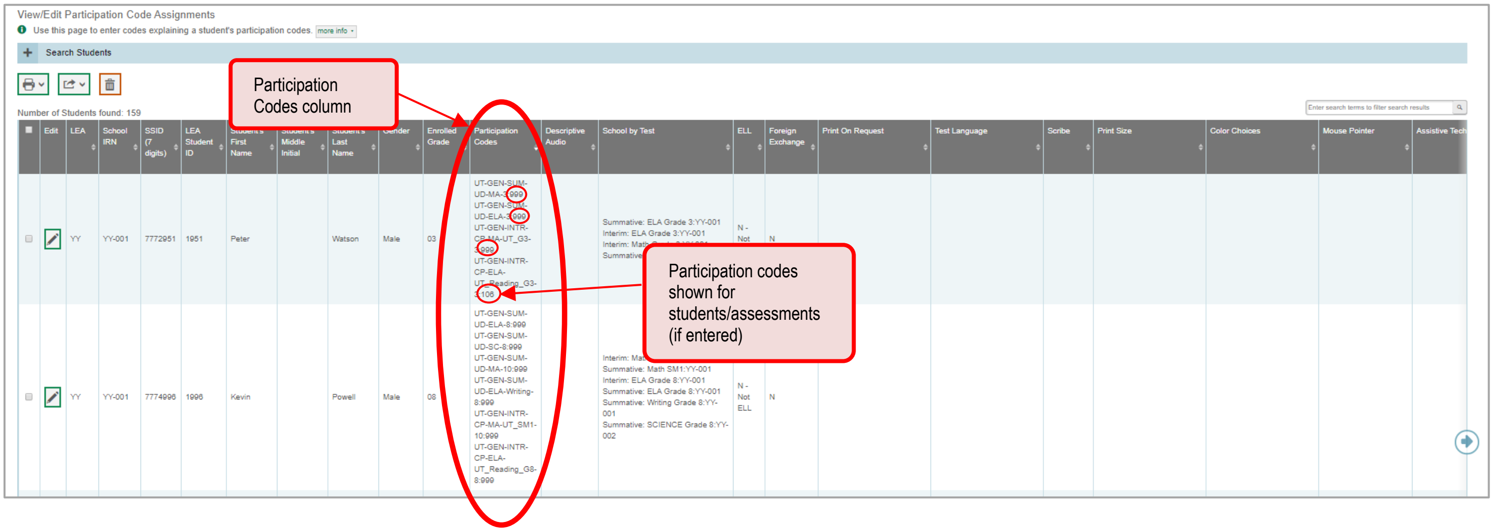
Updating a Student's Participation Codes

You can add or modify a student's participation codes as long as the student is enrolled in your school.

To update a student's participation codes:

1. Log in to TIDE, and click the ***View/Edit Participation Codes*** tab.
2. Search for students using the available filters. (You can use the **Advanced Search** function to search only for students with participation codes.
3. Click **Search**. The search results table displays those students who match the search query. The Participation Codes column lists any assigned participation codes (see Figure 82 on the following page).

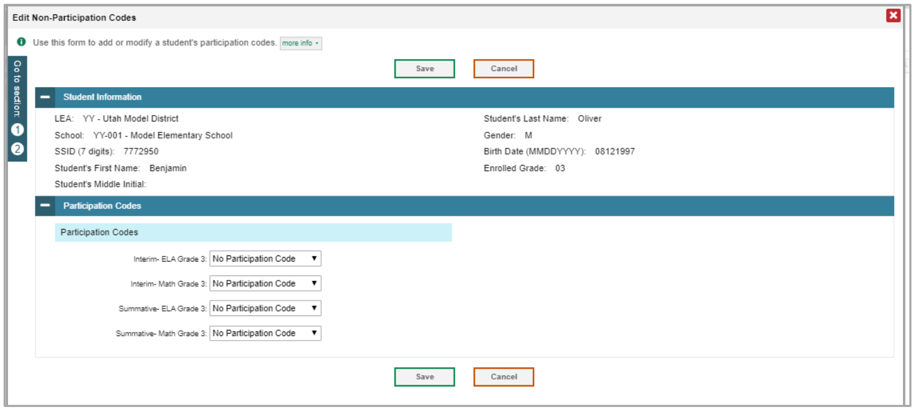
Figure 82: Participation Codes in TIDE



4. In the list of retrieved students, select [edit icon] for the student whose participation code you want to update.

5. The **Edit Non-Participation Code** page appears. In the ***Participation Codes*** section of the page, use the drop-down menus available for each test the student is eligible for to update the participation code(s) as needed (see Figure 83).

Figure 83: Participation Codes in the Test Information Distribution Engine



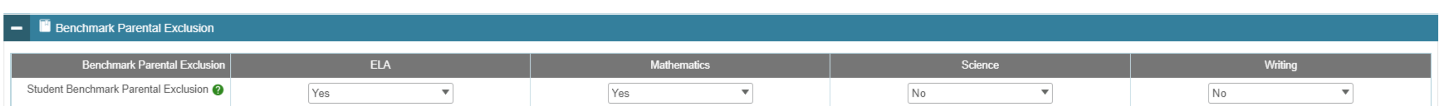
6. Click **Save** when complete.

Table 19 on the following page lists the participation codes and their descriptions.

Table 19: Participation Codes and Their Descriptions

Participation Code	State	Federal	Description
101: Did Not Test	Countable for Participation only	Countable for Participation only	Student was enrolled at the school and eligible to test (with or without reasonable accommodations) but did not test.
103: EL First Year in U.S. April 15 or Later	Not Countable	Not Countable	The student is an English learner (EL) and first enrolled in the U.S. on or after April 15 of current school year. Student is not required to test, but testing is made available.
104: EL First Year in U.S. Before April 15	Counted for Participation only	Counted for Participation only	The student is EL and first enrolled in the U.S. before April 15 of current school year. Student must take ELA, Math, and Science.
205: EL in Second Year of Enrollment	Counted in Participation and Growth	Counted in Participation and Growth	Student is EL and first enrolled in the U.S. during the 2019-2020 school year. Student must take ELA, Math, and Science.
106: Student Refused to Test	Countable	Countable	Student refuses to start the assessment or refuses to complete at least six items of the assessment.
107: Excused for Health Emergency	Not Countable	Not Countable	Student is unable to test during the testing window due to an unanticipated health circumstance.
108: Course Instruction Not Complete	Not Countable	Not Countable	Student will not complete the relevant course instruction during the current academic year. Not available for Utah Aspire Plus.
109: Course Not Provided	Not Countable	Not Countable	Student did not take a course associated with the assessment (E.g. Student is assigned a test for a course they did not take at any time during the current school year).
110: Test Has Already Been Taken	Not Countable	Not Countable	Student has already taken the same assessment during a previous administration year.
111: USBE Excused – Approval Needed	Not Countable	Not Countable	Requires USBE authorization. Used in rare circumstances to capture irregular test circumstances.
112: Student Transferred Before Testing Window	Not Countable	Not Countable	Student transferred out of school before the LEA had a reasonable opportunity to administer the assessment.
200: Standard Participation	Countable	Countable	Student took the assessment under normal circumstances.
201: Accommodated	Countable	Countable	Student took the assessment with allowed accommodation(s).
202: Modified	Counted for Participation only	Counted for Participation Only	Student took the assessment with non-allowed modifications which interfere with the validity/reliability of the test.
203: Invalidated	Not Countable	Not Countable	LEA determines that the test was spoiled or invalid (E.g. Student cheated; test administrator broke protocol).
204: Parental Exclusion*	Not Countable	Countable	A parent or guardian has requested in writing that the student be exempt from the assessment.
208: Test System Irregularity	Not Countable	Not Countable	The test event was interrupted by a system error without reasonable opportunity to reset or re-open the test. USBE Approval required.
209: Incorrect Course Code Assigned	Countable	Countable	An incorrect course code or grade was assigned, triggering an incorrect test. LEA correction of the course code is required.

*If the parental exclusion includes benchmark modules, set the Benchmark Parental Exclusion fields in TIDE found on the View/Edit Student page. It is set by subject.



How school-level users view report of test status codes

The Test Status Code report displays all the non-participation codes for a test administration.

1. From the **Monitoring Test Progress** task menu on the TIDE dashboard, select **Test Status Code Report**. The ***Test Status Code Report*** page appears.
2. In the *Report Criteria* panel (see Figure 84), select search criteria for the test and administration.
3. Do one of the following:
   - To open the report in Microsoft Excel, select **Export Report**.
   - To view the report on the page, select **Generate Report**. Note: due to the size of this report, it is recommended that users Export instead of Generate.

TIDE displays the tests and associated statuses and participation codes (see Figure 85).

Figure 84: Test Status Code Report Search Results

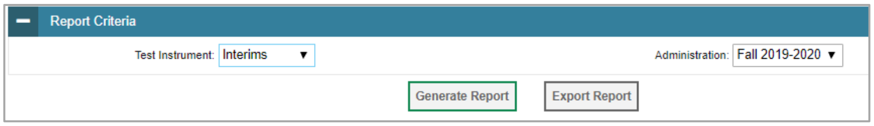
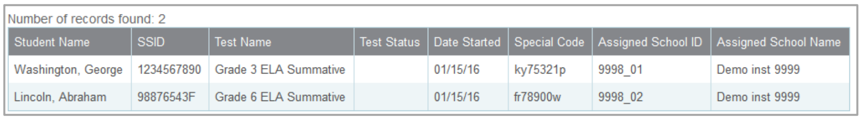


Figure 85: Test Status Code Report



Number of records found: 2

Student Name	SSID	Test Name	Test Status	Date Started	Special Code	Assigned School ID	Assigned School Name
Washington, George	1234567890	Grade 3 ELA Summative		01/15/16	ky75321p	9998_01	Demo inst 9999
Lincoln, Abraham	98876543F	Grade 6 ELA Summative		01/15/16	fr78900w	9998_02	Demo inst 9999

For a description of the columns in this report, see Table 20 below.

Table 20: Columns in the Test Status Code Report

Column	Description
Name	Student's name.
SSID	Student's Statewide Student Identifier number.
TestName	Test in which student did not participate.
TestStatus	Test's most recent status.
Date Started	Date student started the test.
Participation Code	Code indicating why student did not start or complete the test.
Assigned School ID	ID of school where student is enrolled.
Assigned School Name	Name of school where student is enrolled.
Opportunity	Test opportunity number.
Result ID	Unique ID for the item result.
Session ID	Unique ID for the test session.
Test Expiration Date	Date the test expired.

For a description of each status that a test opportunity can have, see Table 21 on the following page.

Table 21: Test Opportunity Status Descriptions

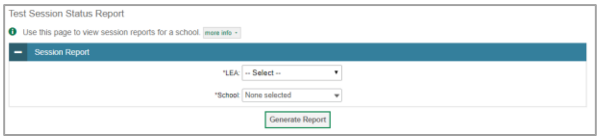
Status	Definitions
Approved	The TA has approved the student for the session, but the student has not yet started or resumed the test.
Completed	The student has submitted the test for scoring. No additional action can be taken by the student.
Denied	The TA denied the student entry into the session. If the student attempts to enter the session again, this status will change to “Pending” until the TA approves or denies the student.
Expired	The student’s test has not been completed and cannot be resumed because the test has expired.
Invalidated	The test result has been invalidated.
Paused	The student’s test is currently paused (as a result of one of the following): • The student paused his or her test by selecting the **Pause** button. • The student idled for too long (more than 20 minutes) and the test was automatically paused. • The test administrator stopped the session the student was testing in. • The test administrator paused the individual student’s test. The student’s browser or computer shut down or crashed.
Pending	The student is awaiting TA approval for a new test opportunity.
Reported	The student’s score for the completed test in TDS has passed the quality assurance review and has been submitted to the ORS. Some items must be hand scored before they appear in ORS.
Review	The student has answered all test items and is currently reviewing his or her answers before submitting the test. (A test with a “review” status is not considered complete.)
Scored	The test will display a scored status, followed by the student’s score.
Started	The student has started the test and is actively testing.
Submitted	The test has been submitted for quality assurance review and scoring before it is sent to the ORS. Note: All tests go through an internal scoring process during quality assurance review.
Suspended	The student is awaiting TA approval to resume a testing.

How school-level users view test session status reports

School-level users can view school-level test session status reports for their school. These reports show each active and inactive session ID for a school, along with information like proctor name, test name, the start time of the test session, the total number of students taking the test, and the number of students who have started, paused, and completed the test.

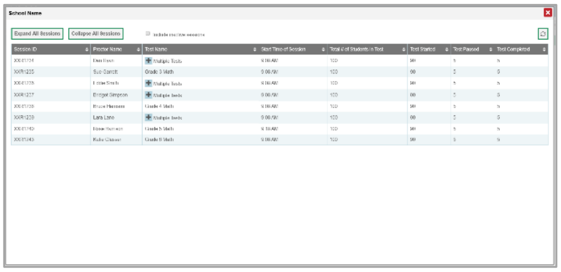
1. From the **Monitoring Test Progress** task menu on the TIDE dashboard, select **Test Session Status Report**. The ***Test Session Status Report*** page appears.

Figure 86: Test Session Status Report Page



2. Select **Generate Report**.
3. A detailed report will appear after you complete step 2. For a description of the columns in this report, see Table 22 below.

Figure 87: Detailed Session Report

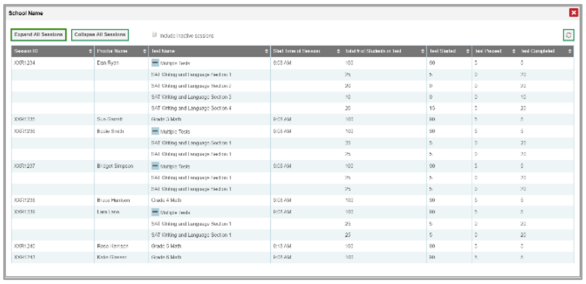


4. *Optional:* Select  to expand all sessions containing multiple tests.

5. *Optional:* Select  to collapse all expanded sessions.

6. *Optional:* To view inactive test sessions, mark the Inactive Test Sessions checkbox. Inactive test sessions will appear in italics.

Figure 88: School Report Page with All Sessions Expanded



7. *Optional:* Select  to refresh the list of available sessions. Data is refreshed in near real-time.

Table 22: Columns in the Detailed Session Report Page

Column	Description
Session ID	The Session ID to which the test is linked.
Proctor Name	Name of the proctor associated with the Session ID.
Test Name	Name of the test associated with the Session ID. Multiple tests may be associated with one Session ID.
Start Time of Session	Start time of the session.
Total # of Students in Test	Total number of students testing in each school.
Test Started	Number of students who have started their test.
Test Paused	Number of students who have paused their test.
Test Completed	Number of students who have completed their test.

Recommended process for managing summative participation during testing

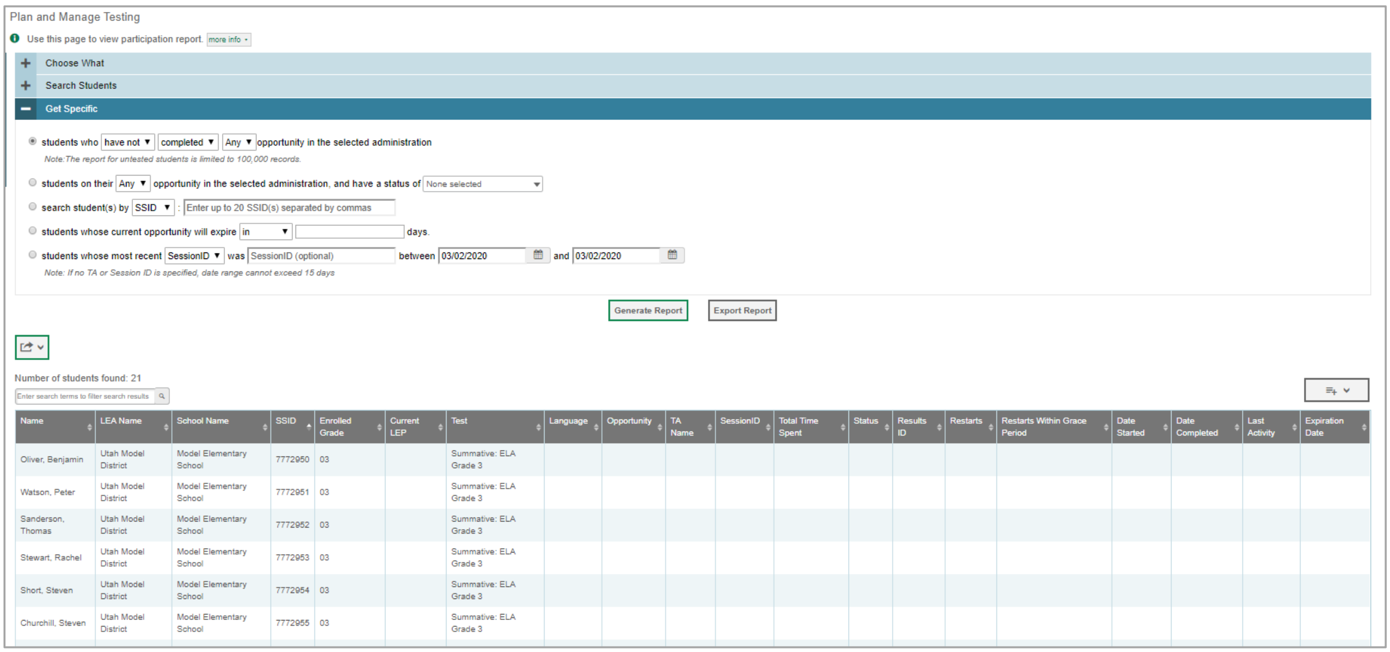
As users progress through their testing window, they can use the features of TIDE described in previous sections to monitor participation in order to ensure that all students eligible to test are either participating or have a participation code entered before the end of your school year. In particular, users can use the following features found in the **Monitoring Test Progress** task menu on the TIDE dashboard.

8. Plan and Manage Testing

   a. This report allows users to view, at any time, a list of students who have not started their tests or have not completed their tests.

      - The data in this report are generated in real-time.

Figure 89: Plan and Manage Testing Results Page



      - For the steps to take to generate this report, see the "How school-level users view report of students' current test status" section on page 62 of this guide.

*Please note: To return to the page in this manual that you were on before clicking one of these links, use one of the following keyboard shortcuts: **Alt** + **Left Arrow** (for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or **Command** + **Left Arrow** (for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

9. Test Completion Rate Report

   a. This report shows the number of students eligible (Total Student), number of students started (Total Student Started), number of students completed (Total Student Completed), and percentages.

      - The data in this report are generated by the system each night; the data is not generated in real-time.

   b. It's recommended for users to view this report by school as they start their Summative test window.

      - The report provides a quick way to monitor progress in a user's school.

Figure 90: Test Completion Rate Report

Date	Test	Administration	Test Name	District Name	LEA ID	LEA NAME	Opportunity	Total Student	Total Student Started	Total Student Completed	Percent Started	Percent Completed
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: ELA Grade 3		YY	Utah Model District	1	21	0	0	0.00%	0.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: ELA Grade 4		YY	Utah Model District	1	20	1	0	5.00%	0.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: ELA Grade 5		YY	Utah Model District	1	20	8	8	40.00%	40.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: ELA Grade 6		YY	Utah Model District	1	20	0	0	0.00%	0.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: ELA Grade 7		YY	Utah Model District	1	15	0	0	0.00%	0.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: ELA Grade 8		YY	Utah Model District	1	14	5	5	35.71%	35.71%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: Math Grade 3		YY	Utah Model District	1	21	0	0	0.00%	0.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: Math Grade 4		YY	Utah Model District	1	20	10	10	50.00%	50.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: Math Grade 5		YY	Utah Model District	1	20	0	0	0.00%	0.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: Math Grade 6		YY	Utah Model District	1	20	0	0	0.00%	0.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: Math Grade 7		YY	Utah Model District	1	15	0	0	0.00%	0.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: Math Grade 8		YY	Utah Model District	1	8	6	5	75.00%	62.50%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: Math SM1		YY	Utah Model District	1	6	0	0	0.00%	0.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: SCIENCE Grade 4		YY	Utah Model District	1	20	0	0	0.00%	0.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: SCIENCE Grade 5		YY	Utah Model District	1	20	0	0	0.00%	0.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: SCIENCE Grade 6		YY	Utah Model District	1	20	1	1	5.00%	5.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: SCIENCE Grade 7		YY	Utah Model District	1	15	8	8	53.33%	53.33%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: SCIENCE Grade 8		YY	Utah Model District	1	14	0	0	0.00%	0.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: Writing Grade 5		YY	Utah Model District	1	20	5	5	25.00%	25.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: Writing Grade 8		YY	Utah Model District	1	14	5	5	35.71%	35.71%

      - For the steps to take to generate this report, see the "How school-level users view report of test completion rates" section on page 66 of this guide.

Please note: To return to the page in this manual that you were on before clicking one of these links, use one of the following keyboard shortcuts: ***Alt*** *+* ***Left Arrow*** *(for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or* ***Command*** *+* ***Left Arrow*** *(for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

10. Test Status Code Report

    a. This is the one report that includes both test status and participation code with a record for every student and every test for which they're eligible.

    - Note: due to the size of this report, it is recommended that users Export instead of Generate. Generating the report can increase the amount of time it takes to load.

    b. Once a user has downloaded the report, they can turn on filters when viewing it in Excel to control the view:

    - In Column D (Test Status),
        a. Tests that are listed as completed can be filtered out.
        b. For tests that are listed as paused, users should make sure the student responded to at least six items or entered one non-blank character if it is a writing test to ensure they count as participated.
    - In Column F (Participation Code),
        a. Tests with participation codes already assigned can be filtered out.
    - Once these filters have been applied, users can see the students who need to finish or start their Summative test.

    c. It's recommended that SAs begin to review this report regularly two weeks before their test window closes.

    d. SAs should use the Test Status Code Report for current students; for students who have moved, your LEA assessment director should use the Discrepancy Resolution tab in TIDE to clean up the data (i.e., to add the appropriate participation code).

Figure 91: Test Code Status Report

Name	SSID	TestName	TestStatus	Date Started	Participation Code	Assigned School ID	Assigned School Name	Opportunity
Test, Test	9810212	Summative: ELA Grade 3			Student Transferred Before Testing Window	99-995	DEMO SCHOOL 4	0
Last25, Test25	9980025	Summative: ELA Grade 3			Student Refuses to Test	99-998	DEMO SCHOOL 2	0
Last70, Test70	9980070	Summative: ELA Grade 3			Excused - Medical Emergency	99-999	DEMO SCHOOL 1	0
Last100, Test100	9980100	Summative: ELA Grade 3			Student Transferred Before Testing Window	99-998,99-995	DEMO SCHOOL 2,DEMO SCHOOL 4	0
DemoKid37, Bromesh37	9999036	Summative: ELA Grade 3			Student Refuses to Test	99-995	DEMO SCHOOL 4	0
DemoKid109, Bromesh109	9999108	Summative: ELA Grade 3			Absent - Did not take test	99-995	DEMO SCHOOL 4	0
DemoKid144, Bromesh144	9999143	Summative: SCIENCE Grade 8			Excused - Medical Emergency	99-999	DEMO SCHOOL 1	0
DemoKid962, Bromesh962	9999961	Summative: Math Grade 4			Student Transferred Before Testing Window	99-996	DEMO SCHOOL 3	0
DemoKid970, Bromesh970	9999969	Summative: SCIENCE Grade 6			Excused - Medical Emergency	99-996	DEMO SCHOOL 3	0
DemoKid978, Bromesh978	9999977	Summative: Writing Grade 8			Test Has Already Been Taken	99-996	DEMO SCHOOL 3	0

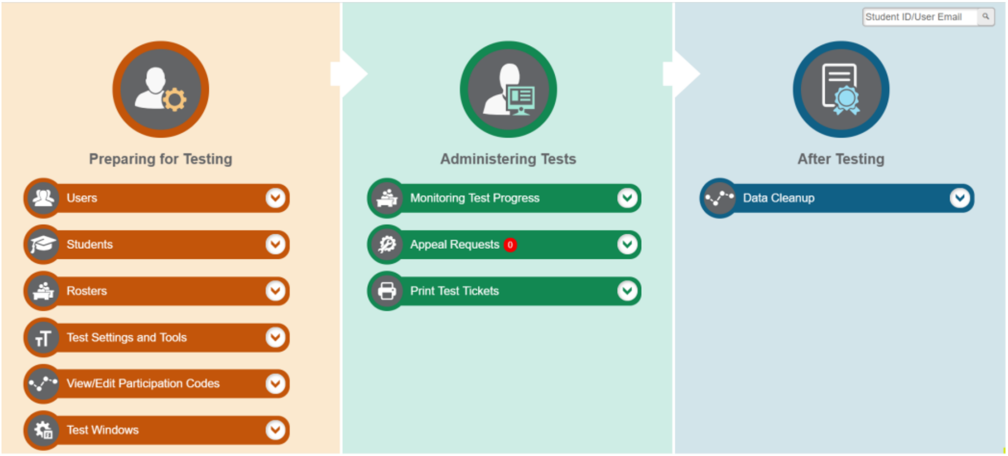
- For the steps to take to generate this report, see the "How school-level users view report of test status codes" section on page 72 of this guide.

*Please note: To return to the page in this manual that you were on before clicking one of these links, use one of the following keyboard shortcuts: **Alt** + **Left Arrow** (for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or **Command** + **Left Arrow** (for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

How LEA-level Users Perform Tasks in TIDE

The TIDE dashboard for LEA-level users has three sections (see Figure 92). These sections give tasks for LEA-level users to do **Before Testing**, **During Testing** and **After Testing**.

Figure 92: LEA-Level User TIDE Dashboard



LEA-level users can perform all of the tasks available in TIDE. Some of these tasks must be performed before testing begins; some must be performed during testing; and some must be performed after testing.

How LEA-level Users Perform Tasks in TIDE Before Testing Begins

Before testing begins, LEA-level users must perform the following tasks in TIDE:

- Set up **user accounts** for school-level users so they can log in to TIDE and other CAI systems. If user accounts are not set up before testing begins, those users will not be able to access any CAI systems.
- Review **student accounts**, uploaded nightly from UTREx, so students can take the correct tests with the correct test settings at the correct time. If student accounts are not set up in TIDE before testing begins, those students will not be able to test.
- Review system-generated **rosters** so the Reporting System can display scores at the classroom, school, LEA, and state levels.
- If desired, set up customized **test windows** so the correct tests are available when you need them. This is highly recommended.

How LEA-level Users Set Up User Accounts in TIDE

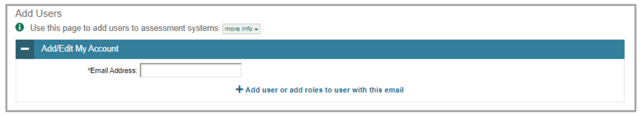
LEA-level users must set up user accounts for school-level users to sign in to TIDE and other CAI systems. If these users don't have accounts set up in TIDE, they will not be able to access any CAI systems.

How LEA-level users add new user accounts one at a time

You can add users to TIDE one at time by following the steps below:

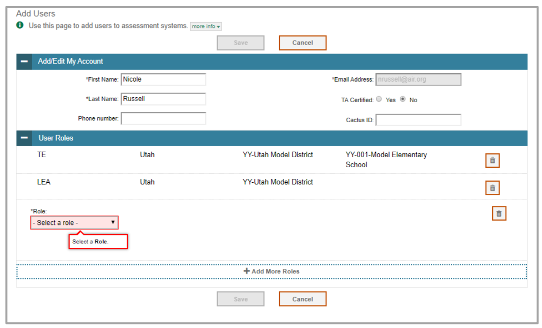
1. From the **Users** task menu, select **Add Users**. The ***Add Users*** page appears.

Figure 93: Add User



2. In the *Email Address* field, enter the new user's email address and select **+Add user or add roles to use with this email**. Additional fields appear.
3. Enter the new user's first and last names in the required fields and other details in the optional fields.

Figure 94: Add User – Additional Fields



4. From the **Role** drop-down, select a role. From the drop-down menus that appear, select an LEA, and school, if applicable.
5. *Optional:* To add multiple roles, select **+Add More Roles** and repeat step 4.
6. *Optional:* To delete a role, select  next to that role.
7. Select **Save**. In the affirmation dialog box, select **Continue** to return to the ***Add Users*** page. TIDE adds the account and sends the new user an activation email from DoNotReply@cambiumast.com.

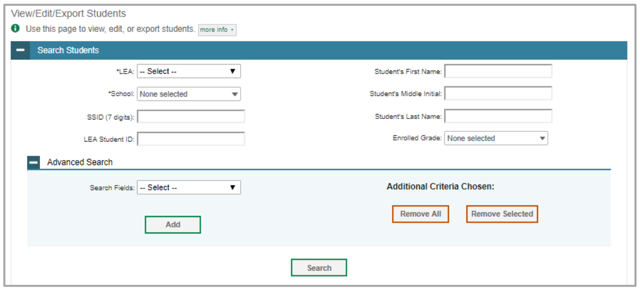
How LEA-level users modify existing user accounts one a time

You can view and modify existing user accounts one at a time or multiple existing user accounts all at once through file export. If a user's information changes after you've added the user to TIDE, you must edit the user account to match the most up-to-date information. If the user's account does not include the most up-to-date information, the user may not be able to access other CAI systems or features within those systems. You can also delete users from TIDE.

1. From the **Users** task menu, select **View/Edit/Export Users**. The ***View/Edit/Export Users*** page appears.

2. Retrieve the individual user account you want to view, edit, export, or delete. Begin by searching for the record you want to modify. Start at the dashboard that appears when you first log in to TIDE, select the task for which you want to search for records, and select **View/Edit/Export**. Fill out the form that appears and select **Search**.

Figure 95: View/Edit/Export Students



3. In the list of retrieved user accounts, select for the user whose account you want to view or edit.

4. Modify the user's details as required, using Table 23 below.

Table 23: Fields in the View/Edit Users [User's Name] Page

Field	Description
First Name	User's first name.
Last Name	User's last name.
Phone Number	User's phone number.
Email Address*	Email address for logging in to TIDE.
Cactus ID	User's cactus ID.
User Roles*	User role(s). For an explanation of user roles, see User Role Permissions.
LEA*	LEA associated with the user.
School*	School associated with the user.

*Required field.

5. *Optional:* To add more roles for this user, select **+Add More Roles** and then follow the steps as described in the section on adding individual users.

6. *Optional:* To delete a role, select next to that role. You can also delete the user's entire account from the search results table.

7. Select **Save**.

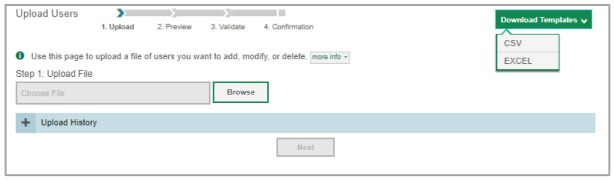
8. In the affirmation dialog box, select **Continue** to return to the list of user accounts.

How LEA-level users add or modify multiple user accounts all at once

You can also add or modify multiple user accounts all at once through file upload by following the steps below:

1. From the **Users** task menu, select **Upload Users**. The ***Upload Users*** page appears where you can download a template file (see Figure 96).

Figure 96: Upload Users Page



2. To fill out the template, use the information in Table 24 below.

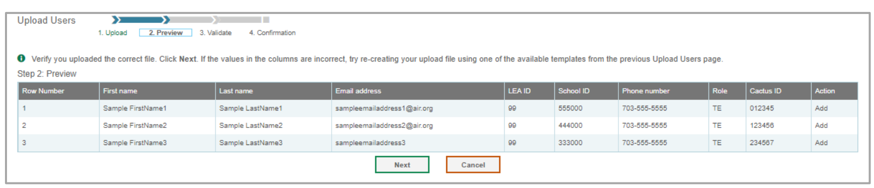
Table 24: Columns in the User Upload File

Column	Description	Valid Values
First Name*	User's first name.	Up to 35 characters.
Last Name*	User's last name.	Up to 35 characters.
Email Address*	User's email address.	Any standard email address. Up to 128 characters that are valid for an email address. This is the user's username for logging in to TIDE.
LEA Number*	User's LEA number.	
School Number*	User's School Number.	
Phone Number	User's phone number.	Phone number in xxx-xxx-xxxx format. Extensions allowed.
Role*	User's role. For an explanation of user roles, see User Role Permissions.	One of the following: `LEA`—LEA administrator. `LRV`—LEA Report Viewer. `SA`—School administrator. `SRV`—School Report Viewer. `TE`—Test administrator. `PR`—Proctor. Must be lower in the hierarchy than the user uploading the file.
Cactus ID	User's CACTUS ID.	
Action*	Indicates if this is an add, modify, or delete transaction.	One of the following: `Add`—Add new user or edit existing user record. `Delete`—Remove existing user record.

*Required field.

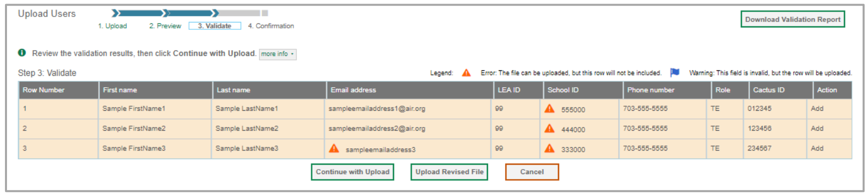
3. Once you've downloaded and filled out the template file, return to the upload screen, select **Browse**, locate the file on your computer, and upload it to TIDE. Select **Next**. The upload preview screen appears.

Figure 97: Upload Users Preview Page



4. Once you've verified the information on the preview screen, select **Next** again. The validation screen appears.

Figure 98: Upload Users Validation Page



5. The validation screen shows errors or warnings associated with your uploaded file. To revise the file before uploading, select **Upload Revised File**.

6. To continue with the upload despite these errors or warnings, select **Continue with Upload**. The selected file will be uploaded, but the rows with errors will not be included.

7. The confirmation page appears, confirming how many records have been committed as a result of your upload. To upload a new file, select **Upload New File**.

Figure 99: Upload Users Confirmation Page

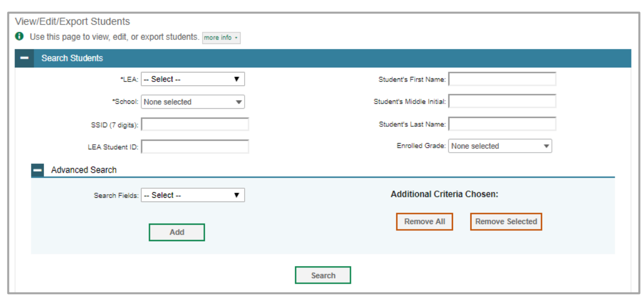
How LEA-level Users Set Up Student Accounts in TIDE

How LEA-level users modify existing student accounts one at a time

You can view and edit detailed information about a student's record. You can also view a student's test participation report, if available. Note: student information provided via UTREx upload cannot be modified.

a. From the **Students** task menu on the TIDE dashboard, select **View/Edit/Export Students**. The ***View/Edit/Export Students*** page appears. Fill out the given fields and hit ***Search***.

Figure 100: View/Edit/Export Students



b. In the list of retrieved students (see Figure 100), select for the student whose account you want to view. The ***View/Edit Students: [Student's Name]*** form appears (see Figure 101 below).

c. Modify the student's record as required.

- In the student information panel, modify the student's record, using Table 25 on the following page.

Figure 101: View/Edit/Export Students

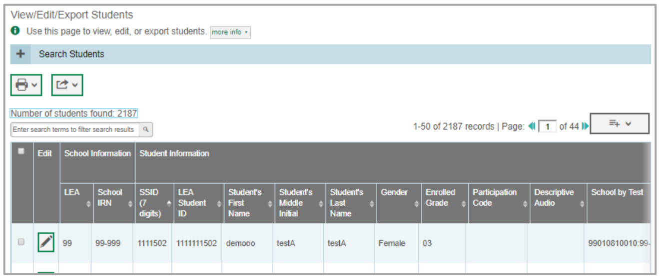


Figure 102: View/Edit Student Page

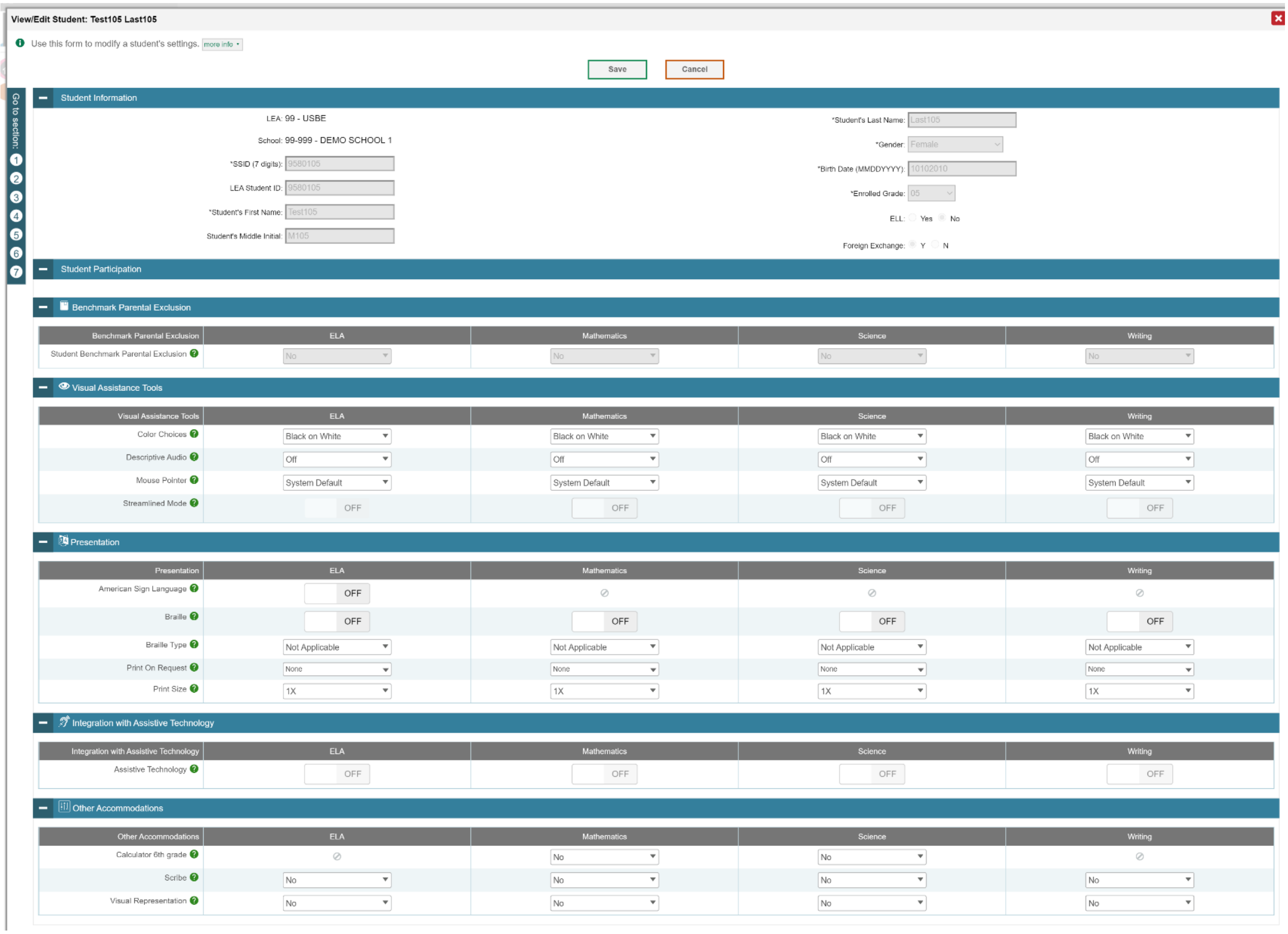


Table 25: Fields in the Student Information Panel

Field	Description
LEA	LEA number and name.
School IRN	School number.
SSID (7 digits)	Student's Statewide Student Identifier (SSID) within the enrolled LEA.
LEA Student ID	LEA ID number.
Student's First Name	Student's first name.
Student's Middle Initial	Initial of student's middle name.
Student's Last Name	Student's last name.
Gender	Student's gender.
Birth Date	Student's date of birth.
Enrolled Grade	Grade in which student is enrolled during the test administration.
Participation Codes	
Descriptive Audio	
School by Test	
ELL	Student's English Language Proficiency level.
Foreign Exchange	Student's foreign exchange status.

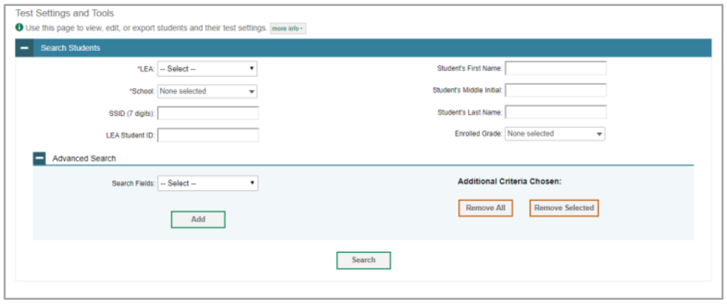
Note: all fields provided by USBE and cannot be modified.

How LEA-level users specify student accommodations and test tools

A student's test settings and tools include the available accommodations, such as Descriptive Audio, along with test tools, such as color schemes. This section explains how to edit student test settings and tools via an online form or a file upload. For additional information about Test Settings and Tools, please refer to the *Assistive Technology Manual*.

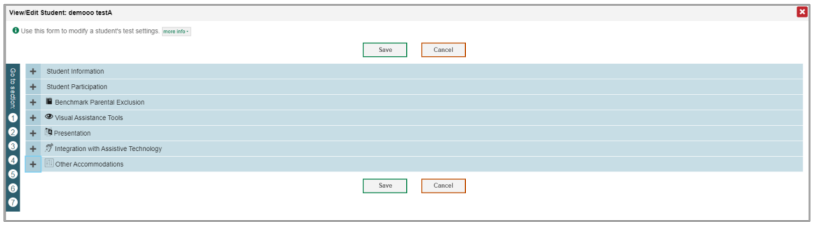
1. From the **Test Settings and Tools** task menu on the TIDE dashboard, select **View/Edit/Export Test Settings and Tools**. The ***View/Edit/Export Test Settings and Tools*** page appears.

Figure 103: Test Settings and Tools Page



2. Retrieve the student accounts whose settings and tools you want by filling out the search fields and selecting **Search**.

Figure 104: View/Edit Student Page



3. In the list of retrieved students, select for the student whose test settings and tools you want to edit. The ***View/Edit Students: [Student's Name]*** form appears (see Figure 103). Click to expand each section (see Figure 104 on the following page).

   a. Modify the student's record as required.

      - In the available test settings and tools panels, modify the student's test settings, using Table 26 on page 87. The test settings are grouped into categories, such as visual assistance tools, presentation, and other accommodations. The panels display a column for each of the student's test subjects. You can select different settings for each test subject, if necessary.

Figure 105: View/Edit Student Page

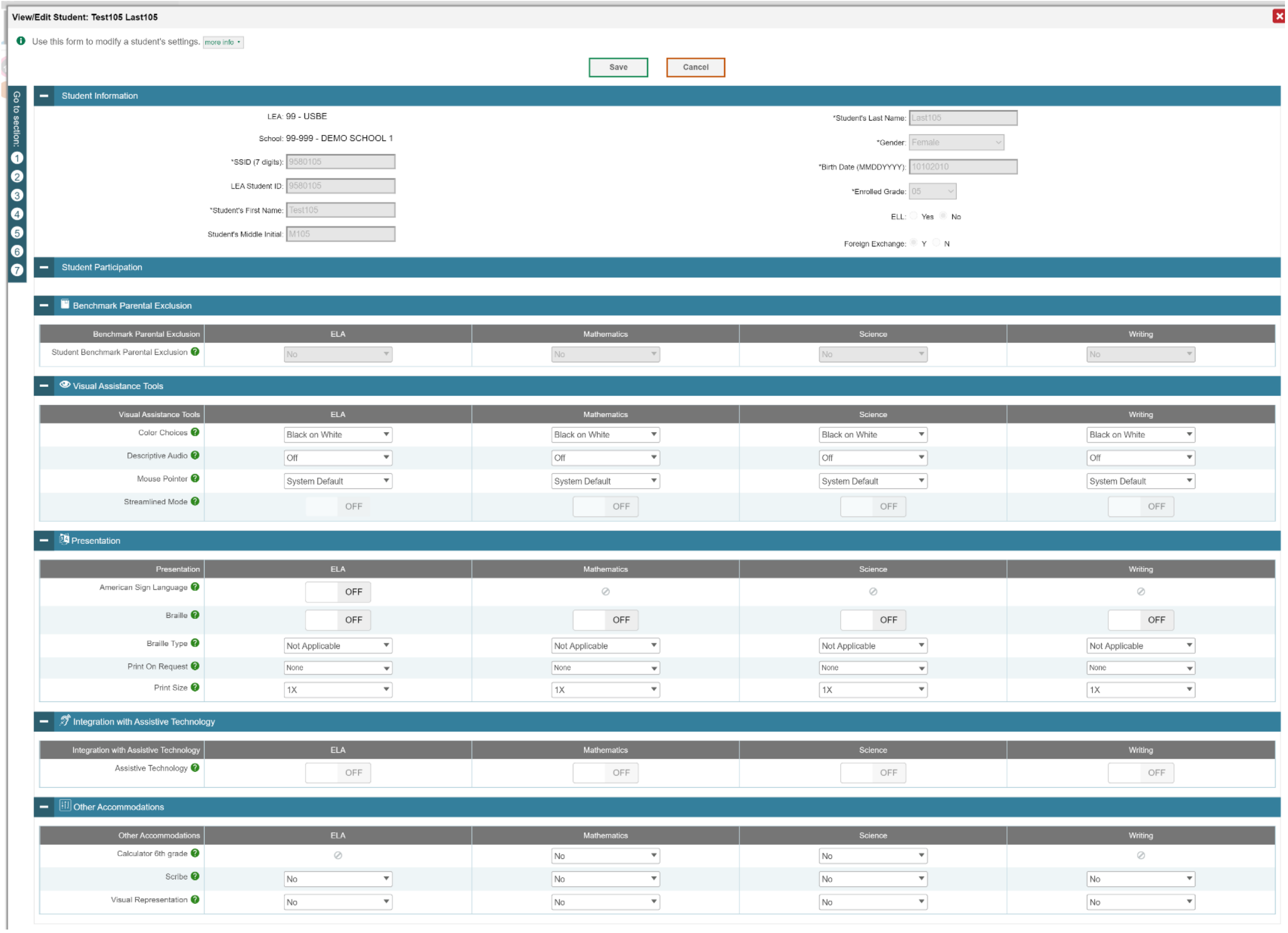


Table 26: Fields in the Test Settings and Tools Panels

Field	Description
Streamlined Mode	Toggles streamlined mode setting on or off, allowing students to view the items from top to bottom and left to right.
Mouse Pointer	List of available Mouse Pointer sizes and colors.
Color Choices	List of available Color Choice settings.
Descriptive Audio	Toggles Descriptive Audio setting on or off, allowing the answer spaces to be read.
Braille with Type	List of available braille settings (UEB or UEB with Nemeth) where available.
Print Size	List of available zoom levels.
Print on Request	List of available Print on Request settings.
American Sign Language	Toggles American Sign Language on or off.
Assistive Technology	Toggles Assistance Technology Mode setting on or off, allowing student to use pre-approved hardware or software with secure browser. USBE approval required.
Visual Representation	Visual Representations are manipulatives such as cubes, tiles, rods, blocks, models, etc. They may be used on all sections of the mathematics assessment if they are included in the student's IEP or 504.
Calculator 6th grade	For students in grade 6, the use of a handheld calculation device or printable computation table is considered an accommodation and may be provided (based on need documented in the IEP) during the allowed segment of the assessment only.
Scribe	Students dictate their responses to a qualified person who records verbatim what they dictate. USBE approval required.

For additional information about Test Settings and Tools, please refer to the *Assistive Technology Manual*.

Changing a test setting in TIDE after the test starts does not update the student's test setting if the same test setting is available in the Test Administration Interface. In this case, you must change the test setting in the TA Interface, although the student will need to log out and resume the test for the settings to be applied.

4. Select **Save**.

5. In the dialog box, select **Continue** to return to the list of student records.

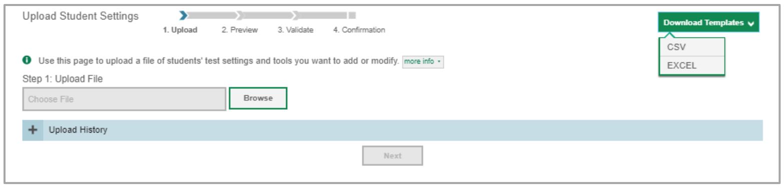
How LEA-level users modify multiple student accounts all at once

If you have many students to edit all at once (for example, if you need to edit the test settings of multiple students at once), you can do so through file upload as shown below. Note: student information provided via UTREx upload cannot be modified.

1. From the **Students** task menu on the TIDE dashboard, select **Upload Student Settings**. The ***Upload Student Settings*** page appears where you can download a template file (see Figure 106).

2. To fill out the template, use the information in Table X on the following page.

Figure 106: Upload Student Settings Page



How LEA-level users upload student accommodations and test tools

If you have many students for whom you need to apply test settings, it may be easier to perform those transactions through file uploads. This task requires familiarity with composing comma-separated value (CSV) files or working with Microsoft Excel.

1. From the **Test Settings and Tools** task menu on the TIDE dashboard, select **Upload Student Settings**. The ***Upload Student Settings and Tools*** page appears where you can download a template file.

2. To fill out the template, use the information in Table 27 below.

Table 27: Columns in the Student Settings Upload File

Column	Description	Valid Values
SSID*	Student's statewide identification number.	Ten digits.
Subject	Subject for which the tool or accommodation applies.	One of the following: ELA Mathematics Science
Tool Name	Name of the tool or accommodation.	See Table 28 on the next page.
Value	Indicates if the tool or accommodation is allowed or disallowed, or the accommodation's appearance.	See Table 28 on the next page.

*Required field.

Table 28: Valid Values for Tool Names in the Test Settings Upload File

Tool Name	Description	Valid Value	Applies to
American Sign Language	Availability of American Sign Language video.	Off	ELA
		On	ELA
Braille		Off	ELA, Math, Science, Writing
		On	
Braille Type	Type of Braille in which test items are printed.	Not Applicable	ELA, Math, Science, Writing
		Contracted	
Calculator 6th Grade		No	Math
		Yes	
Color Choices	Color of text and background for tests in indicated subject.	One of the available color schemes from the drop- down list.	ELA, Math, Science, Writing
Descriptive Audio	Indicates student can listen to audio descriptions of interactive answer spaces in test questions.	One of the available descriptive audio settings from the drop-down list.	ELA, Math, Science, Writing
Mouse Pointer		One of the available color and size combinations from the drop-down list.	ELA, Math, Science, Writing
Assistive Technology	Assistive Technology setting for tests in the indicated subject. USBE approval required.	Off	ELA, Math, Science, Writing
		On	
Print On Request	Student's print-on- demand (POD) accommodation for tests in the indicated subject.	None	ELA, Math, Science, Writing
		Stimuli & Items	
Print Size	Print-size accommodation for tests in the indicated subject.	One of the available magnification options from the drop-down list.	ELA, Math, Science, Writing
Scribe	Student scribe setting for tests the indicated subject.	No	ELA, Math, Science, Writing
		Yes	
Streamlined Mode	Streamlined mode setting for tests in the indicated subject.	Off	ELA, Math, Science, Writing
		On	
Visual Representation	Manipulatives such as cubes, tiles, rods, blocks, models, etc. USBE approval required.	No	ELA, Math, Science, Writing
		Yes	

Changing a test setting in TIDE after the test starts does not update the student's test setting if the same test setting is available in the Test Administration Interface. In this case, you must change the test setting in the TA Interface, although the student will need to log out and resume the test for the settings to be applied.

For additional information about Test Settings and Tools, please refer to the *Assistive Technology Manual*.

3. Select **Save**.

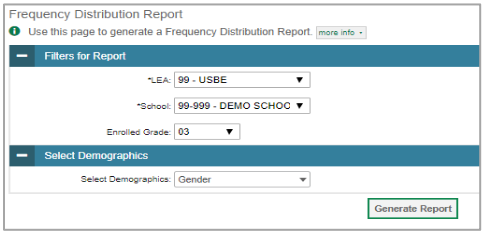
4. In the dialog box, select **Continue** to return to the list of student records.

How LEA-level users view student distribution report

A frequency-distribution report (FDR) shows the number of occurrences of a particular category, such as the number of male and female students. You can generate FDRs for the students in your LEA or school by a variety of demographics and accommodations.

1. From the **Students** task menu on the TIDE dashboard, select **Frequency Distribution Report**. The ***Frequency Distribution Report*** page appears (see Figure 107).

Figure 107: Fields in the Frequency Distribution Report Page



2. In the *Filters for Report* panel, select the report filters:

   a. From the **School** drop-down list (if available), select a school. LEA-level users can retain the default for all schools within the LEA.

   b. *Optional:* Select a specific grade or retain the default for all grades.

   c. *Optional:* In the *Select Demographics* sub-panel, mark checkboxes to filter the report for additional demographics and accommodations.

3. Select **Generate Report**. TIDE displays the selected FDRs in grid format (see Figure 108).

Figure 108: Frequency Distribution Reports by Grade and Gender

4. Do one of the following:

   - To display the FDRs in tabular format, select **Grid**.
   - To display the FDRs in graphical format, select **Graph**.
   - To display the FDRs in both tabular and graphical format, select **Grid & Graph**.
   - To download a PDF file of the FDRs, select , and then select **Print** on the new browser window that opens displaying the report. The generated PDF file displays the report in your selected format of **Grid**, **Graph**, or **Grid & Graph**.

How LEA-level Users Manage Rosters

Rosters are groups of students associated with a teacher in a particular school. Rosters typically represent entire classrooms in lower grades, or individual classroom periods in upper grades. Rosters can also represent special courses offered to groups of students.

The UTREx system populates rosters in TIDE via the nightly upload process. These rosters are called system-defined and cannot be edited by users. These are directly linked to the course codes assigned by LEAs. User-defined rosters can be created to provide additional student groupings for reporting. All rosters are available in NextGen Reporting. The Reporting System can aggregate test scores at these roster levels. You can also use rosters to print test tickets containing students' login information prior to administering an assessment .

Since teachers are responsible for the growth and development of their student's skills in reading, writing, research, communication, and problem solving, it is important that teachers are able to analyze their student performance data and adjust instructional goals accordingly. For teachers to be able to see student performance data, the students must be included in a roster associated with the teacher. Hence, user-defined rosters may need to be created for all teachers who are responsible for teaching an academic subject, such as Reading/Literacy, Mathematics, Science, Social Studies, and Health.

If additional user-defined rosters need to be created, it is recommended to follow the guidelines below:

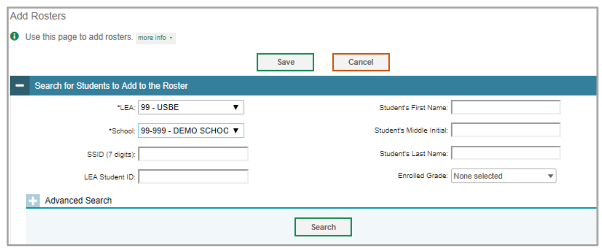
- Rosters should ideally include about 25 – 30 students. If a roster is too large or too small, it may affect the credibility and usefulness of the data.
- One or more rosters may need to be created depending on the subjects taught by a teacher. For example, if a group of Grade 3 students have the same teacher for Reading, Mathematics, and Science, then separate rosters do not need to be created for each subject. However, if different teachers are responsible for teaching different subjects then separate rosters need to be created for each teacher and subject.
- When naming rosters, a clear and consistent naming convention should be used that indicates the grade, class name, teacher, and period as applicable. For example, an elementary school roster may be named ‘Gr3Jones20-21’ and a secondary school roster may be named ‘AikenPeriod3Eng9A20-21’.

You can only create rosters from students associated with your school or LEA.

How LEA-level users add new user-defined rosters one at a time

1. From the **Rosters** task menu on the TIDE dashboard, select **Add Rosters**. The ***Add Rosters*** form appears (see Figure 109).

Figure 109: Add Rosters Form



2. In the *Search for Students to Add to the Roster* panel, search for students by filling out the search criteria and selecting **Search**.

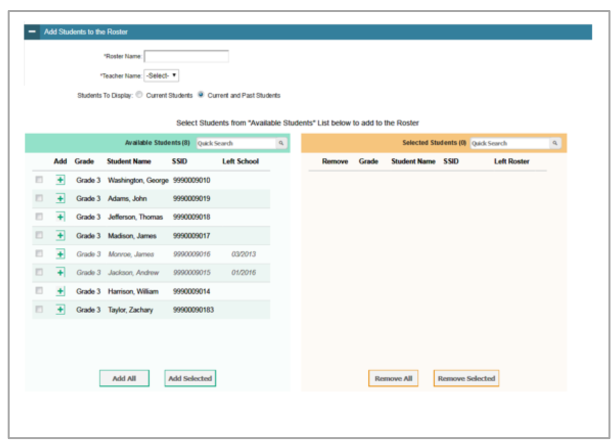
3. In the *Add/Remove Students to the Roster* panel (see Figure 110), do the following:

   a. In the *Roster Name* field, enter the roster name.

   b. From the *Teacher Name* drop-down list, select a teacher or school personnel associated with the roster.

   c. From the *Students To Display* field, select the students you wish to view in the *Available Students* list. The two options are:

Figure 110: Add/Remove Students to Roster Panel: Current and Past Students



   - **Current Students**: Displays students who match your search criteria and are currently associated with the school.

- **Current and Past Students**: Displays all the students who match your search criteria from the current year even if they are no longer associated with the school. For example, if a Grade 3 student has left the school and you search for Grade 3 students with the *Students To Display* field set to **Current and Past Students**, the student who has left the school will also be displayed.

When viewing current and past students from the selected year, students who are no longer associated with your school will display the date on which they left the school. You can still add these students to your roster, if desired.

d. To add students, in the list of available students do one of the following:

- To move one student to the roster, select ➕ for that student.
- To move all the students in the *Available Students* list to the roster, select **Add All**.
- To move selected students to the roster, mark the checkboxes for the students you want to add, then select **Add Selected**.

e. To remove students, do one of the following in the list of students in the roster:

- To remove one student from the roster, select ✖ for the student.
- To remove all the students from the roster, select **Remove All**.
- To remove selected students from the roster, mark the checkboxes for the students you want to remove, then select **Remove Selected**.

4. Select **Save**, and in the dialog box, select **Continue**.

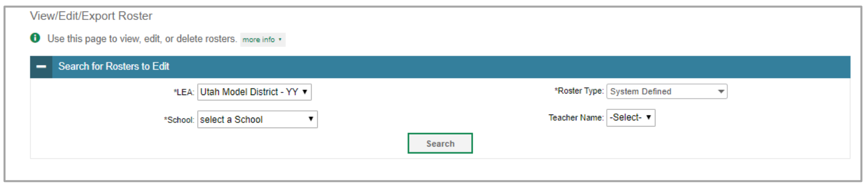
How LEA-level users modify existing user-defined rosters one at a time

You can modify certain rosters, if required. However, whether a roster can be modified or not or the method in which a roster can be modified depends on the roster type. The different types of rosters are:

- User-defined Rosters: These are rosters that you create through the **Add Roster** page or the **Upload Roster** page. You can modify a user-defined roster by changing its name, associated teacher, or by adding students or removing students.
- System-defined Rosters: These are rosters that are imported into TIDE via UTREx and cannot be edited.
- You can modify existing rosters by performing the following steps:

1. From the **Rosters** task menu on the TIDE dashboard, select **View/Edit/Export Roster**. The ***View/Edit/Export Roster*** page appears (see Figure 111).

Figure 111: Add Roster Form

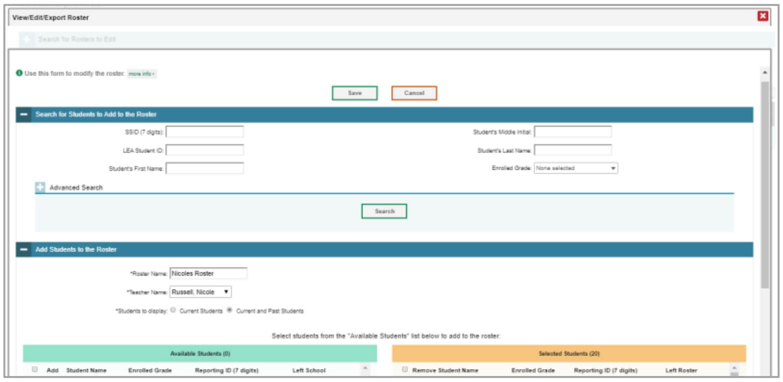


2. Retrieve the roster record you want to view or edit by filling out the search criteria and selecting **Search**.

3. In the list of retrieved rosters, select  for the roster whose details you want to view. The ***View/Edit Roster*** form appears (see Figure 112). This form is similar to the form used to add rosters.

4. In the *Search for Students to Add to the Roster* panel, search for students by filling out the search criteria and selecting **Search**.

Figure 112: View/Edit Roster Form



5. In the *Add/Remove Students to the Roster* panel (see Figure 113), do the following:

   a. In the *Roster Name* field, enter the roster name (if different from the one pre-populated).

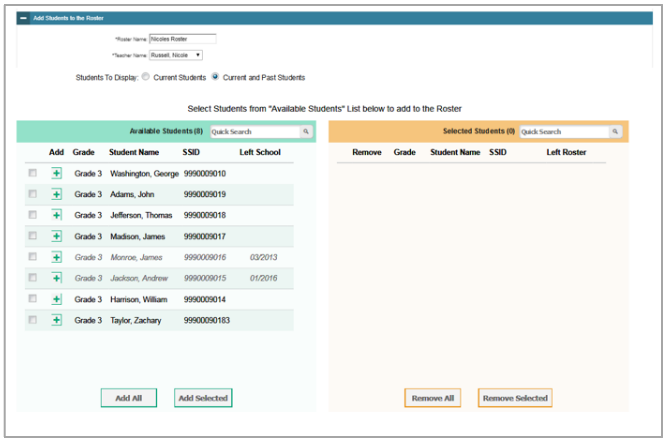
   b. From the *Teacher Name* drop-down list, select a teacher or school personnel associated with the roster (if different from the one pre-populated).

   c. From the *Students To Display* field, select the students you wish to view in the *Available Students* and *Selected Students* lists. The two options are:

      - **Current Students**: Displays students who match your search criteria and are currently associated with the school and roster. The *Available Students* list displays students who are currently associated with your school and the *Selected Students* list displays students who are currently associated with the roster.

      - **Current and Past Students**: Displays all the students who match your search criteria from the current year even if they are no longer associated with the school or the roster. If a student has been removed from the roster, the date on which they were removed from the roster is displayed in the *Selected Students* list. If the student who has been removed from the roster is still associated with the school, they are listed in the *Available Students* list as a regular student. However, if they have left the school then their record will appear in the *Available Students* list with the date they left the school.

Figure 113: Add/Remove Students to Roster Panel: Current and Past Students



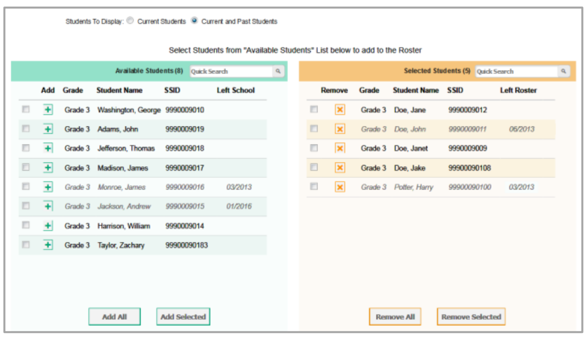
   d. To add students, from the list of available students, do one of the following:

      - To move one student to the roster, select ✚ for that student.

      - To move all the students in the *Available Students* list to the roster, select **Add All**.

      - To move selected students to the roster, mark the checkboxes for the students you want to add, then select **Add Selected**.

Figure 114: Modifying a Roster: Current and Past Students



   e. To remove students, do one of the following in the list of students in the roster:

      - To remove one student from the roster, select ✖ for the student.

      - To remove all the students from the roster, select **Remove All**.

      - To remove selected students from the roster, mark the checkboxes for the students you want to remove, then select **Remove Selected**.

6. Select **Save**, and in the affirmation dialog box select **Continue**.

How LEA-level users add or modify multiple rosters all at once

If you have many rosters to add or modify, you can do so through file upload as shown below.

1. From the **Rosters** task menu on the TIDE dashboard, select **Upload Rosters**. The ***Upload Rosters*** page appears where you can download a template file.

Figure 115: Upload Roster

2. Fill out the template using Table 29 below.

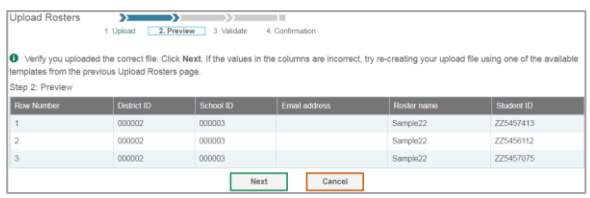
Table 29: Columns in the User-Defined Roster Upload File

Column Name	Description	Valid Values
LEA Number*	LEA associated with the roster.	LEA ID that exists in TIDE. Up to 20 characters.
School Number*	School associated with the roster.	School number that exists in TIDE. Up to 20 characters. Must be associated with the LEA ID.
Email Address*	Email address of the teacher associated with the roster.	Email address of a teacher existing in TIDE or the Reporting System.
Roster Name*	Name of the roster.	Up to 20 characters.
SSID*	Student's unique identifier within the LEA.	Up to 30 alphanumeric characters.

*Required field.

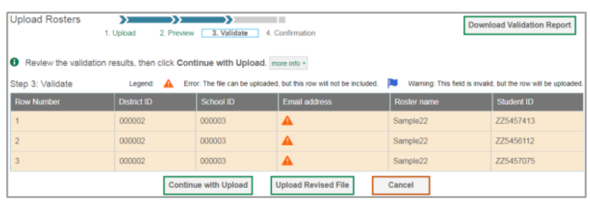
3. Once you've downloaded and filled out the template file, return to the upload screen, select **Browse**, locate the file on your computer, and upload it to TIDE. Select **Next**. The upload preview screen appears.

Figure 116: Upload Roster Preview Page



4. Once you've verified the information on the preview screen, select **Next** again. The validation screen appears.

Figure 117: Upload Roster Validation Page

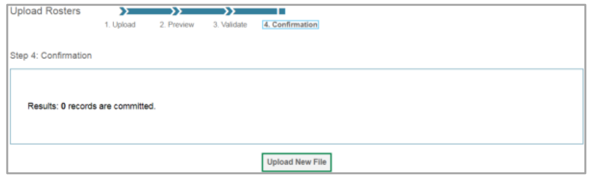


5. The validation screen shows errors or warnings associated with your uploaded file.

6. To continue with the upload despite these errors or warnings, select **Continue with Upload**. The selected file will be uploaded, but the rows with errors will not be included.

7. The confirmation page appears, confirming how many records have been committed as a result of your upload. To upload a new file, select **Upload New File**.

Figure 118: Upload Roster Confirmation Page



How LEA-level Users Manage Test Windows

Prior to the beginning of a school year, the Utah State Board of Education (USBE) establishes the State testing windows for each type of test. Individual LEAs can create customized testing windows, within the state-assigned dates, to control when tests are available in the TA interface for users to select. Creating customized testing windows is highly recommended.

How LEA-level users add new test windows one at a time

When you create or edit a test window at the LEA level, all schools within that LEA's hierarchy must administer the test during that window—except those schools that have their own customized window.

1. From the **Test Windows** task menu on the TIDE dashboard, select **Add Test Windows**. The ***Add Test Windows*** form appears (see Figure 119).

2. In the *Test Window Information* panel, do the following:

   a. In the *Window Name* field, enter a new name for the test window. The *Window Name* field only accepts alphanumeric characters. Characters like spaces, dashes, and underscores are not allowed for test window names.

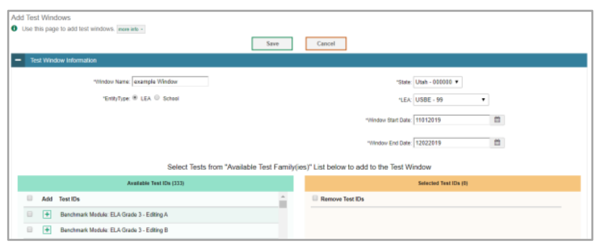
   b. Mark the type of entity for which you want to add a test window: **LEA** or **School**.

   c. From the **LEA** and **School** drop-down lists (as available), make selections for the LEA and school.

   d. In the *Window Start Date* and *Window End Date* fields, enter the test window's start and end dates.

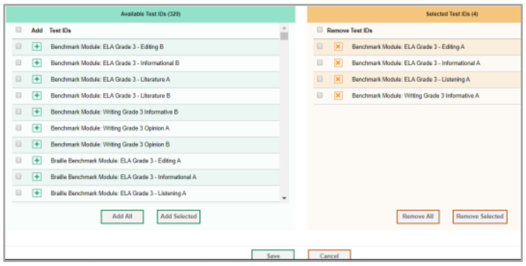
   e. Select **Add Test Window**.

Figure 119: Add Test Windows Page



3. In the *Add/Remove Tests* section (see Figure 120), do the following:

Figure 120: Add/Remove Tests Panel



   a. To add tests, from the list of available test IDs, do one of the following:

      - To move one test ID to the window, select ➕ for that test.
      - To move all the test IDs in the *Available Tests* list to the window, select **Add All**.
      - To move selected tests to the window, mark the checkboxes for the tests you want to add, then select **Add Selected**.

   b. To remove test IDs, do one of the following in the list of test IDs in the window:

      - To remove one test ID from the window, select ✖ for the test.
      - To remove all the test IDs from the window, select **Remove All**.
      - To remove selected test IDs from the window, mark the checkboxes for the test IDs you want to remove, then select **Remove Selected**.

4. Select **Save**, and in the affirmation dialog box select **Continue**.

TIDE creates the test window, and it is immediately available in the TA Interface.

How LEA-level users modify existing test windows one at a time

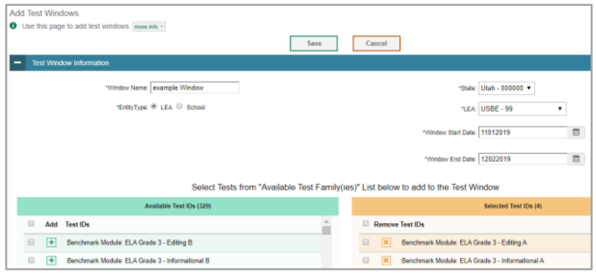
You can modify a custom test window by changing its name and dates, or by adding or removing students.

1. From the **Test Windows** task menu on the TIDE dashboard, select **View/Edit/Export Test Windows**. The ***View/Edit/Export Test Window*** page appears.

2. Retrieve the test window you want to view or edit by filling out the search criteria and selecting **Search**.

3. In the list of retrieved test windows, select for the test window whose details you want to view. The ***View/Edit/Export Test Windows*** form appears. This form is similar to the form used to add test windows (see Figure 121).

Figure 121: Fields in the Add Test Windows Page



4. *Optional*: In the *Test Window Information* panel, do the following:

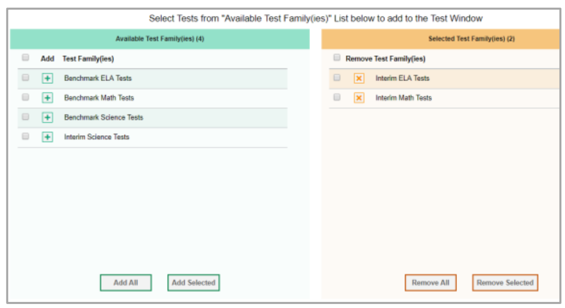
    a. In the *Window Name* field, enter a new name for the test window. The *Window Name* field only accepts alphanumeric characters. Characters like spaces, dashes, and underscores are not allowed for test window names.

    b. In the *Window Start Date* and *Window End Date* fields, enter the test window's new start and end dates.

    c. Select **Add Test Window**.

5. *Optional*: In the *Add/Remove Tests* section (see Figure 122), do the following:

Figure 122: Add/Remove Tests Panel



    a. To add test IDs, from the list of available tests, do one of the following:

        - To move one test ID to the window, select for that test.

        - To move all the test IDs in the *Available Test Family(ies)* list to the window, select **Add All**.

        - To move selected test IDs to the window, mark the checkboxes for the tests you want to add, then select **Add Selected**.

    b. To remove test IDs, do one of the following in the list of test IDs in the window:

        - To remove one test ID from the window, select for the test ID.

        - To remove all the test IDs from the window, select **Remove All**.

        - To remove selected test IDs from the window, mark the checkboxes for the test IDs you want to remove, then select **Remove Selected**.

6. Select **Save**, and in the affirmation dialog box select **Continue**.

How LEA-level users add or modify multiple test windows all at once

If you have many test windows to create, it may be easier to perform those transactions through file uploads. This task requires familiarity with composing comma-separated value (CSV) files or working with Microsoft Excel.

1. From the **Test Windows** task menu on the TIDE dashboard, select **Upload Test Windows**. The ***Upload Test Windows*** page appears where you can download a template file.

2. Fill out the template using Table 30 below; update the template to reflect the desired window label, start dates, end dates and the correct list of test IDs.

Figure 123: Upload Test Window

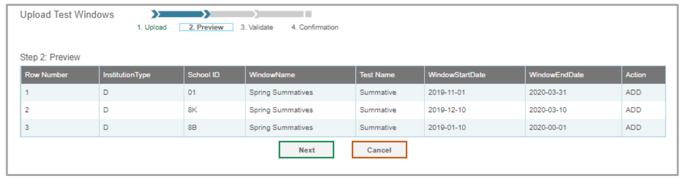
Table 30: Columns in the Test Windows Upload File

Column Name	Description	Valid Values
INSTITUTIONTYPE*	Type of institution to which the test window applies.	One of the following: D—Window applies to LEAs. S—Window applies to schools.
INSTITUTIONIRN*	LEA's or school's ID.	For LEA-level windows, a LEA ID that exists in TIDE. For school-level windows, use DD-SS, where DD is the LEA ID and SS is the school ID. The institution must be associated with the user uploading the file.
WINDOWNAME*	Name for the test windows.	Up to 35 printable characters.
TESTNAME*	Test family included in the test window.	One of the available test families from the drop-down list in the template.
WINDOWSTARTDATE*	Date test window starts.	Timestamp in MMDDYYYY format.
WINDOWENDDATE*	Date test window ends.	Timestamp in MMDDYYYY format.
ACTION*	Indicates if this is an add, modify, or delete transaction.	One of the following: Add—Add new window. Update—Edit an existing window. Delete—Remove existing window.

*Required field.

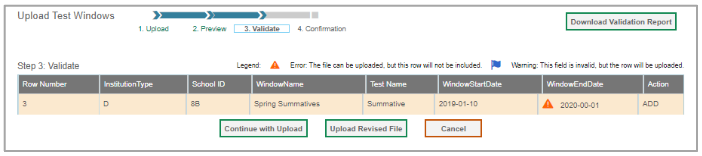
3. Once you've downloaded and filled out the template file, return to the upload screen, select **Browse**, locate the file on your computer, and upload it to TIDE. Select **Next**. The upload preview screen appears.

Figure 124: Upload Test Window Preview Page



4. Once you've verified the information on the preview screen, select **Next** again. The validation screen appears.

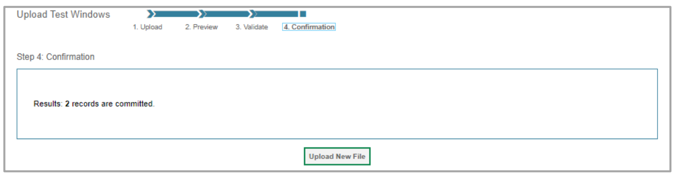
Figure 125: Upload Test Window Validation Page



5. The validation screen shows errors or warnings associated with your uploaded file.

6. To continue with the upload despite these errors or warnings, select **Continue with Upload**. The selected file will be uploaded, but the rows with errors will not be included.

Figure 126: Upload Test Window Confirmation Page



7. The confirmation page appears, confirming how many records have been committed as a result of your upload. To upload a new file, select **Upload New File**.

How LEA-level Users Use TIDE during Test Administration

During testing, LEA-level users can perform the following tasks in TIDE:

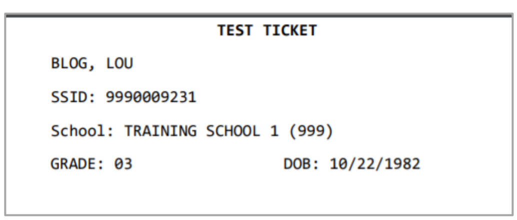
- *Optional:* Print **test tickets** to help students log in to tests.
- Add, modify, upload and process appeal requests.
- View reports of students' current test statuses, test completion rates, and test status codes.

How LEA-level Users Print Test Tickets

A test ticket is a hard-copy form that includes a student's username for logging in to a test (see Figure 127).

TIDE generates the test tickets as PDF files that you download with your browser.

Figure 127: Sample Test Ticket


TEST TICKET

BLOG, LOU

SSID: 9990009231

School: TRAINING SCHOOL 1 (999)

GRADE: 03 DOB: 10/22/1982

About Printing Test Tickets for Dual-Enrolled Students

When printing test tickets for a student who has been dual-enrolled, tickets will be printed for the selected LEAs and schools in which the student is enrolled.

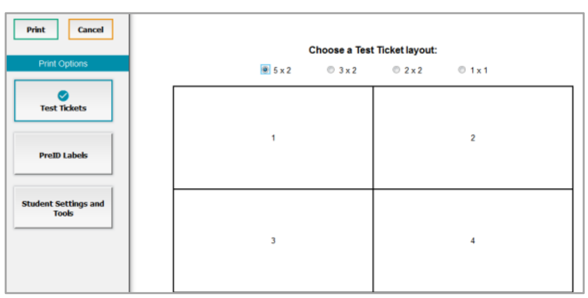
The student can use any of the tickets to log in to the Test Delivery System (TDS). When verifying their information after logging in to the TDS, the first school in which the student was enrolled will be displayed by default. It is okay to continue with the verification process as the school information has no impact on the tests that a student is eligible for.

How LEA-level users print test tickets from student lists

1. From the **Print Test Tickets** task menu on the TIDE dashboard, select **Print from Student List**. The ***Print Test Tickets from Student List*** page appears.
2. Retrieve the students for whom you want to print test tickets by filling out the search criteria and selecting **Search**.
3. Select the column headings to sort the retrieved students in the order you want the test tickets printed.
4. Specify the students for whom test tickets need to be printed:
   - To print test tickets for specific students, mark the checkboxes for the students you want to print.
   - To print test tickets for all students listed on the page, mark the checkbox at the top of the table.
   - To print test tickets for all retrieved students, no additional action is necessary. The option to print all retrieved records is available by default.
5. Select and then select the appropriate action:
   - To print test tickets for selected students, select **My Selected Test Tickets**.
   - To print test tickets for all retrieved students, select **All Test Tickets**.
6. In the new browser window that opens displaying a layout for selecting the printed layout (see Figure 128), verify **Test Tickets** is selected in the *Print Options* section.
7. Select the layout you require, and then select **Print**.

Your browser downloads the generated PDF.

Figure 128: Layout Model for Test Tickets



How LEA-level users print test tickets from roster lists

1. From the **Print Test Tickets** task menu on the TIDE dashboard, select **Print from Roster List**. The ***View/Edit Rosters*** page appears.

2. Retrieve the rosters for which you want to print test tickets by filling out the search criteria and selecting **Search**.

3. Select the column headings to sort the retrieved rosters in the order you want the test tickets printed.

4. Do one of the following:

    - Mark the checkboxes for the rosters you want to print.

    - Mark the checkbox at the top of the table to print tickets for all retrieved rosters.

> When printing multiple class groups, the total number of students included in the class groups should not exceed 1000.

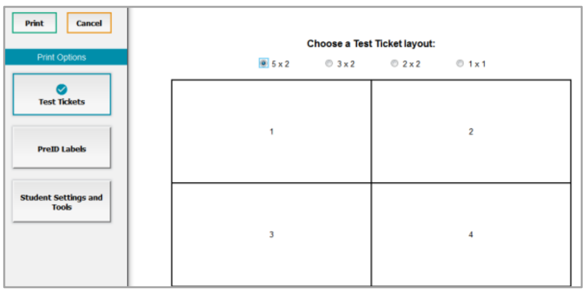
5. Select  and then select **Test Tickets**. A layout model appears for selecting the printed layout (see Figure 129).

6. Verify **Test Tickets** is selected in the *Print Options* section.

7. Select the layout you require, and then select **Print**.

Your browser downloads the generated PDF.

Figure 129: Layout Model for Test Tickets



How LEA-level Users Manage Appeal Requests

In the normal flow of a test opportunity, a student takes the test in TDS and then submits it. Next, TDS forwards the test for scoring, and then the test scores are reported in NextGen Reporting System.

Appeal requests are a way of interrupting this normal flow. A student may need to get back into a segment they incorrectly exited or have a grace period extension if they had to pause their test and didn't have time to review. A test administrator may want to invalidate a test because of a hardware malfunction or an impropriety.

List of Appeal Request Types

Reset and revert appeal requests must be submitted at least one day prior to the end of a test window so that students can complete their test opportunity Table 31 lists the types of appeals.

Table 31: Types of Appeals

Type	Description
Invalidate a test	Eliminates the test opportunity, and the student has no further opportunities for the test. You can submit these test invalidations until the end of the test window.
Reset a test	Allows the student to restart a test opportunity (removing all responses on the test). You can submit these appeal requests until the end of the test window.
Re-open a test	Reopens a test that was completed, invalidated, or expired.
Re-open Test Segment	Reopens a previous test segment. This appeal request is useful when a student inadvertently or accidentally leaves a test segment incomplete and starts a new test segment. Students can answer unanswered items and can modify responses to answered items in the reopened segment.
Grace Period Extension (GPE)	Allows the student to review previously answered questions upon resuming a test or test segment after expiration of the pause timer. For example, a student pauses a test, and a 20-minute pause timer starts running. The following scenarios are possible: • If resuming the test within 20 minutes, student can review previously answered questions. • Without a GPE, student resuming the test after 20 minutes cannot review previously answered questions—student can only work on unanswered questions. Upon receiving a GPE, student can review previously answered questions upon resuming the test. The normal pause rules apply to this opportunity.

For a list of appeal request statuses, see Table 32 on the following page.

Table 32: List of Appeal Request Statuses

Appeal Request Status	Description of Status
Error Occurred	An error occurred while the appeal request was being processed.
Pending Approval	Appeal request is pending approval.
Processed	Appeal request was successfully processed and the test opportunity has been updated.
Rejected	Another user rejected the appeal request.
Rejected by System	Test Delivery System was unable to process the appeal request.
Requires Resubmission	Appeal request must be resubmitted.
Retracted	Originator retracted the appeal request.
Submitted for Processing	Appeal request submitted to Test Delivery System for processing.

For a list of available appeal requests by test status, see Table 33 below.

Table 33: List of Appeal Requests by Test Status

Test Status	Invalidate a test	Reset a test	Re-open a test	Re-open Previous Test Segment	Grace Period Extension
Approved		✓			
Completed	✓	✓	✓		
Denied	✓	✓		✓	✓
Expired	✓	✓	✓		
Paused	✓	✓		✓	✓
Pending		✓			
Processing		✓			
Reported	✓	✓	✓		
Review		✓			
Scored	✓	✓	✓		
Started		✓			
Submitted	✓	✓	✓		
Suspended		✓			
Invalidated		✓	✓		

How LEA-level users add new appeal requests one at a time

You can create an appeal request for a given test result.

1. Retrieve the result for which you want to create an appeal request by doing the following:

Figure 130: Selection Fields in the Create Appeal Requests Page

   a. From the **Appeal Requests** task menu on the TIDE dashboard, select **Create Appeal Requests**. The ***Create Appeal Requests*** page appears (see Figure 130).

   b. Select a request type.

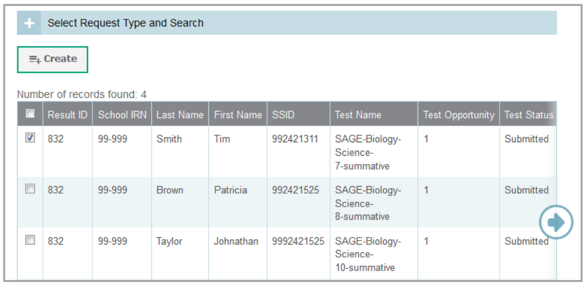
c. From the drop-down lists and in the text field, enter search criteria.

d. Select **Search**. TIDE displays the found results at the bottom of the ***Create Appeal Requests*** page (see Figure 131).

2. Mark the checkbox for each result for which you want to create a test invalidation, and then select **Create**.

3. From the **Select a reason from the list** drop-down, select a reason for creating the appeal request. The reasons may vary based on the appeal request type.

Figure 131: Retrieved Test Results



4. Enter a reason for the request in the window that pops up.

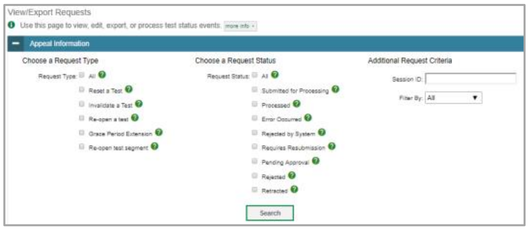
5. Select **Submit**. TIDE displays a confirmation message.

How LEA-level users approve or modify existing appeal requests one at a time

You can view, approve, reject, retract, and export existing appeal requests.

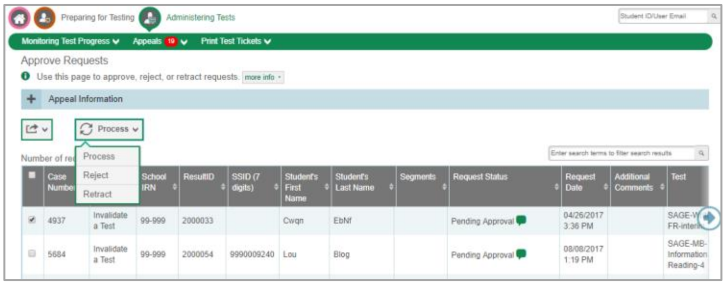
1. From the **Appeal Requests** task menu on the TIDE dashboard, select **View/Approve/Export Appeal Requests**. The ***View/Export Appeal Requests*** page appears (see Figure 132).

Figure 132: Selection Fields in the View/Export Appeal Requests Page



2. Retrieve the appeal requests you want to view by filling out the search criteria and selecting **Search**. Figure 133 shows retrieved appeal requests.

Figure 133: Retrieved Appeal Requests



3. *Optional:* Review the initiator's reason for the appeal request by selecting in the Request Status column.

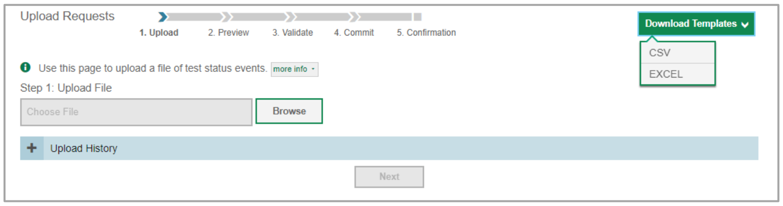
4. To approve appeals, select the appeal to be approved and click the **Process** button when ready. Please note that this is a two-step procedure. To complete the appeal, the requests must be reviewed and processed.

How LEA-level users add or modify multiple appeal requests all at once

If you have many appeal requests to create, it may be easier to perform those transactions through file uploads. This task requires familiarity with composing comma-separated value (CSV) files or working with Microsoft Excel.

1. From the **Appeals** task menu on the TIDE dashboard, select **Upload Appeals**. The ***Upload Appeals*** page appears where you can download a template file.

Figure 134: Upload Appeals Page



2. Fill out the template using Table 34 below.

Table 34: Columns in the Appeal Request Upload File

Column Name	Description	Valid Values

Type*	Type of appeal request.	One of the following:
		`Invalidate a test`
		`Reset a Test`
		`Re-open a test`
		`Grace Period Extension`
		`Re-open test segment`

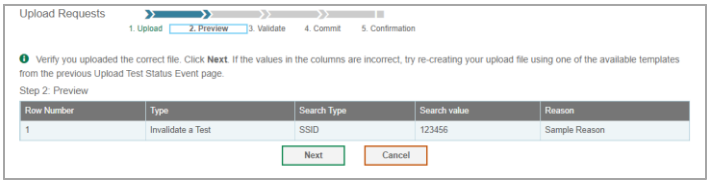
SearchType*	Student field to search.	One of the following:
		`Result ID`
		`SSID`
		`Session ID`

SearchValue*	Search value corresponding to the search type.	Up to 1,000 alphanumeric characters. The value must exist in TDS or TIDE. For example, specifying a result ID of 123456 requires that this result ID exist in TDS.
Reason*	Reason for creating appeal request.	Up to 1,000 alphanumeric characters.

*Required field.

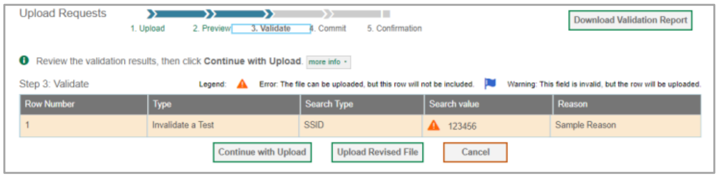
3. Once you've downloaded and filled out the template file, return to the upload screen, select **Browse**, locate the file on your computer, and upload it to TIDE. Select **Next**. The upload preview screen appears.

Figure 135: Upload Appeals Preview Page



4. Once you've verified the information on the preview screen, select **Next** again. The validation screen appears.

Figure 136: Upload Appeals Validation Page



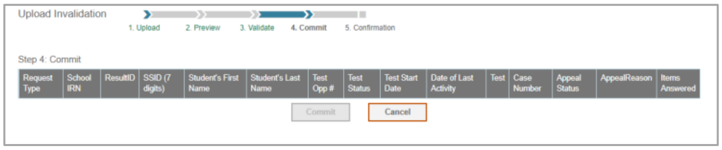
5. The validation screen shows errors or warnings associated with your uploaded file.

6. To continue with the upload despite these errors or warnings, select **Continue with Upload**. The selected file will be uploaded, but the rows with errors will not be included.

7. The commit page appears, showing how many records will be committed based on your upload file.

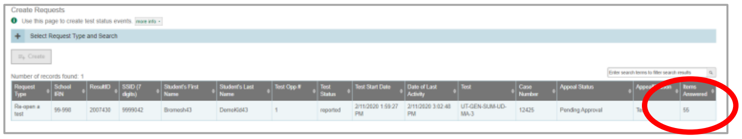
8. The confirmation page appears next, confirming how many records have been committed as a result of your upload. To upload a new file, select **Upload New File.**

Figure 137: Upload Appeals Committ Page



9. Appeals submitted need to be approved and processed by you, the LEA. Any pending appeal(s) you submitted will be shown when you search for them, with "Pending Approval" listed in the **Approval Status** column (see Figure 138). Once an appeal is approved, it will no longer be shown when you search for it.

Figure 138: Appeals Record List with Appeal Status Shown



How LEA-level Users Monitor Test Progress

The tasks available in the **Monitoring Test Progress** task menu allow you to generate various reports that provide information about a test administration's progress.

The following reports are available in TIDE:

- Plan and Manage Testing Report: Details a student's test opportunities and the status of those test opportunities. You can generate this report from the ***Plan and Manage Testing*** page or the ***Participation Report by SSID*** page.
- Test Completion Rates Report: Summarizes the number and percentage of students who have started or completed a test.
- Test Status Code Report: Displays all the participation codes for a test administration.

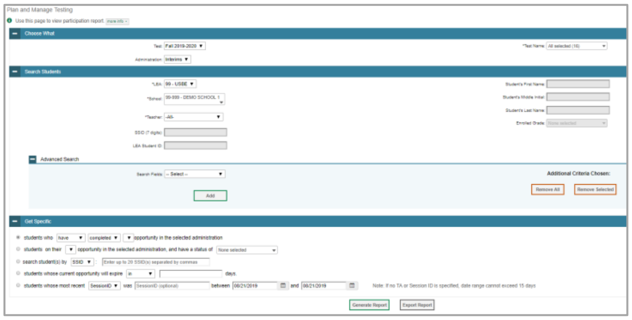
How LEA-level users view report of students' current test status

TIDE includes a Plan and Manage Testing report that details all of a student's test opportunities and the status of those test opportunities.

Because the report lists testing opportunities, a student can appear more than once on the report.

1. From the **Monitoring Test Progress** task menu on the TIDE dashboard, select **Plan and Manage Testing**. The ***Plan and Manage Testing*** page appears (see Figure 139).
2. In the *Choose What* panel, select the parameters for which tests to include in your report:
    a. From the **Test** drop-down list, select a test category.

Figure 139: Plan and Manage Testing Page



    b. From the **Administration** drop-down list, select an administration.
    c. *Optional*: From the **Test Name** drop-down list, select the test for which you want to generate the report. You may select one, multiple, or all from this list.
    d. *Optional*: From the **Search Fields** drop-down list, select a specific test accommodation or demographic to filter the report.
        - If you select a test accommodation or demographic, a *Values* field is displayed. Select the required filter criteria from the available options.
3. In the *Search Students* panel, select the parameters for whose information to include in your report:
    a. From the **LEA** drop-down list, select an LEA if applicable.

b. From the **School** drop-down list, select a school if applicable. You may select one or more schools from this list. You may also select all schools if the selected LEA has 20 or less schools. For LEAs that have more than 20 schools, the **Select all** option will not be available. Furthermore, the checkboxes for the schools will be disabled once 20 schools have been selected.

c. *Optional*: If a single school was selected, choose a teacher from the **Teacher** drop-down list.

About the Teacher Drop-down List

The **Teacher** drop-down list includes all school-level users, such as teachers, test administrators, and principal associated with the selected school. When you select a person from the **Teacher** drop-down list, TIDE performs a check to see if the person is associated with any roster. If no class groups exist for the selected person, no data is displayed when you generate the report. If the selected person has an associated roster, the plan and manage testing reports shows the test attempts of the students included in the roster.

If you do not select any person from the **Teacher** drop-down list and use the default value of **All** to generate the report, you will see all the tests taken in that school, irrespective of roster associations.

It is important to note that the Test Administrator Name displayed on the Plan and Manage Testing report does not imply the name of the teacher. The TA is the person who conducts the test. This can be the same as the teacher or it can be a different person.

d. *Optional:* In the *Student's Last Name* field, enter a student's last name.

e. *Optional:* In the *Student's First Name* field, enter a student's first name.

f. *Optional:* In the *SSID* field, enter a SSID.

g. *Optional:* From the **Grade** drop-down list, select a grade. You may select one, multiple, or all grades from this list.

4. In the *Get Specific* panel, select the radio button for one of the options and then set the parameters for that option. The following options are available (parameters for each option are listed in {brackets}):

   a. Students who {have/have not} {completed/started} the {1st/2nd/Any} opportunity in the selected administration.

   b. Students on their {1st/2nd/Any} opportunity in the selected administration and have a status of {student test status}.

   c. Search student(s) by {SSID/Name}: {SSID/Student Name}

   d. Students whose current opportunity will expire {in/between} {number/range} days.

   e. If you select "in", you may enter any number in the displayed text box to determine tests expiring in the specified number of days. You may also enter 0 to see opportunities that expire that day.

   f. If you select "between", you may enter two numbers in the displayed text boxes to signify a range of days (such as 1–3).

g. Students whose most recent {Session ID/TA Name} was {Optional Session ID/TA Name} between {start date} and {end date}.

5. Do one of the following:
    a. To view the report on the page, select Generate Report.
    b. To open the report in Microsoft Excel, select Export Report.

For descriptions of the columns in this report, see Table 35 below.

Table 35: Columns in the Plan and Manage Testing Report

Attribute	Description
Name	Student's legal name (Last Name, First Name).
LEA Name	Name of the LEA associated with the record.
School Name	Name of the school associated with the record.
SSID	Student's Statewide Student Identifier number.
Enrolled Grade	The grade in which a student is enrolled.
Current LEP	Indicates whether the student is an English Language Learner.
Test	Test name for this student record.
Opportunity	The opportunity number for that student's specific record.
TA Name	The test administrator who created the session in which the student is currently testing (or in which the student completed the test).
Session ID	The Session ID to which the test is linked.
Total Time Spent	The time it took a student to complete a test.
Status	The status for that specific opportunity.
Results ID	The unique identifier linked to the student's results for that specific opportunity.
Restarts	The total number of times a student has resumed an opportunity (e.g., if a test has been paused three times and the student has resumed the opportunity after each pause, this column will show three restarts). (This includes Restarts Within Grace Period—see below.)
Restarts Within Grace Period	The total number of times a student has resumed an opportunity within 20 minutes after a test was paused. For example, if a test has been paused three times and the student resumed the opportunity within 20 minutes of two pauses but 25 minutes after the third pause, this column shows two Restarts Within Grace Period). A student has a grace period of 20 minutes to pause the test at a test item and then resume the test at that same item. However, if a test is paused for more than 20 minutes, the test session will expire, and the student will not be able to review any previous answers.
Date Started	The date when the first test item was presented to the student for that opportunity.
Date Completed	The date when the student submitted the test for scoring.
Last Activity	The date of the last activity for that opportunity or record. A completed test can still have activity as it goes through the QA and reporting process.
Expiration Date	The date the test opportunity expires. The following are the set timeframes for each test; if not completed within this timeframe, the tests will expire. Benchmark Modules: 7 days Interims: 14 days Fall Summatives: 21 days Spring Summatives: 60 days

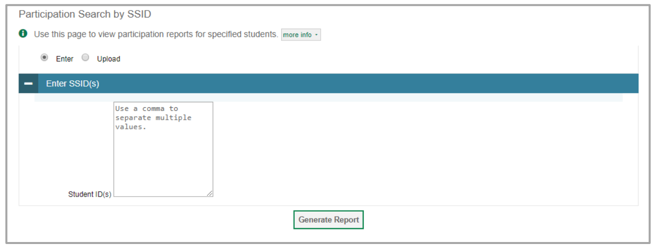
How LEA-level users view report of students' current test status by student ID

You can also generate participation reports for specific students by SSID. This section describes how to generate participation reports for one or more students using students' SSIDs.

Because the report lists testing opportunities, a student can appear more than once on the report.

1. From the **Monitoring Test Progress** task menu on the TIDE dashboard, select **Participation Search by SSID**. The *Participation Search by SSID* page appears (see Figure 140).

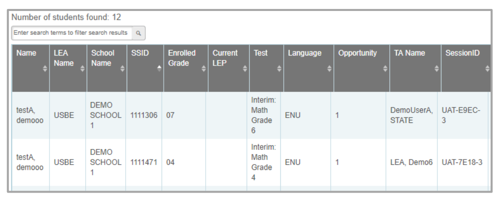
Figure 140: Participation Search by SSID Page



2. Do one of the following:
   - To enter students' SSIDs, select **Enter**. Next, enter one or more SSIDs, separated by commas, in the Student IDs field. You can enter up to 1000 SSIDs.
   - To upload SSIDs, select **Upload**. Next, select **Browse** and then use the file browser to select an Excel or CSV file with Student IDs listed in a single column. You can upload up to 1000 SSIDs.

3. Select **Generate Report**. The Participation Report by SSID appears (see Figure 141).

Figure 141: Plan and Manage Testing Report



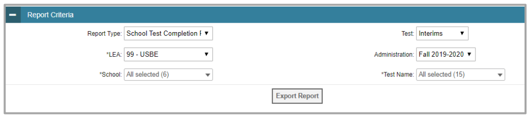
For descriptions of the columns in this report, see Table X on the previous page.

How LEA-level users view report of test completion rates

The Test Completion Rate report summarizes the number and percentage of students who have started or completed a test.

1. From the **Monitoring Test Progress** task menu on the TIDE dashboard, select **Test Completion Rates**. The ***Test Completion Rates*** page appears.

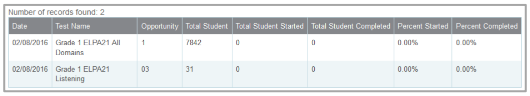
Figure 142: Test Completion Rates Search Fields



2. In the *Report Criteria* panel (see Figure 142), select the parameters for which tests to include in your report.

3. To open the report in Microsoft Excel, select **Export Report**. Figure 143 displays a sample Test Completion Rate report.

Figure 143: Test Completion Rate Report


Number of records found: 2

Date	Test Name	Opportunity	Total Student	Total Student Started	Total Student Completed	Percent Started	Percent Completed
02/08/2016	Grade 1 ELPA21 All Domains	1	7842	0	0	0.00%	0.00%
02/08/2016	Grade 1 ELPA21 Listening	03	31	0	0	0.00%	0.00%

For a description of the columns in this report, see Table 36 below.

Table 36: Columns in the Test Completion Rates Report

Column	Description
Date	Date and time that the file was generated.
Test	Test that is being reported.
Administration	Administration that is being reported.
Test Name	Grade, test, and subject that are being reported.
Opportunity	Test opportunity number that is being reported.
Total Student	Number of students with an active relationship to the school in TIDE.
Total Student Started	Number of students who have started the test.
Total Student Completed	Number of students who have finished the test and submitted it for scoring.
Percent Started	Percentage of students who have started the test out of the total number of students with an active relation to the school in TIDE.
Percent Completed	Percentage of students who have completed the test out of the total number of students with an active relation to the school in TIDE.
LEA Name	The name of the reported LEA.
LEA ID	The ID of the reported LEA.
School Name	The name of the reported school. This column is only included in the school-level report.
School ID	The ID of the reported school. This column is only included in the school-level report.

Overview of Participation Codes

This section addresses the management of participation codes for accountability purposes.

Motivation for Participation Codes

There are circumstances in which a student did not participate in an expected assessment or participated in an assessment but in a non-standard way. In such instances, participation codes control and document how the test record is handled for reporting aggregates and accountability calculations.

Participation codes are not intended to explain data errors present in UTREx. As per R277-404, Local Education Agencies (LEAs) are responsible for updating local student information systems (SISs) so that UTREx data are accurate.

Once any participation code is marked in the Test Information Distribution Engine (TIDE), that participation code persists until it is changed.

When participation codes are used, only one code can be selected. Participation codes are classified as “non-participation” or “participation.” (A student is considered to have attempted a test after answering 6 questions or after responding with any text to a writing prompt.) For a listing of participation codes, see Table X on the following page.

Policy: Participation codes are audited for appropriate use. ALL student data will be used for scoring, reporting, and accountability.

Management of Participation Codes

Using TIDE, you can view participation codes for students enrolled in your LEA or school. You can add, modify, or delete participation codes only in TIDE.

Test eligibility is controlled by the course code provided via the nightly UTREx upload. Once an enrolled student has been assigned a RISE assessed course for at least 10 days, the student will either be required to take the RISE test by the end of the testing window or must be assigned a participation code.

A student’s participation on a test is defined as a student answering 6 or more questions or entering any non-blank character into one writing prompt.

Users can use TIDE’s **View/Edit Participation Codes** tab to add, delete, or modify participation codes for eligible tests. In addition, if a participation code had been assigned prior to eligibility being removed, you can still view and modify the code in TIDE as long as the student is enrolled in the LEA or school by using this tab.

If you assign a non-participation code prior to testing, TIDE removes the student’s eligibility and the student will not be able to start that specific test. In order for a student to take the test, you must remove the participation code in TIDE.

The participation and Test Status Code Reports only display eligible tests. However, if a student had started a test that was later invalidated, that test will be included in the generated reports.

Working with Participation Codes in TIDE

This section describes how to view, modify, and delete participation codes in TIDE.

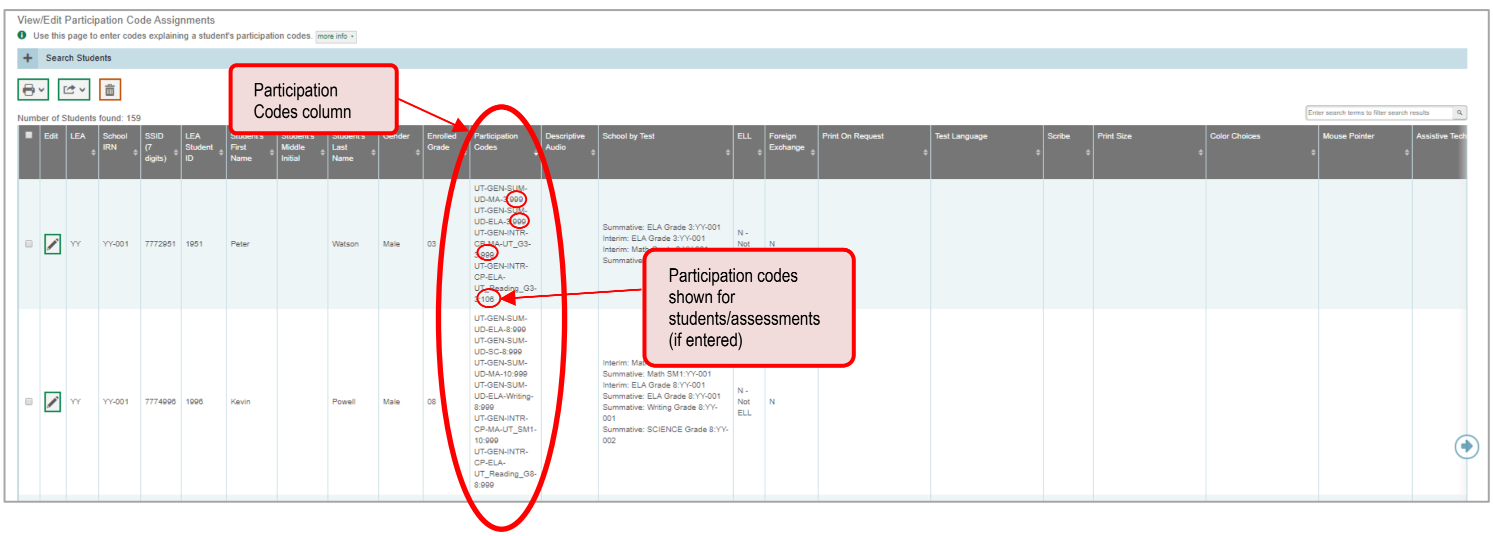
Viewing a Student's Participation Codes

When you search for student records in TIDE, the search results table displays any assigned participation codes. This can be done from the ***View/Edit/Export Students*** tab or the ***View/Edit Participation Codes*** tab.

To view the participation code in TIDE:

1. Click either the ***View/Edit/Export Students*** tab or the ***View/Edit Participation Codes*** tab.
2. Search for students using the available filters. (You can use the **Advanced Search** function to search only for students with participation codes.)
3. Click **Search**. The search results table displays those students who match the search query. The Participation Codes column lists any assigned participation codes (see Figure 144 below).

Figure 144: Participation Codes in TIDE



- Note: The code 999 (shown in Figure 144 above) indicates that a participation code had been assigned and was then removed. This is different from a blank participation code, which means that a partcipation code had never been assigned for that student's test.

If a participation code needs to be changed for a student, do one of the following:

- If the student is still eligible for the test, use the ***View/Edit Participation Codes*** tab in TIDE and follow the procedure in the **Updating a Student's Participation Code** section on the following page.
- If the student is no longer eligible for the test and had attempted the test, use the ***View/Edit Participation Codes*** tab in TIDE and follow the procedure in the **Updating a Student's Participation Code** section on the following page.
- If the student is no longer eligible for the test and had not attempted the test, use the ***View/Edit Participation Codes*** tab in TIDE and follow the procedure in the **Updating a Student's Participation Code** section on the following page.
- If the student is no longer enrolled in the LEA, use the Discrepancy Resolution tab in TIDE to clean up the data (i.e., to add the appropriate participation code); follow the procedure in the "How LEA-level users use Discrepancy Resolution for cleanup" section on page 126.

If a participation code needs to be added for a student, do one of the following:

- If the student is still eligible for the test, use the ***View/Edit Participation Codes*** tab in TIDE and follow the procedure in the **Updating a Student's Participation Code** section on the following page.
- If the student is no longer eligible for the test and had attempted the test, use the Discrepancy Resolution tab in TIDE to clean up the data (i.e., to add the appropriate participation code); follow the procedure in the "How LEA-level users use Discrepancy Resolution for cleanup" section on page 126.
- If the student is no longer eligible for the test and had not attempted the test, use the Discrepancy Resolution tab in TIDE to clean up the data (i.e., to add the appropriate participation code); follow the procedure in the "How LEA-level users use Discrepancy Resolution for cleanup" section on page 126.
- If the student is no longer enrolled in the LEA, use the Discrepancy Resolution tab in TIDE to clean up the data (i.e., to add the appropriate participation code); follow the procedure in the "How LEA-level users use Discrepancy Resolution for cleanup" section on page 126.

Please note: To return to the page in this manual that you were on before clicking one of these links, use one of the following keyboard shortcuts: ***Alt*** *+* ***Left Arrow*** *(for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or* ***Command*** *+* ***Left Arrow*** *(for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

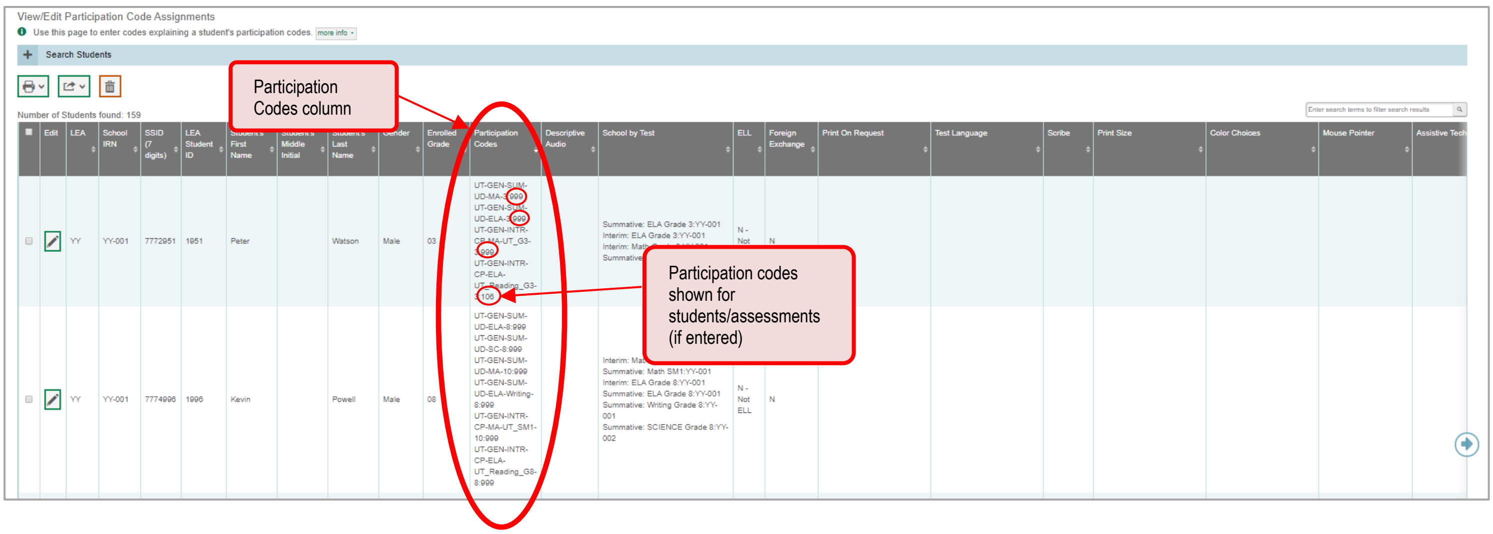
Updating a Student's Participation Codes

You can add or modify a student's participation codes as long as the student is enrolled in your school or LEA.

To update a student's participation codes:

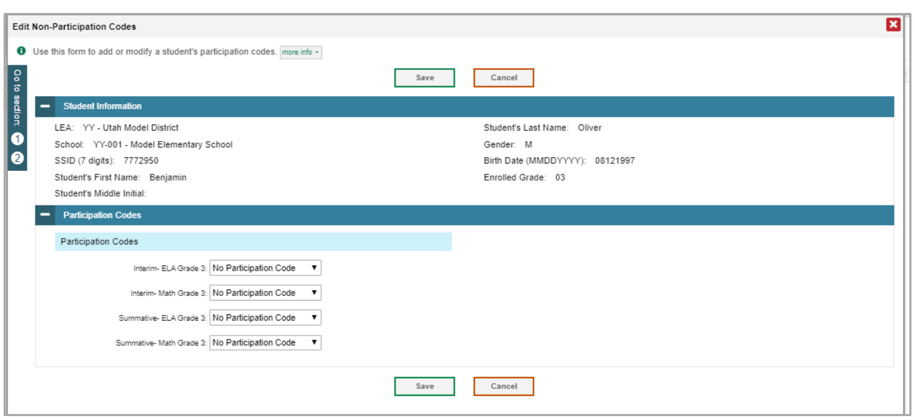
1. Log in to TIDE, and click the ***View/Edit Participation Codes*** tab.
2. Search for students using the available filters. (You can use the **Advanced Search** function to search only for students with participation codes.)
3. Click **Search**. The search results table displays those students who match the search query. The Participation Codes column lists any assigned participation codes (see Figure 145).

Figure 145: Participation Codes in TIDE



4. In the list of retrieved students, select for the student whose participation code you want to update.
5. The **Edit Non-Participation Code** page appears. In the ***Participation Codes*** section of the page, use the drop-down menus available for each test the student is eligible for to update the participation code(s) as needed (see Figure 146).

Figure 146: Participation Codes in the Test Information Distribution Engine



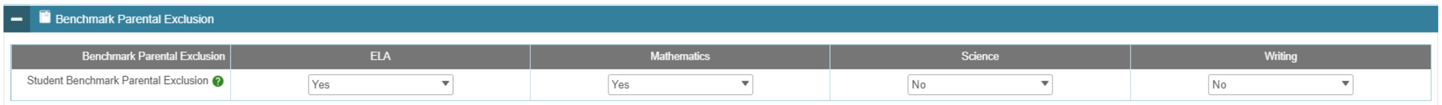
6. Click **Save** when complete.

Table 37 below lists the participation codes and their descriptions.

Table 37: Participation Codes and Their Descriptions

Participation Code	State	Federal	Description
101: Did Not Test	Countable for Participation only	Countable for Participation only	Student was enrolled at the school and eligible to test (with or without reasonable accommodations) but did not test.
103: EL First Year in U.S. April 15 or Later	Not Countable	Not Countable	The student is an English learner (EL) and first enrolled in the U.S. on or after April 15 of current school year. Student is not required to test, but testing is made available.
104: EL First Year in U.S. Before April 15	Counted for Participation only	Counted for Participation only	The student is EL and first enrolled in the U.S. before April 15 of current school year. Student must take ELA, Math, and Science.
205: EL in Second Year of Enrollment	Counted in Participation and Growth	Counted in Participation and Growth	Student is EL and first enrolled in the U.S. during the 2017-2018 school year. Student must take ELA, Math, and Science.
106: Student Refused to Test	Countable	Countable	Student refuses to start the assessment or refuses to complete at least six items of the assessment.
107: Excused for Health Emergency	Not Countable	Not Countable	Student is unable to test during the testing window due to an unanticipated health circumstance.
108: Course Instruction Not Complete	Not Countable	Not Countable	Student will not complete the relevant course instruction during the current academic year. Not available for Utah Aspire Plus.
109: Course Not Provided	Not Countable	Not Countable	Student did not take a course associated with the assessment (E.g. Student is assigned a test for a course they did not take at any time during the current school year).
110: Test Has Already Been Taken	Not Countable	Not Countable	Student has already taken the same assessment during a previous administration year.
111: USBE Excused – Approval Needed	Not Countable	Not Countable	Requires USBE authorization. Used in rare circumstances to capture irregular test circumstances.
112: Student Transferred Before Testing Window	Not Countable	Not Countable	Student transferred out of school before the LEA had a reasonable opportunity to administer the assessment.
200: Standard Participation	Countable	Countable	Student took the assessment under normal circumstances.
201: Accommodated	Countable	Countable	Student took the assessment with allowed accommodation(s).
202: Modified	Counted for Participation only	Counted for Participation Only	Student took the assessment with non-allowed modifications which interfere with the validity/reliability of the test.
203: Invalidated	Not Countable	Not Countable	LEA determines that the test was spoiled or invalid (E.g. Student cheated; test administrator broke protocol).
204: Parental Exclusion*	Not Countable	Countable	A parent or guardian has requested in writing that the student be exempt from the assessment.
208: Test System Irregularity	Not Countable	Not Countable	The test event was interrupted by a system error without reasonable opportunity to reset or re-open the test. USBE Approval required.
209: Incorrect Course Code Assigned	Countable	Countable	An incorrect course code or grade was assigned, triggering an incorrect test. LEA correction of the course code is required.

*If the parental exclusion includes benchmark modules, set the Benchmark Parental Exclusion fields in TIDE found on the View/Edit Student page. It is set by subject.

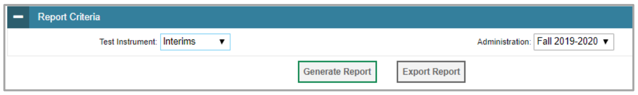


How LEA-level users view report of test status codes

The Test Status Code report displays all the non-participation codes for a test administration.

1. From the **Monitoring Test Progress** task menu on the TIDE dashboard, select **Test Status Code Report**. The ***Test Status Code Report*** page appears.

Figure 147: Test Status Code Report Search Results

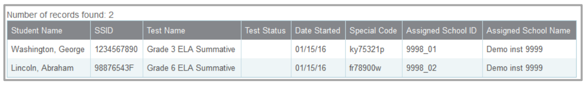


2. In the *Report Criteria* panel (see Figure 147), select search criteria for the test and administration.

3. Do one of the following:

   - To open the report in Microsoft Excel, select **Export Report**.
   - To view the report on the page, select **Generate Report**. Note: due to the size of this report, it is recommended that users Export instead of Generate.

Figure 148: Test Status Code Report



Number of records found: 2

Student Name	SSID	Test Name	Test Status	Date Started	Special Code	Assigned School ID	Assigned School Name
Washington, George	1234567890	Grade 3 ELA Summative		01/15/16	ky75321p	9998_01	Demo inst 9999
Lincoln, Abraham	98876543F	Grade 6 ELA Summative		01/15/16	fr78900w	9998_02	Demo inst 9999

TIDE displays the tests and associated statuses and participation codes (see Figure 148).

For a description of the columns in this report, see Table 38 below.

Table 38: Columns in the Test Status Code Report

Column	Description
Name	Student's name.
SSID	Student's Statewide Student Identifier number.
TestName	Test in which student did not participate.
TestStatus	Test's most recent status.
Date Started	Date student started the test.
Participation Code	Code indicating why student did not start or complete the test.
Assigned School ID	ID of school where student is enrolled.
Assigned School Name	Name of school where student is enrolled.
Opportunity	Test opportunity number.
Result ID	Unique ID for the item result.
Session ID	Unique ID for the test session.
Test Expiration Date	Date the test expired.

For a description of each status that a test opportunity can have, see Table 39 on the following page.

Table 39: Test Opportunity Status Descriptions

Status	Definitions
Approved	The TA has approved the student for the session, but the student has not yet started or resumed the test.
Completed	The student has submitted the test for scoring. No additional action can be taken by the student.
Denied	The TA denied the student entry into the session. If the student attempts to enter the session again, this status will change to "Pending" until the TA approves or denies the student.
Expired	The student's test has not been completed and cannot be resumed because the test has expired.
Invalidated	The test result has been invalidated.
Paused	The student's test is currently paused (as a result of one of the following): • The student paused his or her test by selecting the **Pause** button. • The student idled for too long (more than 20 minutes) and the test was automatically paused. • The test administrator stopped the session the student was testing in. • The test administrator paused the individual student's test. The student's browser or computer shut down or crashed.
Pending	The student is awaiting TA approval for a new test opportunity.
Reported	The student's score for the completed test in TDS has passed the quality assurance review and has been submitted to the ORS. Some items must be hand scored before they appear in ORS.
Review	The student has answered all test items and is currently reviewing his or her answers before submitting the test. (A test with a "review" status is not considered complete.)
Scored	The test will display a scored status, followed by the student's score.
Started	The student has started the test and is actively testing.
Submitted	The test has been submitted for quality assurance review and scoring before it is sent to the ORS. Note: All tests go through an internal scoring process during quality assurance review.
Suspended	The student is awaiting TA approval to resume a testing.

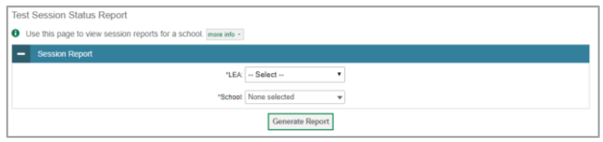
How LEA-level users view test session status reports

LEA -level users can view status reports of active and inactive test sessions happening in their LEA. These reports show how many students in each school are testing and how many have started, paused, and completed their test.

LEA -level users can also view school-level test session status reports for each school in their LEA. These reports show each active and inactive session ID for a school, along with information like proctor name, test name, the start time of the test session, the total number of students taking the test, and the number of students who have started, paused, and completed the test.

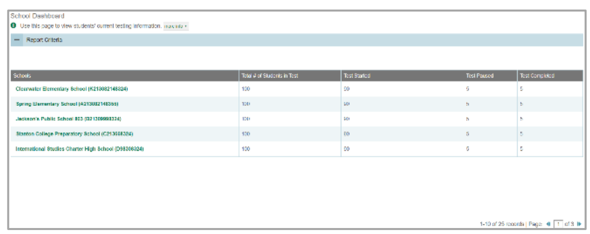
1. From the **Monitoring Test Progress** task menu on the TIDE dashboard, select **Test Session Status Report**. The ***Test Session Status Report*** page appears.

Figure 149: Test Session Status Report Page



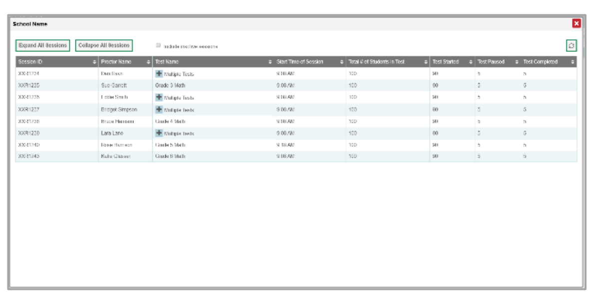
2. From the **LEA** drop-down list, select an LEA.
3. From the **School** drop-down list, select an individual school to view a detailed report for that school or select multiple schools to view a summary report for the schools you select. To view a summary report for all schools in your LEA, select **All Schools**.
4. Select **Generate Report**. If you selected an individual school in step 3, skip step 5.
5. If you selected multiple schools in step 3, a summary report page appears. For a description of the columns in this report, see Table 40 on the following page.

Figure 150: Summary Session Report



6. Select a school from the summary report page to view a detailed report for that school. If you selected an individual school in step 3, a detailed report will appear after you complete step 4. For a description of the columns in this report, see Table 41 on the following page.

Figure 151: Detailed Session Report

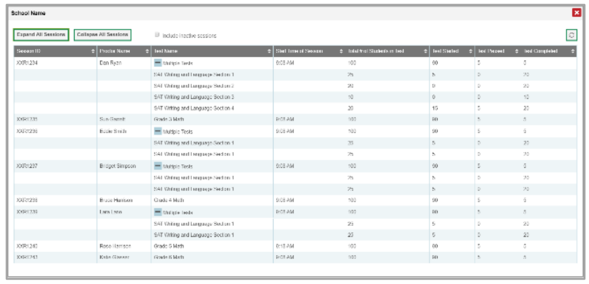


7. *Optional:* Select **Expand All Sessions** to expand all sessions containing multiple tests.

8. *Optional:* Select **Collapse All Sessions** to collapse all expanded sessions.

9. *Optional:* To view inactive test sessions, mark the Inactive Test Sessions checkbox. Inactive test sessions will appear in italics.

Figure 152: School Report Page with All Sessions Expanded



10. *Optional:* Select to refresh the list of available sessions. Data is refreshed in near real-time.

Table 40: Columns in the Summary Session Report Page

Column	Description
Schools	List of schools for which you can view reports.
Total # of Students in Test	Total number of students testing in each school.
Test Started	Number of students who have started their test.
Test Paused	Number of students who have paused their test.
Test Completed	Number of students who have completed their test.

Table 41: Columns in the Detailed Session Report Page

Column	Description
Session ID	The Session ID to which the test is linked.
Proctor Name	Name of the proctor associated with the Session ID.
Test Name	Name of the test associated with the Session ID. Multiple tests may be associated with one Session ID.
Start Time of Session	Start time of the session.
Total # of Students in Test	Total number of students testing in each school.
Test Started	Number of students who have started their test.
Test Paused	Number of students who have paused their test.
Test Completed	Number of students who have completed their test.

Recommended process for managing summative participation during testing

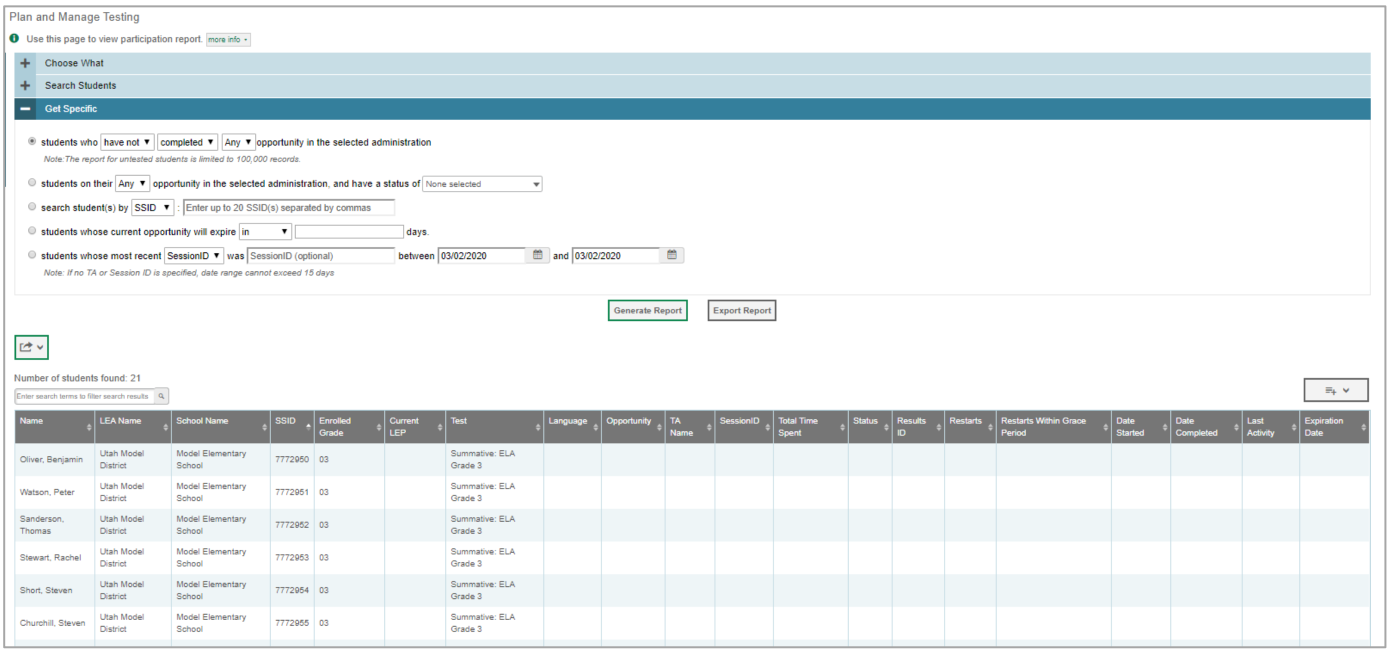
As users progress through their testing window, they can use the features of TIDE described in previous sections to monitor participation in order to ensure that all students eligible to test are either participating or have a participation code entered before the end of your school year. In particular, users can use the following features found in the **Monitoring Test Progress** task menu on the TIDE dashboard.

1. Plan and Manage Testing

    a. This report allows users to view, at any time, a list of students who have not started their tests or have not completed their tests.

    - The data in this report are generated in real-time.

Figure 153: Plan and Manage Testing Results Page



- For the steps to take to generate this report, see the "How LEA-level users view report of students' current test status" section on page 109 of this guide.

*Please note: To return to the page in this manual that you were on before clicking one of these links, use one of the following keyboard shortcuts: **Alt** + **Left Arrow** (for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or **Command** + **Left Arrow** (for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

2. Test Completion Rate Report

   a. This report shows the number of students eligible (Total Student), number of students started (Total Student Started), number of students completed (Total Student Completed), and percentages.

      - The data in this report are generated by the system each night; the data is not generated in real-time.

   b. It's recommended for users to view this report by school as they start their Summative test window.

      - The report provides a quick way to monitor progress in a user's LEA or school.

Figure 154: Test Completion Rate Report

Date	Test	Administration	Test Name	District Name	LEA ID	LEA NAME	Opportunity	Total Student	Total Student Started	Total Student Completed	Percent Started	Percent Completed
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: ELA Grade 3		YY	Utah Model District	1	21	0	0	0.00%	0.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: ELA Grade 4		YY	Utah Model District	1	20	1	0	5.00%	0.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: ELA Grade 5		YY	Utah Model District	1	20	8	8	40.00%	40.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: ELA Grade 6		YY	Utah Model District	1	20	0	0	0.00%	0.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: ELA Grade 7		YY	Utah Model District	1	15	0	0	0.00%	0.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: ELA Grade 8		YY	Utah Model District	1	14	5	5	35.71%	35.71%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: Math Grade 3		YY	Utah Model District	1	21	0	0	0.00%	0.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: Math Grade 4		YY	Utah Model District	1	20	10	10	50.00%	50.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: Math Grade 5		YY	Utah Model District	1	20	0	0	0.00%	0.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: Math Grade 6		YY	Utah Model District	1	20	0	0	0.00%	0.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: Math Grade 7		YY	Utah Model District	1	15	0	0	0.00%	0.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: Math Grade 8		YY	Utah Model District	1	8	6	5	75.00%	62.50%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: Math SM1		YY	Utah Model District	1	6	0	0	0.00%	0.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: SCIENCE Grade 4		YY	Utah Model District	1	20	0	0	0.00%	0.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: SCIENCE Grade 5		YY	Utah Model District	1	20	0	0	0.00%	0.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: SCIENCE Grade 6		YY	Utah Model District	1	20	1	1	5.00%	5.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: SCIENCE Grade 7		YY	Utah Model District	1	15	8	8	53.33%	53.33%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: SCIENCE Grade 8		YY	Utah Model District	1	14	0	0	0.00%	0.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: Writing Grade 5		YY	Utah Model District	1	20	5	5	25.00%	25.00%
3/2/2020 1:00:01 AM	RISE Summative	2019-2020	Summative: Writing Grade 8		YY	Utah Model District	1	14	5	5	35.71%	35.71%

   - For the steps to take to generate this report, see the "How LEA-level users view report of test completion rates" section on page 113 of this guide.

*Please note: To return to the page in this manual that you were on before clicking one of these links, use one of the following keyboard shortcuts: **Alt** + **Left Arrow** (for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or **Command** + **Left Arrow** (for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

3. Test Status Code Report

   a. This is the one report that includes both test status and participation code with a record for every student and every test for which they're eligible.

      - Note: due to the size of this report, it is recommended that users Export instead of Generate. Generating the report can increase the amount of time it takes to load.

   b. Once a user has downloaded the report, they can turn on filters when viewing it in Excel to control the view:

      - In Column D (Test Status),

         a. Tests that are listed as completed can be filtered out.

         b. For tests that are listed as paused, users should make sure the student responded to at least six items or entered one non-blank character if it is a writing test to ensure they count as participated.

      - In Column F,

a. Tests with participation codes already assigned can be filtered out;

- Once these filters have been applied, users can see the students who need to finish or start their Summative test.

c. It's recommended that LEAs and SAs begin to review this report regularly two weeks before their test window closes.

d. LEAs should use the Test Status Code Report for current students; for students who have moved, they should use the Discrepancy Resolution tab in TIDE to clean up the data (i.e., to add the appropriate participation code); follow the procedure in the "How LEA-level users use Discrepancy Resolution for cleanup" section on page 126.

Figure 154. Test Code Status Report

Name	SSID	TestName	TestStatus	Date Started	Participation Code	Assigned School ID	Assigned School Name	Opportunity
Test, Test	9810212	Summative: ELA Grade 3			Student Transferred Before Testing Window	99-995	DEMO SCHOOL 4	0
Last25, Test25	9980025	Summative: ELA Grade 3			Student Refuses to Test	99-998	DEMO SCHOOL 2	0
Last70, Test70	9980070	Summative: ELA Grade 3			Excused - Medical Emergency	99-999	DEMO SCHOOL 1	0
Last100, Test100	9980100	Summative: ELA Grade 3			Student Transferred Before Testing Window	99-998,99-995	DEMO SCHOOL 2,DEMO SCHOOL 4	0
DemoKid37, Bromesh37	9999036	Summative: ELA Grade 3			Student Refuses to Test	99-995	DEMO SCHOOL 4	0
DemoKid109, Bromesh109	9999108	Summative: ELA Grade 3			Absent - Did not take test	99-995	DEMO SCHOOL 4	0
DemoKid144, Bromesh144	9999143	Summative: SCIENCE Grade 8			Excused - Medical Emergency	99-999	DEMO SCHOOL 1	0
DemoKid962, Bromesh962	9999961	Summative: Math Grade 4			Student Transferred Before Testing Window	99-996	DEMO SCHOOL 3	0
DemoKid970, Bromesh970	9999969	Summative: SCIENCE Grade 6			Excused - Medical Emergency	99-996	DEMO SCHOOL 3	0
DemoKid978, Bromesh978	9999977	Summative: Writing Grade 8			Test Has Already Been Taken	99-996	DEMO SCHOOL 3	0

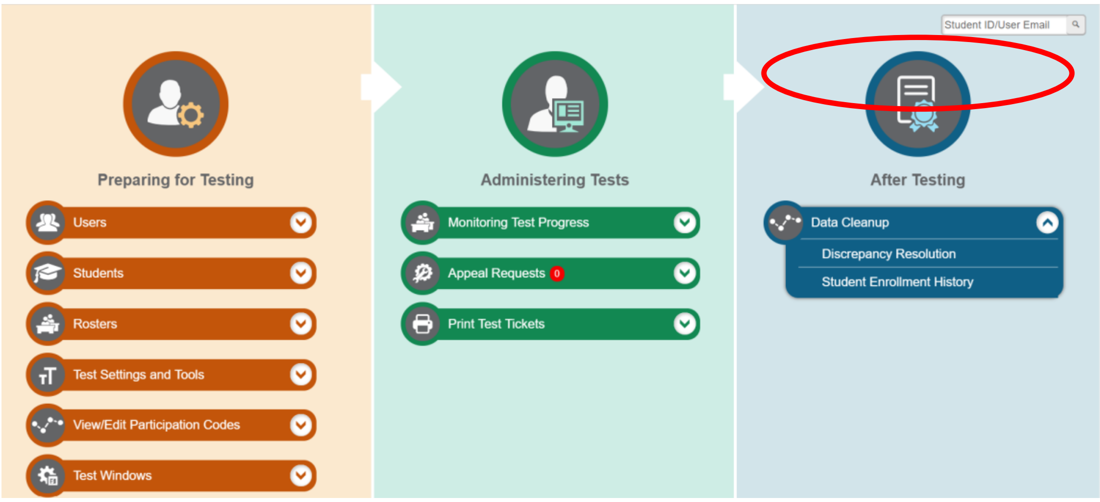
- For the steps to take to generate this report, see the "How LEA-level users view report of test status codes" section on page 119 of this guide.

*Please note: To return to the page in this manual that you were on before clicking one of these links, use one of the following keyboard shortcuts: **Alt** + **Left Arrow** (for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or **Command** + **Left Arrow** (for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

How LEA-level Users Use TIDE after Testing

After testing, LEA-level users can perform cleanup using the ***Discrepancy Resolution*** page in the TIDE system (see Figure 155).

Figure 155: LEA-Level User TIDE Dashboard

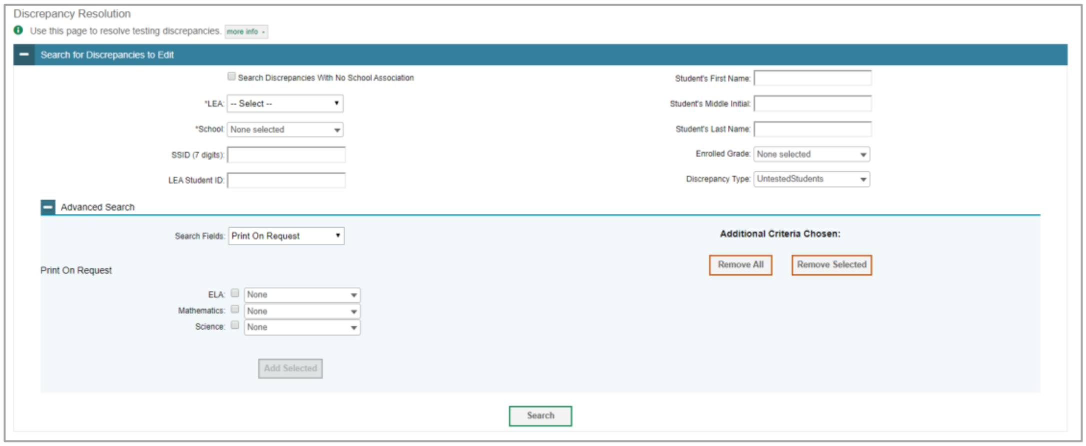


How LEA-level users use Discrepancy Resolution for cleanup

The ***Discrepancy Resolution*** page will show any students eligible for a summative test who have not started that test so users can see any students that still need to test or for whom participation codes need to be added.

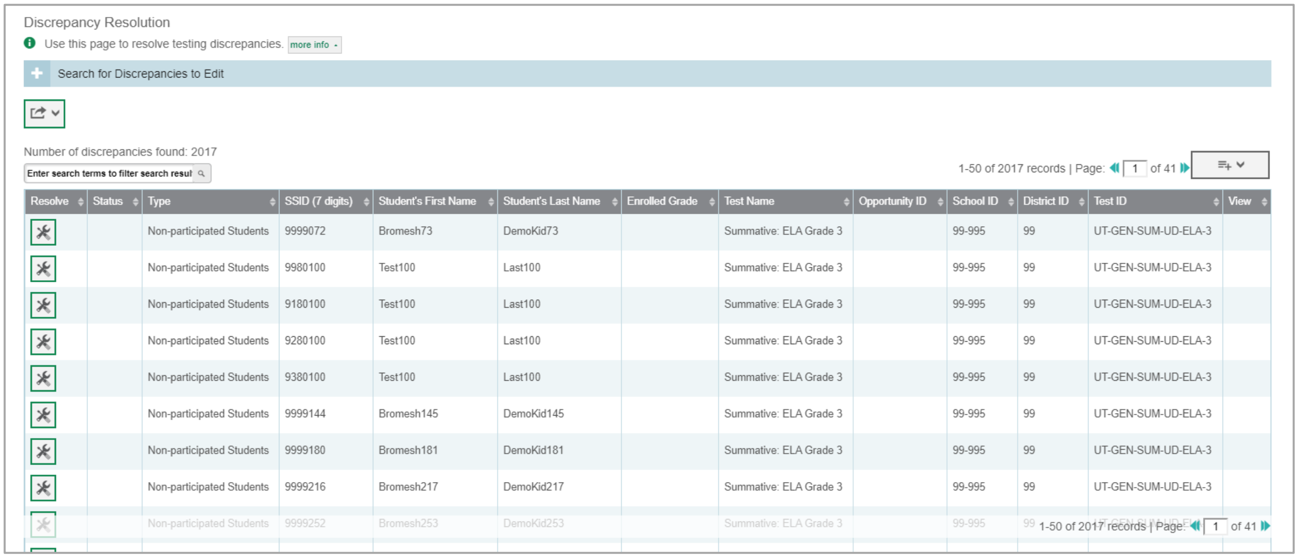
- In the **After Testing** section of the TIDE dashboard, select **Data Cleanup** then **Discrepancy Resolution**. The ***Discrepancy Resolution*** page appears (see Figure 156).

Figure 156: Discrepancy Resolution Page



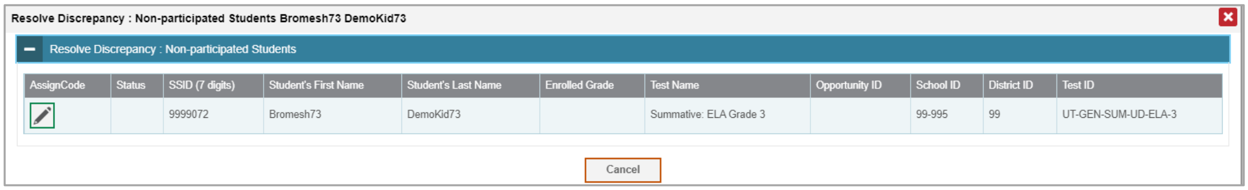
- Fill out the fields given as desired and hit **Search**. The results of the search will be generated, showing the students within the search criteria with discrepancies (those who are eligible for a summative test who have not started).

Figure 157: Discrepancy Resolution Results Page



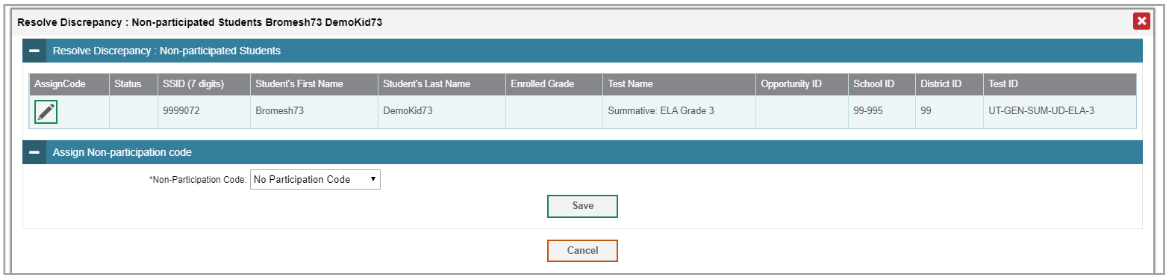
- Select  to resolve the discrepancy. The ***Resolve Discrepancy*** page will appear.

Figure 158: Resolve Discrepancy Page



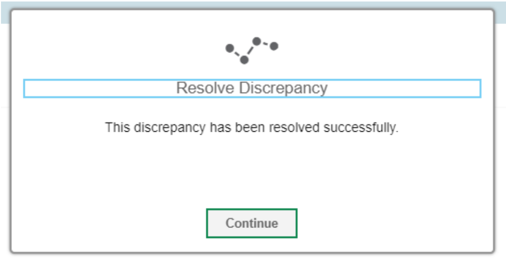
- Select  to assign a participation code to the student listed in that row. The ***Assign Non-participation code*** page will appear.

Figure 159: Assign Non-Participation Page



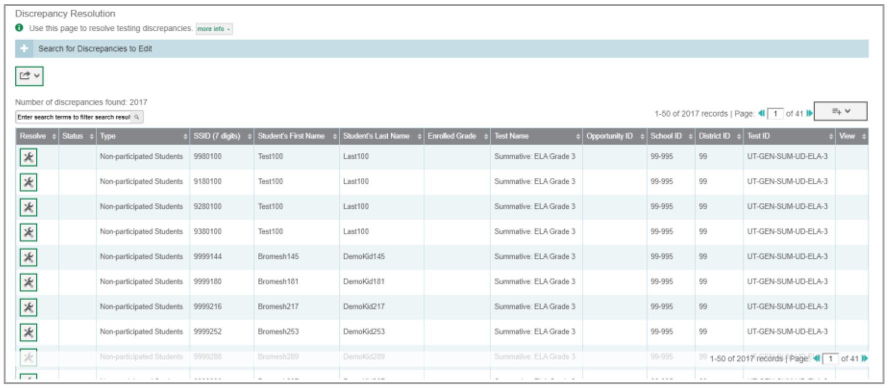
- Use the drop-down menu given to assign a non-participation code to the student as applicable.
- Click **Save** when complete. A confirmation screen will appear confirming that the discrepancy has been resolved.

Figure 160: Assign Non-Participation Page



- Click **Continue**. The ***Resolve Discrepancy*** page will re-appear, updated to exclude the student for whom a participation code was entered because that student's discrepancy is resolved.

Figure 161: Updated Discrepancy Resolution Results Page



It is recommended that users begin using this part of the system two weeks prior to the test window closing for the LEA or school. As a reminder, all participation codes must be submitted by **June 14, 2021**; however, it is best to do this cleanup process and the process of assigning participation codes while students are still in school so users can have a student finish or take a test that may have been discovered was missed.

Appendix

Please note: To return to the page in this manual that you were on before clicking a link to this appendix, use one of the following keyboard shortcuts: ***Alt*** *+* ***Left Arrow*** *(for Windows Operating System [OS] on laptops or tablets when viewing the file in Adobe Reader) or* ***Command*** *+* ***Left Arrow*** *(for Mac OS X on laptops or tablets when viewing the file in Adobe Reader). Please note that these keyboard shortcuts do not apply to Chromebooks. If the keyboard shortcuts do not work or apply to your device, you can also scroll back to your previous location.*

A

Account Information

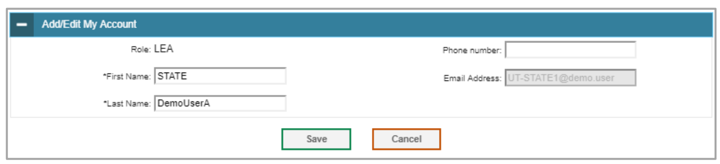
You can modify your name, phone number, and other account information in TIDE. (To change your email address, your school or LEA assessment coordinator must create a new account with the updated email address.)

1. In the TIDE banner (see Figure 162), from the **Manage Account** drop-down list, select **My Contact**. The ***My Contact Information*** page appears (see Figure 163).
2. Enter updates as necessary.
3. Select **Save**.

TIDE saves your changes, and a confirmation message appears.

Figure 162: TIDE Banner

Figure 163: Fields in the My Contact Information Page



C

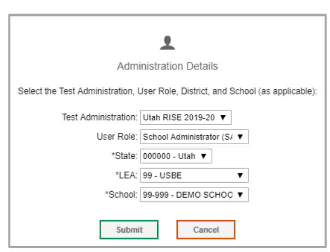
Changing Your Associated Test Administration, Institution, or Role

Depending on your permissions, you can switch to different test administrations, schools, LEAs, and user roles in TIDE.

1. In the TIDE banner (see Figure 164), select **Change Role** from the **Manage Account** drop-down menu. The ***Administration Details*** window appears (see Figure 165).
2. Update the information as necessary.
3. Select **Submit**. A new home page appears that is associated with your selections.

Figure 164: TIDE Banner

Figure 165: Administration Details Window



E

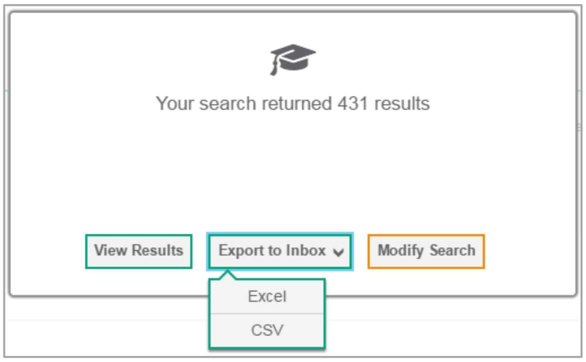
Exporting Records in TIDE

You can export search results for users, students, rosters, students' test settings, test windows, and appeal requests to the inbox.

1. Retrieve the records you want to export by searching for records in TIDE.

2. In the search results pop-up window, select **Export to Inbox** and select the file format (CSV or Excel) in which the data should be exported. You can navigate away from the page and perform other tasks if required. When your file is available for download, you will receive an email to the email account registered in TIDE. After receiving the email, you can download the exported file from the Inbox.

Figure 166: Image Caption



You can also export records from the search results grid.

1. Retrieve the records you want to delete by searching for records in TIDE.

2. Do one of the following:

   - Mark the checkboxes for the record you want to export.

   - Mark the checkbox at the top of the table to export all retrieved records.

3. Select , and make a selection.

I

Inbox Files

When searching for users, students, students' test settings, test windows, and appeal requests, you can choose to export the search results to the Inbox. The shared Inbox serves as a secure repository that lists files containing the data that you have exported in TIDE and other CAI systems. When you choose to export search results to the Inbox, TIDE sends you an email when the export task is completed and the file is available in the Inbox for download.

The Inbox also lists any secure documents that have been externally uploaded to the Inbox and that you have privileges to view.

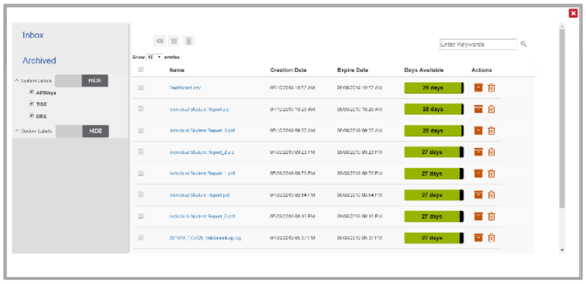
The files in the Inbox are listed in the order in which they were generated, uploaded, or archived. The file creation and file expiration dates appear, if applicable. The number of days remaining until a file expires is also displayed next to a file. By default, exported files are available for 30 days while secure documents are available for the period specified by the USBE. You can access the Inbox from any page in TIDE to either download the file or archive the file for future reference. You can also delete the files you have exported, provided you have not archived them.

3. From the TIDE banner (see Figure 167) select **Inbox**. The ***Inbox*** page appears (see Figure 168).

Figure 167: TIDE Banner

4. *Optional*: Select the file view from the available tabs:
   - Inbox: This is the default view and displays all the files except for the ones that you have archived.
   - Archived: Displays the files that you have archived.

Figure 168: Inbox



5. *Optional*: To filter the files by keyword, enter a search term in the text box above the list of files. TIDE displays only those files containing the entered file name.
6. *Optional*: To hide or display system labels, toggle HIDE/SHOW.
7. *Optional*: To hide files with a system label, unmark the checkbox for that system label.
8. *Optional*: To hide or display custom labels, toggle HIDE/SHOW.
9. *Optional*: To hide files with a custom label, unmark the checkbox for that custom label.
10. Do one of the following:
    - To download a file, select the file name.
    - To add a new custom label or apply an existing custom label, select .
      - To apply a new custom label, mark the checkbox, enter a new custom label in the text box, and select **Save New Label**.
      - To apply an existing custom label, mark the checkbox, enter an existing custom label in the text box, and select **Apply Label**.

- To archive a file, select .
- To delete a file, select .

About File Deletion

- Archived files cannot be deleted.
- You can delete files that you have exported, but you cannot delete secure documents uploaded to the Inbox by admin users.

P

Printing Student Records in TIDE

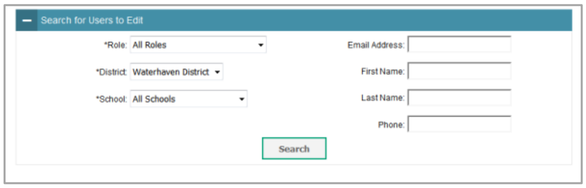
1. Retrieve the student records you want to print by searching for records in TIDE.
2. Do one of the following:
   - To print some records, mark the checkboxes for the records you want to print, select , select My Selected, and then select Print.
   - To print all records, select , select All, and then select Print.

S

Searching for Records in TIDE

Many tasks in TIDE require you to retrieve a record or group of records (for example, locating a set of users to work with when performing the **View/Edit/Export Users** task). For such tasks, a search panel appears when you first access the task page (see Figure 169). This section explains how to use this search panel and navigate search results.

Figure 169: Sample Search Panel



1. In the search panel, enter search terms and select values from the available search parameters, as required. Some fields may allow you to select multiple values. For example, the school and grade drop-down lists on the student search pages will allow you to select one, multiple, or all values. Similarly, the **Test ID** drop-down list on the ***Plan and Manage Testing*** page will allow you to select one, multiple, or all values.

The search parameters available in the search panel depend on the record type. Required search parameters are marked with an asterisk.

2. *Optional*: If the task page includes an additional search panel, select values to further refine the search results:

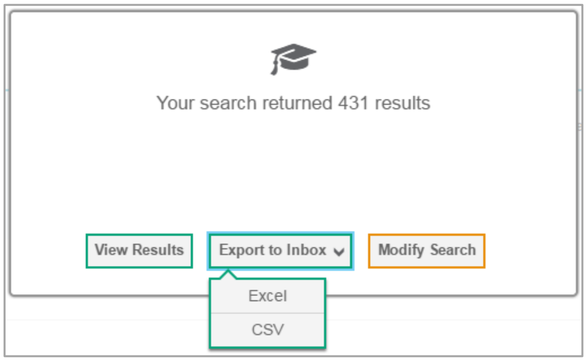
   - To include an additional search criterion in the search, select it and select Add or Add Selected as available
   - Optional: To delete an additional search criterion, select it and select Remove Selected. To delete all additional search criteria, select Remove All.

3. Select **Search**.

   - If searching for users, students, test windows, and appeal requests, proceed to the next step.
   - If searching for other types of records, such as rosters, skip to Step 4.

     - In the search results pop-up window (see Figure 170) that indicates the number of records that matched your search criteria and provides you with options to view or export the records or modify your search parameters, do one of the following:

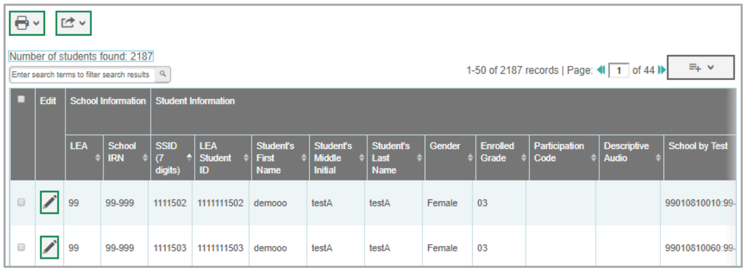
Figure 170: Search Results Pop-up Window



   - To view the retrieved records on the page, select **View Results**. Continue to Step 4. This option is not available if TIDE detects that this action might adversely affect its performance.
   - To export the retrieved results to the Inbox, select Export to Inbox and select the file format (CSV or Excel) in which the data should be exported. You can navigate away from the page and perform other tasks if required. When your file is available for download, you will receive an email to the email account registered in TIDE. After receiving the email, you can download the exported file from the Inbox.
   - To return to the page and modify your search criteria, select **Modify Search**. Repeat Steps 1 – 3.

- The list of retrieved records appears below the search panel (see Figure 171).

Figure 171: Sample Search Results



4. *Optional*: To filter the retrieved records by keyword, enter a search term in the text box above the search results and select . TIDE displays only those records containing the entered value.

5. *Optional*: To sort the search results by a given column, select its column header.
   - To sort the column in descending order, select the column header again.

6. *Optional*: If the table of retrieved records is too wide for your browser window, you can select and at the sides of the table to scroll left and right, respectively.

7. *Optional:* If the search results span more than one page, select or to view previous or next pages, respectively.

8. *Optional*: To hide columns, select (if available) and uncheck the checkboxes for the columns that you wish to hide. To show columns again, mark the applicable checkboxes.

Searching for Students or Users by ID

A *Student ID/User Email* field appears in the upper-right corner of every page in TIDE. You can use this field to navigate to the ***View and Edit Student*** or ***View/Edit User: [User's Name]*** form for a specified student or user.

1. In the *Student ID/User Email* field, enter a student's SSID or a user's email address. The SSID or email address must be an exact match; TIDE does not search by partial SSID or email address.

2. Select . The ***View and Edit Student*** or ***View/Edit User: [User's Name]*** form for that student or user appears.

Figure 172: Student ID/User Email

U

User Role Permissions

Each user in TIDE has a role, such as an LEA-level user. Each role has an associated list of permissions to access certain features within TIDE. Table 42 indicates which users can access specific features and tasks within each CAI system.

Table 42: User Role Permissions

Task or Site	LEA	LRV	SA	TE	PR
Access to Test Information Distribution Engine (TIDE) Features and Tasks					
How to Set Up User Accounts					
How to Add New User Accounts	✓		✓		
How to Modify Existing User Accounts	✓		✓		
How to Upload User Accounts	✓		✓		
How to Register Students					
How to Modify Existing Student Accounts	✓		✓	✓	
How to Upload Student Accounts	✓		✓	✓	
How to Specify Student Accommodations and Test Tools	✓		✓	✓	✓
How to Upload Student Accommodations and Test Tools	✓		✓		
How to View Student Distribution Reports	✓	✓	✓	✓	✓
How to Manage Rosters					
How to Add New Rosters	✓		✓	✓	
How to Modify Existing Rosters	✓		✓	✓	
How to Upload Rosters	✓		✓	✓	
How to Manage Test Windows					
How to Add New Test Windows	✓				
How to Modify Existing Test Windows	✓				
How to Upload Test Windows	✓				
How to Print Test Tickets					
How to Print Test Tickets from Student Lists	✓	✓	✓	✓	
How to Print Test Tickets from Roster Lists	✓	✓	✓	✓	
How to Manage Appeal Requests					
How to Add New Appeal Requests	✓		✓		
How to Modify and Approve Existing Appeal Requests	✓				
How to Upload Appeal Requests	✓		✓		
How to Monitor Test Progress					
How to View Reports of Students' Current Test Status	✓	✓	✓	✓	✓
How to View Reports of Students' Current Test Status by Student ID	✓	✓	✓	✓	✓
How to View Report of Test Completion Rates	✓	✓	✓	✓	✓
How district-level users view test session status reports	✓		✓		
How to View Report of Test Status Codes	✓	✓	✓		
How to Perform Data Cleanup					
How to View or Edit Participation Codes	✓	✓	✓	✓	

User Support

For additional information and assistance in using TIDE, contact the RISE Helpdesk.

The help desk is open 8:00am - 5:00pm (except holidays or as otherwise indicated on the RISE Portal).

RISE Helpdesk

Toll-Free Phone Support: 877-269-4966

Email Support: RISEhelpdesk@cambiumassessment.com

Please provide the helpdesk with a detailed description of your problem, as well as the following:

- If the issue pertains to a student, provide the SSID and associated LEA or school for that student. Do not provide the student's name.
- If the issue pertains to a TIDE user, provide the user's full name and email address.
- Any error messages that appeared.
- Operating system and browser information, including version numbers (e.g., Windows 7 and Firefox 13 or Mac OS 10.7 and Safari 5).

Appendix 5-G

Reporting User Guide

Reporting System Quick Guide

2020–2021

Published August 10, 2020

Prepared by Cambium Assessment, Inc.

Table of Contents

Reporting System Quick Guide

The Reporting System allows you to access your summative, interim, and benchmark module assessment results.

How to Log In

1. Navigate to the portal (https://utahrise.org/)

Figure 1. RISE Portal Home Page

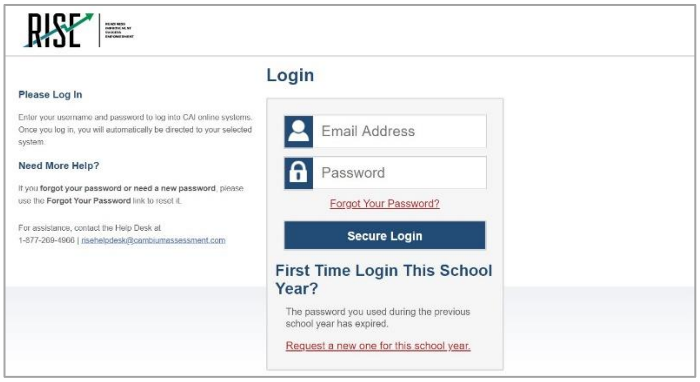
2. Click the **Reporting** card (see Figure 2). The login page appears.

Figure 2. Reporting Card

3. On the login page (see Figure 3), enter the email address and password you use to access all Cambium Assessment, Inc. (CAI) systems.

4. Click **Secure Login**.

Figure 3. Login Page



a. If the ***Enter Code*** page appears (see Figure 4), an authentication code is automatically sent to your email address. You must enter this code in the *Enter Emailed Code* field and click **Submit** within 15 minutes.

- If the authentication code has expired, click **Resend Code** to request a new code.

b. If your account is associated with multiple institutions, you are prompted to select a role, as in Figure 5. From the **Role** drop-down list, select the role and institution combination you wish to use. You can also change your institution after logging in

The dashboard for your user role appears.

Figure 4. Enter Code Page

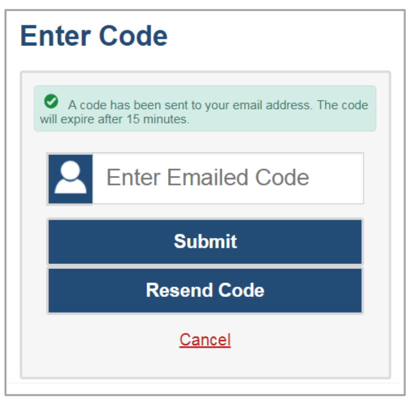
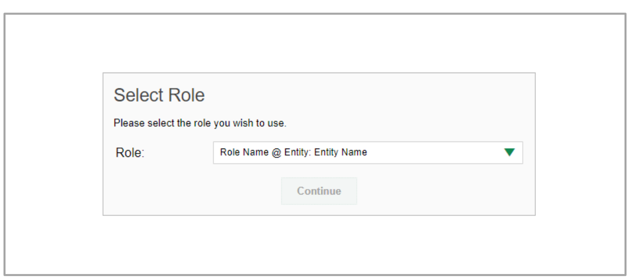


Figure 5. Select Role Page



How to Understand Different User Roles

Teachers, school-level users, and LEA-level users have access to different features and data in the Reporting System.

How to Understand Which Students Appear in Your Reports

- Teachers can view data for all students in their classes (rosters) who have completed assessments. They can also view data for students to whom they have administered assessments in the current school year.
- School-level users can view data for all students in their schools who have completed assessments.
- LEA-level users can view data for all students in their LEAs who have completed assessments.

How to Understand Which Features You Have Access To

- Teachers:
  - You can view the My Students' Performance on Test report, listing results for all your students who took a particular test.
  - You can filter by class (roster).
  - You can easily navigate directly from the Performance on Tests report to the Student Portfolio Report, which lists the various tests a particular student has taken.
  - When generating a Longitudinal Report to track the performance of multiple students over time, you can select the test opportunities to include in the report.
  - When generating Individual Student Reports (ISR) or student data files, you will see the available students grouped by class (roster).
  - You can compare any students' performance with the performance of your total associated students, school, and LEA.
  - You can set persistent preferences for which tests to display. These preferences can be used by school- and LEA-level users to narrow down the class (roster) groupings in their reports.
- School-level users:
  - You can view the School Performance on Test report, listing results for all your school's students who took a particular test.
  - You can filter by class (roster) after first selecting the teacher the class belongs to.
  - When generating Individual Student Reports (ISR) or student data files, you will see the available students grouped by class (roster).
  - You can compare any students' performance with the performance of your whole school and LEA.

  - You can narrow down the class (roster) groupings in your reports whenever teachers have set persistent preferences for tests to display.

- LEA-level users:
  - You can view the LEA Performance on Test report, listing results for all your LEA's schools whose students took a particular test.
  - You can filter by school.
  - You can view the School Performance on Test report just like a school-level user.
  - When generating Individual Student Reports (ISR) or student data files, you will see available students grouped by school.
  - You can compare any students' performance with the performance of your whole LEA.
  - You can narrow down the class (roster) groupings in your reports whenever teachers have set persistent preferences for tests to display

How to View Data from a Previous Point in Time

Changing the reporting time period allows you to view test results from a previous point in time. There are two time period settings: you can select a school year for which to view tests, and you can enter a date for which to view students.

- When you set a school year for which to view tests, the reports show data for test opportunities completed *in the selected school year*.
- When you set a date for which to view students, the reports show data only for the students who were associated with you *as of the selected date*. Students' enrollment and demographic information is all given as of the selected date as well. You can use this setting to view data for students who have left or recently entered your classes (rosters), school, or LEA. You can even view students who have left your state.

If you don't change the reporting time period, or if you reset it to the default, all the reports show test opportunities only for the current school year (except Longitudinal Reports and Student Portfolio Reports, which always retain the ability to look back to previous years), with current student data.

Some examples of how you can use this feature:

- You may want to view the past performance of your current students, including new transfer students. In that case, set a school year in the past and keep the date set to today.
- You may want to view the performance of your former students in order to compare them with that of your current students. In that case, set the date to a time when your former students belonged to you and had started testing, and set the school year to the same time. Then switch back to the present to compare.

1. From the **My Settings** menu in the banner, choose **Change Reporting Time Period** (see Figure 6). The ***Change Reporting Time Period*** window appears (see Figure 7).

Figure 6. Teacher View: Detail of Banner with Expanded My Settings Menu

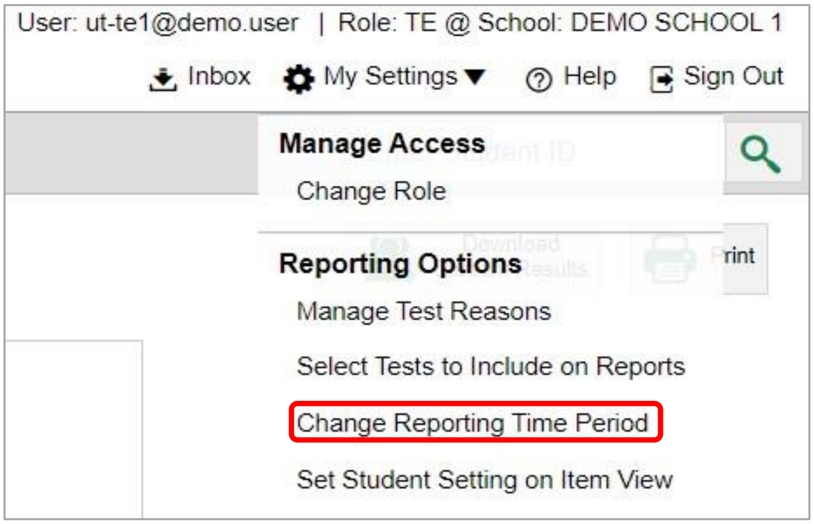


Figure 7. Change Reporting Time Period Window

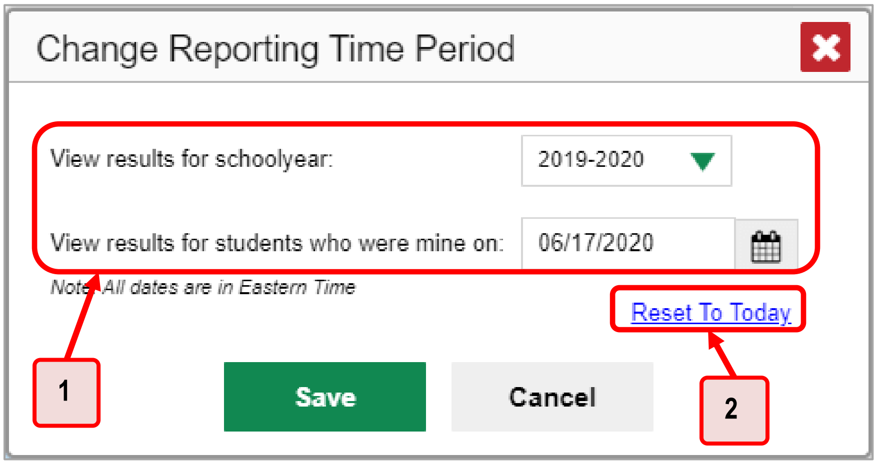


Table 1. Change Reporting Time Period Window Elements

#	Element
1	School year and student date selectors
2	**Reset To Today**

2. From the school year drop-down list, select a school year (see Figure 7). This is the year for which you will view test results.

3. In the *View results for students who were mine on* field, use the calendar tool to select a date, or enter it in the format `mm/dd/yyyy`. You will be viewing all the students who were associated with you on that date, and only those students.

- To view your current students' past performance, keep the date set to today.
- To view the performance of your former students, set the date to a day when those students were associated with you and had started testing.

4. Click **Save**. All reports are now filtered to show only data for the selected school year and date. All other filters are cleared.

Optional: To go back to viewing the latest data, open the ***Change Reporting Time Period*** window again, click **Reset To Today** in the lower-right corner, then click **Save**. The date resets and all filters are cleared. The reporting time period also resets when you log out, but persists when you switch roles

How to Navigate Basic Reports

When you log in to the Reporting System, the first thing you see is the dashboard where you can view overall test results for some or all of your test groups. From there, you can navigate to a report listing individual tests.

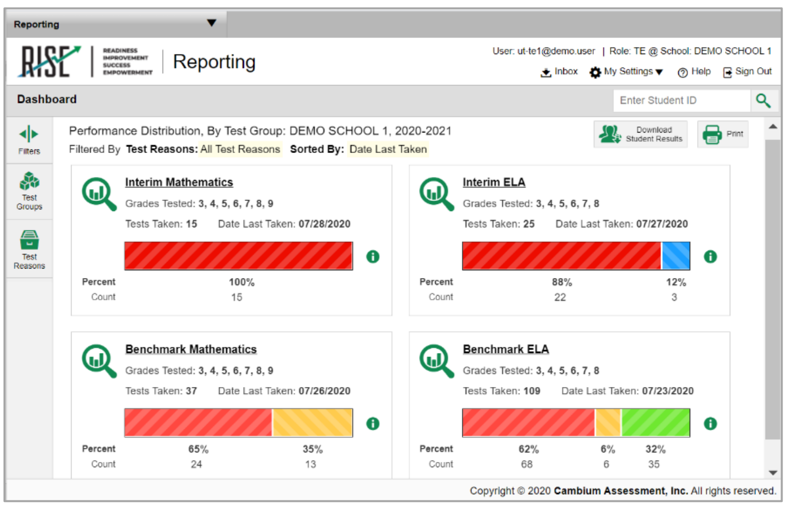
How to Use the Dashboard to View Aggregate Test Results

All users see the standard dashboard. It displays an aggregation card for each test group. A typical test group comprises a single test type, a single subject, and all grades (for example, the second card shown in Figure 8 is for Interim ELA).

Each aggregation card displays the test group name, a list of grades included, the number of students who took tests in the group, the date of the test last taken, and a performance distribution bar displaying both percentages and student counts below it. You may sometimes see the message "Data cannot be aggregated together for this group of tests" instead of the performance distribution bar for tests that do not report performance distribution, or that use different sets of performance levels. Test group cards are sorted by date last taken.

Clicking the button beside the performance distribution bar displays a legend with more information about performance levels.

Figure 8. Teacher View: Dashboard



By default, the dashboard is filtered to display only summative assessments, unless no summative data are available. In this case, all assessments are displayed. You can change the test groups and test reasons that appear using the **Filters** panel on the left. Figure 8 above shows a dashboard filtered to display all test groups.

If a message appears saying "There are no assessments to display", there may be no assessments taken in your current reporting time period, or you may have filtered out all data.

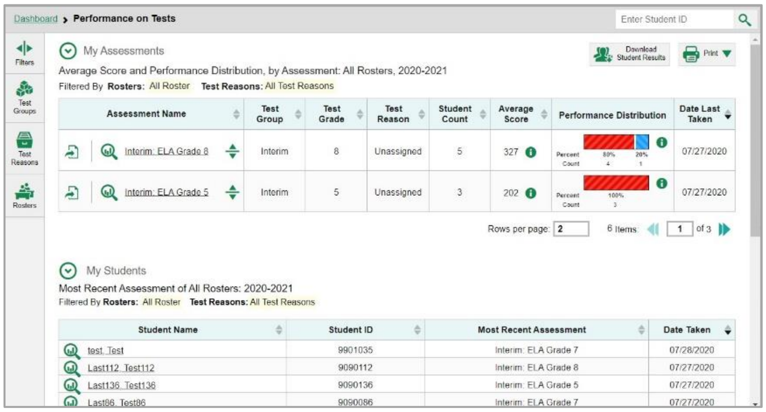
How to View More Detailed Data on a Particular Test Group

To view more detailed data for a particular test group, click the name of the group (or beside it). The Performance on Tests report appears. It is filtered to display only the test group you selected.

In the Performance on Tests report, teachers see two tables, as in Figure 9:

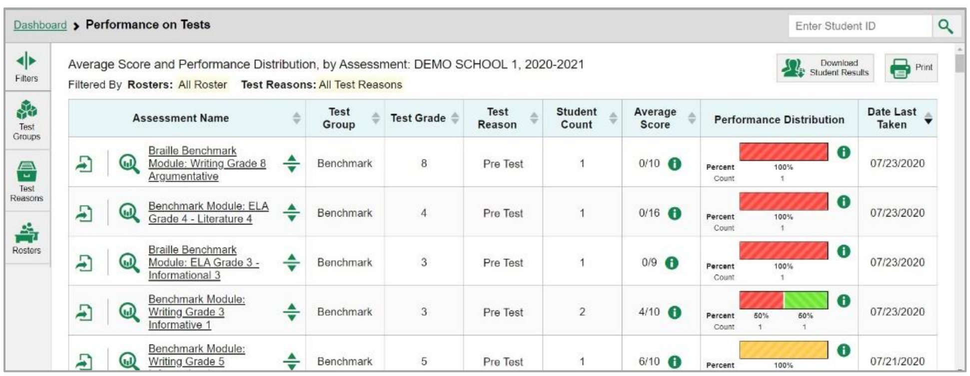
- The My Assessments table, listing all the assessments in the filtered test group or groups.
- The My Students table, listing all your students who took the assessments.

Figure 9. Teacher View: Performance on Tests Report



LEA- and school-level users see just one table, as in Figure 10. Like the first table on the teacher Performance on Tests report, this table lists all the assessments in the test group.

Figure 10. School-Level User View: Performance on Tests Report



For each test, the assessments table (see Figure 11) shows the test group, grade, test reason (the name of the test window of a summative assessment, or a category assigned to an interim assessment or benchmark module), number of students who took the test, average score, performance distribution, and date the test was last taken. Please note: a test reason is required for all benchmark modules and interim tests.

Figure 11. Teacher View: Performance on Tests Report

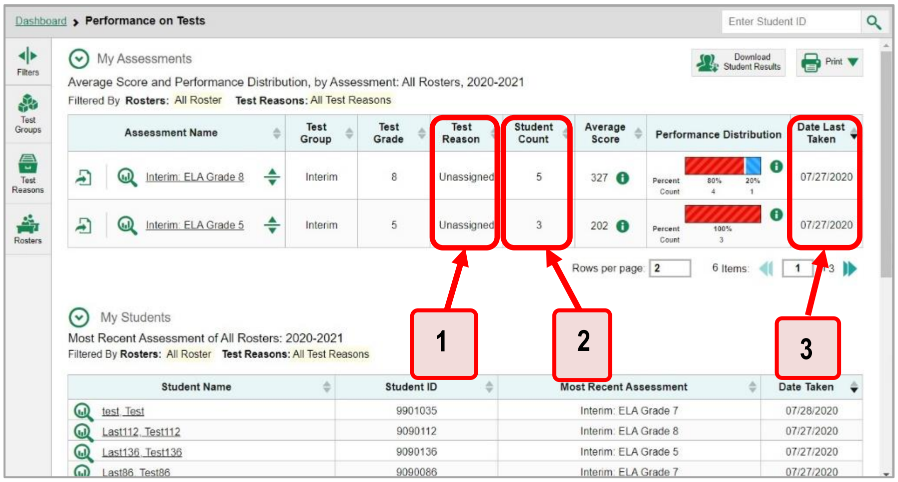


Table 2. Teacher View: Performance on Test Report Elements

#	Element
1	Test reasons (either test windows or categories)
2	Number of students who took each test for each test reason
3	Date of most recent opportunity for each test for each test reason

You can use the filters to view a different set of assessments.

If a message appears saying “There are no assessments to display” or “There are no students to display”, there may be no assessments taken in your current reporting time period, or you may have filtered out all data.

How to Access Test Results for All Your Classes (Rosters)

The **Performance by Roster** tab (Figure 12) displays test results for each class (roster). To view this tab, follow the instructions for your user role below.

Teachers and school-level users:

1. From the dashboard that appears when you log in, click a test group name (or beside it).
2. Click a test name (or beside it) in the table of assessments. Either the My Students’ Performance on Test or the School Performance on Test report appears, depending on your role. It is open to the **Performance by Roster** tab.

LEA-level users can view all classes (rosters) in a school. To do so, follow these instructions:

1. From the dashboard that appears when you log in, click a test group name (or beside it).

2. Click a test name (or beside it) in the table of assessments. A page of LEA test results appears, listing schools within the LEA.

3. Click a school name (or beside it). The School Performance on Test report appears, open to the **Performance by Roster** tab.

The report shown in Figure 12 displays a list of your classes (rosters) and each class's performance. The first few rows also show aggregate performance data for your LEA, school, and total students.

Figure 12. My Students' Performance on Test Report: Performance by Roster Tab

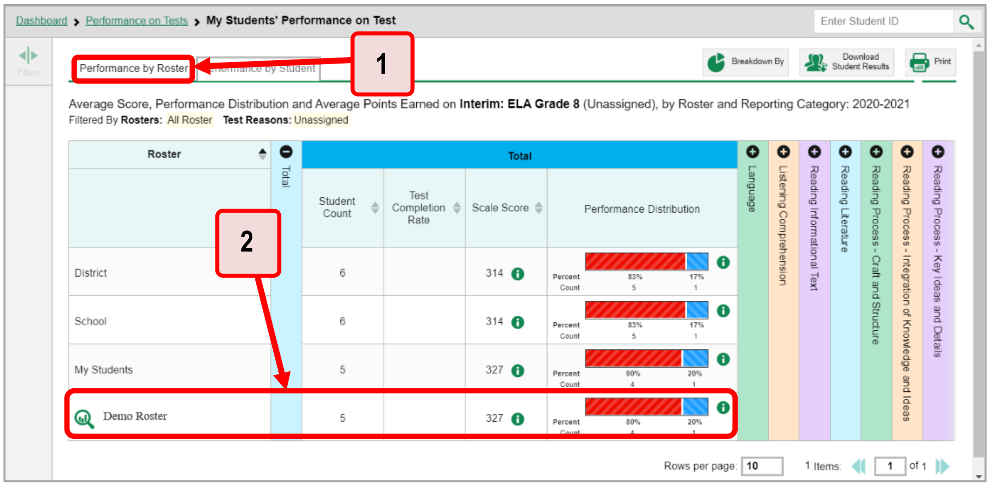


Table 3. My Students' Performance on Test Report: Performance by Roster Tab Elements

#	Element
1	**Performance by Roster** tab
2	Performance data for a class (roster)

How to Access Test Results for an Individual Student on a Particular Test

Teachers and school-level users:

1. From the dashboard that appears when you log in, click a test group name (or beside it).

2. Click a test name (or beside it) in the table of assessments. A page of test results appears.

3. Select the **Performance by Student** tab.

4. Click the name of an individual student (or beside it) in the report. The Student Performance on Test report appears (see Figure 13).

LEA-level users:

1. From the dashboard that appears when you log in, click a test group name (or beside it).

2. Click a test name (or beside it) in the table of assessments. A page of test results by school appears.

3. Click a school name (or beside it). The School Performance on Test report appears.

4. Perform the same steps as teachers and school-level users, starting at step 3.

Figure 13. Teacher View: Student Performance on Test Report

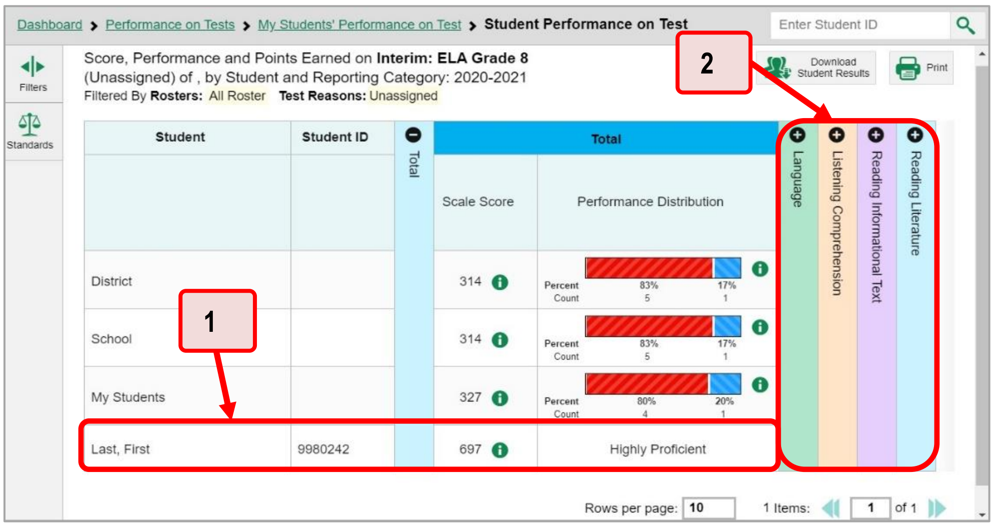


Table 4. Teacher View: Student Performance on Test Report Elements

#	Element
1	Row of data for the student
2	Reporting category section bars (click to expand)

You can view the student's performance in each area of the test using the reporting category sections, which you can click to expand (see Figure 13).

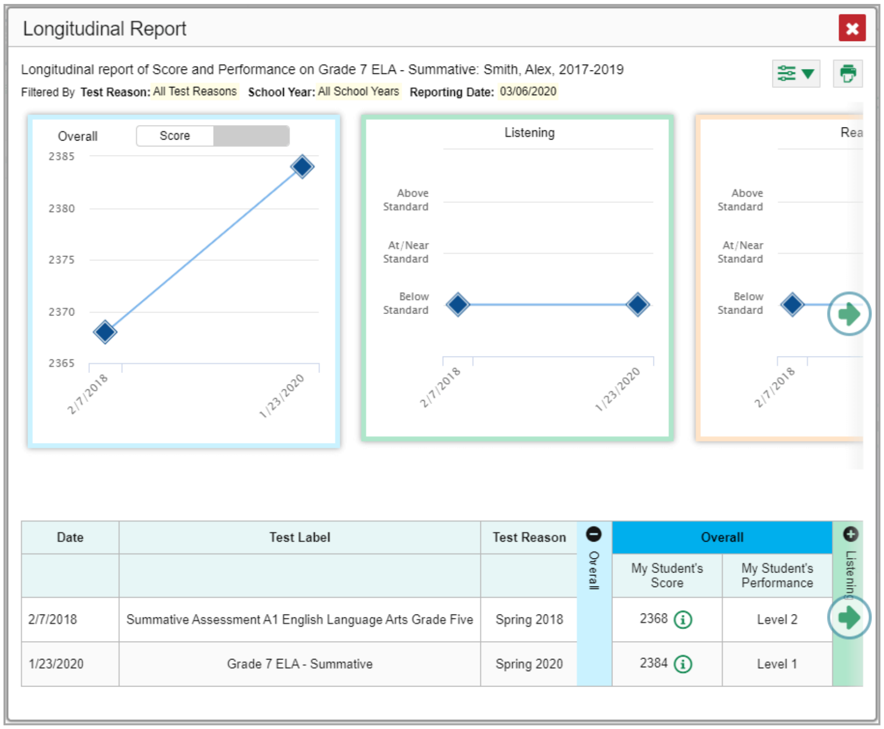
How to Track Student Performance Over Time on Summative and Interim Assessments

For summative and interim assessments, you can view your students' performance over time across multiple related assessments or across multiple test opportunities of a single assessment. This lets you see how students' performance has improved or declined. Please note: This does not apply to benchmark modules. Longitudinal Reports are only available for summative and interim assessments.

Each Longitudinal Report displays performance data for one of the following:

- A group of students who have completed every assessment available in the report.
- An individual student (see Figure 14).

Figure 14. Longitudinal Report Window: Summative Report for a Single Student with Multiple Reporting Categories

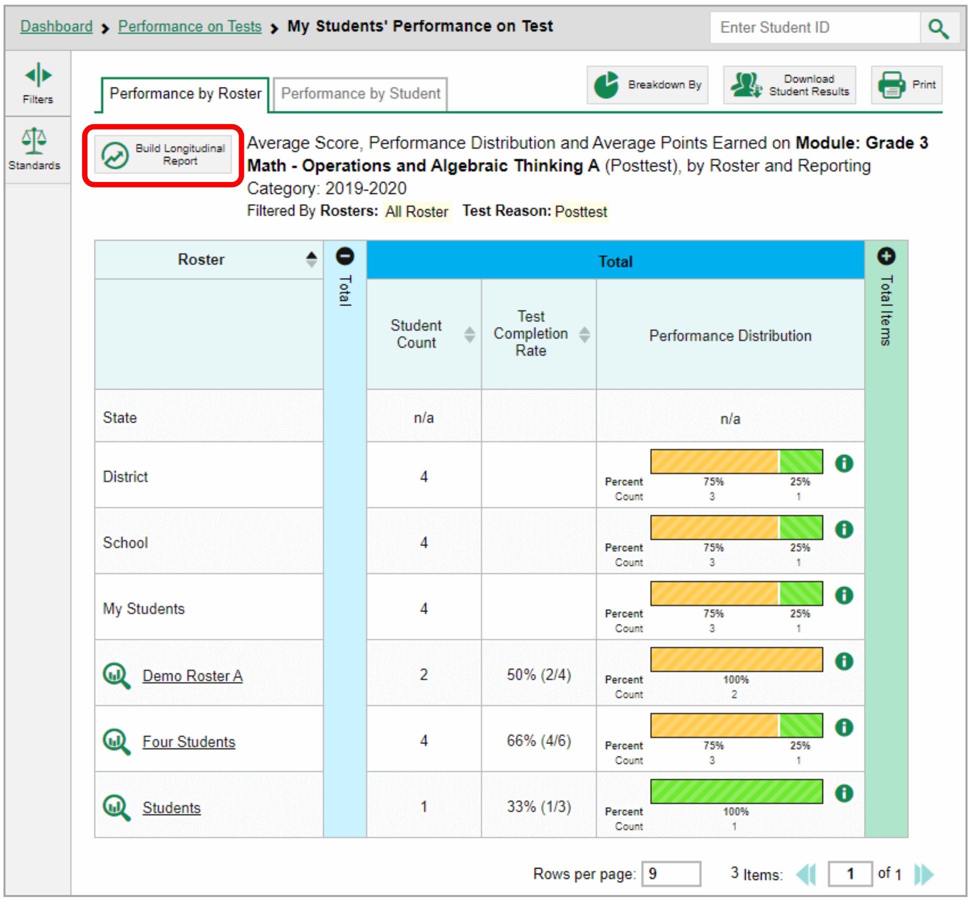


How to Access a Longitudinal Report Comparing Related Assessments

If the student(s) in your test results have completed multiple related assessments, the **Build Longitudinal Reports** button allows you to access a Longitudinal Report in the reports for any of those assessments. If they haven't done so, then no Longitudinal Report is available.

- Above a table of test results, click the **Build Longitudinal Reports** button in the upper-left corner, either directly on the page (see Figure 15) or within a **More Tools** menu, depending on whether additional instructional resources are available.

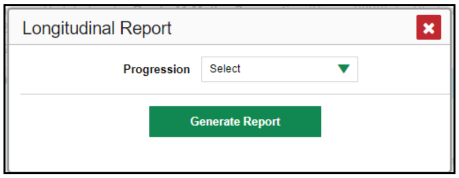
Figure 15. My Students' Performance on Test Report: Performance by Roster Tab



The ***Longitudinal Report*** window appears. Depending on your role, the test types, and the number of students in the report, it may display a report options page rather than the Longitudinal Report itself. The contents of this page depend on your role and the number of students.

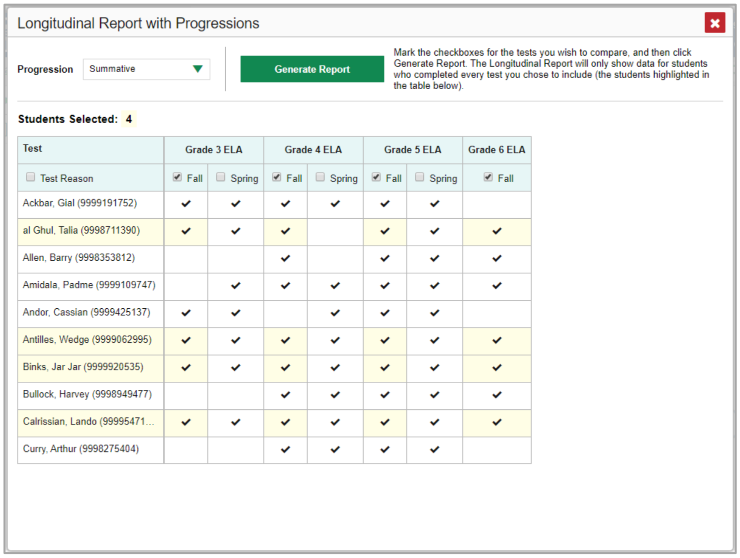
- If you are viewing a Longitudinal Report for which interims and summatives are available, the **Progression** drop-down list (see Figure 16 and Figure 17) appears. Use it to select which test types to view in the Longitudinal Report: summative, interim, or a combination. This drop-down list does not appear when only one test type is available.

Figure 16. LEA-Level User View: Longitudinal Report Window: Report Options Page with Progression Drop-Down List Only



- **Teachers only**: If the test results you're looking at are for multiple students, a table appears with a column for each test (see Figure 17). This table does not appear if you're looking at an individual student.
  - A sub-column appears for each test reason (a category of test, or, for a summative, a test window).
  - The cells in the columns display checkmarks ✔ to indicate which students completed which test/test reason combinations.

Figure 17. Teacher View: Longitudinal Report Window: Detailed Report Options Page



  - Mark the checkbox for each test/test reason combination you wish to include in the report. Mark the **Test Reason** checkbox on the left to include all, or clear it to remove all. The test opportunities that will be included are highlighted in yellow.

- If you're viewing report options, click **Generate Report** at the top of the window to view the Longitudinal Report. (You can modify your selections and regenerate the report later using the **Change Selections** button .)

How to Generate and Export Individual Student Reports (ISR)

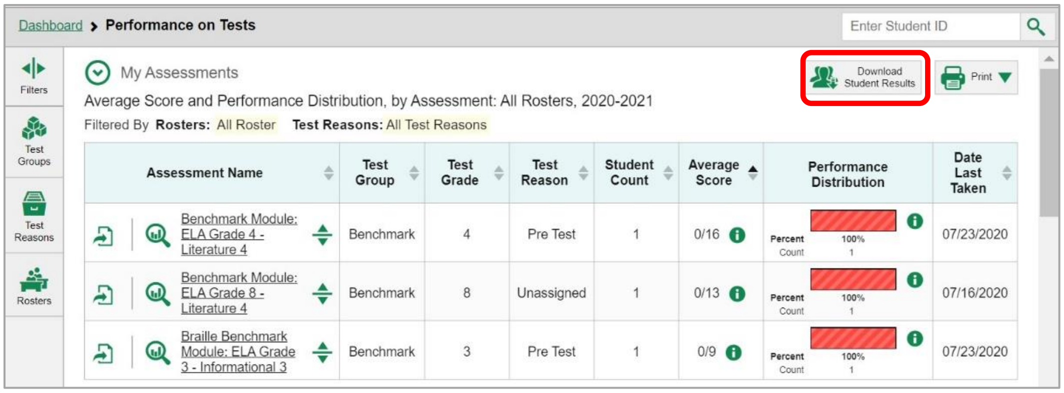
To generate and export an Individual Student Report (ISR) for a test opportunity (an instance of a student taking a test), use the Student Results Generator. Each ISR shows a student's overall performance on their test plus a breakdown of performance by reporting category. You can select any combination of test reasons, assessments, and students in order to generate either a single ISR or multiple ISRs at once.

You may want to use the Student Results Generator to simultaneously print large numbers of ISRs.

ISRs can be generated from almost any Reporting page.

1. Click the **Download Student Results** button in the upper-right corner of the page (see Figure 18).

Figure 18. Teacher View: Performance on Tests Report



The ***Student Results Generator*** window opens (Figure 19).

2. Please note that the options available to you may be prepopulated or preselected, but you can still change them. Starting at the left, click the section bars to expand the sections or use the **Next** and **Previous** buttons to navigate them. Within each section you must make selections: first test reasons, then assessments, then students.

   a. In the **Select Test Reasons** section (Figure 19), mark the checkbox for each test reason you want to include in the report, or mark **All Test Reasons**. Test reasons are either test windows or categories for tests.

Figure 19. Student Results Generator Window: Select Test Reasons Section

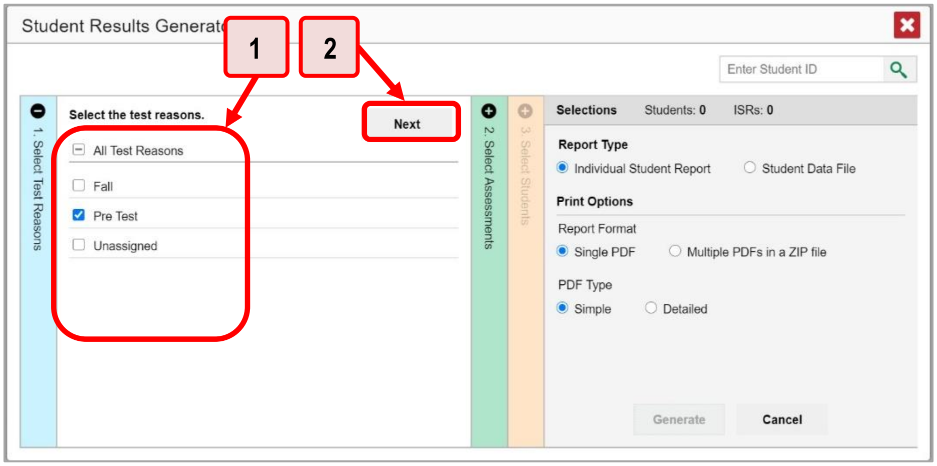


Table 5. Student Results Generator Window: Select Test Reasons Section Elements

#	Element
1	List of test reasons (test windows or categories), one of which is selected
2	Button to proceed to next section (**Select Assessments**)

b. The **Select Assessments** section (Figure 20) groups tests by subject and grade. Mark the checkboxes beside the tests or groups of tests you want to include in the report, or mark **All Subjects**.

Figure 20. Student Results Generator Window: Select Assessments Section

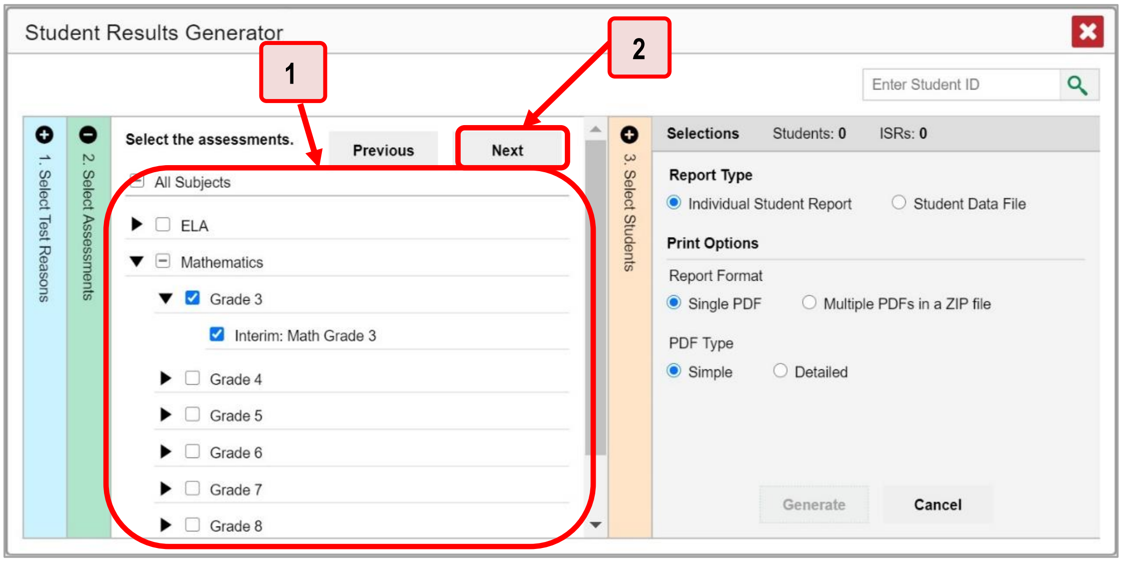


Table 6. Student Results Generator Window: Select Assessments Elements

#	Element
1	List of subjects, grades, and tests, one test of which is selected
2	Button to proceed to next section (**Select Students**)

c. The **Select Students** section (Figure 21) contains a list of classes (rosters) (if you're a teacher or school-level user) or schools (if you're a LEA-level user). Mark the checkboxes for the schools, classes, and/or individual students you want to include in the ISRs.

- Sometimes the list of students is truncated. You can display the entire list by clicking **Click to Load More**.
- Marking the checkbox for a student in one class (roster) or school also marks it anywhere else the student appears, and the same goes for clearing the checkbox.
- To search for a particular student, enter their SSID in the field at the upper-right corner of the window and click . The student and all their assessments and test reasons are selected, and all your previous selections are cleared.

Figure 21. Teacher View: Student Results Generator Window: Select Students Section

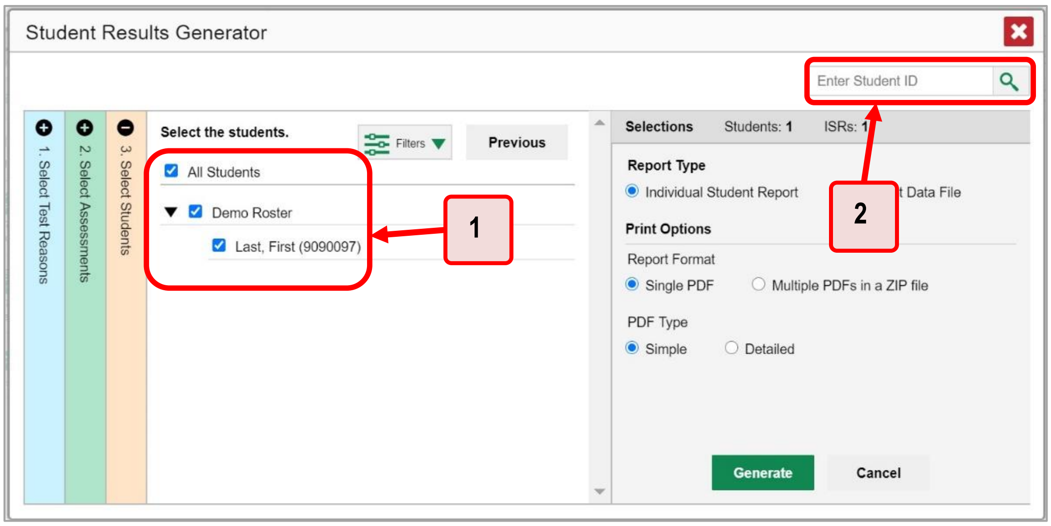


Table 7. Student Results Generator Window: Select Assessments Elements

#	Element
1	List of classes (rosters) and students (all selected)
2	Search field for SSID

The *Selections* section displays a count indicating the total number of students for whom ISRs will be generated.

d. *Optional*: To set a range of processing dates for which to generate results, use the filter menu as follows:

i. Open the **Filters** menu. The menu displays two date fields, as in Figure 22.

ii. Use the calendar tools to select dates, or enter them in the format `mm/dd/yyyy`.

iii. Click **Apply**. The results are filtered to include only test opportunities processed by Reporting in that date range. Note that processing date is not always the same as the date a test was taken.

iv. *Optional*: To revert to including results for all available dates, reopen the filter menu, click **Clear Filters**, then click **Apply**.

Figure 22. School-Level User View: Student Results Generator Window: Select Students Section with Filter Menu Open

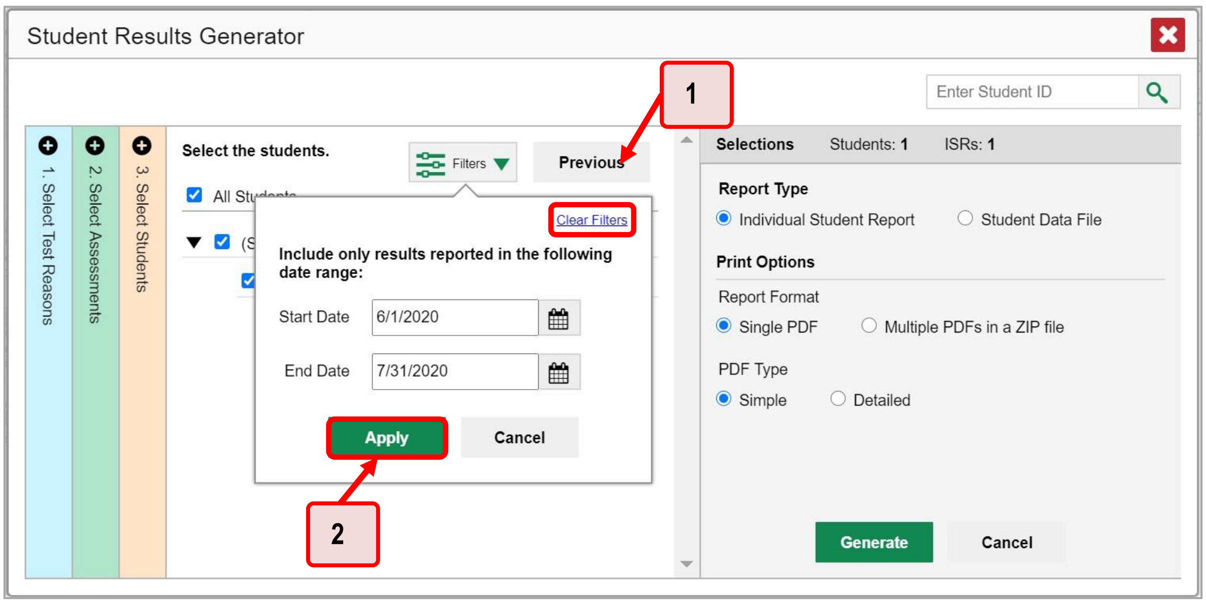


Table 8. School-Level User View: Student Results Generator Window: Select Students Section Elements

#	Element
1	**Clear Filters**
2	**Apply** button

3. From the two Report Type options in the panel on the right, select the option for ISRs. The *Selections* section shows the number of ISRs to be generated, and more options appear below (see Figure 23).

Figure 23. School-Level User View: Student Results Generator Window: Select Students Section

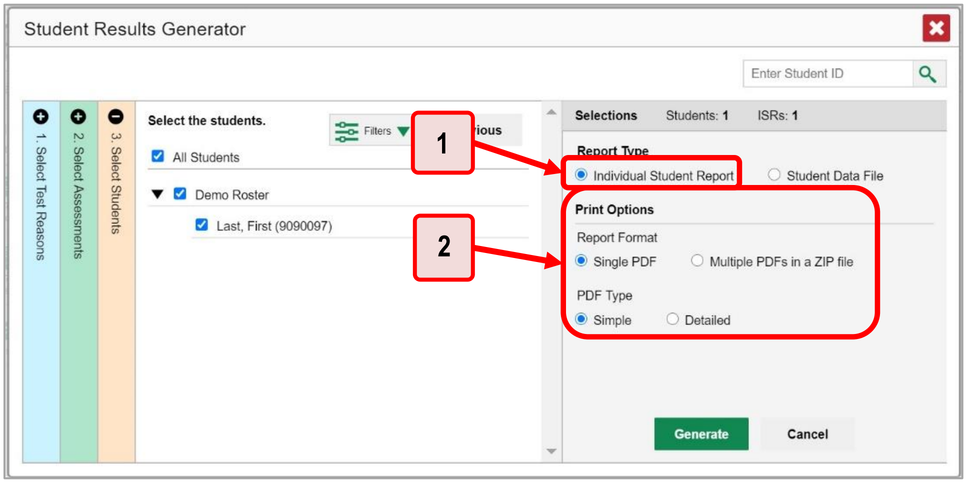


Table 9. School-Level User View: Student Results Generator Window: Select Students Section Elements

#	Element
1	**Individual Student Report** option (selected)
2	Options for your ISR files

4. If you're generating multiple ISRs, then under Report Format, choose either a single PDF for all the ISRs, or a ZIP file containing a separate PDF for each one. If you select **Single PDF**, the Student Results Generator may nonetheless create a ZIP file of multiple PDFs depending on the number of schools, grades, and opportunities included.

5. Under PDF Type, select either a simple or a detailed PDF.

6. *Optional*: If you selected a detailed ISR, then to add any supplemental materials that are available, such as a cover page or addendum, select **Include** under Supplemental Materials.

8. Click **Generate**. Once ISR generation is finished, the Inbox contains the new ISR(s) available for download.

Note that if a student took a test multiple times with different test reasons, an ISR will be generated for each test opportunity. If a student took a test multiple times with the same test reason, only the most recent test opportunity will be included. You can create an ISR for an older test opportunity by navigating directly to the report for that opportunity. Older test opportunities are marked with numbers 1 in reports, starting with the earliest. This applies to interim and benchmark modules only as summative assessments cannot be taken more than once.

How to Generate and Export Student Data Files

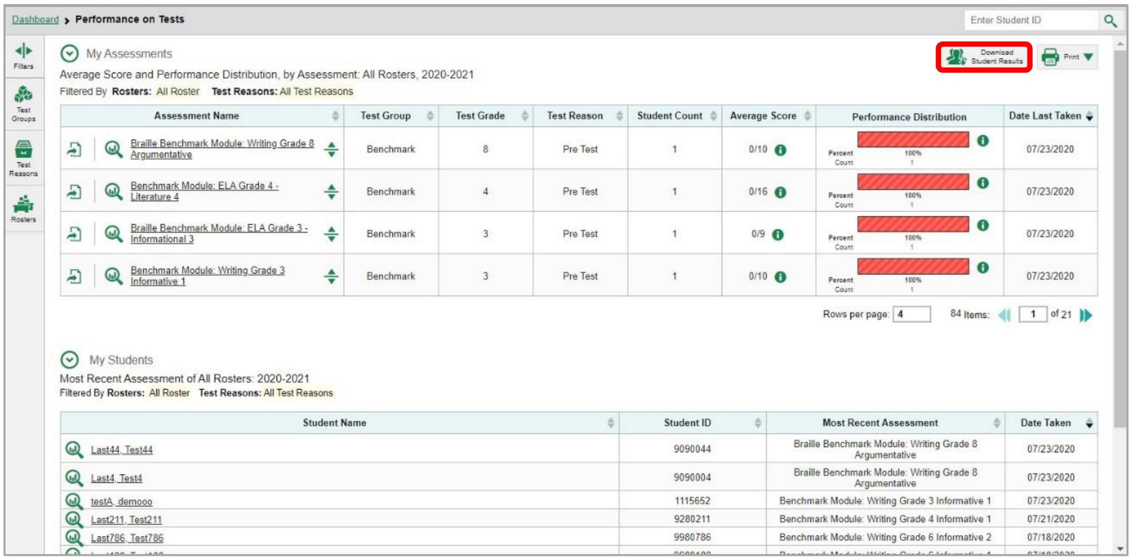
This section discusses student data files, which are useful for analysis.

To generate and export a student data file for a student, use the Student Results Generator. You can select any combination of test reasons, assessments, and students in order to generate and export the files.

You can generate student data files from almost any report page.

1. Click the **Download Student Results** button in the upper-right corner of the page.

Figure 24. Teacher View: Performance on Tests Report



2. The ***Student Results Generator*** window opens (see Figure 25).

Depending what page you open the Student Results Generator from, the options available to you may be prepopulated or preselected. (The filters applied to the page have no effect, however.) You can change the selections.

3. Starting at the left, click the section bars to expand the sections or use the **Next** and **Previous** buttons to navigate them. Within each section you must make selections: first test reasons, then assessments, then students.

    a. In the **Select Test Reasons** section (see Figure 25), mark the checkbox for each test reason you want to include in the results, or mark **All Test Reasons**. Test reasons are categories of tests or, for summatives, simply test windows.

Figure 25. Student Results Generator Window: Select Test Reasons Section

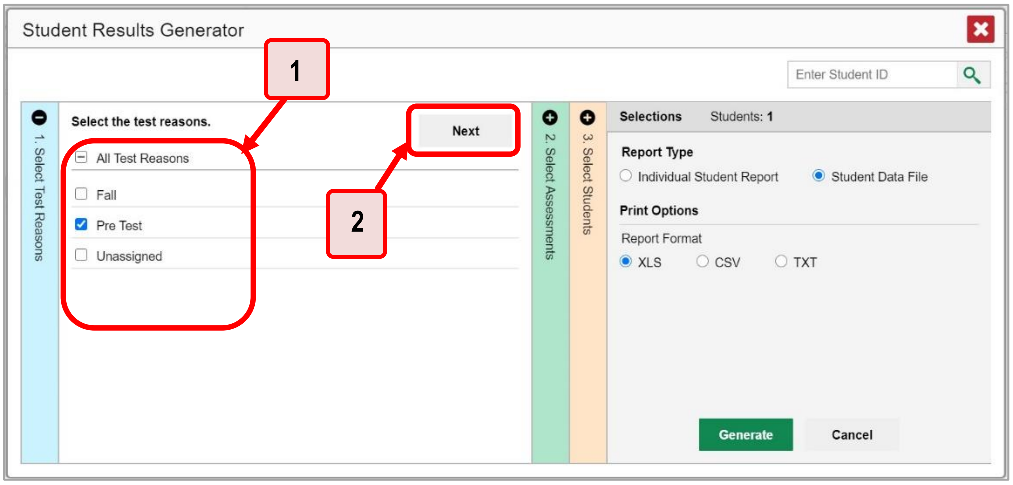


Table 10. Student Results Generator Window: Select Test Reasons Section Elements

#	Element
1	List of test reasons (test windows or categories), some of which are selected
2	Button to proceed to next section (**Select Assessments**)

The expandable sections to the right are now populated with only the tests and students available for your test reason selections.

b. The **Select Assessments** section (see Figure 26) groups tests by subject and grade. Mark the checkboxes beside the tests or groups of tests you want to include in the report, or mark **All Subjects**.

Figure 26. Student Results Generator Window: Select Assessments Section

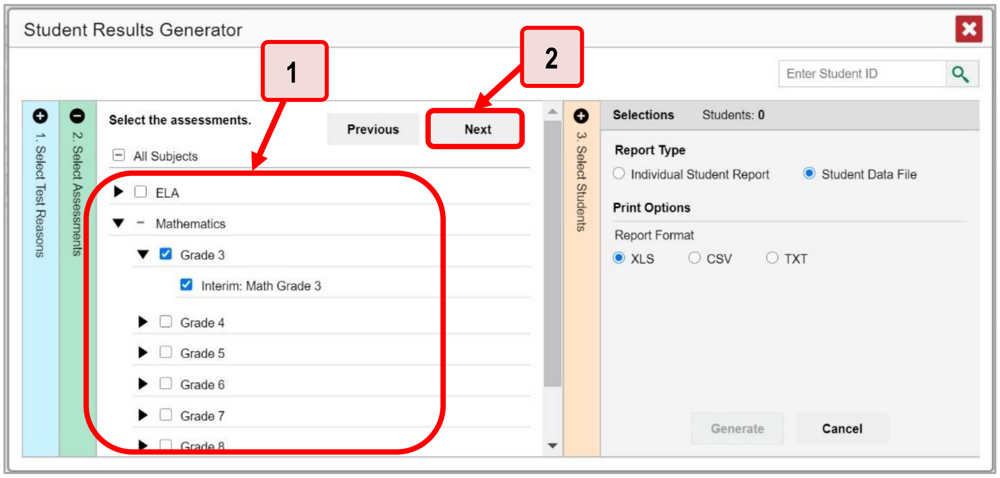


Table 11. Student Results Generator Window: Select Assessments Elements

#	Element
1	List of subjects, grades, and tests, some of which are selected
2	Button to proceed to next section (**Select Students**)

c. The **Select Students** section (see Figure 27) contains a list of classes (rosters) (if you're a teacher or school-level user) or schools (if you're a LEA-level user). Mark the checkboxes for the schools, classes, and/or individual students you want to include in the results.

- Sometimes a list of students is truncated. You can display the entire list by clicking **Click to Load More**.
- Marking the checkbox for a student in one class (roster) or school also marks it anywhere else the student appears, and the same goes for clearing the checkbox.
- To search for a particular student, enter their SSID in the field at the upper-right corner of the window and click 🔍. The student and all their assessments and test reasons are selected, and all your previous selections are cleared.

Figure 27. Teacher View: Student Results Generator Window: Select Students Section

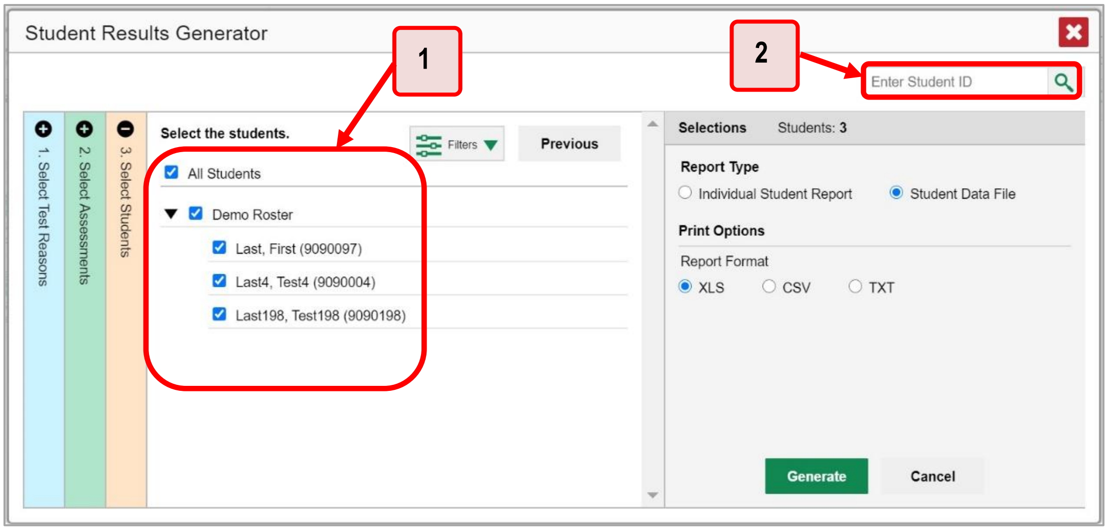


Table 12. Teacher View: Student Results Generator Window: Select Students Section Elements

#	Element
1	List of classes (rosters) and students (all selected)
2	Search field for SSID

The *Selections* section displays a count indicating the total number of students for whom student data files will be generated.

a. *Optional*: To set a range of processing dates for which to generate results, use the filter menu as follows:

i. Open the **Filters** menu  (see Figure 28). The menu displays two date fields.

ii. Use the calendar tools to select dates, or enter them in the format `mm/dd/yyyy`.

iii. Click **Apply**. The results are filtered to include only test opportunities processed by Reporting in that date range. Note that processing date is not always the same as the date a test was taken.

iv. *Optional*: To revert to including results for all available dates, reopen the filter menu, click **Clear Filters**, then click **Apply**.

Figure 28. Teacher View: Student Results Generator Window: Select Students Section with Filter Menu Open

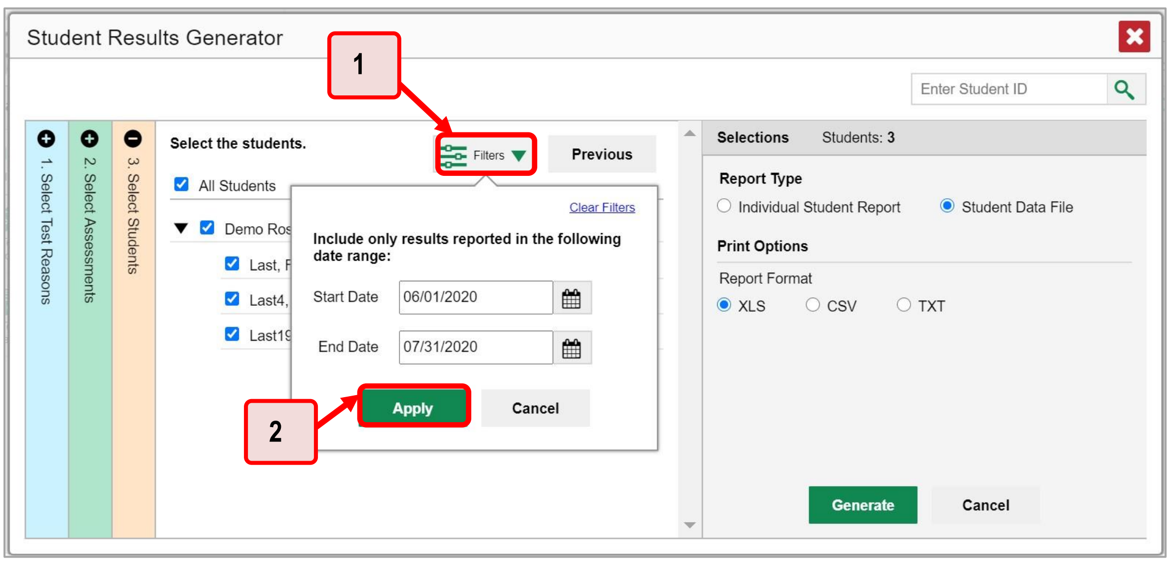


Table 13. Teacher View: Student Results Generator Window: Select Students Section Elements

#	Element
1	**Clear Filters**
2	**Apply** button

4. From the two Report Type options in the panel on the right (see Figure 29), select **Student Data File**. More options appear below.

Figure 29. Teacher View: Student Results Generator Window: Select Students Section

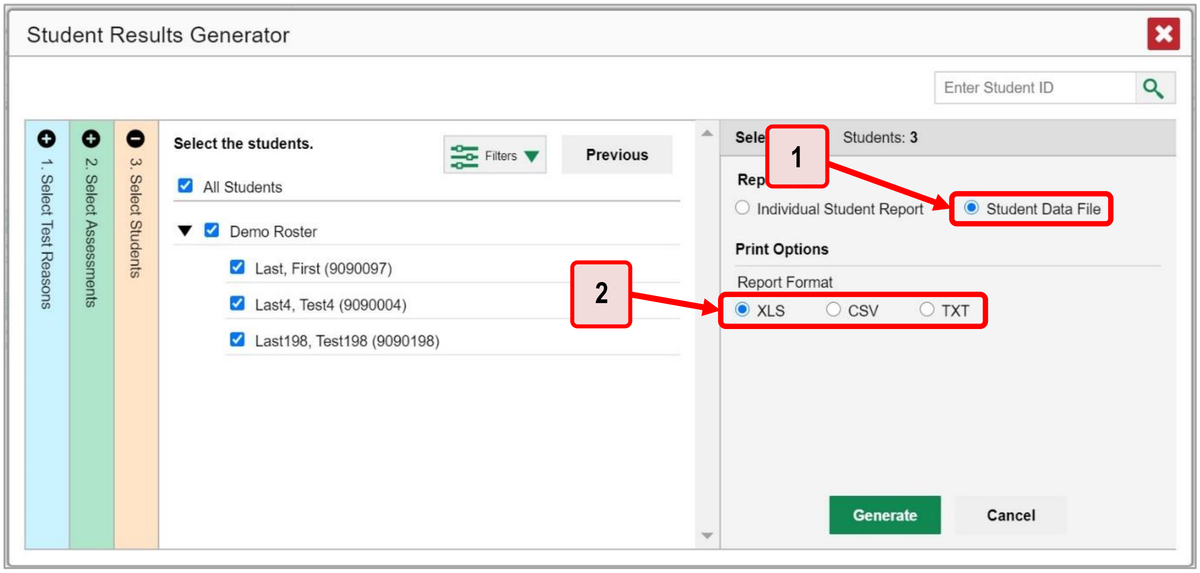


Table 14. Teacher View: Student Results Generator Window: Select Students Section Elements

#	Element
1	**Student Data File** option (selected)
2	Report Format options

5. Under Report Format, select **XLS** (Excel .xlsx), **CSV** (comma-separated values), or **TXT** (tab-delimited text).

6. Click **Generate**. Once data file generation is finished, the Inbox contains the new student data file(s) available for download.

Note that if a student took a test multiple times, the files will include each test opportunity. This applies to interim and benchmark modules only as summative assessments cannot be taken more than once.

Appendix 5-H

Calculator Manual

Online Calculators in the Test Delivery System

2020–2021

Updated June 10, 2020

Prepared by Cambium Assessment, Inc.

Table of Contents

About Calculators in the Test Delivery System

Students are able to use an online calculator for some grades and subjects of the RISE Assessments as an alternative to handheld calculators, as allowed by the Utah State Board of Education. Starting in the fall of 2016, the Desmos calculators will be embedded within the RISE assessments.

The Desmos calculator is used by millions of students around the world and can be accessed from the web, or on iOS, and Chrome apps. This calculator is fully accessible at the WCAG 2.0 AA level (optimized for blind and visually impaired students).

Three versions will be used in RISE assessments:

Standard Calculator

Available for: Mathematics Grade 6 (segment 2) and Science Grades 4-6

http://demo.tds.cambiumast.com/DesmosForAssessments/TDSCalculator.html?mode=basic&url=https://ut.tds.cambiumast.com/student

Desmos generic version:

https://www.desmos.com/fourfunction

Scientific Calculator

Available for the following tests: Mathematics Grades 7-8 and Science Grades 7-8,

http://demo.tds.cambiumast.com/DesmosForAssessments/TDSCalculator.html?mode=scientific&url=https://ut.tds.cambiumast.com/student

Desmos generic version:

https://www.desmos.com/scientific

Full Function Calculator

Available for the following tests: Secondary Mathematics I

http://demo.tds.cambiumast.com/DesmosForAssessments/TDSCalculator.html?mode=graphic&url=https://ut.tds.cambiumast.com/student

Desmos generic version:

https://www.desmos.com/calculator

The Desmos site (www.desmos.com) contains a wide array of resources to help both teachers and students become familiar with the calculator.

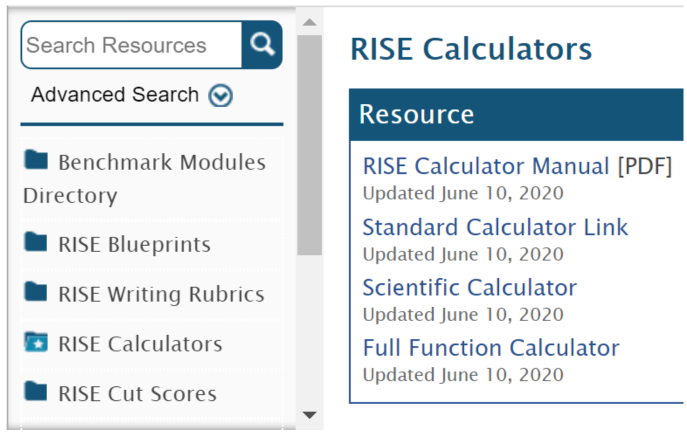
The full Desmos user guide is available at:
https://s3.amazonaws.com/desmos/Desmos_Calculator_User_Guide.pdf

Accessing the Sample Calculators

All sample calculators are available on the RISE portal at https://utahrise.org/resources/rise-calculators/. We encourage bookmarking the sample calculators so that users can easily open them. Desktop/home screen shortcuts can also be created so that the sample calculators can be accessed without an internet connection. The online calculators work on all supported browsers, as listed in the *System Requirements for Online Testing* on the RISE portal.

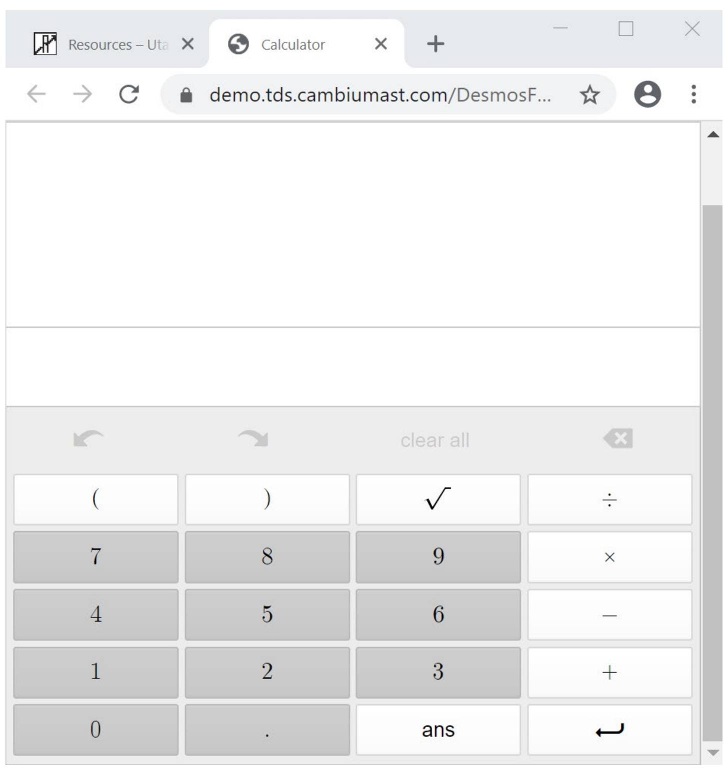
Open a Sample Calculator on Windows/Mac/Linux

1. Navigate to the RISE portal > Resources > RISE Calculators. You may also use the Advance Search to find the calculator links.



2. Click on a [**Calculator**] link.

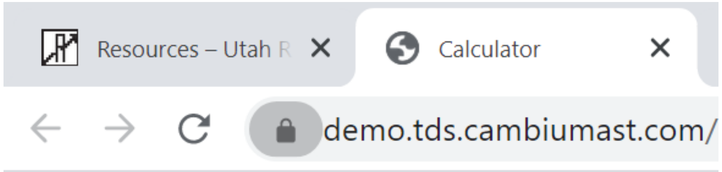
   The sample calculator you selected will open in the browser window.



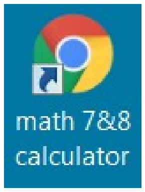
Create a Desktop Shortcut to the Sample Calculator

Note: Ensure the browser window does not take up the full monitor.

1. Use your mouse to hover over the lock icon in the address bar.
2. Click and drag the lock icon to the desktop. A shortcut will appear that says “Calculator” and have the Firefox icon.



3. *Optional: Rename shortcut icon*
   a. Click in the icon text and it will become editable.
   b. Change the text to what you want (e.g., “Graphing Calculator”).
4. Double-click the icon to open the sample calculator. It will open in Firefox.

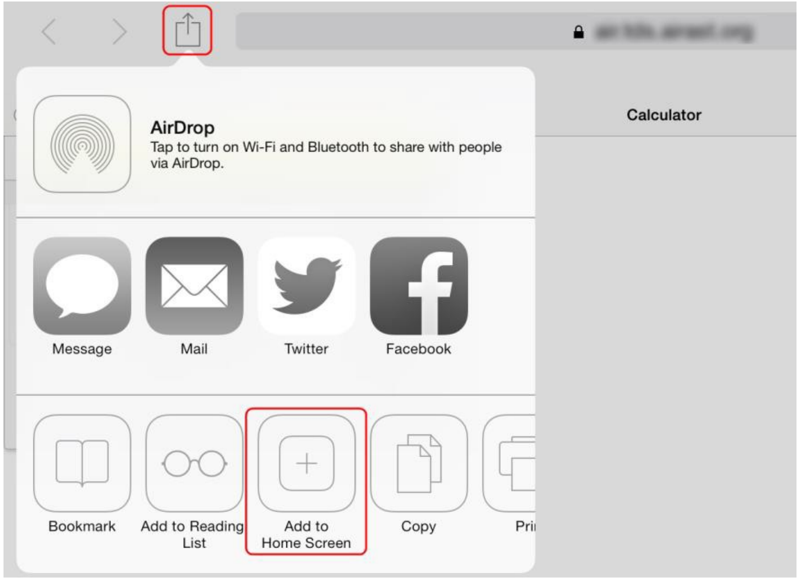


Open a Sample Calculator on a Mobile Tablet

Save a Sample Calculator to your Home Screen for iOS 8

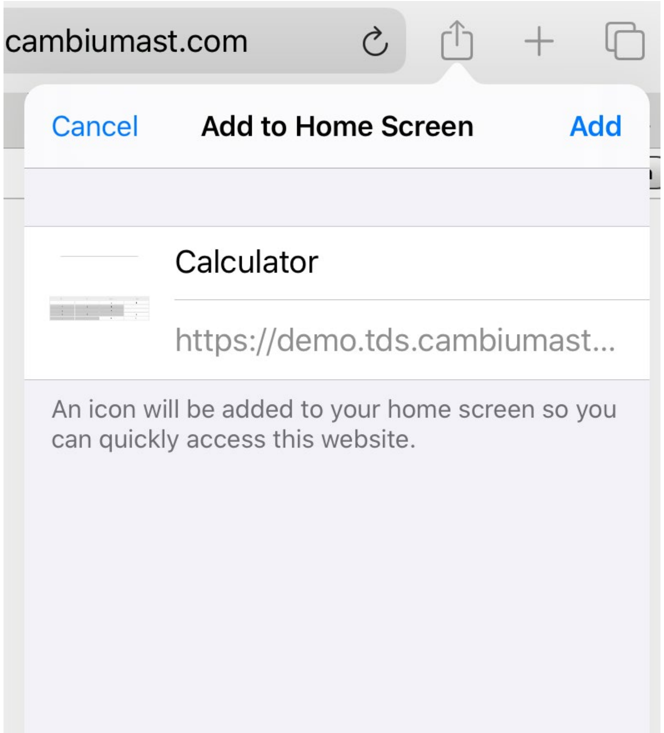
1. Tap the “share” icon [ ], which appears just to the left of the address bar.

2. Tap the [**Add to Home Screen**] icon.



3. *Optional: Rename shortcut icon* (By default, all sample calculators are named “Calculator.”)
   - Tap on the text that says “Calculator.”
   - Using the tablet keyboard, add or modify text (e.g., “Graphing Calculator”).

4. Tap the blue [**Add**] link. The shortcut icon will appear on the Home screen.



Appendix 5-I

Utah Participation and Accommodations Policy

UTAH PARTICIPATION AND ACCOMMODATIONS POLICY 2020–2021

FOR STUDENTS:

- WHO HAVE INDIVIDUALIZED EDUCATION PROGRAMS (IEPS)
- WHO HAVE SECTION 504 PLANS
- WHO ARE LEARNING ENGLISH

Utah State Board of Education

Sydnee Dickson
State Superintendent of Public Instruction

ADA Compliant: October 2021

UTAH STATE BOARD OF EDUCATION

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The Utah State Board of Education (USBE) staff would like to express appreciation to the Council of Chief State School Officers (CCSSO) subgroups Assessment, Standards, & Education for Students with Disabilities State Collaborative on Assessment and Student Standards (ASES SCASS) and English Learners State Collaborative on Assessment and Student Standards (EL SCASS) for publication of model policies, including the Accommodations Manuals for Students with Disabilities, English Learners, and English Learners with Disabilities.

The USBE staff appreciate the support, input, and feedback received from Local Education Agency (LEA) groups, including Local Education Agency Directors (LEAD), Charter Special Education Directors (CSPED), Assessment Directors, Alternative Language Services Directors, as well as USBE staff across departments. The USBE staff also appreciate the support, input, and feedback received from parents, teachers, and administrators regarding the implementation of a fair, accessible, and appropriate statewide assessment system.

TABLE OF CONTENTS

DEFINITIONS OF TERMS

This section defines vocabulary used throughout the manual.

Accommodations

Accommodations for assessments are changes in the test administration that do not alter the validity of score interpretation, reliability, or security of the test. These changes may be available to students with special needs (see definition below), but not to general education students.

Adaptive behavior

The day to day skills or tasks that are essential for someone to live independently and to function safely in daily life, similar to the term life skills.

Individualized Education Program (IEP)

A written statement for a student with a disability that is developed, reviewed, and revised in accordance with Part B of the IDEA.

Individuals with Disabilities Education Act (IDEA) of 2004

The Individuals with Disabilities Education Improvement Act, as amended, and its implementing regulations 34 CFR §300 and §303 and PL 108-446 (20 USC §1401 et. seq.). Part B of the IDEA applies to students ages 3 through 21; Part C (early intervention) applies to children ages 0 through 2.

Resources

Tools that do not alter the validity of score interpretation, reliability, or security of the test. These are available for all students, including general education students and students with special needs.

English Learner Students (ELs)

Students whose native language is not English, and who do not yet possess sufficient English language proficiency to participate effectively in general education classes.

Students with disabilities (SWD)

Students who meet eligibility criteria for special education and related services, as defined in the IDEA and Utah State Board of Education Special Education Rules (USBE SER).

Students with disabilities (SWD) learning English

Students whose native language is not English and who have been identified as having a disability.

Students with Section 504 Plans

Students with disabilities who are eligible to receive accommodations through Section 504 of the Rehabilitation Act of 1973 (20 USC §701 et. seq.).

Students with special needs

Students with disabilities, students with Section 504 plans, ELs, SWD learning English, and ELs with Section 504 Plans.

Plans for students with special needs

Plans for students with special needs created by a team of professionals, such as Section 504 Plans and Individual Education Program (IEPs), and/or English Learners needs.

Special needs planning team

A team of professionals that meet to create plans for students with special needs such as Section 504 Plans, Individual Education Program (IEPs), and/or English Learners needs.

Utah Accountability System

The Utah State Board of Education (USBE) makes annual accountability determinations for schools and Local Education Agencies (LEAs) based on student academic outcomes, growth, progress of English Language Learners (ELLs), equitable educational opportunity, postsecondary readiness, and test participation. All countable and valid assessments are included in the accountability calculations, regardless of a students' special needs status.

Utah also has an Alternative and Special Needs Accountability Report.

Utah State Board of Education (USBE)

Utah Constitution Article X, Section 3 and Utah Code Annotated (UCA) 53E-3-301 describe in detail the specific legal duties of the Board. Among these duties are:

- Appoint the State Superintendent of Public Instruction
- Adopt administrative rules directed to the whole system
- Establish minimum standards for public schools and make rules that establish basic ethical conduct standards for licensed public education employees
- Define, establish, and implement a core curriculum
- Maintain general control and supervision over adult education
- Annually prepare and submit to the Governor and Legislature a budget for the operation of the institutions and agencies under the Board
- With the State Auditor, set and approve auditing standards for auditors employed by local school boards and charter schools
- Verify audits of financial and student accounting records of school districts and charter schools for purposes of determining the allocation of Uniform School Fund monies
- Fulfill statutory responsibility for the management of Utah State Board of Education staff and Utah Schools for the Deaf and the Blind (USDB)

INTRODUCTION

This manual was developed to establish statewide policy for the participation of students with special needs in Utah's accountability system and to provide guidance on accommodations and resources for use during instruction and statewide assessments. The purposes of the Utah Participation and Accommodations Policy are to:

- Identify avenues for all students to participate in Utah's statewide assessments
- Describe procedures that must be used when, in extremely unusual circumstances, a student must be exempted or excused from participation in Utah's statewide assessments
- Provide detailed information regarding the valid and appropriate use of accommodations and resources for students participating in Utah's statewide assessments

Utah's Accountability System

The Utah State Board of Education (USBE) makes annual accountability determinations for schools and Local Education Agencies (LEAs) based on student academic outcomes, growth, progress of English Learners, equitable educational opportunity, postsecondary readiness, and test participation. All countable and valid assessments are included in the accountability calculations, regardless of a students' special needs status.

For more information on Utah's accountability system, see the Utah Accountability Technical Manual (https://schools.utah.gov/file/ba4f83a5-0537-4f0c-b0c4-4a34c8e7c9aa).

Utah also has an alternative accountability system for schools identified as primarily serving alternative and/or special needs students. For more information about Utah's Alternative and Special Needs School Accountability Report, see the Utah Accountability Technical Manual.

Changes in Policy

This policy will be reviewed annually and revised as needed based on research, changes to rules or regulations, and stakeholder input.

FULL PARTICIPATION IN UTAH'S ASSESSMENTS

Federal and State laws require that all students enrolled in public schools participate in assessments designed to provide accountability for the effectiveness of instruction in schools. The UCA accountability requires an accountability system that includes students with special needs (UCA 53E-5). School team members, including teams for English Language Learners (ELLs), Individualized Education Program (IEP) teams, and Section 504 teams, must actively engage in a planning process that addresses:

- The need for accommodations to provide access to grade-level instruction and statewide assessments, and
- The use of alternate assessments for students with significant cognitive disabilities that require measurement of instructional achievement to be based on alternate achievement standards. Alternate achievement standards are specific statements of the content, skills, and grade-level-specific expectations for students with significant cognitive disabilities that are aligned to the Utah Core Standards but have been reduced in depth, breadth, and complexity.

All students are expected to participate in the state accountability system, with only a few exceptions as noted below. This principle of full participation includes English Language Learners, students with an IEP, and students with a Section 504 Plan. In addition, any student with a physical, emotional, or medical emergency just prior to an assessment may receive accommodations or supports based on individual need.

Special Conditions that Warrant Exemption from Statewide Assessments

1. USBE Administrative Rule R277-404-7 (https://rules.utah.gov/publicat/code/r277/r277-404.htm#E7) authorizes parents to exercise their right to exempt their students from a state required assessment by filling out the Parental Exclusion from State Assessments Form (https://schools.utah.gov/assessment?mid=1104&tid=1) and submitting the form to the principal or LEA by email, mail, or in person. When a student is exempted from an assessment, it is only for the immediate administration of the assessment. The student will be included in the next year's administration of that assessment. Students not tested due to parent opt-out shall be counted as non-participants and receive a non-proficient score for federal accountability calculations.
   a. Special needs planning teams (i.e., IEP, 504, or English Learners) cannot exempt a student from the statewide testing requirements.
2. All English learners enrolled in English language arts, mathematics, and science, who first enroll in the U.S. on or after April 15th of the current school year, may be exempt participating in state-wide assessments. However, these students are given the opportunity to take the assessment but are not required to do so.

Pre-Kindergarten – Eighth Grade Assessments

Preschool Entry and Exit Profile (PEEP)

Utah's Pre-Kindergarten Entry and Exit Profile (PEEP) is only required by LEA's who participate in certain preschool grant funding. This assessment is intended to provide information about program effectiveness as well as inform various stakeholders, such as parents, teachers, and leadership, on the academic and lifelong learning practices essential for entering and exiting pre-kindergarten students. The information gained from the profile will be used to:

- Provide insights into current levels of performance upon entry and exit of pre-kindergarten.
- Analyze the effectiveness of programs.
- Provide opportunities for data-informed decision-making and cost-benefit analysis of early learning initiatives.
- Identify effective instructional practices or strategies for improving student achievement outcomes in a targeted manner.

Subjects Assessed	Grades Assessed
Literacy Numeracy Lifelong Learning Practice	Pre-Kindergarten Entry (four weeks prior to and four weeks after the beginning of Pre-Kindergarten) Pre-Kindergarten Exit (last four weeks of Pre-Kindergarten)

The PEEP Alternate Assessment is available for students with significant cognitive disabilities who cannot access the PEEP even with appropriate accommodations, and if these students are accessing preschool programs funded by the grant. See Alternate Assessments below for more details.

Kindergarten Entry and Exit Profile (KEEP)

Utah's Kindergarten Entry and Exit Profile (KEEP) is intended to inform stakeholders such as parents, teachers, and leadership, on the academic and social-emotional development of entering and exiting kindergarten students. The information gained from the profile will be used to:

- Provide insights into current levels of academic and social-emotional performance upon entry and exit of kindergarten,
- Identify students in need of early intervention instruction and promote differentiated instruction for all students,
- Analyze the effectiveness of programs, such as extended-day kindergarten and preschool,
- Provide opportunities for data-informed decision-making and cost-benefit analysis of early learning initiatives,
- Identify effective instructional practices or strategies for improving student achievement outcomes in a targeted manner, and
- Understand the influence and impact of full-day kindergarten on at-risk students in both the short- and long-term.

Subjects Assessed	Grades Assessed
Literacy Numeracy Social-Emotional	Kindergarten Entry (three weeks prior to and after the beginning of Kindergarten) Kindergarten Exit (last four weeks of Kindergarten)

The KEEP Alternate Assessment is available for students with significant cognitive disabilities that cannot access the KEEP even with appropriate accommodations. See Alternate Assessments below for more details.

Acadience Reading

The Early Literacy Program (UCA 53F-2-503) was created to supplement other school resources in order to achieve the state's growth goal. The USBE has selected Acadience Reading (formerly known as DIBELS) as the benchmark assessment LEAs must administer to students in grades 1–3 at the beginning, middle, and end of the school year to show growth (R277-406). In addition, LEAs have the option to administer Acadience Reading to students in Kindergarten.

Subjects Assessed	Grades Assessed
Reading	1–3 (Kindergarten is optional)

Early Literacy Alternate Assessment for Grades 1–3 is available for students with significant cognitive disabilities whom Acadience Reading is not accessible. See Alternate Assessments below for more details.

Readiness Improvement Success Empowerment (RISE)

The RISE assessments are aligned with the Utah Core Standards for grades 3–8 and are designed to assess students' knowledge of the state's academic content standards and are used in the accountability system. The computer item-adaptive design adjusts the difficulty of questions throughout the assessment based on the student's response submitted for each question. The adaptive component of the assessment is to better pinpoint the student's current level of knowledge. All questions at all difficulty levels presented to a student are aligned to the grade level content standards.

RISE assessments are administered via computer. All student responses must be submitted via the online system. There is no accommodation that allows for a paper-based submission of a student's response. Refer to the Test Administration Manuals (TAMs) for specific procedures. More information regarding RISE administration may be found on the RISE assessment webpage (https://schools.utah.gov/assessment/assessments?mid=1173&tid=7).

Subjects Assessed	Grades/Courses Assessed
English Language Arts	3–8
Writing	5 & 8
Mathematics	3–8
Science	4–8

All students enrolled in the grades/subjects described above are expected to participate in the RISE summative assessment for that grade/course, unless a student is a student with a significant cognitive disability receiving instruction based on alternate achievement standards and has been determined eligible for the alternate assessments (Dynamic Learning Maps [DLM] for Mathematics, English, and Science). See Alternate Assessments below for more details.

Students will be assigned their assessments based on their enrolled courses. Students are expected to be enrolled in courses that are standard for that grade level, not enrolled in below grade level courses to meet their needs. If a lower-grade assessment is administered, the student is considered non-proficient and a proficiency score of 1 will be assigned for state accountability, for federal accountability the student will be counted as a non-participant.

High School Assessments

Utah Aspire Plus

Utah Aspire Plus is a hybrid of American College Test (ACT) Aspire and Utah Core Standards test items. It is designed to assess students' knowledge of the state's academic content standards as well as provide a predictive ACT score. This assessment is also used in the accountability system. Utah Aspire Plus is a computer-delivered, fixed-form, end-of-level high school assessment for students in grades nine and ten. The assessment includes subtests for reading, English, mathematics, and science. The assessments will provide students a predictive score for the ACT. The ACT is taken by all Utah 11th grade students and is the most commonly submitted college readiness assessment for local universities. All student responses must be submitted via the online system. There is no accommodation that allows for a paper-based submission of a student's response. Refer to the Test Administration Manuals (TAMs) for specific procedures.

Subjects Assessed	Grades Assessed
English, Mathematics, Reading, Science	9 & 10

Additional information regarding Utah Aspire Plus administration may be found on the Utah Aspire Plus Portal (http://utah.pearsonaccessnext.com/).

American College Test (ACT)

The USBE has designated the ACT as the assessment that will be used for accountability measures that must be administered to Utah students in grade 11. The ACT is a national college admissions examination that consists of subject area tests in English, Mathematics, Reading, and Science. ACT results are accepted by all four-year colleges and universities in the U.S.

Subjects Assessed	Grade Assessed
English, Mathematics, Reading, Science	11

ACT has established policies regarding documentation of disability and the process for requesting accommodations for the ACT. For more information about specific accommodations and their appropriateness for this assessment, see Appendix J, contact the LEA Assessment Director, or visit the Utah ACT website (https://schools.utah.gov/assessment/assessments?mid=1173&tid=2).

Civics Test

The American Civics Education Initiative, introduced and passed in the Utah State Legislature during the 2015 general session, requires all Utah students graduating on or after January 1, 2016, to pass a basic civics test, or an alternate assessment, as a condition for receiving a high school diploma or adult education secondary diploma (UCA 53E).

Students who pass the test in one LEA and transfer to another LEA are not required to retake the test in the new LEA (R277-700-8). Students may take either the standard test or an alternate test, as determined appropriate by the student's IEP team (consistent with Board Rule) and documented within the IEP. Additional information regarding the Civics Test can be found on American Civics Education Initiative webpage.

NOTE: *Board Rule permits the use of the alternate for any student within six months of intended graduation who has not yet passed the basic civics test.*

Alternate Assessments

The Individuals with Disabilities Education Act (IDEA) articulates several requirements related to the assessment of students with disabilities. All children with disabilities must be included in general State and districtwide assessment programs, including alternate assessments (34 CFR § 300.160).

1. The State must develop and implement alternate assessments for those children who cannot participate in regular assessments, even with accommodations, as indicated in their respective IEPs (34 CFR § 300.160).
2. The alternate assessment must be aligned with the State's challenging academic content standards (the Utah Core Standards) and measure the achievement of students with disabilities against Utah's alternate academic achievement standards (the DLM Essential Elements) (34 CFR § 300.160(c)).
3. The alternate assessment must be valid and reliable for assessing the performance of children with disabilities (34 CFR § 300.704(b)(4)(x)).
4. Each State must report on the effectiveness of schools, LEAs, and the State in improving the academic achievement of students with disabilities participating in alternate assessments (34 CFR § 300.602).

The reauthorization of the Elementary and Secondary Education Act (ESEA), the Every Student Succeeds Act (ESSA; PL 114-95) reaffirms section 1111(b)(2)(D) of the ESEA that the alternate assessment (AA) is an appropriate assessment for students with the most significant cognitive disabilities to demonstrate their knowledge and skills based on alternate academic achievement standards (AAAS). ESSA has a new provision that limits the total number of students with the most significant cognitive disabilities who are assessed Statewide with an AA–AAAS to 1.0 percent of the total number of students in the State who are assessed in that subject (§1111(b)(2)(D)(i)(I)). LEAs must mark the "1% Alternate Assessment" flag in UTREx for the students with significant cognitive disabilities who will be participating in any of Utah's alternate assessments.

Early Literacy Alternate Assessment

The Early Literacy Alternate Assessment is a rubric style assessment that is aligned with the Utah Essential Elements for English Language Arts (Utah's Alternate Standards aligned with the Utah Core Standards). Students are expected to participate in this benchmark assessment and LEAs must administer this to students in grades 1–3 at the beginning, middle, and end of the school year. The Early Literacy Alternate Assessment is included in participation for LEA's but not included in growth.

Subjects Assessed	Grades Assessed
Reading	1–3

Pre-Kindergarten Entry and Exit (PEEP) Alternate Assessment

The PEEP Alternate Assessment is available for students with significant cognitive disabilities that cannot access the PEEP even with appropriate accommodations, and if these students are accessing preschool programs funded by the grant. This assessment is aligned to pre-school standards and has been reduced in complexity from the PEEP assessment. The PEEP alternate is designed as a rubric that is meant to be observational of student's skill abilities. The entry and exit use the same rubric and is intended to provide teachers with instructional guidance for students. More PEEP information can be found on the Pre-Kindergarten assessment webpage (https://schools.utah.gov/assessment/assessments?mid=1173&tid=6)

Kindergarten Entry and Exit Profile (KEEP) Alternate Assessment

The KEEP Alternate Assessment is aligned to Utah's Alternate Academic Achievement standards the Essential Elements for ELA and math. The KEEP Alternate Assessment is intended to provide teachers with instructional information and growth for their students from entry to exit of Kindergarten. The KEEP is designed as a rubric that is meant to be observational of student's skill abilities, and the rubric is used for entry and exit. More KEEP information can be found on the Kindergarten assessment webpage (https://schools.utah.gov/assessment/assessments?mid=1173&tid=4)

Dynamic Learning Maps (DLM)

Dynamic Learning Maps (DLM) is the alternate assessment for students with the most significant cognitive disabilities for whom general state assessments are not appropriate, even with accommodations. DLM assessments allow students a way to show what they know and can do in mathematics, English language arts, and science. DLM assessments measure a student's knowledge of the state's academic content of the alternate achievement standards (Essential Elements), which are aligned to the state's academic core standards.

The DLM alternate assessment system provides a way for students with significant cognitive disabilities to demonstrate their learning throughout the school year. Students will demonstrate their knowledge of the Essential Elements by participating in a flexible and adaptive year-end assessment. The DLM system is accessible by students with significant cognitive disabilities, including those who also have hearing or visual disabilities and/or neuromuscular, orthopedic, or other motor disabilities. DLM assessments are flexible and allow for the use of common assistive technologies.

The criteria for participation in the DLM alternate assessment reflect the pervasive nature of a significant cognitive disability. All content areas should be considered when determining eligibility for this assessment. Thus, a student who participates in the DLM alternate assessment participates in this assessment for English language arts, mathematics, and science.

Subjects Assessed	Grades Assessed
English Language Arts	3–11
Mathematics	3-11
Science	4-11

WIDA Alternate Access

The Alternate ACCESS for English Language Learners (ELLs) is a one-on-one, large print, paper-based English language proficiency assessment for students in grades 1–12 who are identified as students learning English with significant cognitive disabilities who will not have meaningful participation in the regular ACCESS for ELLs 2.0 assessment. Students who are instructed using Utah's Alternate Achievement Standards (Essential Elements or Extended Core Science Standards) are eligible to participate in the Alternate ACCESS for ELLs. Alternate ACCESS tests students' language in four domains: Listening, Reading, Speaking, Writing. Test scores can be used to inform instruction and monitor progress of ELLs in a school or district. More information on the WIDA Alternate ACCESS can be found on the WIDA website (https://wida.wisc.edu/assess/alt-access).

Assessment Domain	Grades Assessed
Listening, Speaking, Reading, Writing	1–12

College and Career Readiness Assessments

Secondary students are required to participate in a college readiness assessment (§53E-4-305). A college readiness assessment (UCA 53E-4-305). A college readiness assessment includes a college admissions test that provides an assessment of English language arts, mathematics, and science. The Utah College Readiness Assessment must be commonly used by local universities to assess student preparation for college. A student with an IEP may take an appropriate college readiness assessment other than the tests adopted by the USBE, as determined by the student's IEP team.

American College Test (ACT)

The USBE has designated the ACT as the college readiness assessment that must be administered to Utah students in grade 11 (ACT is also the assessment used for 11th grade statewide accountability). The ACT is a national college admissions examination that consists of subject area tests in English, Mathematics, Reading, and Science. ACT results are accepted by all four-year colleges and universities in the U.S.

Subjects Assessed	Grade Assessed
English, Mathematics, Reading, Science	11

ACT has established policies regarding documentation of disability and the process for requesting accommodations for the ACT. For more information about specific accommodations and their appropriateness for this assessment, see Appendix J, contact the LEA Assessment Director, or visit the Utah ACT website (https://www.act.org/content/act/en/public-affairs/state-organizations/utah.html).

Armed Services Vocational Aptitude Battery (ASVAB)

ASVAB is a nationally normed, multi-aptitude test series that provides high school students with a gauge to measure their academic and occupational readiness for the U.S. military. The career information program section encourages students to explore a wide variety of careers. There are nine subject/content areas that are tested with the ASVAB:

Subject/Content Areas	Grades Assessed
General Science, Arithmetic Reasoning, Word Knowledge, Paragraph Comprehension, Mathematics Knowledge, Electronics Information, Auto and Shop Information, Mechanical Comprehension, Assembling Objects	11 or 12

Some accommodations are available for the ASVAB. For more information about specific accommodations and their appropriateness for this assessment, contact the LEA Assessment Director.

Other Assessments

Assessing Comprehension and Communication in English State-to-State for English Language Learners (ACCESS for ELLs)

ACCESS for ELLs is an online assessment of English language proficiency administered annually to all students who have been identified as students learning English and who receive services in an English language acquisition program to assess English language proficiency. Students with disabilities who have also been identified as students learning English are not exempt from participation in the ACCESS assessment.

Assessment Domain	Grades Assessed
Listening, Speaking, Reading, Writing	K–12

Many accommodations are available for students taking the ACCESS for ELLs assessment. For more information about specific accommodations and their appropriateness for this assessment, please see the WIDA Accessibility and Accommodations Supplement (https://wida.wisc.edu/resources/accessibility-and-accommodations-supplement) or contact the LEA Assessment Director.

The Alternate ACCESS for ELLs is a one-on-one administered English language proficiency assessment for students in grades K–12 who are classified as students learning English and have a significant cognitive disability that prevent their meaningful participation in the regular ACCESS for ELLs assessment. Students who are instructed using alternate achievement standards (Essential Elements) are eligible to participate in the Alternate ACCESS for ELLs.

WIDA Screeners

WIDA Screener Online

The WIDA Screener is an English language proficiency screener given to newly enrolled students who may be designated as students learning English as indicated by the home language survey completed on enrollment. It assists educators with programmatic placement decisions such as identification and placement of students learning English. The WIDA Screener online is one component of WIDA's comprehensive assessment system and should be administered to students in grades 1–12 who may be designated as students learning English. WIDA Screener Paper administration is recommended for students who have recently arrived in the U.S. or for students with significant disabilities. WIDA Screener online assesses the following domains of language in English:

Assessment Domain	Grades Assessed
Listening, Speaking, Reading, Writing	1–12

WIDA K W-APT

The WIDA Kindergarten WIDA-ACCESS Placement Test (K W-APT) is an English language proficiency screener given to newly enrolled kindergarten students who may be designated as students learning English as indicated by the home language survey completed on enrollment. It assists educators with programmatic placement decisions such as identification and placement of students learning English. The WIDA K W-APT is one component of WIDA's comprehensive assessment system. WIDA K W-APT should be administered to students in Kindergarten who may be designated as students learning English. Standard features of the K W-APT might lessen the need for accommodations for students who have recently arrived in the U.S. or for students with significant disabilities. WIDA K W-APT assesses the following domains of language in English:

Assessment Domain	Grades Assessed
Listening	Pre-Kindergarten 1st semester Kindergarten 2nd semester Kindergarten
Speaking	Pre-Kindergarten 1st semester Kindergarten 2nd semester Kindergarten
Reading	2nd semester Kindergarten 1st semester Grade
Writing	2nd semester Kindergarten 1st semester Grade

Many accommodations are available for students taking the K W-APT assessment. For more information about specific accommodations and their appropriateness for this assessment, please see the K W-APT Test Administration Manual pages 32-35 or contact the LEA Assessment Director.

National Assessment of Educational Progress (NAEP)

The NAEP is the largest nationally representative and continuing assessment of what students know and can do in various subjects. Assessments are conducted almost yearly in grades 4, 8, and 12 in mathematics, reading, science, writing, arts, civics, economics, geography, U.S. history, technology, and/or technology and engineering literacy. NAEP assessments are administered uniformly across the nation, and therefore serve as a common metric for all states. The NAEP assessment remains essentially the same from year to year, allowing an evaluation of a state’s student academic progress over time.

Schools and students are selected to participate in NAEP assessments using a stratified random sampling process. This process means that not all students will experience the NAEP assessment. All students with disabilities enrolled in Utah schools selected for NAEP assessments are expected to participate, unless the student is receiving instruction based on alternate standards and is eligible for the alternate assessments (DLM).

The participation of each school and student selected, helps ensure that the NAEP truly reflects the diversity of our nation's student population. Results are reported for groups of students with similar characteristics such as gender, region, race and ethnicity. The school (including the IEP team) may not exclude a student with disabilities from participation in NAEP assessments.

Many accommodations are available for NAEP assessments. For more information about specific accommodations and their appropriateness for this assessment, contact the LEA Assessment Director.

Assessment of Performance toward Proficiency in Languages (AAPPL)

The AAPPL is a proficiency and performance assessment of standards-based language learning appropriate for grades 5–12. It assesses tasks across three modes of communication and is available in thirteen languages.

Modes of Communication	Languages
Interpersonal Listening/Speaking Presentational Writing Interpretive Reading and Listening	Arabic, Chinese (Mandarin), English/ESOL, French, German, Hindi, Italian, Japanese, Korean, Portuguese, Russian, Spanish, Thai

Many accommodations are available for students taking the AAPPL assessment. However, individual accommodations must go through a request and review process before the accommodation can be used. Some of the accommodations may not be applicable to some of the assessments due to test configuration limitations. Please reach out to the AAPPL Accommodations Team (accommodations@languagetesting.com) to discuss specifics. You can also visit the AAPPL testing accommodations webpage (https://aapplcentral.com/accommodations-request/) for access to the template to request accommodations and more information. AAPPL Utah Landing Page

GUIDELINES FOR ASSESSMENT OF ENGLISH LEARNERS (ELS)

English Learners (ELs) who have been enrolled in a school in the United States less than one year may be exempt from some assessments. ELs who have been enrolled in a school in the United States less than three years are not included in some growth and achievement calculations.

1. ELs who are enrolled **on or after April 15 of the current school year** who are new to the United States (first year of enrollment in any U.S. school) are not required to take any ELA, math, or science statewide summative assessments. However, they are required to participate in Acadience Reading.
2. ELs who are enrolled **before April 15 during the current school year** who are new to the United States (first year of enrollment in any U.S. school) are required to participate in:
   a. Acadience Reading
   b. ACCESS for ELLs
   c. English Language Arts Summative (included in participation only; scores are not included in growth and achievement reports)
   d. Math Summative (included in participation only; scores are not included in growth and achievement reports)
   e. Science Summative (included in participation only; scores are not included in growth and achievement reports)
3. ELs in their **second year** of enrollment (in any U.S. school) are required to take:
   a. Acadience Reading (if enrolled in grades 1–3; included in growth)
   b. ACCESS for ELLs
   c. English Language Arts Summative (included in participation and growth only; scores are not included in achievement reports)
   d. Math Summative (included in participation and growth only; scores are not included in achievement reports)
   e. Science Summative (included in participation and growth only; scores are not included in achievement reports)
4. ELs enrolled **three or more years** (in any U.S. school) are included in all statewide reports and are required to take:
   a. Acadience Reading (if enrolled in grades 1–3; included in growth)
   b. ACCESS for ELLs
   c. English Language Arts Summative (included in participation, growth, and achievement reports)
   d. Math Summative (included in participation, growth, and achievement reports)
   e. Science Summative (included in participation, growth, and achievement reports)

Note: *Foreign exchange students may take the statewide assessments for the courses in which they are enrolled and are not included in any growth or achievement reports.*

Basic Principles for Selecting, Administering, and Evaluating Accommodations

School teams must carefully consider the selection, administration, and evaluation of accommodations for students with special needs. To assist with that process, users should examine the philosophical foundation outlined below. This foundation is built upon a five-step process for planning teams selecting accommodations for students with special needs.

1. Expect students to participate in grade-level assessments and achieve grade-level academic content standards.
2. Learn about accommodations and resources for instruction and assessment.
3. Select accommodations and resources for instruction and assessment as needed for individual students.
4. Ensure that access is provided for accommodations and resources during instruction and assessment.
5. Evaluate and improve accommodation use for instruction and assessment.

All Students Participate in Grade-Level Assessments and Access Grade-Level Academic Standards

The achievement of students with special needs is heavily influenced by the expectations of educators and parents. To support students in their long-term goals for success in adult life, including educational and employment goals, the school team must hold the expectation that every student will be taught and assessed based on grade-level standards.

Legislation focuses on accountability and the inclusion of all students; therefore, it is imperative to ensure equal access to grade-level content standards for all students. Academic content standards are educational targets for students to learn at each grade level. Teachers must ensure students are given the opportunity to progress toward grade-level content standards by using a range of instructional strategies based on the varied strengths and needs of students. Providing accommodations during instruction and assessment promotes equal access to grade-level content. To accomplish this goal of equal access:

- Every team member must know and understand the Utah Core Standards,
- Every team member must be familiar with accountability systems at the state and LEA level, and
- Educators must collaborate in order to maximize equal access to grade-level content standards for all students.

All students with special needs can access grade-level academic content standards, and most of them are able to demonstrate growth in achievement on grade-level standards when the following three conditions are met:

1. Instruction is provided by teachers who are qualified to teach in the content areas addressed by the Utah Core Standards and who know how to differentiate instruction for diverse learners.
2. Special needs student plans are carefully designed to ensure all students have access to grade-level standards, with services and supports as needed.
3. Appropriate accommodations, services, and supports are provided to help students' access grade-level content.

The impact that high expectations can have on student success is expressed in Federal and State laws requiring schools to include students with special needs in grade-level instruction and to assess the academic achievement of these students. While these laws vary for students with different types of needs, the core principles remain—public education is available to all students, schools must provide quality instruction to all students, and schools are accountable to demonstrate achievement and improvement for all students.

Every Student Succeeds Act (ESSA)

The ESSA reauthorizes the Elementary and Secondary Education Act (ESEA). It aligns with existing tenets of USBE's Strategic Plan and state law. It offers flexibility to use ESSA funding to achieve education equity, improve quality learning, and advance system values. ESSA funding will help Utah improve educational outcomes for students.

The ESSA requirements concerning students with disabilities are very similar or the same as those of the ESEA. The ESEA expressed a national expectation that schools are accountable to the public for the educational achievements of all students. ESSA explicitly calls for all students to participate in assessments in order to meet this expectation of accountability (§1111(b)(2)(A)). ESSA also requires that assessments provide reasonable adaptations and accommodations for students with disabilities in order to measure the academic achievement of students on grade-level standards (§1111(b)(3)(C)(ix)(II)).

In addition, ESSA mandates that all students who are learning English receive quality instruction for learning both English and grade-level academic content. According to ESSA, students who are learning English are required to participate in annual statewide assessments that measure students' English language and academic progress. States can choose flexible programs of instruction and assessment tools in order to increase accountability for students who are learning English academic achievement.

The ESSA requires that states develop standards for English language proficiency in the context of each state's academic content standards. LEAs must ensure participation of students who are learning English in the state accountability system and provide for:

> The inclusion of English learners, who shall be assessed in a valid and reliable manner and provided appropriate accommodations on assessments administered to such students under this paragraph, including, to the extent practicable, assessments in the language and form most likely to yield accurate data on what such students know and can do in academic content areas, until such students have achieved English language proficiency (§1111(b)(3)(c)(ix)(III)).

The rights of students with disabilities learning English for equitable inclusion in instruction and assessment processes are also outlined in several federal laws and regulations, as well as certain legal decisions in conjunction with the Office of Civil Rights (OCR). These educational protections and supports for students learning English include the ESSA, as well as the Supreme Court cases *Lau v. Nichols* (1974) and *Castañeda v. Pickard* (1981).

The following are some other ESSA provisions for students who are learning English:

- Students must be appropriately identified as English Learners in accordance with Title III policies and procedures
- All students who are English Learners must be tested for English proficiency annually.
- All students who are English Learners must take state academic achievement tests in language arts and mathematics, may be excluded from proficiency calculations in their second year of

enrollment, and must be included in proficiency and growth calculations in their third year of enrollment.

- Students who are English Learners should be assessed in a valid and reliable manner and provided reasonable accommodations.
- Students who are English Learners as a group must make adequate progress toward English proficiency each year; schools, LEAs, and the State are held accountable for ensuring that these targets are met.
- Language instruction curricula must be evidence-based and effective for students who are learning English.
- Local entities have the flexibility to choose the method of instruction to teach students who are English Learners.
- States must establish standards and objectives for raising the level of English proficiency within the four recognized domains of speaking, listening, reading, and writing. Standards for English proficiency must be aligned with achievement of the challenging State academic content and student academic achievement standards. Utah, as part of the WIDA Consortium, has adopted WIDA standards and assessments for English learners.

Individuals with Disabilities Education Act (IDEA) of 2004

The IDEA specifically governs services provided to students with disabilities. Accountability at the individual level is provided through IEPs developed based on each student's unique needs. Accountability at the school and state level is provided through participation in the statewide assessment system. The IDEA requires the participation of all students with disabilities in state and district-wide assessments. Specific IDEA requirements include:

> All children with disabilities are included in all general State and districtwide assessment programs . . . with appropriate accommodations and alternate assessments where necessary and as indicated in their respective individualized education programs (34 CFR § 300.160).
>
> The term "individualized education program" or "IEP" means a written statement for each child with a disability that is developed, reviewed, and revised in accordance with this section and that includes . . . a statement of any individual appropriate accommodations that are necessary to measure the academic achievement and functional performance of the child on State and districtwide assessments consistent with section 612(a)(16)(A) of this title; and if the IEP Team determines that the child shall take an alternate assessment on a particular State or districtwide assessment of student achievement, a statement of why—the child cannot participate in the regular assessment; and the particular alternate assessment selected is appropriate for the child (34 CFR § 300.160).

Section 504 of the Rehabilitation Act

Section 504 provides individuals with disabilities certain rights and protects them against discrimination from federally funded programs and activities. Section 504 states that:

> No otherwise qualified individual with a disability in the United States, as defined in section 705(20) of this title, shall, solely by reason of her or his disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance or under any program or activity conducted by

any Executive agency . . . (Nondiscrimination under Federal grants and programs, 29 USC §794(a))

In school settings, Section 504 legislation guarantees and protects students with disabilities who do not have an IEP but are still considered individuals with disabilities. The definition of a student with disabilities is much broader under Section 504 than it is under IDEA. An important part of Section 504 plans developed by schools for students with disabilities is a description of the specific accommodations the student can utilize on assessments.

Accommodations, Modifications, and Resources for Instruction and Assessment

Accommodations

Accommodations are practices and procedures that provide equitable access during instruction and assessments for students with disabilities that do not alter the validity, score interpretation, reliability, or security of the assessment.

Accommodations are intended to reduce or even eliminate the effects of a student's disability; they do not reduce learning expectations. The accommodations provided to a student should be the same for classroom instruction, classroom assessments, and LEA and state assessments. It is critical to note that although some accommodations may be appropriate for instructional use, they may not be appropriate for use on a standardized assessment. For example, providing a spell check on a spelling assessment item or providing a calculator on a math item designed to assess a student's computation skill would alter the validity, score interpretation, reliability, or security of the assessment.

It is very important for educators to become familiar with state policies regarding accommodations during assessments. Accommodations should be provided routinely for instruction and assessment during the school year in order to be used for state assessments. Students should take advantage of computer-based training tests to be familiar with how accommodations will be made available on computer-based assessments.

In the area of accommodations, research indicates that more is not necessarily better, and that providing students with accommodations that are not truly needed may have a negative impact on performance. The most appropriate approach to accommodations is to focus on students' identified needs within the general education curriculum. Typically, accommodation use does not begin and end in school. Students who use accommodations will generally also need them at home, in the community, and, as they get older, in post-secondary education and at work. Accommodations for instruction and assessment are integrally intertwined.

Recent and ongoing advances in assistive technologies are changing the ways in which many accommodations may be provided, and some tools that once were available only as accommodations are now available to all students. As states move to providing assessments on computer-based platforms, the IEP team must take care to ensure that students have opportunities to become familiar with the technological aspects of the assessment process. In addition to taking training assessments using the same platform, it is also important for educators to provide opportunities for all students to use technology for learning and in formative assessment activities as well.

Modifications

Modifications are changes in the assessment conditions that fundamentally alter the test score interpretation and comparability. Modifications or alterations refer to practices that change, lower, or reduce learning expectations and can increase the gap between the achievement of students with special needs and expectations for proficiency at a particular grade level. Using modifications may have implications that could adversely affect students throughout their educational career. Examples of modifications include:

- Providing a student with a tool (e.g., spell-checker, calculator) for an instructional activity or assessment item when this tool changes the underlying skill or concept being taught or assessed.
- Requiring a student to learn less material (e.g., fewer objectives, shorter units, or lessons).
- Reducing assignments and assessments so a student only needs to complete the easiest problems or items.
- Revising assignments or assessments to make them easier (e.g., crossing out half of the response choices on a multiple-choice test so that a student only has to pick from two options instead of four).
- Giving a student hints or clues to correct responses on assignments and tests.

Providing modifications to students during classroom instruction and/or classroom assessments may have the unintended consequence of reducing their opportunity to learn critical content. If students have not had access to critical, assessed content, they may be at risk for not meeting graduation requirements.

Providing a student with a modification during a state accountability assessment may constitute a test irregularity and/or an ethics violation and may result in an investigation into the school's or LEA's testing practices. If a student is administered a modified assessment, the student may be considered non-proficient and recorded as a non-participant at the school and LEA levels.

Resources

Resources are universally designed best practices that are provided for all students, including students in general education and students with special needs. Scratch paper, extended time, breaks, and use of an alternative location are examples of resources which may be used by all students.

Assessment Accommodations and Resources Overview

Resources for All Students (Table 1): These are accessibility features that are allowed for all students who are participating in the assessment (unless otherwise noted because in some cases they accommodations and/or modifications depending on the assessment). The student must have access to the desired resource throughout the year during classroom instruction so he or she may become familiar with the feature prior to the administration of the assessment.

Again, it is important to remember that some resources from Table 1 may be considered accommodations or modifications depending on the various assessment.

Accommodations for Students with Disabilities, 504 plans, and/or English Learner plans (Table 2): These features are accommodations that are provided for students with disabilities, 504 plans, and/or English Learner plans who require the use of the accommodation(s) to access the assessment. Table 2 has the USBE verification/notification expectations when choosing to provide an accommodation. This ensures that the student will be effectively provided with the necessary accommodation. See each individual assessment test administration manuals (TAMs) for how to set accommodations for the various assessments.

Additional Accommodations Information (Table 3): The resources and accommodations listed in Tables 1 and 2 do not necessarily apply to the DLM, Utah Aspire Plus, ACT, and ASVAB. Table 3 gives specific directions for where to find more information regarding accommodations for these assessments.

Exceptional Accommodations Request: If an IEP team has designated an accommodation needed for a student to receive FAPE and that accommodation is not found in the tables below or is not an accommodation typically used/allowed, please submit an "Exceptional Accommodation Request" form the USBE prior to using that accommodation on a statewide assessment. A committee at USBE, made up of special education and assessment specialists, will review the request for approval. You can find the "Exceptional Accommodations Request" form on the Special Education Assessment webpage (https://schools.utah.gov/specialeducation/resources/assessment?mid=3780&tid=2).

Table 1: Resources for all Students

Resource	RISE	Acadience Reading	ACCESS for ELLs/Screener	NAEP	AAPPL	KEEP	PEEP
Alternate location	Allowed	Allowed	Allowed	Allowed	Allowed as an accommodation	Allowed	Allowed
Audio amplification	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed
Breaks	Allowed	Allowed	Allowed	Allowed	Allowed as an accommodation	Allowed	Allowed
Calculation devices and computation tables	Not allowed for grades 3-5; Embedded Grade 6 segment 2, grades 7 & 8	N/A	N/A	Provided if applicable	N/A	N/A	N/A
Change order of activities	Allowed	Allowed	Listening must be given first	Not allowed	Allowed as an accommodation	Allowed	Allowed
Color adjustments	Embedded	Allowed	Allowed	Allowed	Allowed	N/A	N/A
Descriptive audio	Embedded – must be enabled in TIDE	N/A	N/A	Allowed	N/A	N/A	N/A
***Directions – oral translation**	Allowed for ELs	Allowed for ELs	Allowed for ELs	Allowed for ELs	Allowed for ELs	Allowed for ELs	Allowed for ELs
***Directions – reread**	Embedded as a text-to-speech	Allowed for some subtests – see TAM	Allowed	Allowed	Embedded	Allowed	Allowed
***Directions – signed**	Allowed w/certified interpreter	Allowed w/certified interpreter	Allowed w/certified interpreter	Allowed	Allowed w/certified interpreter	Allowed w/certified interpreter	Allowed w/certified interpreter
Environment change	Allowed	Allowed	Allowed	Allowed	Allowed as an accommodation	Allowed	Allowed

Resource	RISE	Acadience Reading	ACCESS for ELLs/Screener	NAEP	AAPPL	KEEP	PEEP
Extended time	Allowed	Not Allowed	Allowed	Allowed	Allowed as an accommodation	N/A	N/A
Graphic organizer	Not Allowed	N/A	N/A	Allowed	N/A	N/A	N/A
Highlight	Embedded	Not allowed	Not allowed	Allowed	Not Allowed	Allowed	Allowed
Human reader	Not Allowed	Not Allowed	Allowed for directions and listening passages	Allowed	Allowed for directions only (may be allowed as an accommodation	N/A	N/A
Magnification (text zoom)	Embedded	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed
Minimize distractions	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed
Scratch paper and graph paper (blank)	Allowed	N/A	Allowed	Embedded	Allowed	N/A	N/A
Spell check	Embedded- for writing only	N/A	Not Allowed	Available for online test; Unavailable on paper test	Not Allowed	N/A	N/A
Strikethrough	Embedded	Not Allowed	Not Allowed	Allowed	Not Allowed	N/A	N/A
Text-to-speech	Embedded	N/A	N/A	Embedded	Unavailable	N/A	N/A
Line Reader	Embedded	N/A	N/A	N/A	N/A	N/A	N/A
Masking	Embedded	N/A	N/A	N/A	N/A	N/A	N/A
Glossary	Embedded- Grade 3-5 Reading	N/A	N/A	N/A	N/A	N/A	N/A
Dictionary	Embedded- English and Spanish	N/A	N/A	N/A	N/A	N/A	N/A
Thesaurus	Embedded- English only	N/A	N/A	N/A	N/A	N/A	N/A

** = Directions are non-item content that appear at the beginning of the test or between testing sessions. It does not refer to "directions" meaning the item's stem, directions for answering a specific question, etc.*

Table 2—Accommodations for Students with Disabilities, 504 Plans, and/or plans for Students Learning English

Accommodation	RISE	Acadience Reading	ACCESS for ELLs/Screener	NAEP	AAPPL	KEEP	PEEP
Attention marker or ruler	Embedded Line Reader (in Table 1)	Allowed	N/A	N/A	N/A	Allowed	Allowed
Assistive Technology	Allowed	Allowed	Allowed	Not Allowed	Allowed (contact LEA Accommodations Coordinator)	Allowed	Allowed
Braille (tactile graphics for students who are blind)	Allowed	Allowed	Allowed	Allowed	N/A (computer-based test; use human readers)	Allowed	Allowed
Calculation devices and computation tables	6th grade – handheld allowed during calculator segment 2 only	N/A	N/A	Allowed on calculator section	N/A	Not Allowed	Not Allowed
Large print paper	Allowed	Allowed	Order from USBE	Allowed	N/A (computer-based test; increase screen resolution)	Allowed	Allowed
Scribe	Allowed (Need USBE approval)	N/A	N/A	Allowed	Allowed for some components	Not Allowed	Not Allowed
Sign language	Allowed w/certified interpreter-embedded for listening stimulus	Use appropriate alternative assessment option	Allowed for directions/ listening passages w/certified interpreter	Allowed	Allowed for appropriate components	Allowed	Allowed
Standard size paper	Allowed	Allowed	Allowed – order from vendor	Allowed	N/A	Allowed	Allowed
Visual representation	Allowed	N/A	N/A	N/A	N/A	Embedded	Embedded

Table 3—Additional Accommodations Information

Assessment	Accommodations
Utah Aspire Plus	Accessibility supports and accommodations table can be found in Appendix J.
ACT	Accessibility supports and accommodations table can be found in Appendix K.
ASVAB	Contact LEA Accommodations Coordinator.
DLM	Accommodations are based on IEP team decisions for individual student needs and are provided in the DLM assessments with great flexibility.

Accommodations and Resources Definitions

Special needs planning teams are responsible to identify the resources, accommodations, or modifications that are required for instruction and assessment. Each assessment identifies which resources and accommodations are allowed within the assessment to accurately measure student knowledge and skill for the specific concepts being assessed. The special needs planning team may not "override" the requirements for any specific assessment. If a resource or accommodation is provided for an assessment that is not allowed for that assessment, the assessment is invalid. The student is considered non-proficient and is reported as a non-participant.

Alternate Location

In some circumstances, distractions for an individual student or a group of students can be reduced by altering the location in which an individual student interacts with instructional materials or test content. For students who are easily distracted by the presence of other students, an alternate location allows students to work individually or in small groups. Changes may also be made to a student's location within a room, such as away from windows, doors, or pencil sharpeners. Sitting near the teacher's desk or in the front of a classroom may be helpful for some students. Physically enclosed classrooms (classrooms with four walls) may be more appropriate than open classrooms, and study carrels might also be helpful. Some students may benefit from being in an environment that allows for movement, such as being able to walk around.

An alternate location for a student receiving an interpreter or scribe accommodation can prevent other students from becoming distracted. In addition, some students may perform better when they can read content aloud and think out loud or make noises that may be distracting to other students. To reduce distractions to other students when these strategies and/or accommodations are provided, an alternate location must be employed. A student assessed in an alternate location always needs a proctor supervising the assessment.

Assessment	Alternate Location Allowance
ACCESS for ELLs/W-APT	Allowed for all students
AAPPL	Allowed for all students
Acadience Reading	Allowed for all students
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Allowed
KEEP	Allowed for all students
PEEP	Allowed for all students
NAEP	Allowed
RISE	Allowed for all students
Utah Aspire Plus	Allowed

Adaptive Equipment

Adaptive Equipment may be necessary for some students. Some students benefit from the use of adaptive or special furniture, such as devices for sitting upright during instruction or assessment. Use of a slant board or wedge to minimize eye strain and provide a better work surface may be needed by some students. Special lighting may also be beneficial to some students.

Assessment	Environment Allowance
ACCESS for ELLs/W-APT	Allowed
AAPPL	Allowed for all students
Acadience Reading	Allowed for all students
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Allowed
KEEP	Allowed if designated on the IEP
PEEP	Allowed if designated on the IEP
NAEP	Allowed for all students
RISE	Allowed for all students
Utah Aspire Plus	Allowed as an accommodation

Assistive Technology

For students who require a device, software, or equipment to help navigate their educational environment independently. For example, some students may have difficulty manipulating a mouse or standard keyboard, there are a variety of assistive technology devices that allow them to control a computer program and record responses. These assistive technology devices include items such as Intellikeys®, sip-and-puff devices, single-switch devices, eye tracking devices, speech-to-text dictation, and touch screens.

Assessment	Assistive Communication Allowance
ACCESS for ELLs/W-APT	Allowed
AAPPL	Allowed as an accommodation
Acadience Reading	Allowed for all students
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Allowed
KEEP	Allowed if designated on the IEP
PEEP	Allowed if designated on the IEP
NAEP	Not allowed for any student
RISE	Allowed for all students (review technical specifications to verify which devices may be used)
Utah Aspire Plus	Allowed for all students (review technical specifications to verify which devices may be used)

Attention Marker or Ruler

The use of a marker or ruler to focus student attention on the materials is sometimes allowed for students who are not able to demonstrate their skills adequately without one. It is good practice to attempt the task or assessment first without a marker or ruler and then reattempt or retest with an alternate form using a marker or ruler if needed.

Assessment	Attention Marker or Ruler Allowance
ACCESS for ELLs/W-APT	Allowed
AAPPL	Not applicable for any student
Acadience Reading	Allowed if designated on the IEP
ACT and ASVAB	Not applicable for any student
DLM	Allowed
KEEP	Allowed if designated on the IEP
PEEP	Allowed if designated on the IEP
NAEP	Not allowed for any student- use line reader
RISE	Not applicable for any student
Utah Aspire Plus	Not applicable for any student- use line reader

Audio Amplification

Some students may require audio amplification devices in addition to hearing aids to increase clarity. A teacher may use an amplification system when working with students in classroom situations that contain a great deal of ambient noise.

Assessment	Audio Amplification Allowance
ACCESS for ELLs/W-APT	Allowed
AAPPL	Allowed for all students
Acadience Reading	Allowed for all students
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Allowed
KEEP	Allowed if designated on the IEP
PEEP	Allowed if designated on the IEP
NAEP	Not allowed for any student
RISE	Allowed for all students
Utah Aspire Plus	Allowed for all students

Braille/Screen Reader for Students Who Are Blind or Visually Impaired

Braille is a method of reading a raised dot code with the fingertips. Not all students who are blind or visually impaired read braille fluently or choose braille as their primary mode of reading. Even if they use braille as their primary mode of reading, students should also build skills in using electronic formats, such as audio recordings and synthesized speech.

Tactile graphic images provide graphic information through fingers instead of eyes. Graphic material (e.g., maps, charts, graphs, diagrams, illustrations) is presented in a raised format. Tactile sensitivity (recognizing graphic images through touch) is less discriminating than visual reading, making many diagrams too complicated to understand without significant additional information. Braille and/or tactile graphics may be used for instruction and assessment. Auditory descriptions of graphics may be available on assessments.

Screen reading software, which includes both text and graphics description for students who are blind or visually impaired, can be used for instruction or assessment. Some screen readers, such as JAWS, are developed for computer users whose vision loss prevents them from seeing screen content. A refreshable braille display or braille terminal is an electro-mechanical device for displaying braille characters, usually by means of raising dots through holes in a flat surface. Computer users who are blind or visually impaired may use refreshable braille to read text output. Some students may need human assistance to enter responses, which is allowed for students using this accommodation.

Assessment	Braille/Screen Reader Allowance
ACCESS for ELLs/W-APT	Allowed
AAPPL	Not applicable for any student; computer-based test – use human reader.
Acadience Reading	Allowed. Order braille from USBE staff for students with disabilities.
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Allowed
KEEP	Allowed if designated on the IEP
PEEP	Allowed if designated on the IEP
NAEP	Allowed for students with disabilities
RISE	Allowed. Braille/tactile graphics and embossing are available on request for students with disabilities with USBE staff authorization. Text and graphics may be provided via a Tiger embosser in the student's school, which can print text and/or graphics depending on student need. Refreshable braille is generated by JAWS. This accommodation is provided at the time of test administration, which means that educators must allow extra time for each item to be embossed as the items are generated by the computer-adaptive assessment. Training tests should be used to ensure that local configurations for embossing can successfully produce the braille assessment.
Utah Aspire Plus	Allowed accommodation

Breaks

Breaks may be given if needed. The administrator of the assessment must monitor the length and timing of breaks so that students do not have opportunity to seek answers to items on the assessment.

Assessment	Breaks Allowance
ACCESS for ELLs/W-APT	Allowed
AAPPL	Allowed for all students
Acadience Reading	Allowed between subtests for all students
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Allowed
KEEP	Allowed for all students
PEEP	Allowed for all students
NAEP	Allowed for all students
RISE	Allowed for all students
Utah Aspire Plus	Allowed as an accommodation

Calculation Devices and Computation Tables

All students are allowed to use the online calculation device when it is embedded during the allowed segments of a math assessment. Students in grades 7–12 who require a handheld calculation device or printable computation table can use that resource during the allowed segment of the math assessment. For students in grade 6, the use of a handheld calculation device or printable computation table is considered an accommodation and may be provided (based on need documented in the IEP) during the allowed segment of the assessment. For students in grades 3–5, the use of a handheld calculation device printable computation table is not allowed during any segment of the math assessment. If provided, the test must be reported as modified, and the student will receive a score of non-proficient and be considered a non-participant for accountability.

During instruction, it is important to determine whether the use of a calculation device or computation table is a matter of convenience or a necessary accommodation. It is also important to know the goal of instruction and assessment before making decisions about the use of calculation devices or computation tables. In some cases, calculators may be adapted with large keys or voice output (talking calculators). Examples of calculation devices are calculators, slide rules, and abacuses. Examples of computation tables are number lines and multiplication, division, addition, and subtraction charts.

Assessment	Calculation Devices and Computation Tables Allowance
ACCESS for ELLs/W-APT	Not applicable
AAPPL	Not applicable for any student
Acadience Reading	Not applicable for any student
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Allowed
KEEP	Not allowed for any student
PEEP	Not allowed for any student
NAEP	Provided if applicable for the assessment
RISE	Calculators are embedded within the assessment system when allowed. When a calculator is not available within the assessment, a calculator may not be used. The calculators used by RISE Summative are available as a free download for instructional use. • **Math grades 3, 4, 5**: Not allowed for any student. • **Math grade 6**: Allowed when embedded within the assessment system. If a student is unable to access the online calculator due to the student's disability, an accommodation can be made to use a handheld calculator during the calculator segment of the assessment, based on need documented on the IEP. • **Math grade 7 and above**: Allowed when embedded within the assessment system. All students may choose to use the embedded calculator or the handheld calculator they are most comfortable using. • **Science**: Allowed for all students.
Utah Aspire Plus	Allowed

Change in the Order of Activities

Assessments and activities that require focused attention should be scheduled for the time of day when a student is most likely to demonstrate peak performance. To reduce fatigue and increase attention, activities or some tests can be administered over multiple days (e.g., completing a portion each day).

Assessment	Change in the Order of Activities Allowance
ACCESS for ELLs/W-APT	Listening must be administered first.
AAPPL	Allowed for all students
Acadience Reading	Allowed for all students

Assessment	Change in the Order of Activities Allowance
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Allowed
KEEP	Allowed if designated on the IEP
PEEP	Allowed if designated on the IEP
NAEP	Not allowed for any student
RISE	Allowed for all students
Utah Aspire Plus	Allowed

Color Adjustment

Some students with visual needs are better able to view information through color contrast. Students may alter the contrast in which content is presented via computer. Students may choose the font and background color combinations that help them perceive text-based content, including reverse contrast, such as white font on a black background. A color overlay changes the color of the entire page or screen. Lines and graphics are not affected by the color changes.

Assessment	Color Adjustment Allowance
ACCESS for ELLs/W-APT	Allowed
AAPPL	Allowed for all students
Acadience Reading	Allowed for students with visual impairments if designated on the IEP
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Allowed
KEEP	Not applicable for any student
PEEP	Not applicable for any student
NAEP	Allowed for all students
RISE	Embedded and allowed for all students
Utah Aspire Plus	Embedded and allowed for all students

Descriptive Audio

Students may listen to audio descriptions of interactive answer spaces in test questions. This audio is provided in addition to text-to-speech as a test setting.

Assessment	Descriptive Audio Allowance
ACCESS for ELLs/W-APT	Unavailable
AAPPL	Not applicable for any student
Acadience Reading	Not applicable for any student
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Allowed
KEEP	Not applicable for any student
PEEP	Not applicable for any student
NAEP	Allowed for all students learning English
RISE	Embedded and allowed for all students. **Must be marked as an accommodation in TIDE.** Visit the RISE Portal (https://utahrise.org) for more information.
Utah Aspire Plus	Embedded with text-to-speech

Directions – Oral Translation

Oral translation of directions involves immediate rendering of directions into a student's native language. Clarification of directions is not allowed on any assessment. ("Directions" refers only to non-item content that appears at the beginning of the test or between testing sessions. It does not refer to the item's stem, directions for answering a specific question, etc.)

Assessment	Directions – Oral Translation Allowance
ACCESS for ELLs/W-APT	Allowed for all students learning English
AAPPL	Allowed for students who do not speak English
Acadience Reading	Not allowed for students learning English
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Allowed
KEEP	Allowed for all students learning English
PEEP	Allowed for all students learning English
NAEP	Allowed for all students learning English
RISE	Allowed for **directions** for all students learning English. Assessment items, including reading and writing passages, graphs, questions, and answer options may not be translated in English language arts, mathematics, or science.
Utah Aspire Plus	Allowed for **directions** for all students learning English.

Directions – Reread

To accurately understand the task a student is being asked to engage in, some students need to have directions reread. Clarification of directions is not allowed on any assessment. ("Directions" refers only to non-item content that appears at the beginning of the test or between testing sessions. It does not refer to the item's stem, directions for answering a specific question, etc.)

Assessment	Directions – Reread Allowance
ACCESS for ELLs/W-APT	Allowed
AAPPL	Embedded for all students
Acadience Reading	Allowed for all students for some subtests – refer to DIBELS guidelines
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Allowed
KEEP	Allowed for all students
PEEP	Allowed for all students
NAEP	Allowed for all students
RISE	Embedded and allow for all students as text-to-speech only
Utah Aspire Plus	Allowed for all students

Directions – Signed

Directions may be signed by a certified interpreter. Clarification of directions is not allowed for any student. ("Directions" refers only to non-item content that appears at the beginning of the test or between testing sessions. It does not refer to the item's stem, directions for answering a specific question, etc.)

Assessment	Directions – Signed Allowance
ACCESS for ELLs/W-APT	Allowed if signed by a certified interpreter

Assessment	Directions – Signed Allowance
AAPPL	Allowed for students with disabilities if signed by a certified interpreter
Acadience Reading	Allowed for students with disabilities if signed by a certified interpreter
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Allowed
KEEP	Allowed if designated on the IEP
PEEP	Allowed if designated on the IEP
NAEP	Allowed for students with disabilities if signed by a certified interpreter
RISE	Allowed for students with disabilities if signed by a certified interpreter
Utah Aspire Plus	Allowed for students with disabilities if signed by a certified interpreter

Extended Time

A standard extension may be time and one-half. This means a student may be allowed 90 minutes to complete a task that normally has a 60-minute limit. Double time may also be allowed, especially for students who are blind. Decisions should be made on a case-by-case basis, keeping in mind the type of assignments, assessments, and activities. **Unlimited time is not appropriate or feasible for any student**. Tests should not take all day. For example, a test designed to take most students one hour should not take any student more than approximately double time, or about two hours. Students who have too much time may lose interest and motivation to do their best work. Sometimes students who request extended time end up not needing it because of the reduction in anxiety of simply knowing that plenty of time is available.

Assessment	Extended Time Allowance
ACCESS for ELLs/W-APT	Allowed
AAPPL	• Interpersonal Speaking component is **not allowed**. The time to answer each prompt is fixed. • Interpretive Reading, Interpretive Listening, and Presentational Writing are **allowed**.
Acadience Reading	Allowed for all students depending on the subtest—refer to DIBELS guidelines. Some subtests are timed for all students.
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Not applicable for any student. This is not a timed assessment.
KEEP	Not applicable for any student. This is not a timed assessment.
PEEP	Not applicable for any student. This is not a timed assessment.
NAEP	Allowed if designated on the IEP
RISE	Not applicable for any student. This is not a timed assessment.
Utah Aspire Plus	Allowed as an accommodation

Graphic Organizer

Graphic organizers are tools that use visual symbols to express concepts and ideas, or to convey a meaning. They often depict the relationships between facts, ideas, and/or terms within a specific learning task. Examples of graphic organizers are story maps, concept maps, knowledge maps, advanced organizers, concept diagrams, and Venn diagrams. All students may be provided a blank sheet of paper with which they can create their own graphic organizer, without the aid or prompt of the teacher or proctor during the assessment.

Assessment	Graphic Organizer Allowance
ACCESS for ELLs/W-APT	Not applicable for any student
AAPPL	Not applicable for any student
Acadience Reading	Not applicable for any student
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Allowed
KEEP	Not applicable for any student
PEEP	Not applicable for any student
NAEP	Allowed
RISE	Not allowed for any student, students may create a graphic organizer on scratch paper
Utah Aspire Plus	Not allowed for any student, students may create a graphic organizer on scratch paper

Highlight

Highlighting, providing visual cues, and using markers, arrows, and stickers, may draw attention to key words or content in instruction. These resources may or may not be applicable or available for assessments.

Assessment	Highlight Allowance
ACCESS for ELLs/W-APT	Not allowed
AAPPL	Not allowed for any student
Acadience Reading	Not allowed for any student
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Allowed
KEEP	Allowed if designated on the IEP
PEEP	Allowed if designated on the IEP
NAEP	Allowed
RISE	Embedded and allowed for all students
Utah Aspire Plus	Embedded and allowed for all students

Human Reader

In a computer-based environment, text-to-speech technology that reads text and describes graphics may replace a human reader. Human read-aloud of text may or may not be allowed on assessments. If allowed, readers should use even inflection so that the student does not receive any cue from the way the information is read. Human readers may not describe graphics and other symbols, or clarify, elaborate, or provide assistance to students. Familiarity with terminology and symbols specific to the content, especially high school mathematics and science, is necessary for human readers.

Assessment	Human Reader Allowance
ACCESS for ELLs/W-APT	Allowed for directions and listening passages
AAPPL	Allowed for directions
Acadience Reading	Not allowed for any student
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Allowed

Assessment	Human Reader Allowance
KEEP	Not applicable for any student
PEEP	Not applicable for any student
NAEP	Allowed if designated on the IEP
RISE	Not allowed for any student for any portion of ELA, mathematics, or science assessments. Use text-to-speech for all students instead.
Utah Aspire Plus	Only allowed in conjunction with other specific accommodations

Large Print

Students with visual impairments or other print disabilities may need assistance viewing content. Access for students with visual needs is typically provided through enlarging content. Large print paper assessments may no longer be needed in computer-based testing if magnification of the entire screen and/or magnification of select areas is available. Larger monitors may also aid students in computer-based assessments. Large-print editions of instructional materials are required for some students with visual impairments or print disabilities. All text and graphic materials, including labels and captions on pictures, diagrams, maps, charts, exponential numbers, notes, and footnotes, must be presented in at least 18-point type for students who need large print.

Students, working with their teachers, need to find an optimal print size and determine the smallest print that can still be read (copyright issues may need to be addressed).

Assessment	Large Print Allowance
ACCESS for ELLs/W-APT	Allowed; order from USBE staff
AAPPL	Not allowed for any student; contact LEA Accommodations Coordinator
Acadience Reading	Allowed for students with disabilities. Produced by LEA.
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Allowed
KEEP	Allowed if designated on the IEP
PEEP	Allowed if designated on the IEP
NAEP	Allowed for all students
RISE	Available on request for students with disabilities. Large print can be provided, on demand, at a student's school in a variety of font sizes on 8½" x 11" paper.
Utah Aspire Plus	Allowed as an accommodation. Must be pre-ordered, is on 11x17 paper, and 18-point font size.

Magnification

Access for students with visual impairments is typically provided through magnifying content. Magnification of the entire screen, including text and graphics, and/or a magnification tool that magnifies only a portion of the screen, may be available on assessments.

Assessment	Magnification Allowance
ACCESS for ELLs/W-APT	Allowed
AAPPL	Allowed for all students
Acadience Reading	Allowed for all students
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Allowed

Assessment	Magnification Allowance
KEEP	Allowed if designated on the IEP
PEEP	Allowed if designated on the IEP
NAEP	Allowed if designated on the IEP
RISE	Embedded and allowed for all students. Additional magnification may be needed to enlarge graphics.
Utah Aspire Plus	Embedded and allowed for all students.

Minimize Distractions

Some students need help reducing distractions and/or maintaining focus while they are accessing and interacting with information presented during instruction or assessment. A student may wear noise buffers, such as earphones, earplugs, or headphones, to reduce distractions and improve concentration. Study carrels may also be used.

Assessment	Minimize Distractions Allowance
ACCESS for ELLs/W-APT	Allowed
AAPPL	Allowed for all students
Acadience Reading	Allowed for all students
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Allowed
KEEP	Allowed for all students
PEEP	Allowed for all students
NAEP	Allowed for all students
RISE	Allowed for all students
Utah Aspire Plus	Allowed for all students

Scratch Paper and Graph Paper

Students may use **blank** scratch or graph paper without any directions or numbers included. If paper is provided during an assessment, care must be taken not to violate the security of the test. All paper should be collected and destroyed at the end of the assessment.

Assessment	Scratch Paper and Graph Paper Allowance
ACCESS for ELLs/W-APT	Allowed
AAPPL	Allowed for all students
Acadience Reading	Not applicable for any student
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Allowed
KEEP	Not applicable for any student
PEEP	Not applicable for any student
NAEP	Embedded and allowed for all students
RISE	Allowed for all students
Utah Aspire Plus	Allowed for all students

Scribe

A scribe is a skilled person who has been trained to write/input what a student dictates by an assistive communication device, speech, pointing, or sign language. A scribe may not edit or alter student work in any way and must record word for word exactly what the student has dictated. The student must be able to edit what the scribe has written. Individuals who serve as scribes need to carefully prepare to ensure they know the vocabulary involved and understand the boundaries of the assistance to be provided. The role of the scribe is to write only what is dictated, no more and no less. A student who experiences a debilitating injury just prior to testing that prevents him or her from being able to write may need a scribe. **Scribes must have experience and understanding of how to effectively scribe for a student.** Some students may need human assistance to enter scores, which is allowed for students with this accommodation.

For the RISE assessment, use of Speech-to-Text/Voice-Recognition Software used with assistive technology as a third-party application is allowed. This allows students to use their voice and input devices to the computer, to dictate responses, or give commands (i.e., opening application programs, pulling down menus, and saving work) in place of a human scribe.

Please refer to the USBE Scribe Guidelines (https://schools.utah.gov/file/d20bd730-8fdd-4012-a84b-4424e487a735) for more information and guidance.

Assessment	Scribe Allowance
ACCESS for ELLs/W-APT	Allowed if necessary due to injury
AAPPL	Allowed for some components; contact LEA Accommodations Coordinator.
Acadience Reading	Not applicable for any student.
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Allowed
KEEP	Not allowed
PEEP	Not allowed
NAEP	Allowed if designated on the IEP
RISE	Allowed for students with disabilities. Also allowed for students as necessary due to temporary injury just prior to assessment as an emergency accommodation. You must submit a scribe request to USBE staff when a scribe is needed for a student. The use of speech-to-text/voice recognition software device via assistive technology may be used. You must submit a scribe request to USBE staff when a student needs to use these devices/programs. All speech-to-text/voice recognition software requests will need to be approved and activated in TIDE by a USBE staff member. Some programs will not work within the testing platform.
Utah Aspire Plus	Allowed for students with disabilities. Also allowed for students as necessary due to temporary injury just prior to assessment as an emergency accommodation. You must submit a scribe request to USBE staff when a scribe is needed for a student. The use of speech-to-text/voice recognition software device via assistive technology may be used. You must submit a scribe request to USBE staff when a student needs to use these devices/programs. All speech-to-text/voice recognition software requests will need to be approved and activated in TIDE by a USBE staff member. Some programs will not work within the testing platform.

Sign Language

Some students who are deaf or hard of hearing may need assistance accessing text-based instructional or assessment content. Access for these students is typically provided through American Sign Language (ASL).

Please refer to the USBE [Interpreter Guidelines](https://schools.utah.gov/file/9f59c42e-7a71-406a-bbed-580e2b5e2b27) (https://schools.utah.gov/file/9f59c42e-7a71-406a-bbed-580e2b5e2b27) for more information and guidance.

Assessment	Sign Language Allowance
ACCESS for ELLs/W-APT	Allowed for directions and listening passages with a certified interpreter
AAPPL	Allowed for some components. Contact LEA Accommodations Coordinator.
Acadience Reading	Students with disabilities who are deaf or have a hearing impairment should use an alternate assessment to determine whether the student is reading on grade level.
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Allowed
KEEP	Allowed if designated on the IEP
PEEP	Allowed if designated on the IEP
NAEP	Allowed for students with disabilities
RISE	• Allowed for students receiving ASL as designated on the IEP. • Must use a certified interpreter. • The student must have the text-to-speech option on each item and the interpreter must only interpret the audio portion. • Interpreters **may not** interpret any item for which the text-to-speech option or descriptive audio is not available. • If ASL is provided onscreen, the interpreter **may not** interpret the item. The student **must** use the online interpreter. • Interpreters may interpret interactive answer spaces in test questions but must listen to audio descriptions while interpreting. Descriptive Audio must be enabled prior to the test session.
Utah Aspire Plus	• Allowed for students receiving ASL as designated on the IEP. • Must use a certified interpreter. • The student must have the text-to-speech option on each item and the interpreter must only interpret the audio portion. • Interpreters **may not** interpret any item for which the text-to-speech option or descriptive audio is not available.

Spell Check

Students who have difficulty producing text due to the speed with which they are able to enter keystrokes, or who have difficulty with language recall, may benefit from spell check or word prediction software for instruction. On assessments, spell check or word prediction may or may not be available, or only available on items where it would not violate the construct of the item. For example, spell check would not be available on writing passages that are assessing spelling.

Assessment	Spell Check Allowance
ACCESS for ELLs/W-APT	Not allowed
AAPPL	Not allowed for any student
Acadience Reading	Not applicable for any student
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Not applicable for any student
KEEP	Not applicable for any student
PEEP	Not applicable for any student
NAEP	Unavailable
RISE	Embedded and allowed for all students. Embedded spell check will not be available on spelling items so the construct of the item will not be violated.
Utah Aspire Plus	Not allowed

Standard Size Paper

Some students may have a disability that warrants a paper assessment.

Assessment	Standard Size Paper Allowance
ACCESS for ELLs/W-APT	Allowed. Order from vendor.
AAPPL	Not applicable for any student
Acadience Reading	Allowed for students with disabilities. Produced by LEA.
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Allowed
KEEP	Not applicable for any student
NAEP	Allowed for all students
RISE	Standard size paper print-on-demand is available on request for students with disabilities with **USBE staff notification**. On request, standard size paper can be provided at the student's school.
Utah Aspire Plus	Allowed, must be pre-ordered

Strikethrough

Strikethrough functions as an answer eliminator, which allows students to cover and reveal individual answer options.

Assessment	Strikethrough Allowance
ACCESS for ELLs/W-APT	Not allowed
AAPPL	Not allowed for any student
Acadience Reading	Not allowed for any student
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Allowed
KEEP	Not applicable for any student
PEEP	Not applicable for any student
NAEP	Allowed
RISE	Embedded and allowed for all students
Utah Aspire Plus	Not applicable

Text-to-Speech

Computer-based assessments may have embedded text-to-speech that standardizes the way text and graphics are presented. Descriptions of symbols, nomenclature, and other graphics can be provided with text-to-speech. Text-to-speech technology may be provided for an assessment for items where the construct of the item is not violated. For example, text-to-speech would not be available on a reading test for reading items because it would violate the construct of the test item.

Assessment	Text-to-Speech Allowance
ACCESS for ELLs/W-APT	Unavailable
AAPPL	Unavailable
Acadience Reading	Unavailable
ACT and ASVAB	Contact LEA Accommodations Coordinator
DLM	Not Allowed
KEEP	Not applicable for any student
PEEP	Not applicable for any student
NAEP	Embedded
RISE	Embedded and allowed for any student. If the reading of any portion of an ELA, mathematics, or science item violates the construct of that item, text-to-speech will not be available. When text-to-speech is appropriate, it will be available to select onscreen.
Utah Aspire Plus	Embedded and allowed for all students. If the reading of any portion of an ELA, mathematics, or science item violates the construct of that item, text-to-speech will not be available. When text-to-speech is appropriate, it will be available to select onscreen.

Visual Representation

Visual Representations are manipulatives such as cubes, tiles, rods, blocks, models, etc. They may be used on all sections of the mathematics assessment **if** they are included in the student's IEP or 504.

Assessment	Text-to-Speech Allowance
ACCESS for ELLs/W-APT	Not applicable for any student
AAPPL	Not applicable for any student
Acadience Reading	Not applicable for any student
ACT and ASVAB	Not applicable for any student
DLM	Allowed
KEEP	Embedded where applicable
PEEP	Embedded where applicable
NAEP	Not applicable for any student
RISE	Allowed for the mathematics assessment. **MUST** be designated on the IEP or 504 Plan.
Utah Aspire Plus	Allowed for the mathematics assessment. **MUST** be designated on the IEP or 504 Plan.

Selecting Accommodations and Resources for Instruction and Assessment for Individual Students

Effective decision-making about appropriate accommodations and resources begins with making good instructional decisions. Then, by gathering and reviewing information about the student's disability and present level of performance in relation to the Utah Core and local standards, teachers can make appropriate assessment decisions. The process of making decisions about accommodations and resources is one in which members of the team attempt to "level the playing field" so that students with special needs can participate in the general education curriculum.

Documenting Accommodations on a Student's IEP

For students with disabilities served under the IDEA, determining appropriate instructional and assessment accommodations and resources should not pose any problems for IEP teams who follow good practices. With information obtained from the required summary of the student's present level of academic achievement and functional performance (PLAAFP), the process of identifying and documenting accommodations and resources should be straightforward. The PLAAFP is a federal requirement in which IEP team members must state "how the child's disability affects the child's involvement and progress in the general education curriculum" (20 USC § 1414(d)(1)(A)(i)(I)(aa)).

Depending on the design and overall format of an IEP, there are potentially three areas in which accommodations can be addressed. Resources may or may not be addressed depending on the needs of the student.

1. **Consideration of special factors** (34 CFR § 300.324(2)). This is where communication and assistive technology supports are considered.
2. **Supplementary aids and services** (34 CFR § 300.324). This area of the IEP includes "aids, services, and other supports that are provided in regular education classes or other education-related settings to enable children with disabilities to be educated with non-disabled children to the maximum extent appropriate . . ."
3. **Participation in assessments** (34 CFR § 300.160). This section of the IEP, the Assessment Addendum, documents accommodations needed to facilitate the participation of students with disabilities in general state and districtwide assessments. IEP teams will designate how individual students will participate in state and district assessments by using specific codes:
   - SA – Standard Administration
   - PA – Participate with Accommodations
   - PM – Participate with Modifications
   - PAA – Participate with Alternate Assessment

   On the Assessment Addendum, IEP teams will also mark the student's required accommodations for instruction, classroom, district, and statewide assessments.

Documenting Accommodations on a Student's Section 504 Plan

Section 504 of the Rehabilitation Act of 1973 requires public schools to provide certain accessibility and/or accommodation supports to students with disabilities even if they are not eligible for special education services under IDEA. The definition of a disability under Section 504 is much broader than the definition under IDEA. Generally, most students eligible for services under IDEA are also eligible under Section 504, but not all students eligible under Section 504 are eligible under IDEA.

General accommodations include environmental strategies, organizational strategies, behavioral strategies, presentation strategies, and evaluation methods.

Other students who may receive accommodations based on their 504 Plan include students with:

- Allergies or asthma;
- Attention difficulties;
- Communicable diseases (e.g., hepatitis);
- Drug or alcoholic addictions, if they are not currently using illegal drugs;
- Environmental illnesses; or
- Temporary disabilities from accidents who may need short term hospitalization or homebound recovery.

Considering Accommodations for ELs with Disabilities or ELs on Section 504 Plans

Team members should consider the intensity of the student's language and disability-related needs. Decisions should be individualized based on these needs. Students with high English language needs and low disability-related needs will require more language-based accommodations than students with high disability-related needs and low English language needs. Students with high English language needs and high disability-related needs will benefit from intensive language and disability-related accommodations and/or resources.

Unlike students with IEPs and 504 Plans, federal law does not mandate that individual language plans be written for each EL. If individual ELs require specific accommodations/resources in addition to the appropriate teaching strategies used for ELs in class, these accommodations and resources should be carefully selected and documented in a manner determined by the LEA.

Involving Students in Selecting, Using, and Evaluating Accommodations/Resources

It is critical for students with special needs to understand their needs and to learn self-advocacy strategies for success in school and throughout life. Some students have limited experience expressing personal preferences and advocating for themselves. Speaking out about preferences, particularly in the presence of authority figures, may be a new role for students, one for which they need guidance and feedback. Teachers and other team members can play a key role in working with students to advocate for themselves in the context of selecting, using, and evaluating accommodations.

The more students are involved in the selection process, the more likely the accommodations and resources will be used, especially as students reach adolescence and their desire to be more independent increases. Students need opportunities to learn which accommodations/resources are most helpful for them. Then they need to learn how to make certain those accommodations/resources are provided in all their classes and wherever they need them outside of school.

Determining the Consequences of Assessment Accommodations/Resources Use

When selecting accommodations or resources for state assessments with a student, it is important to look at state policies and procedures to determine whether use of an accommodation or resource results in adverse consequences on a state test (e.g., lowering or not counting a student's score). Assessment accommodations/resources that result in adverse consequences are commonly referred to as modifications, alterations, and nonstandard or unapproved accommodations (Thurlow & Wiener, 2000).

Questions to Guide Accommodation/Resources Selection

Selecting accommodations and resources for instruction and assessment is the role of a special needs team. Use the questions provided below to guide teams in the selection of appropriate accommodations/resources:

- What are the student's learning strengths and areas for further improvement?
- How do the student's learning needs affect the achievement of grade-level content standards?
- What specialized instruction (e.g., learning strategies, organizational skills, reading skills) does the student need to achieve grade-level content standards?
- What accommodations/resources will increase the student's access to instruction and assessment by addressing the student's learning needs and reducing the effect of the student's disability? These may be new accommodations/resources or ones the student is currently using.
- Are there assistive technology products that could help meet the student's learning and assessment needs?
- What accommodations/resources are regularly used by the student during instruction and assessment?
- What are the differences in student performance for assignments and assessments when accommodations/resources are used versus when they are not used?
- What is the student's perception of how well an accommodation/resource worked?
- Are there effective combinations of accommodations/resources?
- What difficulties did the student experience when using accommodations/resources?
- What are the perceptions of parents, teachers, and specialists about how the accommodation/resource worked?
- Should the student continue to use an accommodation/resource, are changes needed, or should the use of the accommodation be discontinued?

Of the accommodations or resources that match the student's needs, consider:

- The student's willingness to learn to use the accommodations/resources.
- Opportunities to learn how to use the accommodations/resources in classroom settings.
- When accommodations/resources can be used on state assessments.

Plan how and when the student will learn to use each new accommodation or resource. Be sure to give the student ample of time to learn to use instructional and assessment accommodations or resources before an assessment takes place. Ongoing evaluation and improvement of the student's use of accommodations and resources is critical.

In the case that a student will use an accommodation or resource differently in assessment than the way they use it during their day to day instructional accommodation (such as using a human scribe in place of speech-to-text because the students software/device does not infiltrate the testing platform) the student should have time to practice using that accommodation or resource prior to the test day.

Selecting Accommodations and Resources: Do's and Don'ts

Do	Don't
1. Make accommodation/resource decisions based on individualized needs.	1. Make accommodation/resource decisions based on whatever is easiest to do (e.g., preferential seating).
2. Select accommodations/resources that reduce the effect of the disability or limited English proficiency.	2. Select accommodations/resources unrelated to documented student learning needs or accommodations/resources intended to give students an unfair advantage.
3. Be certain to document instructional and assessment accommodations on the student's 504 Plan, IEP, or plan for learning English.	3. Use an accommodation that has not been documented on the 504 Plan, IEP, or plan for learning English.
4. Be familiar with the types of accommodations or resources that may be used as instructional and/or assessment accommodations/resources.	4. Assume that all instructional accommodations/resources are appropriate for use on assessments.
5. Ensure that appropriate accommodations are identified within online testing systems prior to the student's testing.	5. Assume that the accommodations listed in a student's IEP, 504, or EL plan are identified within the online testing systems prior to the student's testing.
6. Be specific about the "where, when, who, and how" of providing accommodations/ resources.	6. Simply indicate that an accommodation or resource will be provided "as appropriate" or "as necessary."
7. Refer to state accommodations/resources policies and understand implications of selections.	7. Check every accommodation/resource possible on a checklist simply to be "safe."
8. Evaluate accommodations/resources used by the student.	8. Assume that the same accommodations/ resources remain appropriate year after year.
9. Ask teachers, parents, and students for input on accommodations/resources and use it to	9. Make decisions about instructional and assessment accommodations/resources by yourself, without other team members.

Do	Don't
make decisions at meetings with the special needs planning team.	
10. Provide accommodations/resources for assessments routinely used for classroom instruction.	10. Provide an accommodation/resource for the first time on the day of an assessment.
11. Select accommodations/resources based on specific individual needs in each content area.	11. Assume that certain accommodations or resources, such as extended time, are appropriate for every student in every content area.

Implementation of Accommodations and Resources During Instruction and Assessment

Accommodations/Resources During Instruction

The student must be provided with the selected accommodations/resources during instructional periods that necessitate their use. An accommodation/resource should not be used for the first-time during assessments. Students should have an opportunity to use technology that is the same or similar to the technology used on the assessment, which may be accomplished by using training tests.

Accommodations/Resources During Assessment Planning for Test Day

Once decisions have been made about providing accommodations/resources to meet individual student needs, the logistics of providing the actual accommodations or resources during state and LEA assessments must be mapped out. Some accommodations must be coordinated with the USBE staff in advance. It is not uncommon for members of the team to be given the responsibility for arranging, coordinating, and providing assessment accommodations and resources for all students who may need them. Thus, it is essential for all team members to know and understand the requirements and consequences of LEA and state assessments, including the use of accommodations and resources. It is important to monitor the provision of accommodations and resources during testing to ensure that accommodations and resources are delivered appropriately, and that technology is working as it should.

Prior to the day of a test, be certain the test administrator and proctors know what accommodations and resources each student will be using and how to administer them properly. Staff members administering accommodations and resources, such as reading to a student or writing student responses, must adhere to specific guidelines so that student scores are valid.

Administering Assessments, Accommodations, and Resources

State and local laws and policies specify practices to assure test security and the standardized and ethical administration of assessments. See the USBE Standard Test Administration and Testing Ethics Policy (https://schools.utah.gov/assessment?mid=1104&tid=5) for more information. Test administrators, proctors, and all staff members involved in test administration must adhere to these policies. It is required that test administrators and others involved in assessments:

- Take appropriate security precautions before, during, and after the administration of the assessment.

- Ensure that appropriate accommodations are identified within online testing systems prior to testing students.
- Understand the procedures needed to administer the assessment prior to administration. For example, what procedures are required to set up the administration of accommodations and resources within a computer-based testing system?
- Administer standardized assessments according to prescribed procedures and conditions and notify appropriate persons if any nonstandard or delimiting conditions occur.
- Avoid any conditions in the conduct of the assessment that might invalidate the results.
- Provide for and document all reasonable and allowable accommodations and resources for the administration of the assessment to students with special needs.
- Avoid actions or conditions that would permit or encourage individuals or groups to receive scores that misrepresent their actual knowledge, skills, or abilities.

Failure to adhere to these practices may constitute an ethics violation, test irregularity, or a breach of test security, and must be reported and investigated according to state and LEA testing policies.

Ethical Testing Practices

Ethical testing practices must be maintained during the administration of a test. Unethical testing practices relate to inappropriate interactions between test administrators and students taking the test. Unethical practices include changing the content by paraphrasing or offering additional information, coaching students during testing, editing student responses, or giving clues in any way. Educators and school employees who serve as standardized assessment administrators that administer and/or proctor tests shall participate in annual ethics training provided by the local LEA and are accountable for ethically administering tests. (For additional information, see the USBE Standard Test Administration and Testing Ethics Policy [https://schools.utah.gov/assessment?mid=1104&tid=5].)

Standardization

Standardization refers to adherence to uniform administration procedures and conditions during an assessment. Standardization is an essential feature of educational assessments and is necessary to produce comparable information about student learning. Strict adherence to guidelines detailing instructions and procedures for the administration of accommodations is necessary to ensure test results reflect actual student learning.

Test Security

Test security involves maintaining the confidentiality of test questions and answers and is critical to ensure the integrity and validity of a test. Test security can become an issue when accessible test formats are used (e.g., braille, large print) or when someone other than the student is able to see the test (e.g., interpreter, reader, or scribe). To ensure test security and confidentiality, test administrators need to:

1. Keep testing materials in a secure place and control computer access to prevent unauthorized access.
2. Keep all test content confidential and refrain from sharing information with or revealing test content to anyone for both paper-based and computer-based assessments.

3. All test materials are to be organized and returned to the School Testing Coordinator, as appropriate. Educators and test administrators may not preview test content prior to the assessment.
4. All by-products of student testing are collected and protected between and after testing sessions, and securely destroyed as appropriate. This includes notes, outlines, graphic organizers, student drafts, etc.

Evaluating and Improving Accommodation and Resource Use

Accommodations and resources must be selected based on the individual student's needs and must be used consistently for instruction and assessment. Data on the use and impact of accommodations and resources during assessments may reveal questionable patterns of accommodations/resources use, as well as support the continued use of some accommodations/resources or the rethinking of others. Examination of the data may also indicate areas in which special needs planning teams and test administrators need additional training and support.

Observations conducted during test administration and talking with test administrators and students after testing sessions will likely yield data that can be used to analyze accommodation/resource information at the student, school, or LEA level. Accommodation/resource information can be analyzed in different ways. Following are questions designed to guide data analysis at the school or LEA level and the student level.

Questions to Guide Evaluation of Accommodations Use at the School or LEA Level

1. Are policies to ensure ethical testing practices, the standardized administration of assessments, and test security practices followed before, during, and after the day of the test?
2. Are there procedures in place to ensure test administration procedures are not compromised with the provision of accommodations or resources?
3. Are students receiving accommodations/resources as documented in their IEP, 504, or EL plans?
4. Are there procedures in place to ensure that test administrators adhere to directions for the implementation of accommodations/resources?
5. How many students with special needs are receiving accommodations/resources?
6. What types of accommodations or resources are provided, and are some used more than others?

Questions to Guide Evaluation of Accommodations/Resource Use at the Student Level

1. What accommodations/resources are used by the student during instruction and assessment?
2. What are the results of classroom assignments and assessments when accommodations/resources are used versus when accommodations/resources are not used? If a student did not meet the expected level of performance, is it due to not having access to the necessary instruction, not receiving the accommodations/resources, or using inappropriate or ineffective accommodations/resources?
3. What is the student's perception of how well the accommodation/resource worked?
4. What combinations of accommodations/resources seem to be effective?
5. What are the difficulties encountered in the use of accommodations/resources?

6. What are the perceptions of teachers and others about how the accommodation/resource appears to be working?

These questions can be used to evaluate the accommodations/resources used at the school or LEA level and the student level. School- and LEA-level questions can be addressed by a committee responsible for continuous improvement efforts, while the student-level questions need to be considered by the special needs planning team. It is critical to stress that evaluation is not the responsibility of just one individual. The entire special needs planning team should contribute to the information-gathering and decision-making processes.

Post-Secondary Implications

College and career readiness are important educational outcomes for all students. As students with special needs plan for their transition to post-secondary settings, it is important for teams to have documented use of effective accommodations and resources so students can continue to advocate for their use, as needed, in their college and career settings. Colleges and universities may allow fewer accommodations/resources than are available in public K–12 education settings, so it is important for students to document their need to use accommodations and resources. This may also be true for students who transition into vocational and other workplace settings.

APPENDICES

Appendix A: Accommodation/Resource Use in the Classroom

Use this chart to track different aspects of how a student uses an accommodation or resource in your classroom. This will help inform decision-making on assessment accommodations and resources.

Student ______________________________ Date ________________

What accommodation(s) and/or resource(s) does the student use in the classroom? List them under “Accommodation(s) and/or Resource(s)” in the chart. Then answer the questions in the chart. Accommodations for instruction and assessment must be included in the plan for student with special needs; resources may be included but are optional.

Accommodation(s) and/or Resource(s)	Questions	Answers
	1. Is it noted in the plan for the student with special needs?	
	2. For what task(s) is it used?	
	3. Does the student use it for that task every time? How often?	
	4. Does the student use it alone or with assistance (e.g., peers, paraeducator)?	
	5. Does one accommodation or resource seem more effective when used with another on a task?	

Appendix B: Participation Criteria for DLM

The DLM Alternate Assessment will be used to assess students with significant cognitive disabilities in ELA, math, and science. Marking "yes or no" for the following criteria to determine whether a student is eligible to participate in alternate assessments. Include documentation for each in the plan for the student with special needs.

DLM/UAA Participation Criteria	Participation Criteria Descriptors	Agree?
1. The student has a significant cognitive disability.	Review of student records indicates a disability or multiple disabilities that significantly affect intellectual functioning and adaptive behavior. *Adaptive behavior is defined as essential for someone to live independently and to function safely in daily life.*	Yes / No
2. The student's learning content is linked to the Utah Core Standards.	Goals and instruction listed on the IEP for this student are linked to the enrolled grade level Utah Core Standards through the use of Essential Elements and address knowledge and skills that are appropriate and challenging for this student.	Yes / No
3. The student requires extensive direct individualized instruction and substantial supports to achieve measurable gains in the grade- and age-appropriate curriculum.	The student (1) requires extensive, repeated, individualized instruction and support that is not of a temporary or transient nature, and (2) uses substantially adapted materials and individualized methods of accessing information in alternative ways to acquire, maintain, generalize, demonstrate, and transfer skills across multiple settings.	Yes / No

The student is eligible to participate in the DLM/UAA Alternate Assessments if *all responses* above are marked "yes." In addition, evidence for the decision for participating in the DLM/UAA Alternate Assessments is **not based** on:

1. A disability category or label.
2. Poor attendance or extended absences.
3. Native language/social/cultural or economic differences.
4. Expected poor performance on the general education assessment.
5. Academic and other services the student receives.
6. Educational environment or instructional setting.
7. Percent of time receiving special education.
8. English language acquisition level.
9. Low reading level/achievement level.
10. Anticipated student's disruptive behavior.
11. Impact of student scores on accountability system.
12. Administrator decision.
13. Anticipated emotional duress.
14. Need for accommodations (e.g., assistive technology/augmentative and alternative communication) to participate in assessment process.

Appendix C: After-Assessment Accommodation and/or Resource Questions

Use this form after an assessment to interview a student about the accommodation(s) and/or resource(s) provided and used—whether it was useful and whether it should be used again. Also note any adjustments or difficulties experienced by the student either in how the accommodation and/or resource was administered or in using the accommodation and/or resource during the assessment.

Student ____ Date________________________

Accommodation Used ____

Resource Used ____

Questions	Assessment:	Assessment:	Assessment:	Assessment:
Was the accommodation or resource used? *Comments:*	Yes / No	Yes / No	Yes / No	Yes / No
Was the accommodation or resource useful? *Comments:*	Yes / No	Yes / No	Yes / No	Yes / No
Were there any difficulties with the accommodation or resource? (Are adjustments needed?) *Comments:*	Yes / No	Yes / No	Yes / No	Yes / No
Should the accommodation or resource be used again? *Comments:*	Yes / No	Yes / No	Yes / No	Yes / No

Student signature ____

Appendix D: Assessment Accommodations and/or Resources Plan

Student information

Student Name ____ Assessment Date _____________________

Assessment Name ____

Case information

English Language Teacher ____

Special Education Techer ____

General Education Teacher____

School Year _________________ Building/School ____

Assessment accommodations/resources that the student needs for this assessment and date arranged

Accommodations and/or Resources	Date Arranged
1.	
2.	
3.	
4.	

Comments ____

Person responsible for arranging accommodations and/or resources and due date

Person Responsible	Due Date	Date Arranged
1.		
2.		
3.		
4.		

Participants in this process (signatures) ____

Adapted from Scheiber, B., & Talpers, J. (1985). *Campus Access for Learning Disabled Students: A Comprehensive Guide*. Pittsburgh: Association for Children and Adults with Learning Disabilities.

Appendix E: Logistics Planning Checklist

Directions: This logistics planning checklist can be used in the planning and implementation of assessment accommodations and/or resources for an individual student. Use the checklist by indicating Y (Yes), N (No), or N/A (Not Applicable) for each statement.

Accommodations/Resources Used Throughout the Academic Year	Y	N	N/A
1. Accommodations and/or resources are documented by the teacher.			
2. Student uses accommodations and/or resources regularly and evaluates use.			
3. A master accommodation or resource plan/database listing assessment accommodation or resource needs for all students tested is updated regularly.			

Preparation for Test Day	Y	N	N/A
1. The provision of braille, large print, etc. is coordinated with the USBE.			
2. All educators are involved in the administration of state assessments receive ethics training.			
3. Special test requests are considered for individual students based on information contained in the accommodation or resource plan (e.g., large print, braille).			
4. Test administrators/proctors receive a list of accommodations or resource needs for students they will supervise (list comes from the accommodations or resource plan/database).			
5. Adult supervision is arranged, and test administrators receive training for each student receiving accommodations or resource in small group or individual settings, including extended time (with substitutes available).			
6. Certified interpreters are arranged for individual students (with substitutes available).			
7. Special equipment is arranged and checked for correct operation (e.g., audio amplification device).			
8. Training tests are used where available to ensure that accommodations can successfully be provided.			

Accommodations and/or Resources on the Day of the Test	Y	N	N/A
1. All eligible students receive accommodations or resources as determined by their plan.			
2. Provision of accommodations or resources is recorded by test administrator.			
3. Substitute providers of accommodations or resources are available as needed (e.g., certified interpreters).			
4. Plans are made to replace defective equipment.			

Consideration After Test Day	Y	N	N/A
1. All equipment is returned to appropriate locations.			
2. Students who take make-up tests receive needed accommodations or resources.			
3. Effectiveness of accommodation or resource use is evaluated by test administrators and students, and plans are made for improvement.			

Appendix F: Accommodations/Resources Journal for Students

One way to keep track of what accommodations/resources work for students with special needs is to support the student in keeping a journal. The journal lets the student be “in charge” and could be kept up to date through regular consultation with the student’s teachers and/or other staff members. This journal can better assist the students with special needs planning team to determine which accommodations and/or resources the student will benefit from. Information for the student to kept track of in a journal could consist of:

1. Accommodations and/or resources used by the student in the classroom and on tests
2. Test and assignment results when accommodations and/or resources are used and not used
3. The student’s perception of how well the accommodation and/or resource “works”
4. Effective combinations of accommodations and/or resources
5. Difficulties of accommodation and/or resource use
6. Perceptions of teachers and others about how the accommodation and/or resource appears to be working

In the spaces provided below, design and organize the use of an accommodations and/or resource journal for one of your students by answering the following questions.

1. What would you include as headings for the journal?

____

____

____

____

2. When would the student make entries in the journal, and what types of support would the student need to make these entries?

____

____

____

____

3. With whom would the student share journal entries, and when would it be done?

____

____

____

____

Appendix G: Identifying Roles and Responsibilities

This activity can be completed in small groups. Complete the columns below and discuss roles and responsibilities in the provision of standards-based education to students with special needs.

1. Your role as you see it.

2. The role of other colleagues as you see them.

Adapted from *Delaware Accommodation Activity Sheets*, Delaware Department of Education.

Discussion Issues:

1. Is your role clear in the provision of standards-based education to students with special needs?
2. What appear to be similarities and differences between perceived roles and responsibilities of the students with special needs team?
3. To what extent does collaboration among the 504, IEP, or students learning English team occur in your building or LEA? What are some of the barriers or obstacles?
4. Are your boundaries clear? What are you doing now that you feel may be "out of your jurisdiction?"
5. What are some opportunities or barriers that can either facilitate or hinder future opportunities for collaboration between general, English language/bilingual, and special education teachers?

Appendix H: Accommodation and Resources Criteria for ELLs with Disabilities and ELLs on Section 504 Plans

Use this form to determine whether the student is eligible for instruction and assessment accommodations and/or resources.

Student ____Date ______________________

Person Filling out the Form ____

Questions	Yes (please describe)	No
Can you comment on the student's overall oral English language proficiency and level of English literacy?		
Can you comment on the student's disability needs?		
Has the student taken the English language proficiency test? If so, what was the student's score?		
Are you aware of the language(s) the student speaks in his/her family? If so, please specify the language(s) and the level of the student's oral proficiency and literacy in the language(s).		
Has the student received prior formal education before coming to the U.S.? Have there been gaps or interruptions?		
Has the student spent time in English-speaking schools prior to enrolling in this school? If so, how much time?		
Was the student enrolled in special education programs prior to transferring to this school? If so, please describe.		
Do you know how much time the student has spent in Utah and/or your school? Are there mobility issues?		
Are you aware of the student's performance in other content areas and on other tests?		
Are there educational resources available to the student in his/her native language?		
Are you aware of any aspects of the student's home culture that may impact the accommodations/resources selection process (taboos, gestures, kinesthetic, etc.)?		

Questions	Yes (please describe)	No
Are there any other aspects of the student's characteristics that should be considered when selecting accommodations/ resources for the student?		

Appendix I: Parent Input on Accommodations and Resources

Questions Parents Should Ask About Accommodations and Resources in Instruction and Assessments

- About instruction
  - What instructional support does my student need to access and reach the academic standards?
  - How can my student and I advocate to receive accommodations/resources and/or linguistic support not yet provided in instruction?
  - Are the accommodations/resources and/or linguistic support my student is receiving in instruction meant to be a temporary support? If yes, what is the plan to help determine when to phase them out?
  - How are the various staff members who work with my student providing accommodations, resources and/or linguistic support (across regular, special education, or other staff)?
- About accommodations
  - What are the tests my student needs to take, what do they measure (e.g. regular or alternate academic standards), and for what purpose is each given?
  - Are the accommodations/resources allowed on state tests also provided for LEA tests?
  - Can my student participate in part of an assessment with or without accommodations and/or resources?
  - Are there consequences for allowing certain changes to how my student participates in a test? How will my student's test scores' count?
  - Do the consequences of accommodations and/or resources vary by type of test?

Questions Parents Should Ask About Instruction and Assessment

- Is the need for each accommodation documented in my student's special needs plan?
- Are there too many or too few accommodations or resources being provided?
- What are my student's preferences for specific accommodations and/or resources?
- If my student needs accommodations and/or resources, how will they be provided?
- If an accommodation or resource used in instruction is not allowed on a test, is there another allowed option to support my student? If yes, has it been documented and tried in instruction first? If no, how is my student being prepared to work without the accommodations/resources?

Appendix J: Utah Aspire Plus Accessibility Supports and Accommodations

Utah Aspire Plus assessments for grades 9 and 10 have many embedded accessibilities supports and allow for many different accommodations to meet students' special needs to better demonstrate their knowledge.

The following tables outline those accessibility supports (resources/features) and accommodations. Please also refer to the Utah Aspire Plus Resources & Training Center (http://utah.pearsonaccessnext.com/training/) for more details.

Resource/Feature	Delivery
In Browser/App Zoom	Embedded
Zoom Tool	Embedded
Answer Eliminator	Embedded
Calculator	Embedded
Bookmark item for review	Embedded
Line Reader Mask	Embedded
Color Contrast	Embedded
Answer Masking	Embedded
Highlighter	Embedded
Keyboard Navigation	Embedded
Text-to-Speech – English Default	Embedded
Directions re-read (text-to-speech)	Embedded
Personalized visual notification of remaining time	Embedded
Scratch Paper	Allowed – locally provided
Line Reader	Embedded
Supervised breaks within each day	Allowed – locally provided
Special seating/grouping	Allowed – locally provided
Location for movement	Allowed – locally provided
Separate/alternate location	Allowed – locally provided
Minimized distractions	Allowed – locally provided
Food or medication for individuals with medical need	Allowed – locally provided
Administration and optimum time of day	Allowed – locally provided
Special lighting	Allowed – locally provided
Adaptive equipment/furniture	Allowed – locally provided
Wheelchair accessible room	Allowed – locally provided

Accommodation	Delivery
Assistive Technology Screen Reader (English audio + orienting description)	Allowed – must be set
Speech-to-text – assistive technology scribe	Allowed – must be set by state personnel
Other Assistive Technology	Allowed – must be set by state personnel
Standard Print	Allowed – must be ordered
Large Print (11x17 paper, 18-point font size)	Allowed – must be ordered

Accommodation	Delivery
Braille + Tactile Graphics	Allowed – must be ordered
Abacus	Allowed – locally provided
Extra Time (1 1/2, double, triple time)	Allowed – must be set
Online Test-Spanish Transadaptation	Available, must be turned on
Online Test Translation – Languages other than Spanish or English	Allowed, but provided by an interpreter locally provided
Text-to-Speech — Spanish	Available – must be turned on
Personalized auditory notification of remaining time	Allowed – locally provided
Breaks: stop the clock supervised	Online System embedded and Local Arrangements for Paper Testing and Assistive Technology Testing
Breaks: securely extend session over multiple days	Online System embedded and Local Arrangements for Paper Testing and Assistive Technology Testing
Human scribe	Allowed – must be approved by state personnel and locally provided
Home administration	Allowed – must be approved by state personnel and locally provided
Word-to-word dictionary – for languages other than Spanish	Allowed – locally provided
Signed Exact English, directions only	Allowed – locally provided by qualified interpreter
Sign Language Interpretation	Allowed – locally provided by qualified interpreter
Cued speech	Allowed – locally provided by qualified interpreter

Appendix K: ACT High-Incidence Accommodations, Local Arrangements, and Accessibility Supports on the ACT® Test for State Testing and District Testing

Accommodations ("A") used **with required ACT approval**, and/or any Embedded/Universal ("E") tools and/or local arrangements ("LA") listed in this table, will result in a **Reportable** Score.

Accommodations ("A") used **without required ACT approval**, or other tools **not listed** here (not allowed/not approved), will result in a **Non-Reportable** Score.

Key to Abbreviations:

- A = Accommodations
- LA = Local Arrangements
- E = Embedded/Universal Tools
- EL = English Learners

Please see the explanatory notes following the tables for a guide to the superscript notations used.

Presentation Supports	Paper	Online	Reading	English	Writing	Math	Science
Audio Recording, Full Test (USB)	A	—	✓	✓	✓	✓	✓
Reader Script, Full Test	A	—	✓	✓	✓	✓	✓
Screen Reader	A	—	✓	✓	✓	✓	✓
Text-to-Speech	—	A	✓	✓	✓	✓	✓
Translated Written Directions—20 Languages Provided **(ELs)**[5]	A[1]	A[1]	✓	✓	✓	✓	✓
Translated Audio, Full Test[1]	A	A	No	No	[1]	[1]	[1]
Word-to-Word Dictionary **(ELs)**[5]	A	A	✓	✓	✓	✓	✓
American Sign Language (ASL), Directions Only	LA	LA	✓	✓	✓	✓	✓
Signed Exact English (SEE), Directions Only	LA	LA	✓	✓	✓	✓	✓
Signed Exact English (SEE), Full Test	A	—	✓	✓	✓	✓	✓
Cued Speech	A	—	✓	✓	✓	✓	✓
English Braille American Edition (EBAE/Nemeth), available with Tactile Graphics and Nemeth code for Math and Science (Contracted) Online support refers to required paper form companion to online test-see note[2]	A[2]	A[2]	✓	✓	✓	✓	✓
Unified English Braille (UEB), available with Tactile Graphics and Nemeth code for Math and Science (Contracted)[2]	A[2]	A[2]	✓	✓	✓	✓	✓

Presentation Supports	Paper	Online	Reading	English	Writing	Math	Science
Unified English Braille (UEB), available with Tactile Graphics and UEB code for Math and Science (Contracted)[2]	A[2]	A[2]	✓	✓	✓	✓	✓
Tactile Graphics (stand-alone) with EBAE/Nemeth[2]	A[2]	A[2]	—	—	—	✓	✓
Tactile Graphics (stand-alone) with UEB/Nemeth[2]	A[2]	A[2]	—	—	—	✓	✓
Tactile Graphics (stand-alone) with UEB[2]	A[2]	A[2]	—	—	—	✓	✓
Large Print	A	—	✓	✓	✓	✓	✓
Browser Zoom Magnification	—	E	✓	✓	✓	✓	✓
Magnification	LA	E	✓	✓	✓	✓	✓
Line Reader (Online tool or locally provided paper straight edge)	LA	E	✓	✓	✓	✓	✓
Color Contrast (online) or Overlay (locally provided)	LA	E	✓	✓	✓	✓	✓

Interaction and Navigation Supports	Paper	Online	Reading	English	Writing	Math	Science
Abacus	A	A	—	—	—	✓	—
Answer Masking Tool	E	E	✓	✓	✓	✓	✓
Answer Eliminator Tool	E	E	✓	✓	✓	✓	✓
Highlighter Tool	A	E	✓	✓	✓	✓	✓
Keyboard Navigation	—	E	✓	✓	✓	✓	✓
Use Test Booklet for Scratch Paper	E	—	✓	✓	✓	✓	✓
Sheet of Paper to Use as Scratch Paper	LA	E	✓	✓	✓	✓	✓
Calculator, Including Accessible Calculator, **all personally provided** (headphones required for talking calculator)[3]	E	E	—	—	—	✓	—

Response Supports	Paper	Online	Reading	English	Writing	Math	Science
Respond in Test Booklet or on Separate Paper	LA	—	✓	✓	✓	✓	✓
Large Block Answer Sheet	A	—	✓	✓	✓	✓	✓
Dictate Responses	A	A	✓	✓	✓	✓	✓
Computer for Writing Essays and Constructed Responses	A	E	✓	✓	✓	✓	✓
Speech-to-Text	A	A	✓	✓	✓	✓	✓
Mark Item for Review Tool	E	E	✓	✓	✓	✓	✓
Word Prediction External Device[4]	—	—	n/a	n/a	No[4]	n/a	n/a

General Test Conditions Supports	Paper	Online	Reading	English	Writing	Math	Science
Extra Time **(ELs)**[5]	A	A	✓	✓	✓	✓	✓
Breaks	A	A	✓	✓	✓	✓	✓
Multiple Days	A	A	✓	✓	✓	✓	✓
Food or Medication for Individuals with Medical Need	LA	LA	✓	✓	✓	✓	✓
Special Seating/Grouping	LA	LA	✓	✓	✓	✓	✓
Location for Movement	LA	LA	✓	✓	✓	✓	✓
Individual Administration	LA	LA	✓	✓	✓	✓	✓
Administration at Optimum Time of Day	LA	LA	✓	✓	✓	✓	✓
Administration from Home or Care Facility	LA	—	✓	✓	✓	✓	✓
Separate Setting or Location (Familiar Setting and/or Small Group) **(ELs)**[5]	LA	LA	✓	✓	✓	✓	✓
Audio Amplification	LA	LA	✓	✓	✓	✓	✓
Special Lighting	LA	LA	✓	✓	✓	✓	✓
Adaptive Equipment or Furniture	LA	LA	✓	✓	✓	✓	✓
Wheelchair Accessible Room	LA	LA	✓	✓	✓	✓	✓
Personalized Auditory/Visual Notification of Remaining Time	LA	LA	✓	✓	✓	✓	✓
Other Accommodations: Request Using TAA System	Yes	Yes	✓	✓	✓	✓	✓

Explanation of Footnotes Used in the Preceding Tables:

[1] This is provided ONLY as part of a State testing or district testing negotiated contract for non-reportable scores.

[2] All users with blindness will need to use a companion paper form with braille/tactile graphics on the math and science tests as critical interpretive information within math and science graphics will not be read aloud. This is required for both paper and online testing.

[3] Calculator use is not permitted for the science test. Science test questions requiring calculations are designed so that answering the questions involves only minimal, rudimentary calculations. Some math-oriented science constructs that are assessed (e.g., recognizing relationships in scientific data, translation of data) are intended to be performed without use of graphing functionalities often present on calculators.

[4] The writing test domain of Language Use and Conventions (including grammar, syntax, and word usage) can be compromised by Word Prediction device usage. English, reading, math, and science tests are currently in multiple-choice format, making Word Prediction not applicable (n/a) at this time.

[5] English Learners (ELs): Four Accommodation-level ("A") supports available to qualified students learning English are indicated in the preceding tables.

Appendix 5-J

Standard Test Administration and Testing Ethics Policy

Standard Test Administration and Testing Ethics Policy

For Utah Educators

Sydnee Dickson - Superintendent of Public Instruction
Utah State Board of Education 250 East 500 South
P.O. Box 144200
Salt Lake City, UT 84114-4200

Approved by the Utah Board of Education June 4, 2020

Purpose of Testing

When administered properly, statewide assessments allow students to demonstrate what they know and can do. Valid and reliable results from statewide assessments provide the public, the Legislature, the board, local education agencies (LEA), and teachers under Utah Code 53E-4-301.5 with:

- A standardized source of measurement information about student proficiency
- Information, in combination with locally collected data, for evaluation of the effectiveness of school programs and helps guide instructional planning
- Information to recognize excellence, guide and improve instruction, identify the need for additional resources or to provide the reallocation of educational resources in a manner to ensure educational opportunities for all students

Educators are obligated to provide students with opportunities to demonstrate their knowledge and skills fairly and accurately. Educators involved with statewide assessments must conduct testing in a fair and ethical manner (Utah State Board R277-217-3.14).

Statewide Assessments

Statewide assessments require that educators adhere to all ethical practices and procedures as outlined in this policy (Utah State Board R277-404-8). Information about these assessments can be found at the Assessment and Accountability website (http://www.schools.utah.gov/assessment).

Statewide assessments are defined as assessments that are federally-mandated, state-mandated, and/or require the use of a state assessment system or software that is provided or paid for by the state (Utah Code 53G-6-803.9a).

Formative Assessment Tools

Formative Assessment Tools (e.g., RISE Benchmark modules, RISE Interims, High School Core Benchmarks, Acadience Reading Progress Monitoring, Utah Compose, and UTIPS) provided by the Utah State Board of Education (USBE) are productivity tools for Utah teachers and students. They are designed to give teachers and students an opportunity to identify strengths and weaknesses with specific knowledge, skills, and abilities outlined in the Utah Core Standards.

While standards for administration of these formative assessments are important, to maintain the integrity of the assessment items, they differ from the requirements contained in this policy. Please refer to each formative assessment tool's guidance documentation (e.g., test administration manual, user guide, online instructions) as the formative assessment tools may have differing policies and procedures from the summative assessments for specific test administration requirements.

Before Testing: Teaching Practices

Licensed Utah educators are expected to:

- Provide instruction aligned to Utah Core State Standards using appropriate, locally-adopted curriculum
- Provide accommodations throughout instruction to eligible students as identified by an EL, IEP, or 504 team
- Use a variety of assessment methods, including the formative assessment process, throughout the year to assess student competency and inform instructional practices
- Provide students with a variety of assessment experiences, including feedback on their performance and progress, throughout the year
- Use the reference sheets provided for specific assessments as instructional tools throughout the year
- Use the resources provided for each assessment, as applicable, to familiarize students with the testing tools and item types

Utah LEAs shall ensure that:

- Students are enrolled in appropriate courses
- Curriculum and instruction in all courses is aligned with the Utah Core State Standards

During Testing

Utah LEAs shall ensure that:

- Parents are provided with information and procedures regarding student participation in state testing
    - An LEA shall honor parent requests to excuse a student from taking an assessment in accordance with the requirements of Utah Code 53G-6-803 and Utah State Board R277-404
- All statewide assessments are proctored under the supervision of a licensed educator
- Educators, paraprofessionals, and third-party proctors who administer and/or proctor tests, complete annual testing ethics training provided by the LEA (Utah State Board R277-404)
- Test Administrator and proctors review and follow guidelines, instructions, and scripts included in test administration manuals (TAM) for the assessment prior to and during test administration
- All students who are eligible to test are tested or recorded as to why they didn't participate
- LEA and/or school hardware, software, and network specifications can successfully support test administration
- All school testing coordinators, administrators, teachers, and proctors administering tests are aware of their role in the assessment administration

Licensed Utah educators shall ensure that:

- An appropriate environment is set for testing to limit distractions
- A student is not discouraged from participating in testing
- Students aren't penalized who have been exempted by a parent from a statewide assessment (Utah State Board R277-404-7-3b)
- Students aren't provided a nonacademic reward for participating in or performing well on a statewide assessment (Board Rule R277-404-7-8; Utah Code 53G-6-803-9c(iii))
- Students are provided an alternative learning activity if they are exempted by a parent from a statewide assessment (Utah State Board R277-404-7-9)
- Students who have been exempted by a parent from a statewide assessment may be allowed to be physically present in the room during test administration (Board Rule 277-404-7) though testing policy, procedures, and security should still be followed
- A proctor is present, and active proctoring takes place throughout the test session
- At least two assigned proctors are actively involved in each testing session

- Test administrators and proctors review and follow test preparation guidelines and the instructions and scripts included in the test administration manuals (TAM) for each assessment
- Accommodations are provided to eligible students, as identified by the EL, IEP, and/or 504 teams, and are consistent with those provided during instruction
- Any electronic devices (e.g., smart watches, cell phones) shall be inaccessible by students, if they can be used to
  - access non-test content
  - distribute test content and materials
- Any electronic devices that are necessary for a student's health and safety (e.g. monitoring insulin levels) should be made available to the student when the need arises
- Make-up and test completion sessions are provided for students according to the policies and procedures as outlined in the test administration manual (TAM)

After Testing

Utah LEAs shall ensure that the test results are:

- Provided to students and parents, along with information on how to appropriately interpret scores and reports, within three weeks of receipt of test scores by the LEA
- Made available to educators for use in improving their instruction
- Maintained according to LEA policies and procedures

Licensed Utah educators shall ensure that:

- All by-products (e.g. scratch paper, notes, student test tickets) of student testing are collected and handled according to instructions in the test administration manual
- All test materials are returned to the test coordinator, as outlined in the test administration manual

Utah LEAs and Licensed Utah educators may:

- Use a student's score from a statewide assessment to improve the student's academic grade for or demonstrate the student's competency within a relevant course (Utah Code 53E-4-3 (302-305); Utah State Board R277-404-7)

Utah LEAs and Licensed Utah educators may NOT:

- Prohibit a student from enrolling in an honors, advanced placement, or International Baccalaureate course based on a student's score on a statewide assessment or because the student was exempted by a parent from taking the statewide assessment (Utah State Board R277-404-6)
- Provide a nonacademic reward to a student for a student's participation in or performance on a statewide assessment (Utah State Board R277-404-7)

Unethical Testing Practices

Unethical practices include, but are not limited to:

- Providing students directly or indirectly with or changing instruction to include a specific test question, answer, or the content of any specific item in a statewide assessment prior to or during test administration
- Changing, altering, or amending any student's online or paper response answer or any other statewide material at any time in a way that alters the student's intended response
- Rewording or clarifying questions, or using inflections or gestures to help students answer test questions
- Allowing students to use unauthorized resources during testing (e.g. dictionaries, thesauruses, mathematics tables, online references, graphic organizers)
- Using any prior form of any statewide assessment, including pilot assessment materials, that USBE has not released in assessment preparation without express permission of USBE
- Displaying materials on walls or other high visibility surfaces that provide answers to specific test items (e.g. posters, word walls, formula charts)

- Reclassifying students to alter subgroup reports
- Allowing parents to assist with the proctoring of a test their child is taking
- Using students to supervise other students taking a test
- Allowing the public to view secure test items or to observe testing sessions
- Reviewing a student's response and instructing the student to, or suggesting that the student should, rethink their answers
- Downloading, copying, printing, photographing, or making any facsimile of protected assessment material prior to, during, or after test administration without express permission of USBE
- Explicitly or implicitly encouraging students to engage in dishonest testing behavior
- Administering assessment(s) outside of the prescribed testing window for each assessment
- Explicitly or implicitly encouraging parents to exclude their students from participating in a statewide assessment Utah Code 53E-4-312

If your actions will cause students to not receive a valid and reliable score that accurately reflects what they know and can do, don't do it!

Testing Ethics Violations

Testing ethics violations are to be reported to the supervisor of the person who may be investigated, the school administrator, the LEA assessment director, or the USBE Assessment department.

Protocol:

- Each LEA must determine local policies and procedures regarding testing ethics violations
- In most cases, an initial investigation should be conducted at the school level
- The LEA assessment director will review the initial investigation and determine findings
- If the violation is of sufficient concern, the incident may also be forwarded to the Utah Professional Practices Advisory Commission (UPPAC) for review
- If inappropriate practices are substantiated, educators or other staff may receive further training or a reprimand, be subject to disciplinary action, be terminated, and/or lose their Utah teaching license

For more information about the processes in place concerning the investigation of testing ethics violations contact your LEA assessment director.

Resources

Utah State Board of Education (http://www.schools.utah.gov)
Assessment, Utah State Board of Education **(**http://www.schools.utah.gov/assessment)
Utah State Law – Chapter 53E (https://le.utah.gov/xcode/Title53E/53E.html)
Utah State Law – Chapter 53G (https://le.utah.gov/xcode/Title53G/53G.html)
Utah Board of Education – RULES (https://rules.utah.gov/publicat/code/r277/r277-404.htm)
Utah Professional Practices Advisory Commission (https://www.schools.utah.gov/policy/uppac)

Appendix 7-A

2014 SAGE Standard Setting Report

Utah State Assessment 2013–2014 Technical Report

Volume 6: Setting Proficiency Standards

American Institutes for Research

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SECTION 1: BACKGROUND

Utah House Bill 15, passed during the 2012 Utah legislative session, modified the Utah Performance Assessment System for Students (U-PASS) to require school districts and charter schools to administer computer adaptive tests aligned with Utah Core Standards no later than the 2014–2015 school year. In compliance with this bill, Utah began administering the Student Assessment of Growth and Excellence (SAGE) beginning in the 2013–2014 school year. Grade-level assessments will be administered in mathematics in grades 3 through 8, in English language arts (ELA) in grades 3 through 11, and in science in grades 4 through 8. In addition, course assessments were administered for high school math (Math I, Math II, and Math III) and science (Biology, Earth Science, Chemistry, and Physics).

The operational field-test administration of the SAGE occurred in the winter and spring of 2014. Subsequently, the American Institutes for Research (AIR), under contract to the Utah State Office of Education, Assessment Section (USOE), convened panels of Utah educators to recommend proficiency standards on the SAGE assessments in math, science, and English language arts. This document presents the results of the standard-setting workshops.

SECTION 2: OVERVIEW

Standard setting is a means of identifying cut-scores that indicate whether a student has achieved an established level of proficiency. Standard setting involves expert judgment that is typically informed by student performance data. A vast literature describes a wide range of standard setting techniques. Some of these techniques are normative and identify cut-scores that yield a desired percentage of examinees placed in two or more categories. Other techniques focus on what students know and are able to do. The latter techniques are better suited to address the current challenge in Utah.

Staff from AIR used the Bookmark procedure (Mitzel, Lewis, Patz, & Green, 2001) to set proficiency standards. AIR and other test contractors have successfully used this method to set standards in many states. With the Bookmark procedure as implemented by AIR, several activities are required for the workshop:

1. Content Standards
2. Proficiency-Level Descriptors
3. Proficiency Standards
4. Standard-Setting Panel
5. Training
6. Ordered Item Booklet
7. Impact Data
8. Articulation

9. Benchmarking

Each of these components is briefly described below.

Content Standards

During the standard-setting workshops, panelists examined a set of test items that meet the test blueprint and cover the academic content standards, content strands, and reporting categories. The reporting categories are contained in Appendix A.

Proficiency-Level Descriptors

Proficiency-level descriptors (PLDs) are key elements in standard-setting processes. PLDs define the content area knowledge, skills, and processes that examinees at a proficiency level are expected to possess. The panelists based their judgments about the location of the proficiency standards using the PLDs to guide them in placing their bookmarks.

The high-level PLDs are contained in Appendix B and the more detailed PLDs are contained in Appendix C.

Proficiency Standards

USOE identified a set of proficiency levels (intervals on the score scale) demarcated by proficiency standards (cut-scores separating the proficiency levels), as indicated in Table 1. These will be used for reporting to parents, teachers, and schools and for federal reporting.

Table 1: Proficiency Levels and Proficiency Standards

Proficiency Levels and Standards	
Proficiency Levels	**Proficiency Standards**
Level 4: Highly Proficient	Highly Proficient
Level 3: Proficient	Proficient
Level 2: Approaching Proficient	Approaching Proficient
Level 1: Below Proficient	

The proficiency standards (cut-scores) are needed to distinguish or separate the proficiency levels. Moreover, because student progress from grade to grade is a major focus of the testing system, these cut-scores and the levels of proficiency they represent must increase incrementally from grade to grade. That is, at the same rate of progress, it should not be expected that students who exceed proficiency in the current year would become well below proficient in the next year. It would be difficult to interpret results in which large numbers of students show dramatic changes in proficiency levels when their progress is consistent with teacher and program expectations.

The standard-setting procedures that were used are intended to yield reasonable and supportable interpretations about the proficiency of students within a grade level and the growth of students' achievement across grade levels. Standard-setting panels of educators and community representatives followed the Bookmark standard-setting process to recommend cut-scores.

The cut-scores recommended from the process are

- *content referenced* because they are based on a rigorous application of the Utah Academic Content Standards;
- *articulated* across grades with the help of the vertical scale and student performance data;
- *reasonable* because they are based on the expert, informed judgments of the standard-setting panels;
- *credible* because a diverse group of panelists followed a rigorous and well-supported standard-setting procedure; and
- *benchmarked* against well-regarded empirical external college- and career-ready indicators.

Standard-Setting Panel

Five separate educator panels recommended proficiency standards for the SAGE assessments:

1. High School Math
2. High School Science
3. English Language Arts Grades 3–11
4. Mathematics Grades 3–8
5. Science Grades 4–8

In addition, a stakeholder meeting was convened by USOE and coordinated by the Center for Assessment. The stakeholders reviewed the workshop procedures and affirmed the standards recommended by the workshop.

The workshop panel was a diverse group of individuals with a wide range of perspectives and experience, which ensured that the recommendations forwarded to the superintendent are thoughtful and representative of broad educational constituencies. The panels were mostly made up of teachers. Each panel was divided into grade- or course-specific subpanels, as illustrated in Table 2 below.

Table 2: Standard-Setting Panel

Math High School Panelist Breakdown

		Secondary Math I	Secondary Math II	Secondary Math III
Gender:	Female	6	3	5
	Male	2	5	4
Race/Ethnicity:	White	7	7	8
	Hispanic			1
	Asian		1	
	Unknown	1		
Position:	Assistant Superintendent	1		
	Director of Instructions Administrator	1		
	Math Specialist Administrator			1
	Math Supervision Administrator			1
	Research and Evaluation		1	
	Special Education Teacher		1	
	Teacher	4	4	6
	University Faculty	1	1	1
	Utah Education Association		1	
	Unknown	1		

Science High School Panelist Breakdown

		Biology	Earth Science	Chemistry	Physics
Gender:	Female	7	4	8	5
	Male	5	7	3	7
Race/Ethnicity:	White	11	9	10	10
	African-American			1	
	Hispanic		1		
	Multiple	1			
	Unknown		1		2
Position:	Curriculum Director Administrator				1
	ESOL/Bilingual Education	1			
	Retired Teacher		2		
	Special Education Teacher	1			
	Substitute Teacher			1	
	Superintendent	1			
	Teacher	8	9	10	9
	University Faculty	1			2

English Language Arts Grades 3–11 Panelist Breakdown

		Grades 3–5	Grades 6–8	Grades 9–11
Gender:	Female	9	10	9
	Male	2	5	2
Race/Ethnicity:	White	8	15	11
	Hispanic	1		
	Asian	1		
	American Indian/Alaska Native	1		
Position:	Instructional Coach			1
	Assessment		1	
	Clinical Faculty Associate	1		
	ELA Coordinator	4		
	ESOL/Bilingual Education		1	
	Literacy Coach	2		1
	Paraprofessional	1		
	Parent	1		
	Professional Development Administrator			1
	Secondary ELA Coordinator			1
	Special Education Teacher		1	
	Teacher	1	8	7
	Teacher on Special Assignment	1		
	University Faculty		2	
	University Professor		1	

Math Grades 3–8 Panelist Breakdown

		Grades 3–4	Grades 5–6	Grades 7–8
Gender:	Female	14	8	15
	Male	2	2	
Race/Ethnicity:	Caucasian	16	10	14
	Unknown			1
Position:	Curriculum Writer	1		
	G&T Specialist	1		
	Mathematics Coach	4		
	Student Teacher	1		
	Teacher	8	10	14
	University Faculty			1
	University Instructor	1		

Science Grades 4–8 Panelist Breakdown

		Grades 4–6	Grades 7–8
Gender:	Female	9	5
	Male	2	8
Race/Ethnicity:	White	7	12
	American Indian/Alaska Native	1	1
	Native Hawaiian/Other Pacific Islander	1	
	Unknown	2	
Position:	Data Specialist		1
	District Science Specialist	1	
	Healthy Lifestyles Supervisor		1
	Professor		1
	Teacher	10	10

There were two or three table leaders in each of the 15 rooms that were used for standard setting. There was a special training session for table leaders starting at 8:00 a.m. on the first day of each group (Monday and Wednesday). Table leaders were chosen because they represent the most senior and experienced members of the standard-setting panel. They were expected to see the big picture, be sensitive to the policy goals of the standard setting, and help articulate what we are trying to accomplish. Table leaders were tasked with assisting standard-setting staff by

- facilitating discussions within their table;
- assisting with distribution and collection of readiness and recording sheets and secure materials;
- alerting workshop staff of confusion or concerns within their tables; and
- representing panels during stakeholder review meeting.

The primary function of table leaders was to aid standard-setting staff by helping to facilitate discussions within tables, report concerns of fellow panelists to staff, and assist with the distribution and collection of materials. Throughout the standard-setting process, they viewed live test items and other confidential assessment materials. Table leaders were asked to assist in ensuring all secure materials remain in the workshop rooms.

Table leaders also represented the views of the panelists during stakeholder review activities that followed the completion of standard setting. At least one table leader from each subject was asked to attend the stakeholders meeting on Monday, August 18, 2014.

Training

Training is an essential element of a standard-setting workshop. Training at this meeting involved a review and discussion of the SAGE, the test specifications, the PLDs for each proficiency standard, and the ordered item booklet (OIB).

AIR and USOE content experts were assigned to each of the standard-setting panels to provide training on the content, test specifications, and PLDs. They also provided the panelists with materials on the content standards and PLDs. Panelists were instructed to use these documents to familiarize themselves with what students are specifically expected to know and be able to do.

Ordered Item Booklet

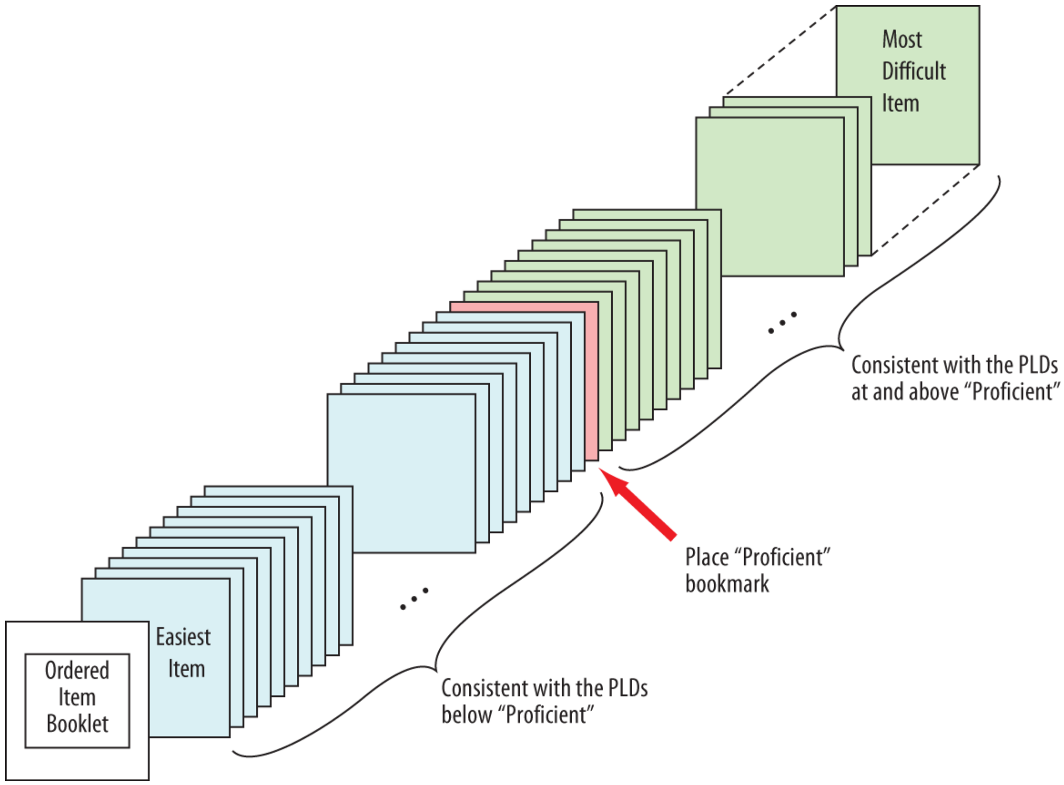
For the SAGE a set of approximately 60 items (proportional to the test blueprint) in each subject and grade was selected from the item bank. Items were selected from the bank that had not been flagged for data review.

Items from the representative form were rank-ordered according to their *RP*67 value. For constructed-response items, the ordering was based on step-level *RP*67 values. Constructed-response items appear multiple times in the OIB, once for each step category.

Standard setters made content judgments about each item. Using the PLDs as a guide, they placed a bookmark beside the item that best delineates the proficiency levels. The judgment was based on their training and the given response probability (*RP67*) level.

Figure 1 illustrates how this is accomplished. In the figure, the items are ordered from easy to hard (i.e., the ordered item booklet). The panelists use the content standards and PLDs to locate the item that best describes the lower bound of each proficiency standard.

Figure 1: Illustration of Bookmark Placement for Proficient Standard



Impact Data

The percentage of students in the state who meet or exceed each potential proficiency standard (i.e., each page in the OIB) was estimated and provided to the panelists to provide them with context for their decisions about proficiency standards. Impact data was introduced before the second round in the standard-setting process to provide contextual information to panelists and an external referent.

For each major demographic group, the percentage of students estimated to meet or exceed the recommended proficiency standards was estimated. These estimates were based on distributional projections of the density distribution from the operational field-test administration projected onto the representative form used in the standard setting. The distributional projections are accomplished as follows.

The goal in determining the impact data is to estimate how well the students would have performed if they had been administered the representative form used during the standard setting. The ability of student i in the field-test population is estimated by $\hat{\theta}_i$ with standard error of $se(\hat{\theta}_i)$, where $i = 1, 2, \ldots, N$. For each theta, θ_0, one can estimate the probability of person i's ability being above given $\hat{\theta}_i$ as

$$P(\theta_i > \theta_0 \mid \hat{\theta}_i) = 1 - \Phi\left(\frac{\theta_0 - \hat{\theta}_i}{se(\hat{\theta}_i)}\right),$$

where Φ is the cumulative density function (CDF) of a standard normal distribution. The proportion of the population with ability higher than θ is then estimated by

$$P(\theta > \theta_0) = \int P(\theta_i > \theta_0 \mid \hat{\theta}_i) f(\hat{\theta}_i) d\hat{\theta}_i = \frac{1}{N}\sum_{i=1}^{N} P(\theta_i > \theta_0 \mid \hat{\theta}_i) = \frac{1}{N}\sum_{i=1}^{N}\left[1 - \Phi\left(\frac{\theta_0 - \hat{\theta}_i}{se(\hat{\theta}_i)}\right)\right].$$

An example of impact data is presented in Table 3.

Table 3: Impact Data (ELA Grade 3 Illustration)

Ordered Item Booklet Page	Overall	Female	Male	White	Native American	African American	Asian	Hispanic	Multi Ethinic	Pacific Islander	LEP	Low Income	SPED
1	94.57	95.95	93.25	96.03	84.25	88.36	96.02	89.10	94.52	92.12	76.97	90.81	80.23
2	92.33	94.14	90.60	94.27	79.23	84.00	94.12	85.02	92.34	89.09	69.33	87.22	74.09
3	90.79	92.87	88.80	93.03	76.02	81.19	92.74	82.33	90.84	87.00	64.56	84.83	70.32
4	90.44	92.58	88.40	92.75	75.30	80.56	92.42	81.72	90.50	86.52	63.51	84.29	69.50
5	84.22	87.29	81.29	87.58	63.73	70.43	86.29	71.51	84.55	77.69	47.87	75.17	57.16
6	83.87	86.99	80.90	87.29	63.14	69.91	85.94	70.97	84.23	77.18	47.14	74.68	56.58
7	83.45	86.63	80.43	86.93	62.43	69.28	85.51	70.31	83.84	76.56	46.26	74.10	55.88
8	78.19	81.94	74.62	82.39	54.14	61.78	80.06	62.34	79.03	68.57	36.57	66.97	48.11
9	71.13	75.41	67.05	76.07	44.78	52.68	72.79	52.43	72.62	58.13	26.65	58.09	39.91
10	70.40	74.72	66.28	75.40	43.90	51.79	72.03	51.45	71.95	57.09	25.78	57.20	39.17
11	66.23	70.74	61.93	71.52	39.16	46.85	67.76	46.14	68.11	51.51	21.36	52.34	35.23
12	63.66	68.25	59.29	69.08	36.42	43.93	65.16	43.05	65.73	48.28	19.03	49.47	33.02
13	59.74	64.41	55.29	65.29	32.39	39.63	61.21	38.59	62.06	43.59	15.95	45.23	29.89
14	58.21	62.90	53.74	63.79	30.88	38.01	59.69	36.94	60.63	41.84	14.89	43.62	28.74
15	56.94	61.64	52.46	62.54	29.64	36.69	58.43	35.60	59.43	40.41	14.06	42.31	27.81
16	55.29	60.00	50.80	60.90	28.06	35.01	56.82	33.91	57.87	38.58	13.06	40.63	26.64
17	52.36	57.07	47.87	57.96	25.36	32.13	53.98	31.01	55.07	35.42	11.42	37.72	24.65
18	50.47	55.17	45.99	56.04	23.68	30.33	52.17	29.21	53.24	33.44	10.47	35.89	23.42
19	49.31	54.00	44.84	54.85	22.68	29.25	51.07	28.14	52.11	32.24	9.91	34.78	22.68
20	45.26	49.89	40.84	50.67	19.39	25.64	47.27	24.56	48.11	28.22	8.17	31.00	20.23
21	44.49	49.11	40.10	49.88	18.80	24.99	46.57	23.91	47.34	27.49	7.87	30.31	19.79
22	43.67	48.27	39.29	49.01	18.18	24.28	45.81	23.22	46.51	26.71	7.55	29.57	19.32
23	43.65	48.25	39.27	49.00	18.17	24.27	45.79	23.21	46.50	26.70	7.55	29.55	19.31
24	41.62	46.17	37.29	46.86	16.71	22.57	43.93	21.55	44.43	24.82	6.81	27.75	18.18
25	41.50	46.04	37.17	46.73	16.62	22.47	43.82	21.45	44.31	24.71	6.77	27.64	18.11
26	35.96	40.30	31.82	40.83	13.08	18.04	38.80	17.25	38.57	19.92	5.02	22.91	15.19
27	35.53	39.85	31.42	40.37	12.84	17.71	38.41	16.94	38.12	19.58	4.91	22.56	14.97
28	34.95	39.25	30.87	39.75	12.51	17.27	37.89	16.54	37.51	19.11	4.75	22.09	14.68
29	34.30	38.56	30.25	39.05	12.15	16.77	37.30	16.08	36.83	18.58	4.57	21.55	14.36
30	33.59	37.81	29.57	38.27	11.76	16.22	36.65	15.59	36.08	18.01	4.39	20.97	14.00
31	29.71	33.69	25.92	34.05	9.83	13.35	33.13	13.03	32.00	15.02	3.47	17.92	12.14
32	28.22	32.09	24.54	32.41	9.15	12.27	31.75	12.10	30.44	13.90	3.16	16.78	11.44
33	27.24	31.03	23.63	31.32	8.72	11.58	30.84	11.51	29.42	13.18	2.97	16.04	10.99

Impact Data (continued)

33	27.24	31.03	23.63	31.32	8.72	11.58	30.84	11.51	29.42	13.18	2.97	16.04	10.99
34	26.69	30.44	23.12	30.71	8.49	11.19	30.33	11.18	28.84	12.78	2.86	15.63	10.74
35	25.84	29.52	22.34	29.77	8.14	10.61	29.53	10.68	27.97	12.17	2.70	15.01	10.35
36	24.12	27.64	20.77	27.86	7.45	9.46	27.88	9.69	26.19	10.95	2.40	13.76	9.58
37	23.31	26.75	20.03	26.95	7.13	8.92	27.09	9.24	25.36	10.39	2.27	13.18	9.22
38	21.57	24.83	18.45	25.00	6.47	7.82	25.36	8.29	23.57	9.20	2.00	11.97	8.45
39	21.23	24.47	18.16	24.63	6.34	7.62	25.03	8.11	23.24	8.98	1.95	11.74	8.30
40	21.13	24.35	18.06	24.51	6.30	7.55	24.92	8.06	23.13	8.91	1.93	11.67	8.25
41	17.70	20.53	15.00	20.64	5.07	5.58	21.33	6.32	19.63	6.72	1.47	9.38	6.77
42	16.97	19.71	14.36	19.81	4.81	5.20	20.53	5.97	18.89	6.29	1.38	8.92	6.47
43	13.75	16.07	11.54	16.14	3.70	3.65	16.85	4.50	15.54	4.50	1.00	6.92	5.12
44	12.56	14.71	10.51	14.77	3.29	3.14	15.41	3.98	14.26	3.89	0.88	6.22	4.63
45	11.15	13.10	9.29	13.15	2.83	2.59	13.68	3.40	12.73	3.23	0.74	5.41	4.07
46	10.79	12.69	8.98	12.74	2.71	2.46	13.23	3.26	12.34	3.07	0.70	5.21	3.92
47	10.20	12.01	8.47	12.05	2.51	2.25	12.47	3.03	11.68	2.81	0.65	4.88	3.69
48	9.89	11.65	8.20	11.69	2.41	2.14	12.08	2.91	11.33	2.68	0.62	4.71	3.57
49	9.56	11.29	7.93	11.32	2.31	2.03	11.66	2.79	10.96	2.55	0.59	4.53	3.44
50	9.17	10.84	7.59	10.87	2.19	1.90	11.16	2.64	10.52	2.40	0.56	4.32	3.29
51	8.94	10.56	7.39	10.59	2.11	1.83	10.85	2.55	10.25	2.30	0.54	4.19	3.20
52	8.53	10.09	7.04	10.11	1.98	1.70	10.32	2.40	9.78	2.15	0.50	3.97	3.04
53	8.14	9.65	6.70	9.66	1.86	1.59	9.81	2.26	9.33	2.00	0.47	3.77	2.89
54	8.04	9.53	6.62	9.55	1.83	1.56	9.68	2.23	9.22	1.97	0.46	3.72	2.85
55	6.04	7.22	4.91	7.21	1.24	1.03	7.06	1.55	6.86	1.31	0.32	2.70	2.10
56	5.79	6.93	4.70	6.92	1.17	0.97	6.73	1.47	6.56	1.23	0.30	2.57	2.01
57	5.34	6.41	4.32	6.39	1.05	0.87	6.15	1.34	6.03	1.10	0.27	2.35	1.84
58	4.15	5.03	3.31	4.99	0.74	0.63	4.63	0.98	4.59	0.79	0.20	1.78	1.42
59	3.31	4.04	2.60	3.99	0.54	0.47	3.59	0.75	3.57	0.60	0.16	1.39	1.12
60	2.58	3.19	2.01	3.13	0.39	0.35	2.74	0.56	2.71	0.44	0.12	1.06	0.87
61	2.13	2.65	1.64	2.59	0.30	0.28	2.24	0.45	2.18	0.35	0.10	0.86	0.71
62	1.65	2.07	1.25	2.01	0.21	0.21	1.74	0.34	1.62	0.25	0.07	0.64	0.55
63	0.83	1.07	0.61	1.02	0.07	0.11	0.97	0.16	0.72	0.10	0.02	0.30	0.27

Articulation

Part of the standard-setting process included efforts to ensure that the proficiency standards established across grades are reasonably consistent. It would not make sense, for example, to set high proficiency standards in grade 3, low proficiency standards in grade 4, and high proficiency standards in grade 5.

Let's use mathematics grades 3–8 as an illustration of articulation. The panelists in subpanel for grades 3–4, 5–6, and 7–8 first recommend cut-scores in the anchor grades (grades 4, 6, and 8, respectively). The inverse cumulative proportions were calculated for all six grades (3–8) in mathematics. A straight line was drawn from each proficiency standard from the lowest grade to the highest grade. In general, this represents the best fitting regression line between the anchor grades. There is a theta associated with the point on the graph where the straight line intersects the test characteristic curve for the intermediate grades (3, 5, and 7). This point of intersection was considered the interpolated cut score for the intermediate grades. This is illustrated in Figure 2.

The articulated standards (expressed in the theta metric) can be graphed on the vertical scale. These standards are provided below.

Figure 2: Articulated Standards—ELA

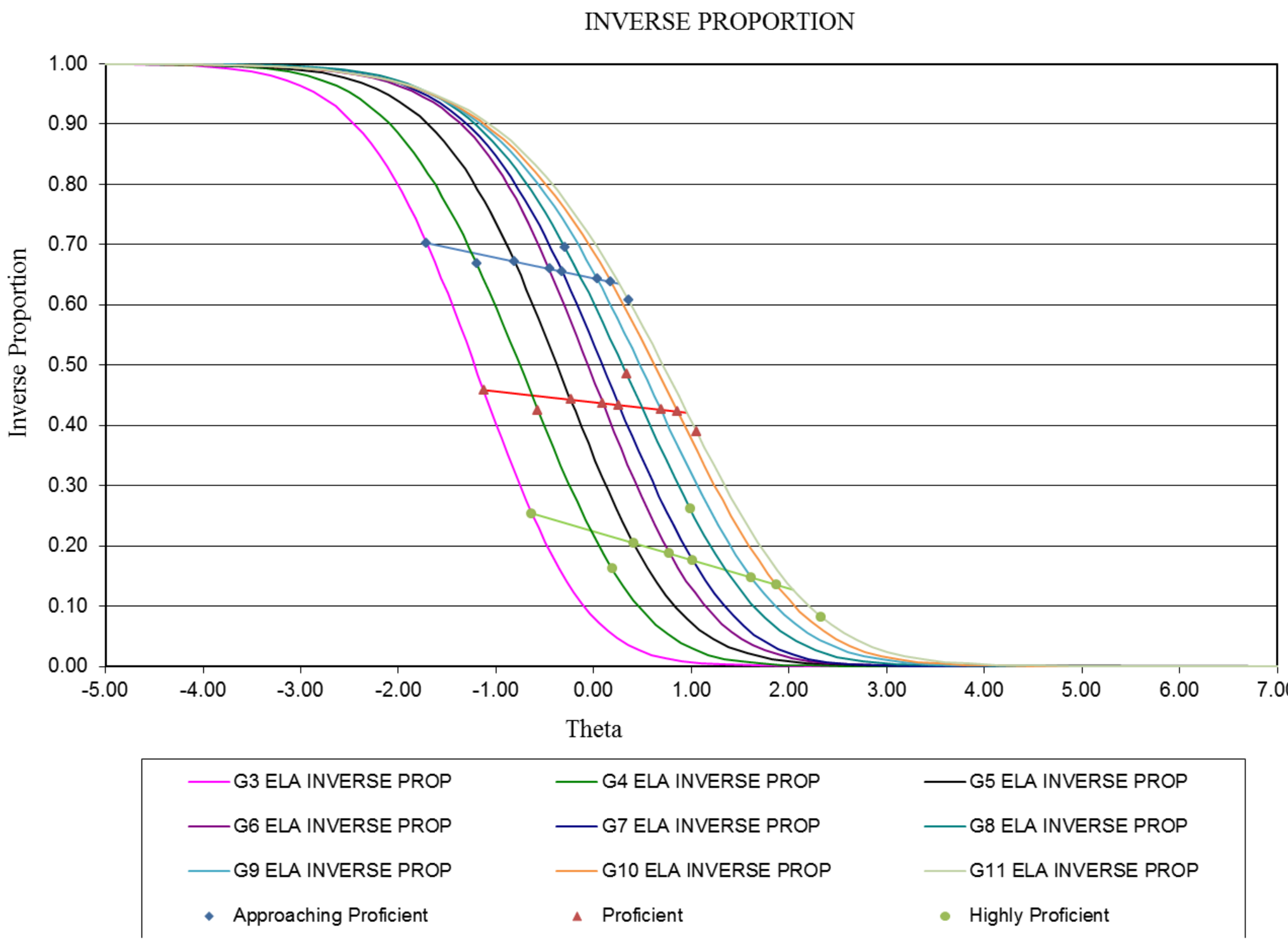
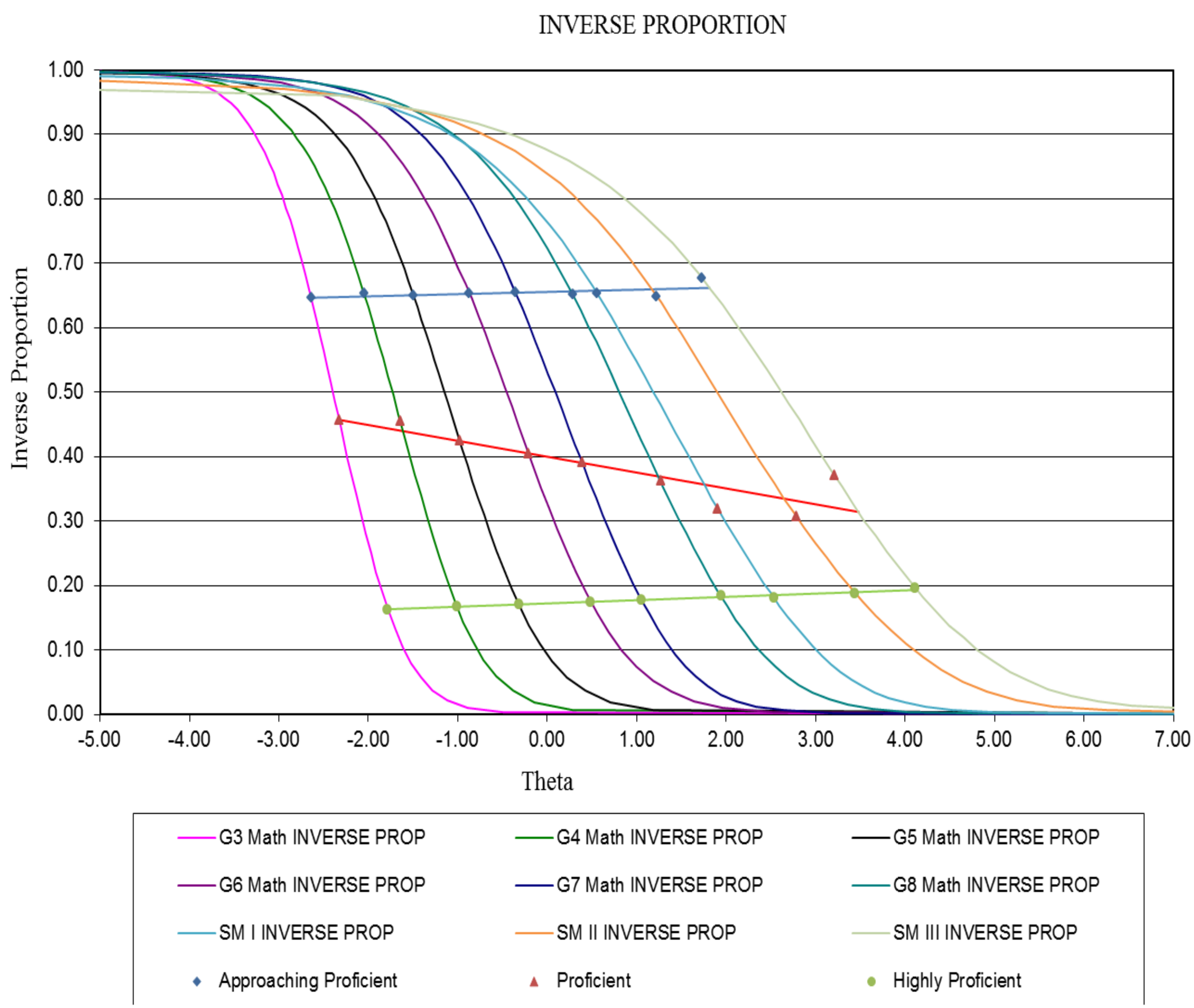


Figure 3: Articulated Standards—Mathematics



The panelists do not see the thetas. Instead they see the page numbers in the within-grade OIBs associated with the thetas. Following the completion of the anchor grades, standard-setting panelists embark on recommending standards for the intermediate grades. The starting point for the panelists' deliberations for the intermediate grades is the articulation information presented as page numbers in the OIB. The page numbers in the OIBs associated with each standard for each intermediate grade are determined by using each standard's location for the anchor grades and then interpolating the location of the standards across the intermediate grades (see the figure below for an illustration).

Articulation information is contrasted with impact data. Impact data are normative and tell the panelists how many students in the state will obtain the standard being contemplated for any page in the OIB. The articulation information tells the panelists what a reasonable standard might be for the grade under consideration given the standards already established in higher and lower grades and given the requisite content-referenced interpretations. Articulation information was presented as page numbers in the OIBs and was used only for assisting in establishing the intermediate grade standards and not the standards for the anchor grades.

Benchmarking

In addition to having well-articulated proficiency standards across grades and subjects Utah would also like to have their proficiency standards benchmarked against college- and career-ready indicators. The expectation would be that students graduating from high school in Utah are college and career ready and students in the lower grades are on a trajectory to be college and career ready. AIR used an approach outlined by Phillips (2011) in which the proficiency standards are benchmarked against an external national referent, such as the ACT, SAT, or NAEP. Similar procedures have been used by AIR in Oregon, Hawaii, and Delaware. From the available data in Utah, AIR used the ACT and NAEP as benchmarks for the SAGE proficiency standards. The benchmark information was presented to the panelists as part of their initial training and was available to the panelists during round 1 of the standards setting. The ACT equipercentile benchmarks for the ACT college-ready and career-ready standard on the SAGE scale were provided. The college- and career-ready ACT benchmarks were as follows.

Table 4: ACT Benchmarks

SAGE Test	ACT 2014 Grade 11	Utah % College and Career Ready	OIB Page Number
ELA Grade 11	Reading	41%	20
Math I	Mathematics	31%	28
Math II	Mathematics	31%	34
Math III	Mathematics	36%	23
Biology	Science	30%	39
Earth Science	Science	20%	45
Chemistry	Science	39%	38
Physics	Science	48%	23

The NAEP equipercentile benchmarks were as follows.

Table 5: NAEP Benchmarks

SAGE Test	NAEP	Utah % Proficient	OIB Page Number
ELA Grade 4	Reading Grade 4 2013	37%	35
ELA Grade 8	Reading Grade 8 2013	39%	38
Math Grade 4	Math Grade 4 2013	44%	34
Math Grade 8	Math Grade 8 2013	36%	32
Science Grade 4	Science Grade 4 2009	38%	38
Science Grade 8	Science Grade 8 2011	43%	29

SECTION 3: PREPARATION

Preparation for the standard-setting workshops includes identifying and training AIR staff for specific roles and responsibilities before, during, and after the workshops; developing and refining workshop materials; rehearsing workshop procedures; and recruiting standard-setting panelists. We cover each of these steps in the sections below.

Workshop Support Staff

Each workshop room included a *workshop leader* and a *workshop assistant.* In addition, an AIR content area specialist familiar with the tests for which standards are being set was available, and an USOE staff member was on hand to answer questions and monitor proceedings of the workshop. The workshop leader acted as host for the standard-setting workshop by welcoming panelists, organizing them at their respective tables, and helping them feel comfortable; conducted training and practice; led discussions that began rounds 1 and 2; decided when to begin and end each phase of the workshop; and fielded questions from the panelists and ensured that timely responses are provided. An additional AIR measurement specialist also participated in parts of the workshop by, for example, responding to panelist questions and leading parts of workshop discussions. The workshops were supported by a team of psychometricians who entered data, did quality checks, analyzed cut-score recommendations from the panelists, and produced feedback information for subsequent rounds.

Workshop Materials

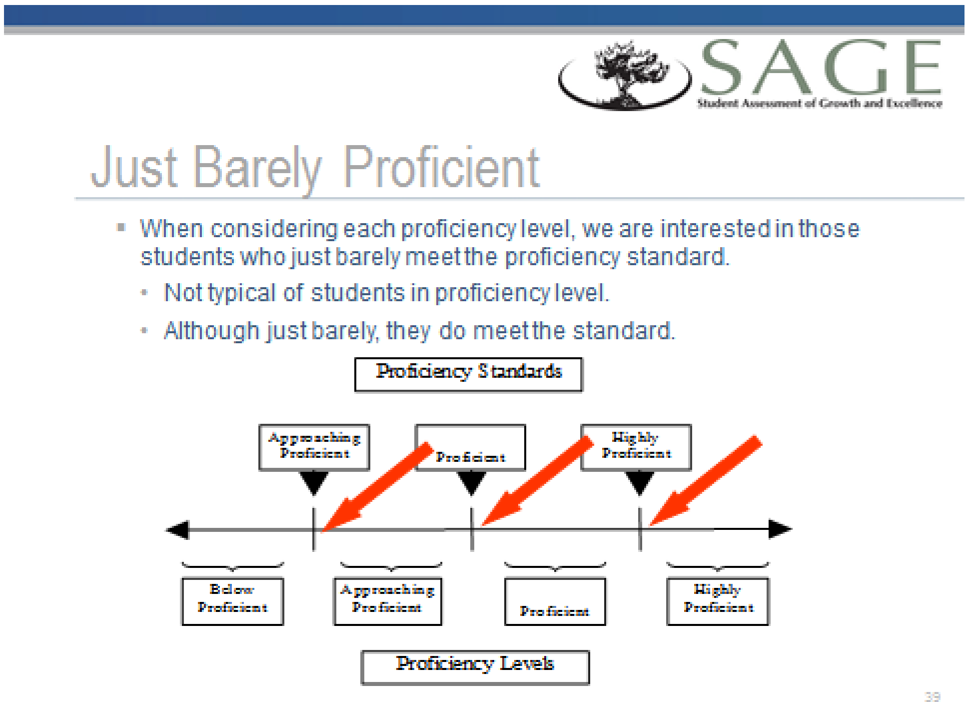
Content Standards

AIR content specialists provided the content standards and test specifications so that the participants were clear on what students are expected to know and be able to do in order to respond to the items they will encounter in the OIB.

Proficiency-Level Descriptors

Detailed Proficiency-level descriptors are contained in Appendix C. At the workshop the panelists were also required to develop “Just Barely” Proficiency-level descriptors as indicated in Figure 1Figure 4. They did this by summarizing the PLDs for each grade and proficiency level. In each case they came to a room consensus.

Figure 4: "Just Barely" Proficiency-Level Descriptors



Ordered Item Booklet

Panelists used on online OIB that presents test items on which they will be setting standards, ordered by difficulty. The OIB was accessed in AIR's Item Tracking System (ITS), and panelists saw the items exactly as they appear in a live student testing environment. A printed OIB map also accompanied each OIB; this item map helped panelists navigate the OIB and provided scoring keys for multiple-choice items and target point values for constructed-response items. Stimuli (e.g., ELA passages) were presented alongside each relevant OIB item.

Training and Workshop Management Presentation Slides

These slides covered concepts that panelists must internalize (e.g., the cognitive task for placing bookmarks, the response probability criterion) and all steps and reminders in the standard-setting process (e.g., steps for completing round 1, review of the standard-setting cognitive task, agreement and articulation information).

Other Workshop Materials

- One laptop computer per panelist, equipped to access to online test environment, and access to OIBs
- One LCD projector per workshop
- Pens and pencils
- Post-it notes for bookmarking

- Travel and other expense reimbursement forms for panelists to complete

Workshop Rehearsal

AIR conducted four training sessions and one dress rehearsal for the workshops. All AIR staff involved in the workshops participated. Workshop leaders rehearsed key steps in a standard-setting workshop (e.g., the training phase that focuses on the cognitive task for placing bookmarks, the presentation and use of discussion guiding questions for rounds 1 and 2, the explanation of feedback information, and practice in leading a discussion of feedback information).

SECTION 4: THE WORKSHOP

Overview

The Bookmark procedure was used, which is structured to ensure that standard-setting panelists recommend cut scores on the basis of their judgment about the content knowledge and skills that each test item requires of students and the relationship of those requirements to the PLDs.

Workshop Procedures

Staff and Leaders

The AIR and USOE staff assigned to the workshop is listed in Table 6. Each panel was supervised by a senior workshop leader with expertise in standard setting. Each subpanel was staffed by a room leader, also with expertise in standard setting procedures and test development. Each room had staff dedicated to assist with distribution and collection of materials and accessing materials using online platforms.

Table 6: Staff and Table Leaders

Date	Panel Rooms	Large Group Training	Room Leader	Technical Research Assistants	Content	Psychometrics	Panelists	Table Leaders	Subject	EOC/Grades
				Cathy Kugler Nik Kalich Ashley Nartey		Stephan Ahadi Bokhee Yoon				
August 11–12, 2014	1	S. Ahadi	Chris Johnston	Hashim Evans		Ming Lei	6	2	Math	I
	2		Paul Maxon	Roshi Matewere			6	2	Math	II
	3		John Neral	Jessica Crutchfield		Okan Bulut	6	2	Math	III
	4		June Zack	Alexander Mendoza	Kevin Chandler		11	3	Science	Biology
	5		Josh Smith	Sam Thomas		Sunny Kim	11	3	Science	Earth Science
	6		Meg McMahon	Sydney Fitzgerald	Crystal Davidson		11	3	Science	Chemistry
	7		Kevin Dwyer	Justin Schneider	Erica Ajder	Tsze Chan	11	3	Science	Physics
August 13–15, 2014	8	S. Ahadi	Cathy Kugler	TBD	Kevin Dwyer	Ming Lei ELA 3-7	11	3	ELA	3 to 5
	9		Katina Marshall	Roshi Matewere	Kevin Dwyer		11	3	ELA	6 to 8
	10		Sean Redmond	Jessica Crutchfield	Kevin Dwyer	Okan Bulut ELA 8-11 Math 3	11	3	ELA	9 to 11
	11		John Neral	Alexander Mendoza	Meg McMahon		11	3	Math	3 to 4
	12		Chris Johnston	Sam Thomas	Meg McMahon	Sunny Kim Math 4-8	11	3	Math	5 to 6
	13		Paul Maxon	Sydney Fitzgerald	Meg McMahon		11	3	Math	7 to 8
	14		June Zack	Hashim Evans	Kevin Chandler	Tsze Chan Science 4-8	11	3	Science	4 to 6
	15		Josh Smith	Justin Schneider			11	3	Science	7 to 8
	Totals						150	42	Total =	192

Agenda

The timeline for completing the standard setting was exceedingly tight. We designed a schedule and made some adjustments that enable work to be completed in three days for on-grade elementary and middle school standards and two days for end-of-course (EOC) assessments without making panelists feel unduly rushed to complete their judgmental processes. The agendas for the panels appear in Appendix D.

Day 1: Introductions, Training, Practice, Preparation

Days 1 and 2 were devoted to the high-school courses assessment. Day 1 of the workshop was devoted to introductory training and review cumulating with the review of the OIB. Panelists were first instructed in the purpose of the standard-setting workshop and participated in a brief review of the Utah Academic Content Standards, PLDs, and OIB from which they set standards.

Following large-group (panel-level) training, panelists were separated into subpanel rooms, and room leaders walked them through the standard-setting process, training participants at each step. First, panelists participated in an operational test in the online environment, which allowed them to experience the interface students experience when taking tests. Each panelist received a unique set of test items, allowing the group to sample a wide range of content. Following that, panels reviewed and parsed the PLDs for the anchor grades. Then, panelists reviewed each item in the OIB, focusing on two questions:

1. What do students who are just barely at the standard need to know and be able to do to respond successfully to this item?
2. What makes this item more difficult than the previous items?

Responses to these questions helped prepare individual panelists to complete the Bookmark placement task. The table discussions of these questions also facilitated cohesion, communication and shared understanding of the tasks and the Utah assessments.

Day 2: Setting the Cut-Scores

Day 2 was devoted to setting round 1 and 2 of the standards. Day 2 began with training on bookmark placement, including in-depth discussion of the concepts of students who “just barely” meet the proficiency standard, and how to use *RP67* in making judgments. Once panelists had discussed and understood their task, they placed their bookmarks for round 1, working independently. The cognitive-judgmental task of placing the bookmark was stated as follows:

> *Place your bookmark on the page that two-thirds of those students who are just barely proficient would be able to answer successfully.*
>
> *Fewer than two-thirds of those students would be expected to respond successfully to the next item.*
>
> *More than two-thirds of those students would be expected to respond successfully to the previous item.*

Going into round 2, panelists viewed feedback from the round 1 judgment task. Specifically, they were provided with agreement information in the form of the page number on which each panelist at the table placed his or her bookmark in round 1, the median page number for the table, and the highest and lowest page numbers for panelists at that table. In addition, panelists received student impact data. Panelists then discussed with one another the placement of bookmarks in the OIBs. The goal of this discussion was not to force agreement among panelists but rather to allow panelists to gain a broader understanding of the reasons their fellow panelists used to identify the cut-scores. Following the group discussions, panelists made a second and final judgment about where to place their bookmark in the OIB.

Day 3 to Day 5

Elementary and middle school subpanels began day 3 with a debrief of the anchor grade moderation activities and outcomes and moved into completing bookmark placement rounds 1 and 2, using interpolated cut points. The process for the grade-based process was the same as the end-of-course process.

Moderation: Following the completion of each panel’s activities, all panel table leaders met to review the final outcomes of the workshop. This activity allowed each panel’s table leaders to evaluate their panel's bookmark placements in light of those of the other panels. The table leaders from each panel were able to decide to make adjustments to their own panel's recommended score but not to the other panels' recommended cut-scores.

Security Considerations

The fundamental purpose of the security plans was to ensure that item security is not compromised. AIR told all panelists that all materials in the workshop are secure.

In addition to the workshop materials, AIR kept all data under the tightest security. For example, the data analysis workroom was kept locked and/or monitored by AIR staff at all times. Each AIR staff member was responsible for his or her own computer during the evenings.

As an added precaution, AIR staff constantly monitored entry into the participant workrooms as well as the project workroom, the data processing room, and the staff meeting room.

The reader is directed to the security plan in Appendix F for a complete discussion of all security measures being taken.

Evaluation of Workshop

After all activities were completed, the panelists were asked to evaluate the activity. We encouraged panelists to discuss their satisfaction and comfort with the workshop process and with the standards they recommended. The questions were based on the main sections of workshop training and activities and appear as questions in the workshop evaluation form. Panelists completed the workshop evaluation form independently. The workshop evaluation results appear in Appendix G.

Within-Grade and Across-Grade Vertical Scale

One SAGE test uses within-grade scales and two use vertical scales. They are as follows:

- Within-grade scales
  - Science grades 4–8
  - Biology
  - Earth Science
  - Chemistry
  - Physics
- Across-grade vertical scales
  - ELA grades 3–11
  - Mathematics grades 3–8, Math I, Math II, and Math III

SECTION 5: RESULTS

Preliminary Calibrations: The USOE decided that the results from the 2014 operational field test would be reported in early October 2014. This required that the standard-setting workshop be conducted about one month earlier than planned. To meet the timeline the analyses related to standard setting were fast-tracked. This involved taking an early extract of the data before the testing window closed, obtaining preliminary calibrations and creating the vertical scales in ELA and mathematics, conducting an early rubric validation for items used in standard setting, and creating OIBs and estimating impact data based on the preliminary calibrations. Subsequent to the standard-setting workshop, the final calibrations were obtained based on the entire state population and the cut-scores associated with final *RP67*s were determined.

LOSS and HOSS*:* In every grade there are some theta estimates that are very large or very small especially in the extremely hard tests, such as Math III where there were more extreme negative estimates. In order to compensate for this the within-grade theta estimates were truncated to -4.0 and +4.0. For ELA and mathematics the linking constants were then applied to place the within-grade thetas on the vertical scale. The resulting minimum and maximum scores are contained in Table 7–9.

Table 7: Minimums and Maximums for ELA

ELA Min and Max (Scaled Scores)

SAGE Test	Scaled Scores	
	Min	Max
ELA 3	40	600
ELA 4	61	655
ELA 5	92	687
ELA 6	115	718
ELA 7	113	745
ELA 8	106	782
ELA 9	95	816
ELA 10	85	845
ELA 11	80	868

ELA Min and Max (Theta)

SAGE Test	Theta	
	Min	Max
ELA 3	-4.64	2.07
ELA 4	-4.39	2.73
ELA 5	-4.02	3.13
ELA 6	-3.75	3.49
ELA 7	-3.76	3.82
ELA 8	-3.85	4.26
ELA 9	-3.99	4.67
ELA 10	-4.11	5.01
ELA 11	-4.16	5.30

Table 8: Minimums and Maximums for Mathematics

Math Min and Max (Scaled Scores)

SAGE Test	Scaled Scores	
	Min	Max
Math 3	185	436
Math 4	188	498
Math 5	197	551
Math 6	203	614
Math 7	228	647
Math 8	215	732
Math I	185	796
Math II	188	867
Math III	207	872

Math Min and Max (Theta)

SAGE Test	Theta	
	Min	Max
Math 3	-4.86	-0.04
Math 4	-4.79	1.16
Math 5	-4.62	2.17
Math 6	-4.50	3.39
Math 7	-4.03	4.02
Math 8	-4.28	5.64
Math I	-4.85	6.87
Math II	-4.79	8.23
Math III	-4.43	8.33

Table 9: Minimums and Maximums for Science

Science Min and Max a (Scaled Scores)

SAGE Test	Scaled Scores	
	Min	Max
Science 4	727	939
Science 5	742	929
Science 6	694	975
Science 7	721	943
Science 8	729	942
Biology	714	944
Earth Science	704	959
Chemistry	684	983
Physics	683	985

Science Min and Max (Theta)

SAGE Test	Scaled Scores	
	Min	Max
Science 4	-4.00	4.00
Science 5	-4.00	4.00
Science 6	-4.00	4.00
Science 7	-4.00	4.00
Science 8	-4.00	4.00
Biology	-4.00	4.00
Earth Science	-4.00	4.00
Chemistry	-4.00	4.00
Physics	-4.00	4.00

***Scaling Constants**:* After the standards were recommended by the panelists and affirmed by the stakeholders committee, the cut-scores in the theta metric were transformed to scaled scores using the following linear transformations. For ELA and mathematics, the proficient cut-score was set to 450 in grade 7, and the overall standard deviation was set to 100 through the formula

Scaled Score $SS_C + SS_{SD}\left[\dfrac{\hat{\theta}-\theta_C}{\sigma_{\hat{\theta}}}\right].$

For science the cut-scores within each within-grade scale were fixed at Approaching Proficient = 820 and Proficient = 840. The linear transformation to scaled scores was

$$\text{Scaled Score} = \left[\frac{(SS_{C_1}\theta_{C_2} - SS_{C_2}\theta_{C_1})}{\theta_{C_2}-\theta_{C_1}}\right] + \left[\frac{(SS_{C_2} - SS_{C_1})}{\theta_{C_2}-\theta_{C_1}}\right]\hat{\theta}.$$

The scaling constants are contained in Table 10.

Table 10: Scaling Constants

Scaling Constants				
Scaled Score Metric			Intercept	Slope
	Gr 7 Prof	SD	A	B
ELA	450	100	427	83
	Gr 7 Prof	SD		
Mathematics	450	100	438	52
	Cut1	Cut2		
Science 4	820	840	833	26
Science 5	820	840	836	23
Science 6	820	840	834	35
Science 7	820	840	832	28
Science 8	820	840	836	27
Biology	820	840	829	29
Earth Science	820	840	831	32
Chemistry	820	840	834	37
Physics	820	840	834	38

Scaling Constants		
Theta Metric		
	Gr 7 Prof	SD
ELA	0.28	1.20
	Gr 7 Prof	SD
Mathematics	0.24	1.92
	Cut1	Cut2
Science 4	-0.49	0.26
Science 5	-0.66	0.19
Science 6	-0.41	0.16
Science 7	-0.44	0.28
Science 8	-0.59	0.16
Biology	-0.31	0.39
Earth Science	-0.35	0.27
Chemistry	-0.37	0.16
Physics	-0.37	0.16

The proficiency levels in the scaled score metric are contained in Table 11–13 and the percent within each proficiency level are in Table 14–16Table 16.
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Table 11: Proficiency Levels—ELA

SAGE Test	Proficiency Level			
	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
ELA 3	< 291	291—333	334—405	406 +
ELA 4	< 323	323—377	378—441	442 +
ELA 5	< 361	361—409	410—464	465 +
ELA 6	< 394	394—433	434—492	493 +
ELA 7	< 404	404—449	450—513	514 +
ELA 8	< 416	416—470	471—532	533 +
ELA 9	< 430	430—486	487—558	559 +
ELA 10	< 454	454—497	498—573	574 +
ELA 11	< 457	457—512	513—590	591 +

Table 12: Proficiency Levels—Math

SAGE Test	Proficiency Level			
	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Math 3	< 297	297—316	317—336	337 +
Math 4	< 326	326—348	349—375	376 +
Math 5	< 360	360—383	384—415	416 +
Math 6	< 397	397—431	432—463	464 +
Math 7	< 415	415—449	450—498	499 +
Math 8	< 447	447—498	499—553	554 +
Math I	< 478	478—534	535—590	591 +
Math II	< 507	507—583	584—647	648 +
Math III	< 550	550—610	611—679	680 +

Table 13: Proficiency Levels—Science

SAGE Test	Proficiency Level			
	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Science 4	< 820	820–839	840–855	856 +
Science 5	< 820	820–839	840–855	856 +
Science 6	< 820	820–839	840–863	864 +

SAGE Test	Proficiency Level			
	Below	Approaching	Proficient	Highly
Science 7	< 820	820–839	840–853	854 +
Science 8	< 820	820–839	840–853	854 +
Biology	< 820	820–839	840–857	858 +
Earth Science	< 820	820–839	840–865	866 +
Chemistry	< 820	820–839	840–864	865 +
Physics	< 820	820–839	840–877	878 +

Table 14: Percentage at Each Proficiency Level—ELA

SAGE Test	Percent at Each Level			
	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
ELA 3	34%	22%	31%	12%
ELA 4	33%	26%	27%	15%
ELA 5	35%	24%	24%	17%
ELA 6	38%	20%	25%	17%
ELA 7	37%	21%	26%	16%
ELA 8	37%	23%	24%	16%
ELA 9	38%	23%	26%	14%
ELA 10	43%	17%	26%	14%
ELA 11	41%	21%	25%	13%

Table 15: Percentage at Each Proficiency Level—Math

SAGE Test	Percent at Each Level			
	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Math 3	33%	22%	23%	22%
Math 4	32%	21%	25%	22%
Math 5	36%	20%	25%	19%
Math 6	39%	25%	20%	15%
Math 7	34%	23%	30%	14%
Math 8	33%	29%	26%	11%
Math I	41%	27%	22%	10%
Math II	38%	33%	19%	10%
Math III	41%	25%	22%	11%

Table 16: Percentage at Each Proficiency Level—Science

SAGE Test	Percent at Each Level			
	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Science 4	31%	27%	20%	22%
Science 5	27%	29%	22%	22%
Science 6	35%	21%	22%	22%
Science 7	33%	26%	18%	23%
Science 8	29%	26%	18%	27%
Biology	37%	26%	20%	17%
Earth Science	36%	23%	26%	16%
Chemistry	35%	21%	23%	22%
Physics	36%	20%	30%	14%

Overall Standard Setting Results*:* In general, the standards were well articulated across grades. The good articulation was accomplished because the panelists generally agreed with the pages that were recommended by the statistically interpolations. Also, the standards were generally consistent with the NAEP and ACT benchmarks that were provided to the panelists. This means the Utah high school standards do represent college-ready standards and the standards in the lower grades represent a level of performance that is on a trajectory to college readiness in high school

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APPENDIX A: REPORTING CATEGORIES

SAGE Reporting

Below is a summary of the reporting categories for the three SAGE content areas: English language arts (ELA), mathematics, and science. A reporting category is a portion of a test for which a student receives a score. There are sufficient items in these groupings of items to report a reliable score at the individual student level. The listing of reporting categories (below) is followed by a listing of "subcategories." Subcategories are at a lower level in the test blueprint falling under the reporting categories. Subcategories are subdomains supporting the reporting category. Fewer items are seen by a given student in a given subcategory. Due to the small numbers of test items, reporting scores for subcategories at the student level is not recommended due to the unreliability of scores. However, there is a way to provide subcategory information at an aggregate level (classes, schools, districts). Indicators of strengths and weaknesses can be produced that provide indicators of relative strengths and weaknesses. These indicators are produced by comparing observed performance on items within the subcategory with expected performance based on the overall ability estimate. At the aggregate level, when observed performance within a domain is greater than expected performance, then the reporting unit (e.g., class, school, or district) shows a relative strength in that domain. Conversely, when observed performance within a domain is below the level expected based on overall achievement, then the reporting unit shows a relative weakness in that domain.

Utah SAGE Student Reporting Categories

ELA
Grades 3–11:

Student Reporting Categories
Reading: Literature
Reading: Informational Text
Listening
Writing
Language

Mathematics
Grades 3–5:

Student Reporting Categories
Operations and Algebraic Thinking
Number and Operations in Base Ten
Number and Operations—Fractions
Measurement and Data & Geometry

Grade 6:

Student Reporting Categories
Ratios and Proportional Relationships
Number System
Expressions and Equations
Geometry & Statistics and Probability

Grade 7:

Student Reporting Categories
Ratios and Proportional Relationships
Number System
Expressions and Equations
Geometry
Statistics and Probability

Grade 8:

Student Reporting Categories
Expressions and Equations
Functions
Geometry & Number System
Statistics and Probability

Secondary I:

Student Reporting Categories
Algebra
Number & Quantities/Functions
Geometry
Statistics

Secondary II:

Student Reporting Categories
Algebra
Number & Quantities
Functions
Geometry
Statistics & Probability

Secondary III:

Student Reporting Categories
Number & Quantities/Algebra
Functions
Trigonometric Functions & Geometry
Statistics & Probability

Science
Grade 4:

Student Reporting Categories
Water Cycle
Weather
Rocks, Soils, and Plant Growth
Fossils
Utah Wetlands. Forests, and Deserts

Grade 5:

Student Reporting Categories
Chemical and Physical Changes
Processes that Reshape Earth's Surface
Magnetism
Electricity
Inheritance of Traits

Grade 6:

Student Reporting Categories
Moon Change Cycle
Earth's Tilting Axis
Solar System
Universe
Microorganisms
Light, Heat and Sound

Grade 7:

Student Reporting Categories
Structure of Matter
Properties of Matter and Earth's Structure
Organ, Tissue, and Cell Structure and Function
Effect of Inherited Traits on Survival
Classification Systems

Grade 8:

Student Reporting Categories
Changes in Matter
Energy Transfers and Transformations
Rock and Fossil Formation
Energy, Force, and Motion

Earth Science:

Student Reporting Categories
Earth, Solar System, and Universe
Earth's Internal Heat and Structure
Atmospheric Processes, Weather, and Climate
Hydrosphere
Interaction of Earth Science and Society

Biology:

Student Reporting Categories
Organism Interaction
Cells
Organ Structure and Function
DNA
Evolution and Diversity

Chemistry:

Student Reporting Categories
Structure and Origin of Matter
Atoms and Energy
Chemical Bonds
Chemical Reactions
Equilibrium
Solutions

Physics:

Student Reporting Categories
Motion and Newton's First Law
Forces and Newton's Second and Third Laws
Gravitational and Electrostatic Forces
Energy
Waves

APPENDIX B: HIGH LEVEL PROFICIENCY LEVEL DESCRIPTORS

SAGE Summative Proficiency Level Descriptors

Proficiency Levels:

4—Highly Proficient*

The Level 4 student is highly proficient in applying the English language arts/literacy, mathematics, and science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for his or her grade level/course, is able to access above grade-level content, and engages in higher-order thinking skills independently.

** For Secondary Math III and English 11, this level of performance also likely indicates students are well prepared for postsecondary success in mathematics and language arts.*

3—Proficient**

The Level 3 student is proficient in applying the English language arts/literacy, mathematics, and science knowledge /skills as specified in the Utah Core State Standards. The student generally performs at the standard for his or her grade level/course, is able to access grade-level content, and engages in higher-order thinking skills with some independence and minimal support.

*** For Secondary Math III and English 11, this level of performance also likely indicates students are sufficiently prepared for postsecondary success in mathematics and language arts.*

2—Approaching Proficient

The Level 2 student is approaching proficient in applying the English language arts/literacy, mathematics, and science knowledge/skills as specified in the Utah Core State Standards**.** The student generally performs slightly below the standard for his or her grade level/course, is able to access grade-level content, and engages in higher-order thinking skills with some independence and support.

1—Below Proficient

The Level 1 student is below proficient in applying the English language arts/literacy, mathematics, and science knowledge /skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for his or her grade level/course, is likely able to partially access grade-level content, and engages with higher-order thinking skills with extensive support.

APPENDIX C: DETAILED PROFICIENCY LEVEL DESCRIPTORS

Secondary Math I

SEC I PLD	Standard	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy		The Level 1 student is below proficient in applying the mathematics knowledge/ skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for his or her grade level, is likely able to partially access grade-level content, and engages with higher-order thinking skills with extensive support.	The Level 2 student is approaching proficient in applying the mathematics knowledge/ skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for his or her grade level, is likely able to access grade-level content, and engages in higher-order thinking skills with some independence and support.	The Level 3 student is proficient in applying the mathematics knowledge/ skills as specified in the Utah Core State Standards. The student generally performs at the standard for his or her grade level, is able to access grade level content, and engages in higher-order thinking skills with some independence and minimal support. This level of performance also likely indicates students are sufficiently prepared for post-secondary success in mathematics.	The Level 4 student is highly proficient in applying the mathematics knowledge/ skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for his or her grade level, is able to access above grade-level content, and engages in higher-order thinking skills independently. This level of performance also likely indicates students are well prepared for post-secondary success in mathematics.

NUMBER AND QUANTITY/Functions					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	N.Q.1	Draws conclusions and makes inferences with respect to the units involved when given a scaled graph.	Selects and uses appropriate scales to create linear and exponential graphs with context.	Uses units as a way to understand problems and to guide the solution of multi-step problems; chooses and interprets units consistently in formulas; chooses and interprets the scale and the origin in graphs and data displays.	Evaluates aspects of misleading graphs and units and can explain needed corrections.
Range	N.Q.2	Selects the most appropriate unit for the situation when given a context.	Identifies a situation or context that can be measured using a given unit or quantity.	Creates and defines appropriate quantities for the purpose of descriptive modeling.	Justifies the units or quantities selected for a given context or situation.
Range	N.Q.3	Determines the appropriate power of 10 to reasonably measure a quantity. Determines whether whole numbers, fractions, or decimals are most appropriate.	Determines what level of rounding should be used in a problem-solving situation. Determines the resulting accuracy in calculations.	Chooses a level of accuracy appropriate to limitations on measurement when reporting quantities.	Explains the level of accuracy selected.

Number and Quantity/FUNCTIONS					
		The Level One Student:	**The Level Two Student:**	**The Level Three Student:**	**The Level Four Student:**
Range	F.IF.1	Identifies functions, including functions represented in equations, tables, graphs, or context.	Writes relations in function notation.	Demonstrates understanding that a function's domain assigns to exactly one element of the range. Understands input and output values.	Applies and extends knowledge of domain and range to real-world situations and contexts.
Range	F.IF.2	Evaluates simple functions in their domains. Rewrites an equation in function notation when given in $y =$ form.	Evaluates functions for inputs in their domain. Writes functions using function notation (without context).	Uses function notation and evaluates functions for inputs in their domain. Interprets statements that use function notation (including combinations and compositions) in terms of context.	Creates context from a given domain and range and uses function notation to write an equation to model the context.
Range	F.IF.3	Identifies the parts of a recursive function or sequence.	Defines and expresses a recursive sequence as a function.	Recognizes that sequences are functions. Recognizes that a sequence has a domain, which is the subset of integers and can generate a sequence given a recursive function.	Applies the ideas of sequences being functions to real-world contexts.

Number and Quantity/FUNCTIONS					
		The Level One Student:	**The Level Two Student:**	**The Level Three Student:**	**The Level Four Student:**
Range	F.IF.4	Identifies the key features (as listed in the Standard) when given a linear or exponential graph.	Interprets the key features (as listed in the Standard) when given a linear or exponential graph.	Identifies and interprets the key features (as listed in the Standard) when given a table of values for a linear or exponential function. Sketches graphs of linear or exponential functions, showing key features, when given a verbal description of the relationship.	Accurately creates a story or context that models the given key features of linear or exponential functions.
Range	F.IF.5	Identifies domains of functions when given a graph.	Relates the domain of a function to its graph and graphs a function given a restricted domain.	Relates the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. Graphs a function given a restricted domain and identifies reasonability of a domain in a particular context.	Creates a function for a given context where the domain meets given parameters.
Range	F.IF.6	Determines the rate of change of a linear function presented algebraically.	Determines the rate of change of an exponential function presented algebraically over a given interval.	Calculates and interprets the average rate of change of a function presented symbolically or as a table over a specified interval.	Describes the different rates of change over given intervals of a line graph.

Number and Quantity/FUNCTIONS					
		The Level One Student:	**The Level Two Student:**	**The Level Three Student:**	**The Level Four Student:**
Range	F.IF.7a	Identifies the graph of a linear function given its equation.	Constructs the graph of a linear function given its equation.	Constructs the graph of a linear function given its equation and identifies the *x*- and *y*-intercepts.	Graphs linear equations generated from real-life contexts.
Range	F.IF.7e	Identifies the graph of an exponential function given its equation.	Constructs the graph of an exponential function given its equation.	Constructs the graph of an exponential function given its equation and identifies the intercepts and end behavior.	Graphs exponential equations generated from real-life contexts.
Range	F.IF.9	Compares slopes and *y*-intercepts of two linear functions where one is presented graphically and the other is presented in slope-intercept form.	Compares growth rates and intercepts of two exponential functions where one is presented graphically and the other is presented in function notation.	Uses tables, graphs, algebra, and verbal descriptions to compare properties of two functions (linear and/or exponential), each presented a different way.	Constructs a linear or exponential function that has a characteristic (i.e., slope, intercept, maximum) that is greater than or lesser than a given function.
Range	F.BF.1a	Recognizes a relationship between explicit or recursive.	Describes an explicit or recursive expression for a linear function.	Describes steps to model a given linear or exponential context with mathematical representations.	Writes an explicit or recursive expression for a linear or exponential function or recursive process for a given context.

Number and Quantity/FUNCTIONS					
		The Level One Student:	**The Level Two Student:**	**The Level Three Student:**	**The Level Four Student:**
Range	F.BF.1b	Combines linear functions using addition and multiplication.	Combines linear and/or exponential functions using addition and multiplication.	Combines linear and/or exponential functions using addition, subtraction, multiplication, and division.	Builds a function that models a given situation by adding another function that alters the situation, and relates these individual and combined functions to the model.
Range	F.BF.2	Recognizes if a sequence is arithmetic, geometric, or neither.	Writes arithmetic and/or geometric sequences with an explicit formula.	Writes arithmetic and geometric sequences both recursively and with an explicit formula.	Models contextual situations with arithmetic and geometric sequences (as appropriate).
Range	F.BF.3	Relates the vertical translation of a linear function to its y-intercept.	Performs vertical translations on linear functions.	Performs vertical translations on linear and exponential graphs. Describes what will happen to a linear or exponential function when $f(x)$ is replaced by $f(x) + k$ for different values of k.	Find the value of k given $f(x)$ replaced by $f(x) + k$ on a graph of linear or exponential functions.

Number and Quantity/FUNCTIONS					
		The Level One Student:	**The Level Two Student:**	**The Level Three Student:**	**The Level Four Student:**
Range	F.LE.1a, b, c	Recognizes situations in which one quantity changes at a constant rate per unit interval relative to another.	Recognizes relationships in tables and graphs that can be modeled with linear functions (e.g., constant rate of change) and with exponential functions (e.g., multiplicative rate of change).	Justifies that linear functions grow by equal differences over equal intervals and exponential functions grow by equal factors over equal intervals (e.g., percentage change).	Describes the rate of change per unit as constant or the growth factor as a constant percentage. Proves that linear functions grow by equal differences over equal intervals; exponential functions grow by equal factors over equal intervals.
Range	F.LE.2	Constructs linear functions representing arithmetic sequences when given a graph.	Constructs linear and exponential functions, including arithmetic and geometric sequences, given a graph.	Constructs linear functions and exponential functions, including arithmetic sequences and geometric sequences, given input-output pairs, including those in a table.	Constructs linear and exponential functions, including arithmetic and geometric sequences, given the description of a relationship.
Range	F.LE.3	Graphs a linear and exponential function on the same coordinate plane and describes how the graphs compare.	Recognizes that linear and exponential functions may have points in common when graphed on the same coordinate plane.	Observes that a quantity increasing exponentially eventually exceeds a quantity increasing linearly using graphs and tables.	Describes and compares the changes of behavior between a linear and an exponential function, including the approximate point(s) of intersection.

Number and Quantity/FUNCTIONS					
		The Level One Student:	**The Level Two Student:**	**The Level Three Student:**	**The Level Four Student:**
Range	F.LE.5	Identifies which values are constant from a given context.	Interprets the slope and x- and y-intercepts in a linear function in terms of a context.	Interprets the base value and vertical shifts in an exponential function of the form $f(x) = b^x + k$, where b is an integer and k can equal zero in terms of context.	Interprets the base value and initial value in an exponential function of the form $f(x) = ab^x$, where b is an integer and a can be any positive integer including one in terms of context.

Algebra

		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	A.SSE.1 a & b	Identifies some of the basic terms (base, exponent, coefficient, and factor) of a linear **or** exponential expression.	Identifies all of the basic terms (base, exponent, coefficient, and factor) of linear and exponential expressions.	Interprets complicated expressions by viewing one or more of their parts as a single entity.	Explains the context of different parts of a formula presented as a complicated expression.
Range	A.CED.1	Creates one variable linear equations and inequalities from contextual situation of a form $2x = 6$ or $3x < 6$.	Creates one variable linear equations and inequalities from contextual situations of a form $2x + 3 = 7$ or $2x—5 > 6$.	Creates multi-step linear equations, inequalities, and exponential functions in context.	Uses properties of exponents to solve and interpret the solution to multi-step exponential equations and inequalities in context.
Range	A.CED.2	Writes and graphs an equation to represent a linear relationship.	Writes and graphs an equation to represent an exponential relationship.	Constructs equations and graphs that model linear and exponential relationships (with context).	Compares and contrasts equations and graphs that model linear and exponential relationships.

		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	A.CED.3	Determines whether a point is a solution to a system of equations and/or inequalities given a graph or equations.	Interprets solutions as viable or non-viable options in a modeling context where constraints are presented verbally.	Represents constraints by equations or inequalities, and by systems of equations and/or inequalities.	Defends and justify solutions or non-solutions in a modeling context.
Range	A.CED.4	Rearranges a linear equation that contains only one variable.	Rearranges a linear equation that includes several steps with scaffolding.	Uses linear equation solving techniques to rearrange formulas to highlight a specific quantity by extending concepts used in solving numerical equations.	Identifies useful quantities to highlight the variable of interest and applies the rearranged linear formula to solve problems in context.
Range	A.REI.1	Solves a linear equation with multiple steps, without justifying the steps involved in solving.	Describes the steps in solving linear equations.	Explains and justifies the steps in solving linear equations by applying the properties of equality, inverse, and identity.	Explains and justifies the steps in solving linear equations by applying **and naming** the properties of equality, inverse, and identity.
Range	A.REI.3	Solves linear equations and inequalities in one variable.	Solves linear equations and inequalities in one variable, where that variable is included on both sides of the equal sign or inequality.	Solves linear equations and inequalities in one variable, including equations with coefficients represented by letters.	Solves linear equations and inequalities in one variable, including equations with coefficients represented by letters within a real-world context.

		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	A.REI.5	Explains the use of the multiplication property of equality to solve a system of equations.	Explains why the sum of two equations is justifiable in the solving of a system of equations.	Relates the process of linear combinations with the process of substitution for solving a system of linear equations.	Proves that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.
Range	A.REI.6	Solves a system of linear equations approximately when given a graph of the system.	Tests a solution to the system in both original equations graphically and algebraically.	Solves a system of linear equations exactly and approximately by choosing the best method depending on the representation of the equations.	Analyzes the system of equations and is able to solve exactly and approximately given a context or real-world situation. Solves a system of equations and manipulates one of the equations to provide additional information or an additional given solution.
Range	A.REI.10	Identifies solutions and non-solutions of linear equations in two variables.	Identifies solutions and non-solutions of exponential equations in two variables.	Graphs points that satisfy linear and exponential equations.	Describes viable solutions using the knowledge that continuous lines and curves contain an infinite number of solutions.

		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	A.REI.11	Finds the point where two lines or exponential curves intersect on a graph or approximates solutions using other methods such as a table or technology.	Finds and explains why the solution to a system of linear/ exponential equations is the point where the two intersect.	Models the solutions of a system of linear equations and/or exponential equations showing the solutions using technology, tables, graphs, approximations.	Explains why there are infinitely many solutions when $f(x) = g(x)$.
Range	A.REI.12	Identifies a solution region when the graph of a linear inequality is given.	Graphs the solutions to a linear inequality in two variables as a half-plane.	Graphs solutions of the system of inequalities and identifies the solution set as a region of the coordinate plane that satisfies both inequalities.	Writes or creates a system of linear inequalities given a context or graph and identifies the solution set as a region of the coordinate plane that satisfies all inequalities.

Geometry					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	G.CO.1	Identifies an angle, circle, perpendicular line, parallel line, and line segment using proper notation.	Informally defines an angle, circle, perpendicular line, parallel line, and line segment using examples and non-examples.	Can explain definitions of an angle, circle, perpendicular line, parallel line, and line segment based on the notions of point, line, distance along a line, and distance around a circular arc.	Identifies real-life examples of an angle, circle, perpendicular line, parallel line, and line segment using precise definitions.

Geometry					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	G.CO.2	Describes reflections, rotations, and translations.	Describes dilations.	Compares transformations in the plane and understands them as functions that take points in the plane as inputs and give other points as outputs.	Represents functions to describe transformations using a variety of media.
Range	G.CO.3	Distinguishes between rotations and reflections given a rectangle, parallelogram, trapezoid, or regular polygon and its transformation.	Identifies lines and points of symmetry given a rectangle, parallelogram, trapezoid, or regular polygon and its reflection or rotation.	Describes the rotations and reflections that a given rectangle, parallelogram, trapezoid, or regular polygon may use to carry it onto itself.	Identifies a rectangle, parallelogram, trapezoid, or regular polygon that satisfies a description of rotational symmetry or lines of symmetry.
Range	G.CO.4	Identifies rotations, reflections, and translations given an image and its transformation.	Informally describes rotations, reflections, and translations using examples and non-examples.	Develops definitions of rotations, reflections, and translations using the terms angles, circles, perpendicular lines, parallel lines, and line segments.	Justifies statements about rotations, reflections, and translations on the coordinate plane.
Range	G.CO.5	Performs rotations, reflections, and translations on a given figure.	Identifies a sequence of transformations that will carry a given figure onto another.	Performs rotations, reflections, and translations using a variety of methods and specifies the sequence of transformations that will carry a given figure onto another.	Explains how the order of a sequence of transformations is performed may result in different outcomes.

Geometry					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	G.CO.6	Explains transformations of a given figure based on descriptions of rigid motion.	Predicts the effect of a transformation of a given figure based on descriptions of rigid motion.	Creates the congruence of two figures using transformations of rigid motion.	Justifies the congruence of two complex figures using properties of rigid motion.
Range	G.CO.7	Identifies corresponding pairs of angles or corresponding pairs of sides of two triangles that are congruent.	Identifies corresponding pairs of angles and corresponding pairs of sides of two triangles that are congruent.	Shows that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent (CPCTC) using the definition of congruence in terms of rigid motions.	Justifies that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent in a context.
Range	G.CO.8	Identifies corresponding parts of two congruent triangles.	Identifies the minimum conditions necessary for triangle congruence (ASA, SAS, SSS).	Demonstrates how the criteria for triangle congruence (ASA, SAS, SSS) follow from the definition of congruence in terms of rigid motions.	Understands and explains why SSA and AAA do not provide enough evidence for triangle congruence.
Range	G.CO.12	Copies a line segment and an angle.	Bisects a line segment and an angle.	Constructs perpendicular lines, a perpendicular bisector of a line segment, and a line parallel to a given line through a point not on the line.	Creates a polygon given certain attributes using geometric constructions.

Geometry					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	G.CO.13	Constructs congruent segments and perpendicular lines.	Constructs an equilateral triangle and a square.	Constructs a regular hexagon inscribed in a circle.	Explores the construction of other regular polygons inscribed in a circle.
Range	G.GPE.4	Locates segments on a coordinate plane that are parallel or perpendicular by calculating slopes.	Locates segments on a coordinate plane that are congruent by calculating length.	Proves a triangle is a special triangle or a quadrilateral is a special quadrilateral (such as a rectangle or parallelogram), algebraically, using coordinates.	Justifies statements about geometric figures using coordinates.
Range	G.GPE.5	Can explain why the slopes of parallel lines are equal and the slopes of perpendicular lines are negative reciprocals or one that is 0 and the other that is undefined.	Creates the equation of a line that passes through a specific point given its slope.	Creates the equation of a line parallel or perpendicular to a given line that passes through a given point.	Creates the equation of a line parallel or perpendicular to a given line that passes through a given point in a context.
Range	G.GPE.7	Calculates the perimeter of a polygon.	Calculates areas of a rectangle and right triangle given their coordinates.	Calculates areas of any triangle given its coordinates.	Calculates perimeters of polygons and areas of triangles and rectangles using their coordinates from a contextual problem.

Statistics and Probability					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	S.ID.1	Identifies dot plots, histograms, and box plots for a given set of data.	Graphs numerical data on a real number line using dot plots, histograms, and box plots.	Describes and gives a simple interpretation of a graphical representation of data on dot plots, histograms, and box plots.	Determines and justifies which type of data plot on a real number line would be most appropriate for a set of data. Identifies advantages and disadvantages of different types of data plots.
Range	S.ID.2	Describes informally the center and spread of a single set of data or graph.	Compares informally the similarities or differences in shape, center, or spread between two graphs.	Explains similarities and differences using specific measures of center and spread, given two sets of data or two graphs.	Plots data based on situations with multiple data sets, and then compares and discusses using measures of center and spread. Justifies which measure(s) are most appropriate for comparison. Identifies advantages and disadvantages of using each measure of center and spread.

Statistics and Probability					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	S.ID.3	Identifies shape, center, and spread of a data set.	Identifies and states the effects of existing outliers.	Interprets similarities and differences between shape, center, and spread in the context of data sets with possible effects from existing outliers.	Plots and interprets data based on contextual situations involving outliers, and then compares and discusses center and spread and explores the manipulation of additional data points.
Range	S.ID.5	Explains data in a two-way frequency table.	Creates a two-way frequency table showing the relationship between two categorical variables.	Finds and interprets joint, marginal, and conditional relative frequencies. Recognizes possible associations and trends in the data.	Given a context, interprets, identifies, and describes associations and trends using a two-way frequency table.
Range	S.ID.6a, b, and c	Creates a scatter plot of bivariate data.	Determines if a plotted data set is approximately linear.	Creates a scatter plot of bivariate data and estimates a linear function that fits the data. Uses this function to solve problems in the context of the data.	Compares the fit of different functions to data and determines which function has the best fit.
Range	S.ID.7	Identifies a linear model of bivariate data.	Graphs data in a scatter plot. Identifies the slope and y-intercept from the linear model.	Using the line fitted to the data, interprets the slope (rate of change) and the intercept (constant term) of a linear model in the context of the situation	Using the function that best fits the data, interpolates and extrapolates trends in the data.

Statistics and Probability					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				and data.	
Range	S.ID.8	Uses a table or graph of a set of data to informally describe a correlation.	Computes the correlation coefficient of a set of linearly related data using technology.	Interprets the correlation coefficient of a linear fit in the context of a situation using technology. Determines whether the correlation shows a weak positive, strong positive, weak negative, strong negative, or no correlation.	Supports or refutes a hypothesized correlation between two sets of data.
Range	S.ID.9	Defines causation and correlation.	Identifies the existence of or non-existence of causation in the context of a correlated problem.	Distinguishes between causation and correlation in the context of a situation with data.	Supports or refutes claims of causation with the understanding that a strong correlation does not imply causation.

Secondary Math II

SEC II PLD	Standard	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy		The Level 1 student is below proficient in applying the mathematics knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for his or her grade level, is likely able to partially access grade-level content, and engages with higher-order thinking skills with extensive support.	The Level 2 student is approaching proficient in applying the mathematics knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for his or her grade level, is likely able to access grade-level content, and engages in higher-order thinking skills with some independence and support.	The Level 3 student is proficient in applying the mathematics knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for his or her grade level, is able to access grade-level content, and engages in higher-order thinking skills with some independence and minimal support. This level of performance also likely indicates students are sufficiently prepared for post-secondary success in mathematics.	The Level 4 student is highly proficient in applying the mathematics knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for his or her grade level, is able to access above grade-level content, and engages in higher-order thinking skills independently. This level of performance also likely indicates students are well prepared for post-secondary success in mathematics.

Number and Quantity					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**

Number and Quantity					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	N.RN.1	Uses proper notation and uses structure for integer exponents only.	Uses proper notation for radicals in terms of rational exponents but is unable to explain the meaning.	Explains and uses the meaning of rational exponents in terms of properties of integer exponents and uses proper notation for radicals in terms of rational exponents.	Proves, uses, and explains the properties of rational exponents, which are an extension of the properties of integer exponents, and extends to real-world context.
Range	N.RN.2	Converts radical notation to rational exponent notation.	Identifies equivalent forms of expressions involving rational exponents (but is not able to rewrite or find the product of multiple radical expressions).	Rewrites expressions involving radicals and rational exponents, using the properties of exponents; identifies equivalent forms of expressions involving rational exponents; and converts radical notation to rational exponent notation.	Compares contexts where radical form is preferable to rational exponents, and vice versa.
Range	N.RN.3	Explains why adding and multiplying two rational numbers results in a rational number.	Explains why adding a rational number to an irrational number results in an irrational number.	Explains why multiplying a nonzero number and an irrational number results in an irrational number.	Generalizes and develops rules for sum and product properties of rational and irrational numbers.
Range	N.CN.1	Recognizes that the square root of a negative number is not a real number.	Converts simple "perfect" squares to complex number form (*bi*), such as the square root of –25 is 5*i*.	Knows that there is a complex number *i* such that *i^2 = -1*, and identifies the proper *a + bi* form (with *a* and *b* real).	Generalizes or develops a rule that explains complex numbers and their properties.

Number and Quantity					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	N.CN.2	Adds, subtracts, and multiplies using single operations with complex numbers (e.g., $4i + 5i = 9i$).	Uses the Commutative, Associative, and Distributive properties to identify products and sums of complex numbers.	Calculates sums and products of complex numbers for multi-step problems.	Generalizes or develops rules for abstract problems, such as explaining what type of expression results, when given $(a + bi)(c + di)$.
Range	N.CN.7	Understands the meaning of a complex number.	Understands the meaning of a complex number and identifies when quadratic equations will have non-real solutions (but is unable to identify the complex solution).	Solves quadratic equations that have complex solutions.	Creates a quadratic function without *x*-intercepts, and verifies that the solutions are complex.
Range	N.CN.8	Identifies expanded forms of polynomials with complex numbers.	Expresses a quadratic as a product of two complex factors.	Creates multi-step factored forms of polynomials with complex numbers, such as *(x^2 + 4)^2—y^2.*	Generalizes and develops rules for situations involving factored and expanded forms of polynomials, with complex numbers.
Range	N.CN.9	Explains the definition of the Fundamental Theorem of Algebra.	Explains and shows the Fundamental Theorem of Algebra is true for quadratic equations (using equations with only with real roots).	Knows the Fundamental Theorem of Algebra, shows that it is true for quadratic polynomials, and explains that the Fundamental Theorem of Algebra guarantees that any quadratic function	Identifies what values of *a*, *b*, and *c* will provide rational solutions, irrational solutions, and complex solutions, given *y=ax^2+bx+c.*

Number and Quantity					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				will have a solution in the complex number system.	

Algebra					
		The Level One Student:	**The Level Two Student:**	**The Level Three Student:**	**The Level Four Student:**
Range	A.SSE.1a, & 1b	Identifies some of the basic terms (base, exponent, coefficient, and factor) of a quadratic expression.	Identifies the parts of any quadratic expression (not in a context).	Identifies and interprets the parts of quadratic expressions in terms of their context.	Identifies and interprets parts from a variety of different quadratic expressions by viewing one or more of their parts as a single entity.
Range	A.SSE.2	Can identify different forms for the same expression.	Justifies the different forms based on mathematical properties.	Recognizes equivalent forms of algebraic expressions, particularly those involving quadratic and exponential functions, and uses the structure of the expression to identify ways to rewrite it.	Rewrites algebraic expressions, including those involving quadratic and exponential functions, to equivalent forms, using the structure of the expression. Interprets different symbolic notation. Makes generalizations by rewriting expressions in context, using their structure.

Algebra					
		The Level One Student:	**The Level Two Student:**	**The Level Three Student:**	**The Level Four Student:**
Range	A.SSE.3a	Identifies the zeroes of a quadratic expression written in factored form.	Factors a quadratic expression without a leading coefficient.	Factors a quadratic expression to reveal the zeroes of the function it defines.	Explains conditions for two, one, and no real roots.
Range	A.SSE.3b	Identifies the maximum or minimum of a function, using the graph.	Identifies the maximum or minimum of a function when given in vertex form.	Completes the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.	Completes the square in a quadratic expression (where *b* is not divisible by two).
Range	A.SSE.3c	Knows the properties of exponents.	Applies the properties of exponents.	Uses the properties of exponents to transform expressions for exponential functions.	Rewrites rational exponents as radicals.
Range	A.APR.1	Adds or subtracts polynomials.	Multiplies polynomials using the distributive property and then simplifies.	Understands closure of polynomials for addition, subtraction, and multiplication.	Adds, subtracts, and multiplies a quadratic expression in a problem-solving context.
Range	A.CED.1	Identifies a linear, exponential, quadratic equation or inequality that models a given situation.	Creates one-variable linear, exponential, and quadratic equations and inequalities from contextual situations.	Solves and interprets the solution to linear, exponential, quadratic and simple rational equations and inequalities in context. Solves compound inequalities. Includes interval notation to represent inequalities.	Explains the meaning of solutions, and determines when solutions are valid in reference to context.

Algebra					
		The Level One Student:	**The Level Two Student:**	**The Level Three Student:**	**The Level Four Student:**
Range	A.CED.2	Identifies a quadratic graph that represents relationships between quantities.	Graphs a quadratic function with appropriate scales for the variables.	Writes an equation and creates a graph to represent a quadratic function, from given data.	Interprets the relationship between the independent and dependent variables in a quadratic equation, in reference to context.
Range	A.CED.4	Rearranges a simple quadratic equation (requiring one step).	Rearranges a simple quadratic equation (requiring two steps).	Rearranges formulas (especially quadratic functions) to highlight a quantity of interest, using the same reasoning as in solving equations.	Decides which variable to solve for or isolate, depending upon the given context or problem-solving situation.
Range	A.REI.4a & 4b	Solves quadratic equations by simple inspection.	Solves quadratic equations by factoring.	Solves quadratic equations by inspection (e.g., for *x2 = 49*)—taking square roots, completing the square, the quadratic formula, and factoring—as appropriate to the initial form of the equation.	Determines the most efficient method for solving a quadratic equation and justifies the choice selected.
Range	A.REI.7	Identifies by inspection the number of solutions for a system.	Finds approximate solutions of a system of equations from a graph.	Solves a simple system (consisting of a linear equation and a quadratic equation in two variables) algebraically and graphically.	Generalizes the number of solutions, given a system consisting of a linear equation and a quadratic equation.

Functions					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	F.IF.4	Identifies key features of a graph, such as intercepts, relative maxima and minima, axes of symmetry and end behavior.	Identifies key features of a function (not given as a graph), such as intercepts, relative maxima and minima, axes of symmetry, and end behavior.	Creates graphs showing key features, given a verbal description of the relationship.	Creates graphs to model a situation.
Range	F.IF.5	Identifies domains of functions, given a graph.	Identifies a domain in a particular context.	Relates the domain of a function to its graph, and, where applicable, to the quantitative relationship it describes.	Models a function in context of real-world domain.
Range	F.IF.6	Identifies the rate of change from a table that models a quadratic over a specific interval.	Estimates the rate of change of a quadratic function from a graph.	Calculates and interprets the average rate of change of a quadratic function over a specified interval. Estimates the rate of change from a graph.	Compares rates of change between different types of functions.
Range	F.IF.7a	Evaluates quadratic functions.	Identifies key features of quadratic graphs when the graph is given.	Graphs quadratic functions, showing intercepts, maxima, and minima. Graphs functions expressed symbolically and shows key features of the graph (by hand in simple cases, and using technology for more complicated cases).	Graphs and compares quadratic functions expressed in various forms.

Functions					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	F.IF.7b	Evaluates piecewise, step, and absolute value functions.	Identifies key features of piecewise, step, and absolute value graphs, when the graph is given.	Graphs piecewise-defined functions, step functions, and absolute value function, and shows intercepts, maxima, and minima. Graphs functions expressed symbolically and shows key features of the graph (by hand in simple cases, and using technology for more complicated cases).	Graphs and compares piecewise, step, and absolute value functions in various forms.
Range	F.IF.8a	Factors quadratic functions to find zeroes, when zeroes are rational numbers.	Identifies zeroes, extreme values, and symmetry of a quadratic function.	Uses the process of factoring and completing the square to show zeroes, extreme values, and symmetry of the graph, and interprets these in terms of context.	Compares different forms of quadratic functions and identifies advantages of each.
Range	F.IF.8b	Evaluates exponential function.	Identifies key features of exponential functions when the graph is given.	Uses the properties of exponents to interpret expressions for exponential functions.	Compares different forms of exponential functions and identifies advantages of each.
Range	F.IF.9	Compares the properties of two functions of the same representation (e.g., a table to a table, or an equation to an	Compares the properties of two functions of the same type with different representations (e.g., a quadratic to a	Compares properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal	Creates and compares functions, given a context.

Functions					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		equation).	quadratic, but using a table and equation).	descriptions). For example, compares a quadratic equation to an exponential graph.	
Range	F.BF.1a	Creates a function describing a linear or exponential relationship.	Creates an explicit or recursive expression for a quadratic function.	Determines an explicit expression, a recursive process, or steps for calculation, from a context.	Creates an expression, recursive process, or steps to model with mathematical representations (given a quadratic context).
Range	F.BF.1b	Combines linear and exponential functions using arithmetic operations.	Combines quadratic functions, using addition and multiplication.	Combines quadratic functions using arithmetic operations.	Combines linear, exponential, and quadratic functions, using arithmetic operations in a context.
Range	F.BF.3	Performs vertical translations on linear and exponential graphs. Describes what will happen to a linear or exponential function when $f(x)$ is replaced by $f(x) + k$ (for different values of k).	Performs translations on linear and exponential graphs. Identifies the value of k, given $f(x)$ replaced by $f(x) + k$ (on a graph of linear or exponential functions).	Identifies the effect on the graph of replacing $f(x)$ with $f(x) + k$, $kf(x)$, $f(kx)$, and $f(x + k)$, for specific values of k (both positive and negative); finds the value of k, given the graphs.	Recognizes which transformations take away the even nature of a quadratic or absolute value function.

Functions					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	F.BF.4a	Solves an equation of the form $f(x) = c$.	Solves an equation of the form $f(x) = c$, and identifies extraneous solutions.	Solves an equation of the form $f(x) = c$, for a simple function f (that has an inverse), and writes an expression for the inverse.	Solves an equation of the form $f(x) = c$, for a simple function f (that has an inverse), and writes an expression for the inverse in a context.
Range	F.LE.3	Compares the values of functions at specific points.	Compares the values of functions over various intervals.	Observes, using graphs and tables, that a quantity increasing exponentially eventually exceeds a quantity that is increasing linearly or quadratically.	Observes, explores, predicts, models, and evaluates different situations that compare linear, quadratic, and exponential functions.
Range	F.TF.8	Shows that the Pythagorean Identity is valid, given numerical values for the identity.	Finds an unknown trigonometric value by using the Pythagorean Identity.	Proves the Pythagorean Identity *sin^2x + cos^2x = 1*, and uses it to find basic trig values, given one trig value and the quadrant.	Extends the Pythagorean Identity to prove that trig ratios are constant for similar triangles.

Geometry					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	G.CO.9	Describes examples of theorems about lines and angles.	Determines the validity of statements within a given proof of a theorem about lines and angles.	Proves theorems about lines and angles.	Applies theorems about lines and angles to a real-life context.

Geometry					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	G.CO.10	Describes examples of theorems about triangles.	Determines the validity of statements within a given proof of a theorem about triangles.	Proves theorems about triangles. (Theorems include measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.)	Applies theorems about triangles to a real-life context.
Range	G.CO.11	Defines theorems about parallelograms.	Determines the validity of statements within a given proof of a theorem about parallelograms.	Proves theorems about parallelograms.	Applies theorems about parallelograms to a real-life context.
Range	G.SRT.1a,b	Identifies dilations.	Identifies the scale factors of dilations.	Verifies the properties of dilations given by a center and a scale factor, by understanding that a dilation creates parallel lines and line segments in ratios of the scale factor.	Locates the center of dilation and scale factor, given a pair of similar figures on a coordinate plane.
Range	G.SRT.2	Identifies corresponding parts of two similar figures.	Determines if two given figures are similar.	Explains that two given figures are similar in terms of similarity transformations.	Proves or disproves that two given figures are similar, using transformations and the definitions of

Geometry					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
					similarity.
Range	G.SRT.3	Identifies similarity transformations.	Identifies triangle similarity by the use of the AA criterion.	Establishes the AA criterion for two triangles to be similar by using the properties of similarity transformations.	Proves that two triangles are similar if two angles of one triangle are congruent to two angles of the other triangle, using the properties of similarity transformations.
Range	G.SRT.4	Defines theorems about triangles.	Determines the validity of statements within a given proof of a theorem about triangles.	Proves theorems about triangles. (Theorems include a line parallel to one side of a triangle divides the other two proportionally and conversely; the Pythagorean Theorem proved using triangle similarity.)	Applies theorems about triangles to a real-life context.
Range	G.SRT.5	Finds measures of sides and angles of congruent and similar triangles.	Solves problems involving triangles, using congruence and similarity criteria.	Solves problems and proves relationships in geometric figures by using congruence and similarity criteria for triangles. Includes problems from context.	Proves conjectures about congruence or similarity in geometric figures, using congruence and similarity criteria for triangles. Includes problems from context.

Geometry					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	G.SRT.6	Understands that, in similar triangles, corresponding angles are congruent and ratios of corresponding sides are equal.	Defines sine, cosine, and tangent as the ratio of sides of a right triangle.	Understands that the ratio of two sides in one triangle is equal to the ratio of the corresponding two sides of all other similar triangles, leading to definitions of trigonometric ratios for acute angles.	Determines the similarity of right triangles by comparing the trigonometric ratios of the corresponding sides.
Range	G.SRT.7	Understands that the acute angles of a right triangle are complementary.	Identifies the relationship between the sine and cosine of the acute angles of a right triangle.	Explains the relationship between the sine and cosine of complementary angles.	Solves for missing angles of right triangles using sine and cosine.
Range	G.SRT.8	Solves right triangles using the Pythagorean Theorem.	Applies the Pythagorean Theorem in real-life and mathematical contexts.	Solves right triangles using trigonometric ratios and the Pythagorean Theorem in applied/contextual problems.	Models solutions to situations, using trigonometric ratios and the Pythagorean Theorem, by constructing equations that can be used to solve the problem. Includes problems from context.
Range	G.C.1	Knows the definition of a circle as a set of points equidistant from a given point.	Recognizes that all circles are similar.	Proves that all circles are similar.	Solves applied math problems, using the fact that all circles are similar.
Range	G.C.2	Identifies inscribed angles, radii, and	Recognizes relationships among	Describes relationships among inscribed angles,	Solves problems using relationships among

Geometry					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		chords in circles.	inscribed angles, radii, and chords in circles.	radii, and chords in circles.	inscribed angles, radii, and chords in circles.
Range	G.C.3	Identifies inscribed and circumscribed circles of a polygon.	Constructs the inscribed and circumscribed circles of a triangle.	Proves properties of angles for a quadrilateral inscribed in a circle.	Proves the unique relationships between the angles of a triangle or quadrilateral inscribed in a circle.
Range	G.C.4	Identifies a tangent line from a point outside a given circle to the circle.	Sketches an approximate tangent line from a point outside a given circle to the circle.	Constructs a tangent line from a point outside a given circle to the circle.	Constructs a line that is tangent to two given circles.
Range	G.C.5	Defines a sector area of a circle as a proportion of the entire circle.	Develops the definition of radians as a unit of measure by relating to arc length.	Derives the formula for the area of a sector, and derives, using similarity, the fact that the length of the arc intercepted by an angle is proportional to the radius.	Proves that the length of the arc intercepted by an angle is proportional to the radius, with the radian measure of the angle being the constant of proportionality.
Range	G.GPE.1	Identifies the center and radius of a circle, given an equation written in $(x—h)^2 + (y—k)^2 = r^2$ form.	Creates the equation for a circle, when given the center and radius.	Completes the square to find the center and radius of a circle given by its equation.	Determines the equation of a circle, given points of tangency.
Range	G.GPE.2	Identifies the directrix and focus of a parabola when given its graph.	Identifies the directrix and focus of a parabola when given the equation.	Derives the equation of a parabola, given a focus and directrix.	Justifies conditions for when a point is or is not part of a parabola, given information about the focus and directrix.

Geometry					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	G.GPE.6	Finds the point on a line segment that partitions the segment in a given ratio, given a visual representation of the line segment.	Finds the point on a line segment that partitions the segment in a given ratio, given coordinates for the line segment.	Finds the point on a directed line segment (between two given points) that partitions the segment in a given ratio.	Constructs a line segment that is partitioned in a given ratio.
Range	G.GPE.4	Solves problems algebraically, using geometric theorems involving a circle on the coordinate plane.	Proves simple geometric theorems using coordinates, when given a visual representation on the coordinate plane.	Proves simple geometric theorems algebraically using coordinates, such as proving a point lies on a given circle.	Constructs visual representations on the coordinate plane that meet given conditions for coordinates.
Range	G.GMD.1	Informally describes the formulas for the circumference and area of a circle.	Informally describes the formulas for the volume of a cylinder, pyramid, and cone by the use of dissection arguments.	Explains the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone.	Justifies the formulas for the circumference of a circle; area of a circle; and volume of a cylinder, pyramid, and cone.
Range	G.GMD.3	Substitutes given dimensions into the formulas for the volume of cylinders, pyramids, cones, and spheres.	Computes the volume of cylinders, pyramids, cones, and spheres, given a graphic.	Solves problems using the volume formulas for cylinders, pyramids, cones, and spheres.	Finds the volume of cylinders, pyramids, cones, and spheres in a real-life context.

Statistics and Probability					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	S.CP.1	Identifies an event as a subset of a set of outcomes (a sample space).	Identifies or shows relationships between sets of events, using Venn diagrams.	Describes events as subsets of sample space using characteristics of the outcomes, or using appropriate set language and appropriate set representations (unions, intersections, or complements).	Using complex representations, makes sense of outcomes in context (e.g., unions of all subsets would equal the sample space).
Range	S.CP.2	Calculates probabilities for events (including joint probabilities).	Identifies whether events are independent or dependent.	Understands that two events, *A* and *B*, are independent, if the probability of *A* and *B* occurring together is the product of their probabilities, and uses this characterization to determine if they are independent.	Contrasts several events in a sample space and determines if they are independent by calculating the event probabilities.
Range	S.CP.3	Understands conditional probability and how it applies to real life events.	Calculates conditional probabilities.	Determines the independence of *A* and *B* using conditional probabilities.	Identifies and interprets independence of events in contextual problems, using conditional probabilities.
Range	S.CP.4	Constructs two-way frequency tables of data.	Approximates conditional probabilities using two-way frequency tables.	Interprets two-way frequency tables of data and uses them to decide if events are independent.	Constructs, interprets, and finds missing values of a two-way frequency table.

Statistics and Probability					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	S.CP.5	Expresses conditional probabilities and independence using probability notation.	Interprets conditional probabilities and independence in context.	Recognizes and explains the concepts of conditional probability and independence, in everyday language and everyday situations.	Using concepts of conditional probability and independence, extrapolates the meaning behind probabilities that were calculated from real-world context.
Range	S.CP.6	Distinguishes between compound and conditional probability scenarios.	Finds the conditional probability of *A*, given *B* as the fraction of *B*'s outcomes that also belong to *A*, using a two-way table, Venn diagram, or tree diagram.	Interprets conditional probability in terms of a uniform probability model.	Compares and contrasts conditional probabilities and compound probabilities (e.g., from a table, determine the probability of getting the flu, and then compare that to the probability of getting the flu given the individual never washes their hands).
Range	S.CP.7	Recalls the Addition Rule.	Applies the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ to calculate a probability, in a given context.	Applies the general Addition Rule to a uniform probability model, and interprets the answer in terms of the model.	Applies the Addition Rule to different representations of probability models (Venn diagram, tree diagram, and two-way tables), and interprets the answer in an abstract or real-world

Statistics and Probability					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
					context.
Range	S.CP.8	Recalls the Multiplication Rule.	Applies the Multiplication Rule, $P(A \text{ and } B) = P(A) \cdot P(B\|A) = P(B) \cdot P(A\|B)$, to calculate a probability in a given context.	Applies the general Multiplication Rule to a uniform probability model, and interprets the answer in terms of the model.	Applies the Multiplication Rule to different representations of probability models (Venn diagram, tree diagram, and two-way tables), and interprets the answer in an abstract or real-world context.
Range	S.CP.9	Understands that a permutation is a rearrangement of the elements of an ordered list. Understands that a combination is the number of ways to choose *r* items from a set of *n* elements.	Calculates probabilities using the permutation and combination formulas.	Uses permutations and combinations to compute probabilities of compound events and solve problems.	Uses permutations and combinations to compute probabilities of compound events and solve problems in a complex context, and extends ideas to real-world models.
Range	S.MD.1	Distinguishes between fair games and unfair games.	Analyzes the fairness of games by determining the probabilities of the possible outcomes.	Uses probabilities to make fair decisions (drawing by lots, using a random number generator).	Is able to create a game, activity, problem, or event, based on random events, and writes rules that are based on fair and non-fair

Statistics and Probability					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
					outcomes.
Range	S.MD.2	Analyzes decisions and strategies using basic probability concepts, where scaffolding and guided information is given.	Informally assesses the outcome of decisions or strategies, when presented with data with context.	Analyzes decisions and strategies using probability concepts.	Analyzes experimental designs and sampling strategies using probability concepts, and supports claims using specific probability calculations.

Secondary Math III

SEC III PLD	Standard	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy		The Level 1 student is below proficient in applying the mathematics knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for his or her grade level, is likely able to partially access grade-level content, and engages with higher-order thinking skills with extensive support.	The Level 2 student is approaching proficient in applying the mathematics knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for his or her grade level, is likely able to access grade-level content, and engages in higher-order thinking skills with some independence and support.	The Level 3 student is proficient in applying the mathematics knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for his or her grade level, is able to access grade-level content, and engages in higher-order thinking skills with some independence and minimal support. This level of performance also likely indicates students are sufficiently prepared for post-secondary success in mathematics.	The Level 4 student is highly proficient in applying the mathematics knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for his or her grade level, is able to access above grade-level content, and engages in higher-order thinking skills independently. This level of performance also likely indicates students are well prepared for post-secondary success in mathematics.

Number and Quantity/ALGEBRA					
SEC III PLD	**Standard**	**Below Proficient**	**Approaching Proficient**	**Proficient**	**Highly Proficient**
Range	N.CN.8	Adds, subtracts, and multiplies two complex, linear factors.	Rewrites a quadratic as the product of two complex linear factors.	Multiplies three or more linear factors, at least two of which are complex, to form a polynomial. Divides a quadratic by a complex linear factor.	Rewrites a polynomial of degree 3 or higher as a product of linear factors that may or may not be complex. Divides a polynomial of degree 3 or higher by a complex linear factor.
Range	N.CN.9	Identifies the maximum number of roots possible for a given polynomial.	Given a specific polynomial, identify all possible combinations for the number of real roots and the number of complex roots.	Given the graph of a polynomial of a known degree, identifies the number of real roots and the number of complex roots (includes the concept of multiplicity.)	Given the graph of a known polynomial of degree 3 or higher, with all real roots shown explicitly on the graph, finds the remaining roots of the polynomial.
Range	A.SSE.1ab	Identifies parts of an expression, such as terms, factors, numeric coefficients and exponents.	Interprets parts of an expression (e.g., terms, factors, numeric coefficients and exponents, including those involving radical functions) by viewing one or more of their parts as a single entity.	Interprets complicated expressions with variable coefficients and exponents (including those involving radical, rational, or logarithmic functions) by viewing one or more of their parts as a single entity. Determines the practical domain of an expression in a given	Interprets complicated expressions that model natural phenomena, including those involving radical, rational, or logarithmic functions, and explains the role of the various parts of the expression in context of the problem situation.

Number and Quantity/ALGEBRA					
SEC III PLD	**Standard**	**Below Proficient**	**Approaching Proficient**	**Proficient**	**Highly Proficient**
				problem situation.	
Range	A.SSE.2	Identifies structure used to rewrite polynomial expressions.	Identifies structure used to rewrite rational and polynomial expressions.	Recognizes equivalent forms of complicated expressions, particularly those involving rational or polynomial functions, and uses the structure of the expression to identify ways to rewrite it.	Rewrites complicated expressions (including those involving rational or polynomial functions) to equivalent forms using the structure of the expression. Makes generalizations by rewriting expressions in context using their structure.
Range	A.SSE.4	Writes a geometric sequence using a formula and finds the sum by addition.	Finds the sum of a simple expression written in summation notation (e.g. Sum*(n=1 to n = 4 of* $\sum$*n)*)	Writes a formula for the sum (when given the geometric series) and uses the formula to solve problems.	Writes a geometric series from a context, using summation notation, and finds its sum.
Range	A.APR.1	Adds, subtracts, or multiplies monomials.	Adds, subtracts, or multiplies polynomial expressions with single variables and at least two terms.	Adds, subtracts, and multiplies polynomials, where at least one polynomial is degree 3 or higher.	Adds, subtracts, and multiplies polynomials of degree 3 or higher in a problem-solving context.

Number and Quantity/ALGEBRA					
SEC III PLD	**Standard**	**Below Proficient**	**Approaching Proficient**	**Proficient**	**Highly Proficient**
Range	A.APR.2	Given a polynomial in factored form, identifies the zeroes of the polynomial.	Divides a polynomial by a factor $(x – a)$.	Using the Remainder Theorem, decides whether $(x – a)$ is factor of a given polynomial.	Explains why $(x – a)$ is a factor of $p(x) = 0$ when $p(a) = 0$.
Range	A.APR.3	Identifies the zeroes of a function from a graph.	Uses zeroes to sketch the graph of a function given in factored form.	Factors a polynomial and uses zeroes to sketch a graph of the function.	Identifies zeroes from the graph and uses zeroes to construct the function.
Range	A.APR.4	Identifies a polynomial identity.	Justifies an algebraic identity by testing with specific numbers.	Proves polynomial identities and uses them to describe numerical relationships.	Algebraically justifies the validity of polynomial identities. Uses the identity to describe numerical relationships in a given context.
Range	A.APR.5	Expands *(x + a)^2* to its equivalent trinomial form, where *a* is an integer.	Expands *(ax + b)^2* to its equivalent trinomial form, where *a* and *b* are integers.	Expands *(x + y)^n* to its reduced polynomial form using the Binomial Theorem, where *x* and *y* are integers or a single variable, and *n* is a positive integer.	Expands *(ax + by)^n* to its reduced polynomial form using the Binomial Theorem.

Number and Quantity/ALGEBRA					
SEC III PLD	**Standard**	**Below Proficient**	**Approaching Proficient**	**Proficient**	**Highly Proficient**
Range	A.APR.6	Rewrites simple rational expressions in different forms, such as rewriting *a(x)/x* in the form *q(x) + 0*, where *a(x)* and *q(x)* are polynomials.	Rewrites simple rational expressions in different forms, such as rewriting *a(x)/x* in the form *q(x) + r/x*, where *a(x)* and *q(x)* are polynomials and *r* is an integer.	Rewrites simple rational expressions in different forms, such as rewriting *a(x)/b(x)* in the form *q(x) + r(x)/b(x)*, where *a(x), b(x), q(x)* and *r(x)* are polynomials, with the degree of *r(x)* less than the degree of *b(x).*	Rewrites simple rational expressions in different forms such as rewriting *a(x)/b(x)* in the form *q(x) + r(x)/b(x)* where *a(x), b(x), q(x)* and *r(x)* are polynomials, with the degree of *r(x)* less than the degree of *b(x)*, and *b(x)* with degree 2 or above.
Range	A.APR.7	Adds or subtracts two rational expressions with a common denominator.	Multiplies two rational expressions, factoring when necessary in order to recognize common factors.	Adds, subtracts, multiplies, and divides nonzero rational expressions.	Understands and explains that rational expressions form a system analogous to the integers.
Range	A.CED.1	Identifies a linear, quadratic, or exponential equation or inequality that models a given situation.	Identifies a rational, radical, polynomial, trigonometric, or logarithmic equation or inequality that models a given situation.	Creates a rational, radical, polynomial, trigonometric, or logarithmic equation or inequality, and uses it to solve the problems.	Explains the meaning of solutions (including extraneous), in reference to context.
Range	A.CED.2	Identifies a linear, quadratic, or exponential graph that represents relationships between quantities.	Identifies a rational, radical, polynomial, trigonometric, or logarithmic graph that represents relationships between quantities.	Creates rational, radical, polynomial, trigonometric, or logarithmic equations and graphs that represent relationships between quantities.	Interprets the relationship between the independent and dependent variables, in reference to context.

Number and Quantity/ALGEBRA					
SEC III PLD	**Standard**	**Below Proficient**	**Approaching Proficient**	**Proficient**	**Highly Proficient**
Range	A.CED.3	Identifies whether a proposed solution is viable or non-viable for a system of equations with given constraints.	Identifies domain, range, asymptotes, and points of discontinuity for a system of equations.	Writes a system of equations or inequalities to represent constraints, and interprets solutions.	Interprets solutions as viable or non-viable based on constraints, in reference to context.
Range	A.CED.4	Rearranges simple formulas (requiring only one step) to highlight a quantity of interest.	Rearranges simple formulas (requiring two steps) to highlight a quantity of interest.	Rearranges simple rational, exponential, logarithmic, or multi-step formulas to highlight a quantity of interest.	Rearranges more complex formulas (such those formed from compositions) to highlight a quantity of interest.
Range	A.REI.2	Identifies simple rational and radical equations.	Identifies the number of solutions and extraneous solutions, given a simple rational or radical equation.	Solves simple rational and radical equations and identifies extraneous solutions.	Solves complicated rational and radical equations and justifies extraneous solutions.
Range	A.REI.11	Finds the solution to $f(x) = g(x)$, where $f(x)$ and $g(x)$ are linear, and the solution to quadratic functions are presented in a graph.	Finds the solution to $f(x) = g(x)$, where $f(x)$ and $g(x)$ are absolute value and exponential functions.	Finds the solution to $f(x) = g(x)$, where $f(x)$ and $g(x)$ are polynomial, rational, radical, absolute value, exponential, or logarithmic functions presented in different forms. Justifies why the x-coordinates of the points of intersection are solutions to the equation $f(x) = g(x)$.	Interprets solutions to $f(x) = g(x)$, where $f(x)$ and $g(x)$ are polynomial, rational, radical, absolute value, exponential, or logarithmic functions presented in different forms, in reference to context.

Functions					
SEC III PLD	**Standard**	**Below Proficient**	**Approaching Proficient**	**Proficient**	**Highly Proficient**
Range	F.IF.4	Interprets key features of graphs and tables that model a linear function. Sketches graphs showing key features, given a verbal description of a linear relationship.	Interprets key features of graphs and tables that model a quadratic function. Sketches graphs showing key features, given a verbal description of a quadratic relationship.	Interprets key features of graphs and tables that model a function that is neither linear nor quadratic. Sketches graphs showing key features, given a verbal description of a relationship that is not linear or quadratic.	Interprets complex features of a function modeling a real-world context, given a verbal description.
Range	F.IF.5	Expresses the domain of a linear function from its graph (in a given context), using either set or interval notation.	Expresses the domain of a quadratic function from its graph (in a given context), using either set or interval notation.	Expresses the domain of a function that is neither linear nor quadratic from its graph (in a given context), using either set or interval notation.	Relates the domain of a function to its graph in a given context.
Range	F.IF.6	Calculates and interprets the average rate of change of a linear function over a specified interval from a graph of the function.	Calculates and interprets the average rate of change of a quadratic function over a specified interval. Estimates the rate of change from a graph of a quadratic function.	Calculates and interprets the average rate of change of a function (non-linear and non-quadratic) over a specified interval. Estimates the rate of change from a graph.	Compares the average rate of change of two non-linear functions over a specified interval.
Range	F.IF.7b	Graphs basic square root, cube root, piece-wise, step-wise, or absolute value	Graphs square root, cube root, piece-wise, step-wise, or absolute value functions (with	Graphs complex square root, cube root, piece-wise, step-wise, or absolute value	Explains how key features can be used to quickly sketch square root, cube root, piece-

Functions					
SEC III PLD	**Standard**	**Below Proficient**	**Approaching Proficient**	**Proficient**	**Highly Proficient**
		functions, and describes key features.	one transformation), and describes key features.	functions, and describes key features.	wise, step-wise, or absolute value functions.
Range	F.IF.7c	Graphs quadratic functions and correctly identifies zeroes and describes end behavior.	Chooses the graph of a polynomial function (degree 3 or higher) that matches given key features.	Graphs a polynomial function (degree 3 or higher); correctly identifies zeroes and describes end behavior.	Identifies additional features (such as multiplicity of zeroes, locations of minimums and maximums, domain and range appropriate to a context, or intervals where the function is increasing or decreasing) for a polynomial function of degree 3 or higher.
Range	F.IF.7e	Graphs basic exponential, logarithmic, and trigonometric functions, and describes key features.	Graphs exponential, logarithmic, and trigonometric functions (with one transformation), and describes key features.	Graphs complex exponential and logarithmic functions and shows intercept and end behaviors. Graphs complex trigonometric functions and shows period, midline, and amplitude.	Explains how key features can be used to quickly sketch exponential, logarithmic, or trigonometric functions.
Range	F.IF.8	Expresses linear and quadratic functions in equivalent forms to reveal their properties.	Expresses a polynomial function (of degree 3 or higher) and exponential functions in equivalent forms to reveal their properties.	Expresses any function (including trigonometric, logarithmic, and simple rational functions) in equivalent forms to	Expresses complex functions in a different form to reveal different properties. Explains how expressing a function in

Functions					
SEC III PLD	**Standard**	**Below Proficient**	**Approaching Proficient**	**Proficient**	**Highly Proficient**
				reveal different properties.	a certain form helps to solve a real-world problem.
Range	F.IF.9	Compares the properties of two functions (linear or exponential), each represented in two different ways (algebraically, graphically, numerically in tables, or by verbal descriptions).	Compares the properties of two quadratic functions, each represented in two different ways (algebraically, graphically, numerically in tables, or by verbal descriptions).	Compares the properties of two functions (non-linear, non-quadratic, and non-exponential), each represented in two different ways (algebraically, graphically, numerically in tables, or by verbal descriptions).	Explains the benefits and drawbacks of different representations of a function by comparing two different representations.
Range	F.BF.1b	Adds a constant to a function or multiplies a function by a constant to model a real-world context.	Applies arithmetic operations to multiple linear or exponential functions to build a new function to model a real-world context.	Combines standard functions using arithmetic operations.	Determines whether combining two functions is appropriate to a context and performs the correct operations.
Range	F.BF.3	For a linear and exponential function, $f(x)$, identifies the effect on the graph of replacing $f(x)$ with $f(x) + k$, $k(f(x))$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative).	For quadratic and logarithmic functions, $f(x)$, identifies the effect on the graph of replacing $f(x)$ with $f(x) + k$, $k(f(x))$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative).	For any function, $f(x)$, identifies the effect of the graph of replacing $f(x)$ with $f(x) + k$, $k(f(x))$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative). Estimates the value of k	Recognizes even and odd functions from their graphs and algebraic expressions.

Functions					
SEC III PLD	**Standard**	**Below Proficient**	**Approaching Proficient**	**Proficient**	**Highly Proficient**
		Estimates the value of *k* given the graphs. Compares two functions of the same kind that differ by a transformation, and identifies the transformation.	Estimates the value of *k* given the graphs. Compares two functions of the same kind that differ by a transformation, and identifies the transformation.	given the graphs. Compares two functions of the same kind that differ by a transformation, and identifies the transformation.	
Range	F.BF.4a	Finds inverse functions for linear functions. Identifies whether a function has an inverse from its graph.	Identifies whether a function has an inverse from any representation.	Finds inverse function for a simple non-linear function, if it exists.	Restricts the domain in order to find an inverse.
Range	F.LE.4	Evaluates a logarithm using technology.	Expresses a logarithmic expression (with no variables) in equivalent exponential form.	Expresses the solution to *ab^(ct) = d* as a logarithm (where *b* is 2, 10, or *e*). Evaluates a logarithm using technology.	Apply logarithms to solve for variables in exponents for contextual problems (e.g., continuous interest or uninhibited growth/decay).
Range	F.TF.1	Knows that a full rotation of a circle is 2∏ radians.	Locates a radian measure between 0 and 2∏ on a unit circle.	Locates any radian measure on a unit circle.	Explains that the radian measure of an angle is equivalent to the length of the arc on the unit circle subtended by the angle.

Functions					
SEC III PLD	**Standard**	**Below Proficient**	**Approaching Proficient**	**Proficient**	**Highly Proficient**
Range	F.TF.2	Identifies the sine and cosine of angles in the first quadrant of a unit circle. Recognizes that the coordinates of any point on the unit circle may be defined as *(cos* θ, *sin* θ*).*	Identifies the sine and cosine of angles on the unit circle.	Explains that one can travel around the unit circle any real number of units and arrive at a set of coordinates that defines trigonometric functions for all real numbers.	Explains that one can travel around any circle any real number of units and arrive at a set of coordinates that defines trigonometric functions for all real numbers.
Range	F.TF.3	Finds side lengths of a special right triangle, given one side.	Finds trigonometric values for ∏*/3*, ∏*/4*, and ∏*/6* (given a special right triangle).	Uses special right triangles to determine the values of the sine, cosine, and tangent on the unit circle.	Uses the unit circle to express the values of sine, cosine, and tangent for ∏ – *x*, ∏ + *x*, and *2*∏ – *x*, in terms of their values for *x* (where *x* is any real number).
Range	F.TF.5	Identifies the amplitude, frequency, and midline of a given trigonometric function.	Writes a trigonometric function (given a specific amplitude, frequency, and midline).	Writes an appropriate trigonometric function to model a real-world context (where the information about amplitude, frequency, and midline are given clearly).	Analyzes a real-world context to determine which information can be used to write a trigonometric function. Uses this analysis to model the context with a trigonometric function.

Geometry					
SEC III PLD	**Standard**	**Below Proficient**	**Approaching Proficient**	**Proficient**	**Highly Proficient**
Range	G.SRT.9	Finds the area of a triangle, given the formula *A = ½ab sin(C)* (given the dimensions).	Determines the side and angle relationships using a given figure. Finds the area of the triangle using the formula *A = ½ab sin(C).*	Derives the formula *A = ½ab sin(C)* for the area of a triangle. Expresses the area of any triangle in terms of the sides and angles, and includes an appropriately labeled figure.	Derives and apply the formula, *A = ½ab sin(C)*, within a given context.
Range	G.SRT.10	Uses the Laws of Sines or Cosines to solve for a missing side in a triangle.	Uses the Laws of Sines or Cosines to solve for a missing angle in a triangle.	Proves the Laws of Sines and Cosines and uses them to solve problems.	Proves the Law of Sines or Law of Cosines. Uses the Law of Sines with the ambiguous case.
Range	G.SRT.11	Uses the Law of Sines or Cosines to solve for a missing value in a triangle, when prompted to use the correct Law, given a labeled diagram.	Using the appropriate Law, solves for a missing value in a triangle in a context, given a labeled diagram for the context.	Using the appropriate Law, solves for a missing value in a triangle in a context, without a labeled diagram being provided.	Using the appropriate Law, solves for a missing value in a triangle in a context, which could be an example of the ambiguous case.
Range	G.GMD.4	Identifies the shapes of two-dimensional cross-sections formed by a vertical or horizontal plane.	Identifies a three-dimensional object generated by rotations of a simple two-dimensional object about a line of symmetry of the object.	Identifies the shapes of two-dimensional cross-sections of three-dimensional objects. Identifies a three-dimensional object generated by rotations of two-dimensional	Sketches the shape of a particular two-dimensional cross-section of a three-dimensional shape. Sketches the three-dimensional object that results from the rotation

Geometry					
SEC III PLD	**Standard**	**Below Proficient**	**Approaching Proficient**	**Proficient**	**Highly Proficient**
				objects.	of a given two-dimensional object.
Range	G.MG.1	Identifies geometric shapes that model a real-world object.	Uses a geometric shape modeled in a simple real-world object to determine the appropriate measures.	Uses geometric shapes, measures, and properties to model and describe objects.	Uses composite geometric shapes, measures, and properties to model and describe objects.
Range	G.MG.2	Calculates density based on area, when a formula is given.	Calculates density based on volume (when a formula is given), and identifies appropriate unit rates.	Uses properties of density based on area and volume to model a situation in context.	Compares and contrasts density rates in a modeling context.
Range	G.MG.3	Identifies relevant geometric models for use in solving a design problem.	Compares quantitatively different proposed solutions to a design problem, using geometric properties of the solution.	Designs a structure to meet constraints and optimization requirements.	Designs a composite structure to meet constraints and optimization requirements.

Statistics and Probability					
SEC III PLD	**Standard**	**Below Proficient**	**Approaching Proficient**	**Proficient**	**Highly Proficient**
Range	S.ID.4	Labels a blank normal distribution curve with the appropriate mean and standard deviations.	Uses the Empirical Rule to label a blank normal distribution curve with the appropriate percentages (68%–95%–99.7%).	Uses the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages using the Empirical Rule.	Additionally, recognizes that there are data sets for which such a procedure is not appropriate. Uses technology or tables to estimate areas under the normal curve.
Range	S.IC.1	Describes why a particular sample is not representative.	Describes why a particular sample is not random. Determines what inferences can be made about a population from a given representative random sample.	Explains why a representative random sample is appropriate to make inferences about a population. Explains how a sample may be random but not representative of the underlying population, or how a sample may be representative but not random.	Explains how to select a representative random sample from a particular population.
Range	S.IC.2	Given two results, decides which is more consistent with a specific data-generating process.	Explains why a specific model is not consistent with given data-generated results.	Decides if a specified model is consistent with results from a given data-generating process, such as a simulation.	Designs a data-generating process (e.g. simulation) to evaluate whether a specified model is consistent with given results.
Range	S.IC.3	Identifies whether random sampling was used in a particular study.	Matches a given study to its category: survey, observational study, or experiment.	Explains the differences among sample surveys, experiments, and	Explains the purposes and limitations of sample surveys, experiments, and

Statistics and Probability					
SEC III PLD	**Standard**	**Below Proficient**	**Approaching Proficient**	**Proficient**	**Highly Proficient**
				observational studies. Explains how randomization relates to each type of study.	observational studies. Designs an appropriate study for a given situation.
Range	S.IC.4	Chooses an interval that represents possible population proportions or means, for a particular sample proportion or mean.	Interprets whether a particular proportion is possible, given a sample proportion or mean in context and a margin of error.	Uses +/–2 standard deviations from a sample proportion or mean to create an interval that can be used to estimate possible population proportion or mean.	Develops a margin of error for a given survey through use of a simulation model.
Range	S.IC.5	Determines if the differences between two treatments are typically positive, negative, or centered about zero, given results of a randomized experiment comparing the treatments.	Calculates statistics related to a randomized experiment using two treatments.	Compares the results of a randomized experiment using two treatments to simulations in order to determine if differences in the treatments are significant.	Designs and runs a simulation to build a distribution for possible differences, for a given experiment.
Range	S.IC.6	Determines the question being investigated and the groups that were considered, given a report based on data.	Determines the way randomization was used in the design and the results, given a report based on data.	Evaluates the reasonableness of a report based on data.	Interprets the consequences of the results, given a report based on data, and discusses the statistical validity of the findings.

Chemistry

PLD Type	Objective	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy	*Note: Students who are designated Below Proficient (Level 1) will be able to perform up to the level described by the Proficiency Level Descriptor (PLD). Level 1 is the lowest reported proficiency designation; some students may perform below the provided description.*	The Level 1 student is below proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for his or her grade level, is likely able to partially access grade-level content, and engages with higher-order thinking skills with extensive support.	The Level 2 student is approaching proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for his or her grade level, is likely able to access grade-level content, and engages in higher-order thinking skills with some independence and support.	The Level 3 student is proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for his or her grade level, is able to access grade-level content, and engages in higher-order thinking skills with some independence and minimal support.	The Level 4 student is highly proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for his or her grade level, is able to access above grade-level content, and engages in higher-order thinking skills independently.

Structure & Origin of Matter					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	I.1 Recognize the origin and distribution of elements in the universe.	Identifies that all elements formed in stars.	Recognizes that all matter in the universe is composed of the same elements.	Identifies the distribution of elements. Compares the occurrence of heavier elements on Earth and	Relates the assumption that matter in the universe has a common origin to matter on Earth and the distribution of

Structure & Origin of Matter					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				in the universe.	elements in the universe.
Range	I.2 Relate the structure, behavior, and scale of an atom to the particles that compose it.	Identifies protons, neutrons, and electrons as parts of the atom. Identifies the protons of an element. Recognizes that the current model of the atom is based on historical evidence.	Matches the charge and position of protons, neutrons, and electrons. Given texts that describe a discovery, makes connection to how the model of the atom has changed. States that there is a fixed number of atoms in a mole.	Compares the relative sizes of protons, neutrons, and electrons. Explains the relationship between proton number and an element's identity. When given text, evaluates the limitation of atomic models. Relates the mass and the number of atoms to gram-sized quantities of matter in a mole.	Explains why atomic models are limited and gives specific evidence. Determines mass, number of atoms, or number of moles in a sample.
Range	I.3 Correlate atomic structure and the physical and chemical properties of an element to the position of the element on the periodic table.	Identifies the number of protons in atoms of an element using the periodic table. Recognizes that position on the periodic table is based on properties of the elements.	Identifies the number of electrons in neutral atoms of an element using the periodic table. Recognizes that different isotopes have different masses. Explains that an element's properties determine its position on the period table.	Determines the number of neutrons in a given isotope. Compares the protons and neutrons of different isotopes of the same element. Explains that properties of elements are similar going down groups and properties of elements change across periods.	Determines the number of neutrons in atoms using the periodic table. Makes the connection between the masses of isotopes and on the periodic table. Compares and contrasts the properties exhibited by elements within groups of the periodic table.

Structure & Origin of Matter					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				Generalizes the trends of reactivity within a group.	Generalizes the trends of reactivity between groups.

Atoms & Energy					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	II.1 Evaluate quantum energy changes in the atom in terms of the energy contained in light emissions.	Recognizes that light is energy. Recognizes that different elements have different emission spectra.	Recognizes that there is a relationship between wavelength and energy of electromagnetic waves. Recognizes that the light being given off in an emission spectrum is energy. Recognizes that different colors have different energies.	Given a graph, describes the relationship between wavelength and energy. Given experimental evidence, identifies an unknown element from its emission spectrum. Ranks colors of light based on energy. Indicates if energy is being absorbed or released by electrons from emission/absorption spectra evidence.	Calculates and describes the wavelength, energy, or frequency of a wave. Explains the connection between electron movement and the energy of the associated photons.
Range	II.2 Evaluate how changes in the nucleus of an atom result in emission of radioactivity.	Recognizes that radioactive elements give off radiation. Identifies that different types of radiation are classified by energy. Recognizes that a large amount of energy is given off in a nuclear reaction. Recognizes that	Recognizes alpha, beta, and gamma radiation as forms of radioactive decay. Identifies the mass, energy, and penetrating power of alpha, beta, and gamma radiation. Recognizes that there is a difference in the amount of energy being given off between a nuclear reaction and a chemical reaction.	Recognizes and explains that radioactive particles and electromagnetic radiation are products of the decay of an unstable nucleus. Compares the mass, energy, and penetrating power of alpha, beta, and gamma radiation. Compares the amount of energy released in a nuclear reaction vs. a chemical reaction. Given text, identifies the effects of nuclear radiation on organisms.	Predicts the products of the decay of an unstable nucleus. Determines the type of radiation from data about penetration power. Compares the dangers of the three types of radiation to organisms. Compares the strong nuclear force to the amount of energy released in nuclear reactions. Given text, evaluates the effects of nuclear

Atoms & Energy					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		nuclear radiation affects organisms.	Recognizes that overexposure to nuclear radiation is harmful to organisms.		radiation on organisms.

Chemical Bonds					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	III.1 Analyze the relationship between the valence (outermost) electrons of an atom and the type of bond formed between atoms.	Identifies that ions have an electrical charge. Identifies the three types of chemical bonds. Recognizes that electrons are involved in bonds.	Defines valence electron. Recognizes that charges on ions come from gaining and losing electrons. Identifies the type of chemical bond based on the behavior of valence electrons. Recognizes that different types of bonds have different strengths.	Determines the number of valence electrons from the periodic table. Predicts the charge of an atom when it forms an ion. Predicts the type of bond based on the behavior of valence electrons. Compares the different bond strengths relative to type of bond.	Based on the number of valence electrons, predicts reactivity. Understands why the group has a specific charge.

Chemical Bonds					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	III.2 Explain that the properties of a compound may be different from those of the elements or compounds from which it is formed.	Recognizes that chemical formulas are made of chemical symbols. Recognizes that different compounds have different physical and chemical properties.	Given a chemical formula, determines the number of atoms of each element that are represented. Recognizes that compounds made of elements in differing proportions have different physical and chemical properties.	Explains that each chemical formula is unique to a specific compound. Compares the physical and chemical properties of a compound to the elements that form it.	Writes the chemical formulas of unfamiliar compounds. Infers physical and chemical properties of unfamiliar compounds based on similarities to familiar compounds.
Range	III.3 Relate the properties of simple compounds to the type of bonding, shape of molecules, and intermolecular forces.	Recognizes that molecules with different types of bonds have different types of physical properties. Recognizes that molecules are polar or nonpolar. Recognizes that water has unique properties.	Matches the physical properties of a molecule to the type of bond making up the molecule. Recognizes that molecular shape produced by the orientation of bonds affects polarity. Recognizes that there is a connection between water's unique properties and hydrogen bonding.	Given data, determines the physical properties of molecules with different bond types. Given a model, describes the shape and polarity of water, ammonia, and methane molecules. Identifies how hydrogen bonding affects water's properties.	Identifies the types of bonds ofunknown compounds based on experimental data. Explains why water has its unique properties.

Chemical Reactions					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	IV.1 Identify evidence of chemical reactions and demonstrate how chemical equations are used to describe them.	Recognizes that a visual change in the appearance of a substance can indicate a chemical reaction. Recognizes that a chemical reaction can be represented by a chemical equation. Recognizes that chemical reactions occur every day.	Recognizes that the release of heat and light are evidence of a chemical reaction. Recognizes that reactants and products do not have the same properties. Given a reaction, identifies the reactants and products of a reaction. Recognizes that the number of atoms in a chemical reaction do not change. Recognizes that coefficients indicate molar proportions. Distinguishes chemical reactions from examples of physical change.	Describes all evidences of chemical reactions. Explains why the properties of products are independent of the properties of reactants. Given a reaction, writes a balanced chemical equation. Determines molar proportions from a balanced chemical equation. Gives examples of chemical reactions in everyday life.	Uses evidences of chemical reactions to predict products. Given the reactants of a chemical reaction, predicts the products and balances the equation. Uses molar proportions to predict the amount of products.

Chemical Reactions					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	IV.2 Analyze evidence for the laws of conservation of mass and conservation of energy in chemical reactions.	Recognizes that reactions can produce heat. States that batteries produce electricity through chemical reactions.	Recognizes that mass cannot be created nor destroyed during a chemical reaction. Recognizes that the amount of product is determined by the amount of reactant. Defines exothermic and endothermic reactions. Recognizes that chemical reactions can absorb or produce energy.	Interprets evidence supporting conservation of mass in reactions. Uses molar relationships from a balanced reaction to predict mass of product in a reaction that goes to completion. Analyzes evidence of energy transformation and classifies it as endothermic or exothermic. Describes how electrical energy is produced by an electrochemical cell.	Shows mathematically the conservation of mass in a chemical reaction. Determines which reactant is the limiting factor in a chemical reaction. Classifies everyday reactions as endothermic or exothermic. Explains why reversing a chemical reaction reverses the energy flow.

Equilibrium					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	V.1 Evaluate factors specific to collisions (e.g., temperature, particle size, concentration, and catalysts) that affect the rate of chemical reaction.	Identifies factors that speed up or slowdown reactions. Explains that collisions between particles must occur in order for reactions to happen. Recalls that some chemicals increase reaction rates.	Follows a procedure to conduct an experiment comparing reaction rates. Identifies a trend in reaction rate from a graph. Correlates frequency of collisions to reaction rates. Identifies that catalysts are effective in increasing reaction rates.	Conducts an experiment to determine factors affecting reaction rate. Interprets graphs to draw conclusions about reaction rates. Correlates frequency and energy of collisions to reaction rates. Describes how catalysts increase reaction rates.	Designs and conducts an experiment to determine factors affecting reaction rate. Makes inferences about the rates of unknown reactions based on similarities to known reactions. Uses information from graphs to draw conclusions about reaction rates and uses the findings to generalize the results to other reactions. Creates energy diagrams showing how catalysts affect reaction rate.
Range	V.2 Recognize that certain reactions do not convert all reactants to products but achieve a state of dynamic equilibrium that can be changed.	Recognizes that not all reactions go to completion. Observes that equilibrium will change in different conditions.	Recognizes that at equilibrium, amounts of reactants and products do not change. Given an equation, identifies the effect of adding either a product or a reactant	Explains the concept of dynamic equilibrium, showing that the rates of forward and reverse reactions are equal and that the reaction has not stopped. Given an equation, predicts how to shift equilibrium	Explains the concept of dynamic equilibrium, showing that the rates of forward and reverse reactions are equal, but the amounts of reactants and products are not

Equilibrium					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
			to a shift in equilibrium. Indicates that temperature changes equilibrium.	towards the product or reactant. Indicates the effect of temperature change on equilibrium, using an equation containing a heat term.	usually equal. Describes uses of equilibrium in industry. Designs a method to shift equilibrium by altering reaction variables.

Solutions					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	VI.1 Describe factors affecting the process of dissolving and evaluate the effects that changes in concentration have on solutions.	Identifies common chemical solutions. Describes the relative amount of solute particles in concentrated and dilute solutions. Identifies factors that affect the rate of dissolution.	Identifies the solute and solvent in solutions given a description or model. Identifies examples of solutions and non-solutions from sketches. Given the molarity of different solutions, states which is more concentrated and which is more dilute. Follows a procedure to conduct an experiment to compare rates of dissolution. Connects the concept of ppm to environmental issues.	Describes the action of dissolution at the molecular level. Sketches a solution, showing even distribution at the particle level. Expresses concentration in terms of molarity and molality. Conducts an experiment to determine factors affecting rate of dissolution. Draws conclusions from graphs of ppm about environmental issues.	Sketches a solution, showing direction of forces, relative numbers of solvent and solute particles, and separation of ions, at the particle level. Distinguishes between molarity and molality and calculates those quantities. Designs and conducts an experiment to determine factors affecting rate of dissolution.
Range	VI.2 Summarize the quantitative and qualitative effects of colligative properties on a solution when a solute is added.	Recognizes what boiling and freezing points are. Recognizes that solutes have practical applications.	Recognizes that different concentrations of solutions have different boiling and freezing points. Determines the boiling or freezing point of a solution given a graph	Recognizes that boiling point increases and freezing point decreases as concentration of solute increases. Measures change in boiling and/or freezing point of a solvent when a	Designs an experiment to collect and analyze data and makes inferences about freezing or boiling point of different solutes in the same concentrations. Extrapolates examples

Solutions					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
			of concentration vs. temperature. Identifies an example of solutes being used in everyday applications.	solute is added. Describes how colligative properties affect the behavior of solutions in everyday applications.	of colligative properties to unfamiliar situations.
Range	VI.3 Differentiate between acids and bases in terms of hydrogen ion concentration.	Recognizes that the pH scale includes acids, bases, and neutral solutions. Recognizes that acids and bases neutralize each other. Recognizes that acids and bases are used in industry.	Using a common indicator, classifies a solution as an acid or base. Identifies neutralization using simple acid-base titration. Recognizes that acids and bases are used differently in different industries. Recognizes that acids and bases affect the environment.	Relates hydrogen ion concentration to pH values and to the terms acidic, basic, or neutral. Using an indicator, measures the pH of common household substances. Determines the relative acidity or basicity of solutions using simple acid-base titration. Reports on the uses of acids and bases in industry, citing evidence. Identifies ways that acids and bases affect the environment.	Recognizes the logarithmic nature of the pH scale. Determines the concentration of an acid or a base using simple acid-base titration. Describes situations and makes inferences about the uses of acids or bases in industry. Evaluates mechanisms by which pollutants modify the pH of environments.

Physics

PLD Type	Objective	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy	*Note: Students who are designated Below Proficient (Level 1) will be able to perform up to the level described by the Proficiency Level Descriptor (PLD). Level 1 is the lowest reported proficiency designation; some students may perform below the provided description.*	The Level 1 student is below proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for his or her grade level, is likely able to partially access grade-level content, and engages with higher-order thinking skills with extensive support.	The Level 2 student is approaching proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for his or her grade level, is likely able to access grade-level content, and engages in higher-order thinking skills with some independence and support.	The Level 3 student is proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for his or her grade level, is able to access grade level content, and engages in higher-order thinking skills with some independence and minimal support.	The Level 4 student is highly proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for his or her grade level, is able to access above grade-level content, and engages in higher-order thinking skills independently.

Motion and Newton's First Law					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	I.1 Describe the motion of an object in terms of position, time, and velocity.	Describes and calculates distance and speed. Compares magnitude of average and instantaneous velocity given explicit values. Compares velocities from position vs. time graphs for objects with constant velocity.	Describes and calculates the magnitude of displacement and velocity. Creates a position vs. time graph for an object with constant velocity and identifies position at different times.	Distinguishes between distance vs. displacement and speed vs. velocity. Describes and calculates the magnitude and direction of displacement and velocity. Determines and compares average and instantaneous velocities using position vs. time graphs. Creates a position vs. time graph for an object with non-constant velocity using experimental data. Interprets motion of an object from a position vs. time graph.	Calculates velocity from data, complex graphs, and charts. Infers from data the average and instantaneous velocity for any time interval. Collects and analyzes data graphically or mathematically.

Motion and Newton's First Law					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	I.2 Analyze the motion of an object in terms of velocity, time, and acceleration.	Calculates acceleration given explicit data. Recognizes that an object at rest has zero acceleration. Recognizes that an increase of positive velocity is positive acceleration.	Recognizes that an object with constant velocity has zero acceleration. Creates a velocity vs. time graph for an object with constant acceleration and identifies velocity at different times. Recognizes that a change in direction results in a nonzero acceleration.	Calculates average acceleration from data. Describes the conditions at which acceleration is zero. Creates a velocity vs. time graph for an object with non-constant acceleration using experimental data. Interprets the motion of the object from a velocity vs. time graph. Describes that circular motion or any change in direction results in a nonzero acceleration.	Calculates average acceleration from self-generated data. Infers the motion of real world objects when the object is either accelerating or not. Collects data and analyzes it graphically or mathematically.
Range	I.3 Relate the motion of objects to a frame of reference.	Relates the motion of an object to the student's own frame of reference.	Recognizes that the motion of an object would seem different in a different frame of reference.	Compares and predicts the motion of an object relative to two frames of reference and chooses an appropriate frame of reference to describe an object's motion.	Compares and predicts the two-dimensional motion of an object from multiple frames of reference and recognizes the relationship between various frames of reference.

Motion and Newton's First Law					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	I.4 Use Newton's first law to explain the motion of an object.	Identifies balanced forces in a diagram.	Identifies the balanced forces in a diagram and recognizes that the object may be at rest.	Describes and states the direction of balanced forces. Recognizes that an object experiencing balanced forces may be at rest or moving with a constant velocity.	Describes and states the direction of the balanced forces and describes the motion of an object in real world or abstract situations.

Forces and Newton's Second and Third Laws					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	II.1 Analyze forces acting on an object.	Describes and observes some forces given a labeled vector diagram. Measures and calculates net force when given detailed instructions and group guidance.	Describes, observes, and states the direction of everyday forces and labels the forces in a provided vector diagram. Uses data to calculate the net force acting on an object, provided with instructions.	Describes, observes, and states the direction of everyday forces and represents the forces in a vector diagram. Measures forces and uses the data to calculate the net force acting on an object.	Describes, observes, and states the direction of a wide range of forces and represents the forces in a vector diagram. Designs and conducts an experiment to measure forces and uses the data to calculate the net force acting on an object.

Forces and Newton's Second and Third Laws					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	II.2 Use Newton's second law; relate the force, mass, and acceleration of an object.	Recognizes that changing either a force or mass can affect the acceleration. Measures force, mass, and acceleration given appropriate tools.	Recognizes the relationship between net force, mass, and acceleration. Calculates the net force on an object given the mass and acceleration.	Explains the relationship between net force, mass, and acceleration on an object with unbalanced forces. Calculates the net force on an object and predicts the change on the object's motion due to unbalanced forces.	Applies the relationship between net force, mass, and acceleration on an object with unbalanced forces to unfamiliar situations. Designs and conducts an experiment to measure net force, mass and/or acceleration and compares the results to Newton's second law.
Range	II.3 Explain that forces act in pairs as described by Newton's third law.	Identifies the directions of two forces in force pairs. Recognizes Newton's development of the laws of motion.	Identifies magnitude and direction of contact force pairs. Realizes that Newton's laws of motion still have applications today.	Identifies magnitude and direction of force pairs, including contact and long-range forces. Makes connections between Newton's laws of motion to current understanding. Distinguishes between force pairs and balanced forces.	Identifies magnitude and direction of force pairs with multiple sets of force pairs in a system. Makes connections between Newton's laws and modern systems.

Gravitational and Electrostatic Forces					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	III.1 Relate the strength of the gravitational force to the distance between two objects and the mass of the objects (i.e., Newton's law of universal gravitation).	Recognizes that there is a connection between mass and weight. Recognizes that gravity affects everyday life.	Investigates and describes qualitatively how the amount of mass and the distance between two objects affect the gravitational force. Describes common gravitational interactions on Earth.	Distinguishes between mass and weight. Investigates and describes quantitatively how the amount of mass and the distance between two objects affect the gravitational force. Describes evidence and makes inferences of gravitational forces on objects in nature.	Creates a visual representation that shows relationships between amount of mass and distance between objects and the gravitational force between these objects. Describes modern day applications of gravitational force.
Range	III.2 Describe the factors that affect the electric force (i.e., Coulomb's law).	Relates the type of charge to the effect on electric force (i.e., like charges repel, unlike charges attract). Recognizes electric forces found in nature and technology.	Investigates and describes qualitatively how the amount of charge, type of charge, and distance between charged objects affects the electric force. Cites evidence that electric forces occur in nature and technology.	Investigates and describes quantitatively how the amount of charge, type of charge, and distance between charged objects affects the strength of the electric force. Summarizes how electric forces affect everyday life.	Creates a visual representation that shows relationships between amount of charge, type of charge, and distance between charged objects and the force between these objects. Makes inferences about how electric forces impact everyday life.

Energy						
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	IV.1 Determine kinetic and potential energy in a system.	Identifies gravitational potential energy, elastic potential energy, and kinetic energy in a system.	Identifies types of potential energy (i.e., gravitational, elastic, chemical, electrostatic, and nuclear), kinetic, and heat energy in a system.	Describes many types of energy in a system. Calculates the kinetic energy of an object given the velocity and mass of an object.	Develops generalizations about types of energy. Uses kinetic and potential energies to quantitatively describe real-world situations.
Range	IV.2 Describe conservation of energy in terms of systems.	Describes a closed system in terms of its total energy. Recognizes the transformations between kinetic and potential energy. Calculates gravitational potential energy and kinetic energy of an object. Recognizes social, economic, and environmental issues related to the production of electrical energy.	Specifies transformations between kinetic and potential energy in a system and shows that total energy remains constant. Uses data to calculate gravitational potential energy and kinetic energy of an object. Cites evidence for social, economic, and environmental issues related to the production of electrical energy based on provided information.	Analyzes and draws qualitative conclusions from data, explaining the transformations between kinetic energy and various types of potential energy in a system. Gathers data and calculates the gravitational potential energy and kinetic energy of an object and relates this to conservation of energy. Summarizes the social, economic, and environmental issues related to the production of electrical energy	Draws quantitative conclusions explaining the transformations between kinetic and various types of potential energy in a system. Designs an investigation and collects data to show the relationship between kinetic and potential energies of a system. Evaluates the social, economic, and environmental issues related to the production of electric energy.

Energy					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				based on provided information.	
Range	IV.3 Describe common energy transformations and the effect on availability of energy.	Identifies that when energy is transferred, useful energy is lost. Recognizes radiation, conduction, and convection. Recognizes that mechanical energy can transform into electrical energy.	Identifies that when energy is transferred, useful energy is lost to a variety of energy forms. Classifies examples of radiation, conduction, and convection. Identifies where/when energy transformations (between mechanical and electrical) have occurred in a given situation. Given evidence, identifies energy transformations in electrical generation plants.	Explains that when energy is transferred, useful energy is lost to a variety of energy forms. Draws conclusions about the type of heat transfer (radiation, conduction, or convection) from evidence. Describes the transformation of mechanical energy to electrical energy. Gathers and analyzes information to report on the energy transformations in electrical generation plants.	Shows the relationship between the amount of initial energy and final energy of a system. Draws conclusions and cites evidence about the type of heat transfer. Gathers, analyzes, and evaluates information about the energy transformations in a variety of electrical generation plants.

Waves					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	V.1 Demonstrate an understanding of mechanical waves in terms of general wave properties.	Identifies amplitude and wavelength of a wave. Identifies examples of reflection and refraction, from a diagram. Identifies examples of waves commonly found in nature.	Differentiates between period, frequency, wavelength, and amplitude. Recognizes examples of reflection, refraction, and diffraction. Provides examples of waves found in nature. Identifies relationships between wavelength and frequency. Determines direction of relative motion given changes in frequency. Recognizes that energy can move through a medium.	Compares reflection, refraction, and diffraction. Identifies and uses relationships between speed, wavelength, and frequency of a wave. Predicts changes in frequency based on relative motion of an object. Recognizes that energy moves through an object, rather than matter moving.	Investigates reflection, refraction, and diffraction and provides models to describe each. Designs models and interprets data (for stationary or moving objects) and makes inferences on the changes to frequency, wavelength, and speed of the waves created. Explains and models how energy moves through an object.

Waves					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	V.2 Describe the nature of electromagnetic radiation and visible light.	Given a diagram of the electromagnetic spectrum showing frequency or wavelength, orders waves by energy. Provides examples of EM radiation in everyday life.	Recognizes that all EM waves travel the same speed in a vacuum. Distinguishes and orders EM waves by frequency, wavelength, or energy. Recognizes relationships between energy and frequency. Determines direction of relative motion given changes in frequency.	Compares and diagrams parts of the EM spectrum, including color, use of the waves' energies, frequencies, wavelengths, and speeds. Identifies relationships between wavelength, frequency, and energy. Predicts changes in frequency based on relative motion of objects and distinguishes between red and blue shift.	Creates a graph of energy vs. frequency and/or wavelength. Justifies relationship differences in frequency, wavelength, or energy. Designs models and interprets data for stationary or moving objects and makes inferences on changes to frequency, wavelength, and speed.

Biology

PLD Type	Objective	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy	*Note: Students who are designated Below Proficient (Level 1) will be able to perform up to the level described by the Proficiency Level Descriptor (PLD). Level 1 is the lowest reported proficiency designation; some students may perform below the provided description.*	The Level 1 student is below proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for his or her grade level, is likely able to partially access grade-level content, and engages with higher-order thinking skills with extensive support.	The Level 2 student is approaching proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for his or her grade level, is likely able to access grade-level content, and engages in higher-order thinking skills with some independence and support.	The Level 3 student is proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for his or her grade level, is able to access grade level content, and engages in higher-order thinking-skills with some independence and minimal support.	The Level 4 student is highly proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for his or her grade level, is able to access above grade level content, and engages in higher-order thinking skills independently.

Organism Interaction					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	I.1 Summarize how energy flows through an ecosystem.	Given the components of a food chain, identifies feeding relationships. Recognizes that available energy decreases when moving up the steps of the energy pyramid. Recognizes that organisms can modify behavior to obtain energy.	Places organisms on a food web when given information on feeding relationships. Given an energy pyramid, compares the amount of available energy for producers and consumers. Given details about an organism, identifies strategies used to obtain energy.	Identifies relationships of organisms on a food web. Given a food chain, creates a graph showing energy available at different trophic levels. Given multiple organisms' feeding strategies, identifies which strategy best balances energy expended to energy obtained. Given an article, cites examples of energy used to produce or obtain food.	Predicts the effect of a disturbance to a food web. Given an energy pyramid, calculates the energy difference between trophic levels. Given multiple organisms' feeding strategies, cites evidence to show which strategy best balances energy expended to energy obtained. Predicts how an organism would change feeding strategies when given information about an environmental change. Given a text, evaluates the pros and cons of a system of food production.

Organism Interaction					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	I.2 Explain relationships between matter cycles and organisms.	Labels a diagram of the carbon and water cycles. Identifies water as a limiting factor in ecosystems.	Given a diagram, identifies how matter cycles into and out of organisms. Using a newspaper, magazine, journal, or Internet article, identifies which statements give evidence based on scientific data. Given a text, identifies ways human activity has affected ecosystems.	Describes how matter cycles into and out of organisms. Recognizes that the amount of matter in a system remains constant. Predicts the effect of a limiting factor on a population. Given a newspaper, magazine, journal, or Internet article, cites instances of inference and evidence and bias. Identifies the cause and effect relationship of personal choices to the cycling of matter within an ecosystem.	Predicts how one matter cycle affects another cycle. Given an ecosystem, distinguishes adaptations that are advantageous when water is limited. Given two articles, evaluates which contains more bias. Evaluates the impact of personal choices in relation to the cycling of matter within an ecosystem. Designs an investigation to analyze the interactions in an ecosystem.
Range	I.3 Describe how interactions among organisms and their environment help shape ecosystems.	Categorizes predator/prey relationships among living things. Differentiates between abiotic and biotic factors. Identifies types of data within an ecosystem. Given text, identifies ways	Categorizes relationships among living things as predator/prey, competition, or symbiosis. Identities biotic and abiotic factors within an ecosystem. Determines which is the best procedure to	Designs an investigation and tests a hypothesis about the effect of changing a variable in a small ecosystem. Uses data to interpret interactions among biotic and abiotic factors within an ecosystem. Given	Analyzes and critiques an experiment where a claim is made based on changes to only one variable, since ecosystems tend to be more multivariate. Predicts the effects of changing biotic and abiotic factors on an ecosystem. Given

Organism Interaction					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		human activity has affected ecosystems.	investigate interactions in an ecosystem.	data, draws conclusions about the interactions within ecosystems. Given text, cites evidence showing how human activities affect ecosystems. Differentiates between qualitative and quantitative data.	texts, evaluates how human activities have affected an ecosystem.

Cells					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	II.1 Describe the fundamental chemistry of living cells.	Identifies the major chemical elements in cells. Identifies the properties of water. States that enzymes increase reaction rate.	Matches macromolecules to their uses in the cell. Matches the name of a property of water to a description.	Describes how macromolecules are used in cells. Given a cellular process, identifies which properties of water contribute to the process. Given two graphs, differentiates between enzyme-catalyzed reactions and non-catalyzed reactions.	Identifies which of the elements are in each macromolecule. Given a cellular process, explains how the properties of water contribute to the process. Interprets data from an experiment testing the role of enzymes in cell chemistry.
Range	II.2 Describe the flow of energy and matter in cellular function.	Recognizes the features of autotrophic and heterotrophic cells. Recognizes that the sun provides energy for photosynthesis, which provides energy for cellular respiration.	Identifies at least one product of photosynthesis that is used by cell respiration and at least one product of cellular respiration that is used by photosynthesis.	Explains the differences between autotrophic and heterotrophic cells. Identifies two products of photosynthesis that are used by cell respiration and at least two products of cellular respiration used by photosynthesis. Given a set of variables, sets up an experiment and collects data about products of photosynthesis.	Recognizes that all cells perform respiration but only autotrophic cells photosynthesize. Given an experiment, analyzes data about the products of photosynthesis.

Cells					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	II.3 Investigate the structure and function of cells and cell parts.	Explains that new cells come from preexisting cells. Identifies that some forms of cellular transport require energy and some do not. States that a cell's structure can differ depending on its function.	Given pictures, sequences the events of cell division. Identifies the three parts of cell theory. Matches osmosis, diffusion, and active transport with their definitions. Matches an organelle to its function. Recognizes the environmental factors that can influence the growth and reproduction of organisms.	Describes the events of cell division. Given text, identifies scientific discoveries that contributed to the development of cell theory. Given a diagram, describes how the transport of materials in and out of a cell enables cells to maintain homeostasis. Given either a diagram or a description, identifies possible functions of a cell. Given a set of materials, designs an investigation with microorganisms and/or plants of growth and reproduction.	Explains the importance of cell division in unicellular and multicellular organisms. Cites evidence from text of how advancements in technology contributed to the development of cell theory. Explains how various transport mechanisms maintain homeostasis. Given a description or picture of a cell, identifies an organ in which the cell could be found. Analyzes data from an experiment investigating growth and reproduction of microorganisms and/or plants.

Organ Structure and Function					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	III.1 Describe the structure and function of organs.	Labels a diagram of an organ, given a word bank. Recognizes that the organs of different organisms are similar. Identifies one technological development related to organs.	Labels a diagram of an organ, with a word bank. Recognizes that the organs and the organ functions of different organisms are similar. Identifies and explains one technological development related to organs.	Labels a diagram of an organ, with a word bank and matches the function of each part in relation to the organ. Compares the structure and function of organs in one organism to the structure and function of organs in a similar organism (e.g., animal/animal). Identifies and explains some technological development related to organs.	Labels a diagram of an organ, without a word bank and matches the function of the organ in relation to the system. Compares the structure and function of organs in one organism to the structure and function of organs in a different organism (e.g., animal/plant).
Range	III.2 Describe the relationship between structure and function of organ systems in plants and animals.	Labels a diagram of an organ system, with a word bank. Recognizes the organs of different organ systems and how they are similar.	Labels a diagram of an organ system, with a word bank. Recognizes that the organ system's structure and function of different organisms are similar.	Labels a diagram of an organ system, with a word bank and matches the function of each part in relation to the organ system and different tissues that make up that organ. Compares the structure and function of organ systems in one organism to the structure and function of organ systems in a	Labels a diagram of an organ system, without a word bank and matches the function of the organ system in relation to the structure and function of a different organ system and how these systems contribute to homeostasis. Compares the structure and function of organ systems in one

Organ Structure and Function					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				similar organism (e.g., animal/animal).	organism to the structure and function of organ systems in a different organism (e.g., animal/plant).

DNA					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	IV.1 Compare sexual and asexual reproduction.	Given text, identifies whether the statement is an advantage or disadvantage in relation to both sexual reproduction and asexual reproduction.	Describes how fertilization mixes genetic material. Compares the advantages and disadvantages of sexual and asexual reproduction.	Explains the significance of meiosis and fertilization in genetic variation. Given data, identifies advantages and disadvantages of sexual and asexual reproduction. Defends an opinion of a bioethical issue related to intentional or unintentional chromosomal mutations.	Describes how the processes of meiosis and fertilization increase genetic variation. Interprets data and draws conclusions about advantages and disadvantages of sexual and asexual reproduction. Formulates, defends, and supports an opinion of a bioethical issue related to intentional or unintentional chromosomal mutations.
Range	PIV.2 Predict and interpret patterns of inheritance in sexually reproducing organisms.	Describes in simple terms that genetic information gets shuffled in sexual reproduction. Describes that parents can pass on recessive genes that they do not express.	Complete a diagram (e.g., Punnett square) to demonstrate possible results of recombination in sexually reproducing organisms using one trait in a simple dominance/recessive monohybrid cross. Relates Mendelian principles to modern-day practices of plant and	Explains Mendel's laws of segregation and independent assortment. Use a diagram (e.g., Punnett square) to demonstrate possible results of recombination in sexually reproducing organisms using one trait, monohybrid, in a dominance/recessive, incomplete dominance,	Given results of a dihybrid cross, relates Mendel's laws of segregation and independent assortment to their roles in genetic inheritance. Analyzes bioethical issues and considers the role of science in determining public policy.

DNA					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
			animal breeding.	co-dominance, and sex-linked traits. Identifies current bioethical issues related to genetics.	
Range	IV.3 Explain how the structure and replication of DNA are essential to heredity and protein synthesis.	Identifies that DNA molecules are double helix. Demonstrates that sequence of DNA is a gene. Identifies genetic technologies that have improved the quality of life.	Describes the specific chemical make-up of DNA that consists of repeating subunits ATCG. Describes that DNA is replicated prior to cell reproduction. Illustrates that a specific sequence of DNA codes for a specific sequence of RNA, which in turn is decoded into protein. Describes how a mutation affects gene expression. Identifies and explains how a genetic technology may improve the quality of life.	Describes the specific chemical make-up and base pairing (A-T, C-G) of DNA structure. Describes the simple process of DNA replication including the creating of sister chromatids and their role in the cell cycle. Diagrams how the specific sequence of DNA is transcribed into RNA, which is then translated into a protein. Identifies specific types of mutations and mutagens that cause mutations that affect gene expression. Given a text, relates	Explains key scientific discoveries leading to the discovery of the structure of DNA. Using a sequence of DNA and a codon chart, transcribes, translates, and shows resulting sequences of amino acids. Explains the principle of gene expression and the effects of changing DNA on the protein the gene expressed. Explains the short- and long-term impacts of mutations on populations. Formulates an argument for or against

DNA					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				important historical events leading to understanding of DNA. Identifies pros and cons of a specific genetic technology.	a form of genetic technology using scientific reasoning and evidence.

Evolution and Diversity					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	V.1 Relate principles of evolution to biological diversity.	Identifies in a text the effects of environmental factors on natural selection. States that a species can evolve into two new species. Identifies natural selection and selective breeding as two modes of change in a species.	Relates genetic variability to a species' potential for adaptation to a changing environment. Given text, relates reproductive isolation to speciation. Describes the differences and similarities between selective breeding and natural selection.	Describes the effects of environmental factors on natural selection. Interprets data to describe the variability of a species' potential for adaptation to a changing environment. Given different mechanisms of reproductive isolation, predicts speciation. Compares selective breeding to natural selection and relates the differences to agricultural practices.	Shows or infers, from given data, the effects of environmental factors on natural selection. Performs an experiment and extracts data to show that genetic variability in a species is essential for adaptation to a changing environment. Given data, infers which reproductive isolation mechanism caused speciation. Evaluates pros and cons of selective breeding practices in agricultural practices.
Range	V.2 Cite evidence for changes in populations over time and use concepts of evolution to explain these changes.	Recognizes that species exhibit variations and change over time.	Given text, cites evidence that supports biological evolution over time. Identifies the role of mutation in evolution.	Identifies in a scientific article the scientific methods used to gather evidence that documents the evolution of a species. Describes the role of mutation and recombination in evolution. Relates the nature of science to the historical development of the theory of	Distinguishes between observations and inferences in making interpretations related to evolution. Describes the role of mutation and recombination in evolution and relates this to changes in DNA. Reviews a scientific article and identifies

Evolution and Diversity					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				evolution.	the research methods used to gather evidence that documents the evolution of a species.
Range	V.3 Classify organisms into a hierarchy of groups based on similarities that reflect their evolutionary relationships.	Recognizes that organisms can be grouped by similarities. Recognizes one way organisms can be classified. Recognizes that classification schemes have changed throughout history.	Identifies an organism using a classification tool. Identifies two criteria used to classify organisms. Explains that evolutionary relationships are related to classification systems. Identifies ways classification schemes have changed.	Generalizes criteria used to classify organisms. Describes how evolutionary relationships are related to classification systems. Justifies the ongoing changes to classification schemes.	Justifies which classification tool is most accurate to classify organisms. Compares and contrasts criteria used to classify organisms. Creates a classification diagram based on given evolutionary relationships. Gives examples of how classification systems have changed throughout history.

Earth Science

PLD Type	Objective	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy	*Note: Students who are designated Below Proficient (Level 1) will be able to perform up to the level described by the Proficiency Level Descriptor (PLD). Level 1 is the lowest reported proficiency designation; some students may perform below the provided description.*	The Level 1 student is below proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for his or her grade level, is likely able to partially access grade-level content, and engages with higher-order thinking skills with extensive support.	The Level 2 student is approaching proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for his or her grade level, is likely able to access grade-level content, and engages in higher-order thinking skills with some independence and support.	The Level 3 student is proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for his or her grade level, is able to access grade-level content, and engages in higher-order thinking skills with some independence and minimal support.	The Level 4 student is highly proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for his or her grade level, is able to access above grade-level content, and engages in higher-order thinking skills independently.

Earth, Solar System, and Universe					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	I.1 Describe both the big bang theory of universe formation and the nebular theory of solar system formation and evidence supporting them.	Recognizes the big bang theory and recalls that heavy elements on Earth came from stars. Provides an example of how technology has helped scientists investigate the universe.	Recognizes evidence and theories for the age and formation of the solar system. Describes the big bang theory in simple terms. Simply describes the nebular theory of solar system formation.	Explains how scientists determine the age of the solar system. Describes and gives evidences for the big bang and nebular theories. Describes how heavy elements on Earth were formed. From a given text, relates past scientific findings to current understanding of the universe composition and origin. Distinguishes how scientists form and support theories.	Describes the evidence for the big bang and how scientists use the evidence to infer past events. Generalizes the nebular theory to the formation of other solar systems. Reports on the development of theories for the formation of the universe.

Earth, Solar System, and Universe					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	I.2 Analyze Earth as part of the solar system, which is part of the Milky Way galaxy.	Recalls that the distance from the sun is a predictor for the composition of objects in the solar system. Identifies conditions necessary for life. Recognizes that the solar system is much larger than Earth and that the Milky Way is much larger than the solar system.	Given a table, organizes objects in the solar system by size, composition, or distance from the sun. Produces a list of the conditions necessary for life. Draws a diagram comparing the sizes of the solar system and the Milky Way.	Relates the composition of objects in the solar system to their distance from the sun. Models the size of the solar system compared to the Milky Way Galaxy. Compares the size and scale of objects within the solar system. Evaluates the conditions that currently support life on Earth and compares them to the conditions that exist on other planets and moons in the solar system.	Constructs a model using conditions of the lithosphere, atmosphere, and hydrosphere that affect the biosphere. Uses this model to compare conditions on Earth that support life compared to other planets and moons in the solar system.

Earth's Internal Heat and Structure					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	II.1 Evaluate the source of Earth's internal heat and the evidence of Earth's internal structure.	Recognizes Earth's internal heat is a source of energy on Earth. Labels a diagram of Earth's physical layers. Given a diagram recognizes convection currents that help distribute heat within the mantle.	Recognizes radioactive decay of elements and heat of formation as sources of Earth's internal heat. Recognizes and labels Earth's interior layers when given a diagram. Recognizes that Earth's layers are separated based on physical properties. Given a model, describes how convection currents within the mantle distribute heat.	Describes how radioactive decay of elements and heat of formation are the sources of Earth's internal heat. Identifies the scientific evidence that supports the claim that separation of Earth's core, mantle, and crust are based on composition. Summarizes the scientific evidence leading to the inference that the lithosphere, asthenosphere, mesosphere, outer core and inner core are separated based on physical properties. Explains the results of convection currents within the mantle.	Analyzes the physical properties and composition of Earth's interior. Describes how seismic activity and wave behavior distinguishes between the physical properties of each layer in Earth's interior. Creates a model demonstrating how convection currents distribute heat within the mantle.

Earth's Internal Heat and Structure					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	II.2 Describe the development of the current theory of plate tectonics and the evidence that supports this theory.	Given an illustration, recognizes evidence that supports the theory of plate tectonics, specifically mid-ocean ridges, oceanic trenches, and magnetic striping. Recalls evidence of Alfred Wegener's continental drift theory. Illustrates tectonic plate motion.	Identifies evidence supporting the current theory of plate tectonics. Identifies hot spots and mantle plumes from a model. Identifies examples of evidence of past change preserved in the geological record. Identifies evidence of mantle plumes. Recognizes evidence for the rate and direction of tectonic plate motion.	Explains Alfred Wegener's continental drift hypothesis and why evidence for it was not accepted in his time. Explains and analyzes how the past is inferred from the geologic record. Explains how mantle plumes provide evidence for the rate and direction of tectonic plate motion.	Analyzes the evidence for the current theory of plate tectonics: sea floor spreading, age of sea floor, distribution of earthquakes and volcanoes. Compares and contrasts the discovery of mid-ocean ridges, oceanic trenches, and magnetic striping of the sea floor to the development of the modern theory of plate tectonics.
Range	II.3 Demonstrate how motion of tectonic plates affects Earth and living things.	Recognizes that the Earth's crust is made of major plates. Given a model identifies convergent, divergent, transform plate boundaries. Recalls that earthquakes and volcanoes transfer energy.	Describes convergent, divergent, and transform boundaries, and draws a diagram of each boundary. From a graphic, identifies Earth's major plates. Recognizes that many factors cause plate tectonic movement. Identifies geologic processes and their possible effects on human-made structures.	Describes a lithospheric plate. Describes how earthquakes and volcanoes transfer energy from Earth's interior to the surface. Constructs a model demonstrating factors that cause tectonic plates to move. Labels types of boundaries and the resulting formation of mountains, volcanoes, trenches, mid-oceanic	Designs, builds, and tests a model that investigates local geologic processes and the possible effects on human- engineered structures. Explains complex plate interactions and the energy sources that produce them. Constructs a model demonstrating factors that cause plate tectonics and analyzes

Earth's Internal Heat and Structure					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				ridges and earthquakes. From a news source or reference, analyzes how geologic processes may affect human-engineered structures.	the effect of these factors on plate movement and changes to Earth's surface.

Atmospheric Processes, Weather, and Climate					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	III.1 Relate how energy from the sun drives atmospheric processes and how atmospheric currents transport matter and transfer energy.	On a diagram, labels energy transfer between the sun, ocean, atmosphere, and land masses. Recalls that there are factors that cause uneven heating of the Earth's surface. Recognizes the greenhouse effect from a diagram.	On a diagram, identifies energy from the sun that is reflected, absorbed or scattered by the atmosphere, oceans, and land masses. Defines Coriolis effect, Hadley cells, trade winds, and prevailing westerlies. Using a diagram, explains that the greenhouse effect maintains higher atmospheric temperatures. Observes effects of Hadley cells, trade winds, prevailing westerlies, Coriolis effect and the tilt of the Earth on the distribution of heat and sunlight on Earth's surface.	Given a model demonstrates energy transfer from the sun by the atmosphere, oceans, and land masses and determines the effects of greenhouse gasses on that model. Designs and conducts an experiment on how the tilt of Earth's axis causes variations in the intensity and duration of sunlight striking Earth. Describes how Coriolis effect, Hadley cells, trade winds, and prevailing westerlies affect Earth's atmosphere. Identifies locations in the atmosphere in which ozone is beneficial to life and locations in which ozone is a pollutant.	Designs a demonstration to show movement and uneven distribution of heat energy in the Earth's atmosphere from various factors. Compares the effects of ozone in the troposphere and stratosphere. Models Earth's energy budget.

Atmospheric Processes, Weather, and Climate					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	III.2 Describe elements of weather and the factors that cause them to vary from day to day.	Identifies the instruments used to measure weather. Recognizes conditions that give rise to severe weather phenomena. Given a weather map, identifies low-pressure and high-pressure zones.	Identifies the elements of weather and matches them with the instruments used to measure them. Identifies conditions that give rise to severe weather phenomena. Using a map, identifies a low-pressure system and its weather and a high-pressure system and its weather.	Describes conditions that give rise to severe weather phenomena. Explains the difference between a low-pressure system and a high-pressure system, including the weather associated with them. Given a map, identifies the location of a cold front, a warm front, occluded and stationary boundaries.	Diagrams and describes cold, warm, occluded, and stationary boundaries between air masses. Designs and conducts a weather investigation, uses appropriate weather tools, uses an appropriate display of the data, and interprets the combined observations and data.

Atmospheric Processes, Weather, and Climate					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	III.3 Examine the natural and human-caused processes that cause Earth's climate to change over intervals of time ranging from decades to millennia.	Identifies the difference between weather and climate. Recognizes that Earth's climate has changed over time. Given a picture, identifies parts of the carbon cycle. Recognizes that use of fossil fuels produces pollutants. Identifies that climate change could have an ecological consequence.	Identifies the methods used to investigate evidence for changes in climate. Given textual information, cites evidence of how Earth's climate has changed over time. Given a diagram, identifies where human activities affect the carbon cycle. Defines the differences between air pollution and climate change. Cites examples of how pollution is related to the use of fossil fuels. Cites evidence from given information about the current and potential consequences of climate change on ecosystems.	Given diagrams, explains how Earth's climate has changed over time and describes the natural causes for these changes. Describes how human activity influences the carbon cycle and may contribute to climate change. Explains the differences between air pollution and climate change and how these are related to society's use of fossil fuels. Draws conclusions from given evidence about the current and potential consequences of climate change on ecosystems, including human communities.	Applies differences between weather and climate and the methods used to investigate evidence for changes in climate to real-life situations. Compares and contrasts opposing views on how Earth's climate has changed over time and describes the natural causes for these changes. Analyzes multiple sources documenting how human activity influences the carbon cycle and may contribute to climate change. Synthesizes information across multiple texts to compare the differences between air pollution and climate change and how these are related to society's use of

Atmospheric Processes, Weather, and Climate					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
					fossil fuels.

Hydrosphere					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	IV.1 Characterize the water cycle in terms of its reservoirs, water movement among reservoirs, and how water has been recycled throughout time.	Identifies bodies of water as the reservoirs within Earth's water cycle. Identifies evaporation, condensation, precipitation, and surface runoff.	Identifies oceans, lakes, running water, frozen water, ground water, and atmospheric moisture as the reservoirs of Earth's water cycle. Describes the processes of evaporation, condensation, precipitation, surface runoff, ground infiltration, and transpiration. Identifies that natural purification of water occurs through those processes.	Interprets a graph or chart of the relative amounts of water in each reservoir of the water cycle. Describes how the processes of evaporation, condensation, precipitation, surface runoff, ground infiltration, and transpiration contribute to the cycling of water through Earth's reservoirs. Interprets a diagram of the natural purification of water as it moves through the water cycle.	Creates a chart or graph identifying the relative amount of water in each of Earth's hydrologic reservoirs. Creates a diagram illustrating how the processes of evaporation, condensation, precipitation, surface runoff, ground infiltration, and transpiration contribute to the cycling of water through Earth's reservoirs. Models the natural purification of water as it moves through the water cycle. Given textual information, compares natural purification to processes used in local sewage treatment plants.

Hydrosphere					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	IV.2 Analyze the characteristics and importance of freshwater found on Earth's surface and its effect on living systems.	Given a picture or diagram, recognizes properties of water: exists in all three phases and dissolves many substances. Recognizes biotic and abiotic factors that affect freshwater systems. Recognizes that pollution can make water unavailable.	Identifies properties of water: exists in all three states and dissolves many substances, density of solid vs. liquid water. Describes biotic and abiotic factors that affect freshwater ecosystems. Given basic information, cites evidence about how pollution can make water unavailable. Given textual evidence, identifies how communities manage water resources.	Identifies the properties of water: exists in all three states, dissolves many substances, exhibits adhesion and cohesion, density of solid vs. liquid water. Given experimental data, interprets biotic and abiotic factors that affect freshwater ecosystems. Using given data, interprets water quality and concludes how pollution can make water unavailable or unsuitable for life. Given textual information, cites evidence on how communities manage water resources.	Explains the properties of water: exists in all three states, dissolves many substances, exhibits adhesion and cohesion, density of solid vs. liquid water. Plans and conducts an experiment to investigate biotic and abiotic factors that affect freshwater ecosystems. Collects data to evaluate water quality and concludes how pollution can make water unavailable or unsuitable for life. Reports on how communities manage water resources to address social, economic, and environmental concerns.

Hydrosphere					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	IV.3 Analyze the physical, chemical, and biological dynamics of the oceans and the flow of energy through the oceans.	Given pictorial information, identifies how the oceans formed from outgassing by volcanoes and ice from comets. Identifies that salt water and cold water are denser than fresh or warm water. Recognizes that freshwater and saltwater have different chemical and physical properties. Recognizes convection currents. Recognizes human influences on ocean systems.	Diagrams how the oceans formed from outgassing by volcanoes and ice from comets. Identifies how salinity, temperature, and pressure at different depths and locations in oceans and lakes affect saltwater ecosystems. Identifies chemical properties and physical properties of freshwater and saltwater. When given a model identifies the energy flow in the physical dynamics of oceans. Identifies the impact of human activities on ocean systems.	Describes how the oceans formed from outgassing by volcanoes and ice from comets. Describes how salinity, temperature, and pressure at different depths and locations in oceans and lakes affect saltwater ecosystems. Given data, interprets an experiment comparing chemical properties and physical properties of freshwater samples to saltwater samples from different sources. Interprets a diagram modeling energy flow in the physical dynamics of oceans. Cites examples of the impact of human activities on ocean systems.	Creates a diagram or reports about how the oceans formed from outgassing by volcanoes and ice from comets. Investigates how salinity, temperature, and pressure at different depths and locations in oceans and lakes affect saltwater ecosystems. Designs and conducts an experiment comparing chemical properties and physical properties of freshwater samples to saltwater samples from different sources. Models energy flow in the physical dynamics of oceans. Evaluates the impact of human activities on ocean systems.

Interaction of Earth Science with Society					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	V.1 Characterize Earth as a changing and complex system of interacting spheres.	Identifies Earth's biosphere, geosphere, atmosphere, and hydrosphere. Given illustrations or diagrams, recognizes how Earth's systems continually change. Given a pictorial example, recognizes how technological advances help human understanding of scientific principles.	Identifies energy flowing and matter cycling within Earth's biosphere, geosphere, atmosphere. Given textual evidence, identifies how Earth's systems are dynamic and continually react to natural and human caused changes. Given textual examples, cites evidence about how technological advances lead to increased human knowledge. Given a graph or text example, identifies human-caused change. Given a visual, identifies feedback loops.	Illustrates how energy flowing and matter cycling within Earth's biosphere, geosphere, atmosphere, and hydrosphere give rise to processes that shape Earth. Explains how Earth's systems are dynamic and continually react to natural and human caused changes. Explains how technological advances lead to increased human knowledge and ability to predict how changes affect Earth's systems. Interprets an experiment that investigates how Earth's biosphere, geosphere, atmosphere, or hydrosphere reacts to human-caused change. Given evidence, summarizes how scientists study feedback loops to	Designs and conducts an experiment to investigate how Earth's biosphere, geosphere, atmosphere, or hydrosphere reacts to human-caused change. Given evidence, compares and contrasts opposing views on how scientists study feedback loops to inform the public about Earth's interacting systems.

Interaction of Earth Science with Society					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				inform the public about Earth's interacting systems.	
Range	V.2 Describe how humans depend on Earth's resources.	Given pictorial scenarios, identifies Earth's resources. Given external information, identifies how human populations depend on Earth resources. Given a scenario, identifies the role of scientists in the discussion of Earth resource use.	Given a map, identifies how Earth's resources are distributed across an area. Given external information, cites evidence about how human populations depend on and affect Earth's resources. Given a scenario, cites evidence of the role of scientists in providing data to inform the discussion of Earth resource use. Identifies a claim about how Earth science literacy can help the public make informed choices related to the use of natural resources.	Investigates how Earth's resources are distributed across an area. Summarizes how human populations depend on Earth's resources and how changing conditions over time have affected these resources. Identify how resource development and use alters Earth systems. Describes the role of scientists in providing data to inform the discussion of Earth resource use. Summarizes and cites evidence for the claim that Earth science literacy can help the public make informed	Investigates how Earth's resources are distributed across the state, the country, and the world. Compares and contrasts opposing views on how human populations depend on Earth resources for sustenance and how changing conditions over time have affected these resources. Predicts how resource development and use alters Earth systems. Develops a logical argument about the role of scientists in providing data to inform the discussion of Earth resource use. Justifies the claim that

Interaction of Earth Science with Society					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				choices related to the extraction and use of natural resources.	Earth science literacy can help the public make informed choices related to the extraction and use of natural resources.
Range	V.3 Indicate how natural hazards pose risks to humans.	Identifies a natural hazard. States that human activities that can contribute to natural hazards. Identifies technology used to predict natural hazards.	Identifies natural hazards that occur locally and globally. Identifies examples of human activities that can contribute to natural hazards. Given textual evidence, cites scientists' use of technology to estimate when and where natural hazards may occur. Given textual scenarios, cites evidence about how social, economic, and environmental issues affect decisions about human-engineered structures.	Describes natural hazards that occur locally and globally. Given examples, justifies the statement that human activities that can contribute to natural hazards. Summarizes how scientists use technology to continually improve estimates of when and where natural hazards may occur. Explains how social, economic, and environmental issues affect decisions about human-engineered structures.	Describes how natural hazards that occur locally and globally pose a risk to humans. Evaluates and gives examples of human activities that can contribute to the frequency and intensity of some natural hazards. Compares and contrasts opposing views about how social, economic, and environmental issues affect decisions about human- engineered structures.

Grade 3 English Language Arts

PLD	Standard	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy		The Level 1 student is below proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for the grade level, is likely able to partially access grade-level content, and engages with higher-order thinking skills with extensive support.	The Level 2 student is approaching proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for the grade level, is likely able to access grade-level content and engages in higher-order thinking skills with some independence and support.	The Level 3 student is proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for the grade level, is able to access grade-level content, and engages in higher-order thinking skills with some independence and minimal support.	The Level 4 student is highly proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for the grade level, is able to access above grade-level content, and engages in higher-order thinking skills independently.

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	RL.3.1	Asks and answers explicit questions to demonstrate understanding of a text.	Asks and answers explicit questions to demonstrate understanding text, referring to the text as the basis for answers.	Asks and answers questions to demonstrate understanding of a text, referring explicitly to the text as the basis for answers.	Asks and answers complex questions to demonstrate understanding of a text, referring explicitly to the text as the basis for answers.
Range	RL.3.2	Identifies details to recount stories; identifies explicitly stated central messages, lessons, or morals and identify details.	Identifies key details to recount stories; determines central messages, lessons, or morals.	Recounts stories, including fables, folktales, and myths from diverse cultures; determines the central message, lesson, or moral and explains how it is conveyed through key details in the text.	Explains details to recount stories; determines implicitly stated central messages, lessons, or morals; and explains how they are conveyed through key details.
Range	RL.3.3	Identifies basic elements (e.g., traits, feelings) of characters in a story and explains how these elements contribute to the story.	Describes basic elements (e.g., traits, feelings) of characters in a story and explains how these elements contribute to the story.	Describes characters in a story (e.g., their traits, motivations, or feelings) and explains how their actions contribute to the sequence of events.	Describes complex elements (e.g., traits, feelings, motivations) of complex characters in a story and explains how their actions contribute to a complex sequence of events.

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	RL.3.4	Uses easily located, explicitly stated details to determine the meanings of familiar words and phrases as they are used in a text.	Uses explicitly stated details to determine the meaning of words and phrases as they are used in a text, identifying literal and nonliteral language.	Determines the meaning of words and phrases as they are used in a text, distinguishing literal from nonliteral language.	Determines the meanings of unfamiliar words and phrases as they are used in a text, distinguishing literal from nonliteral language.
Range	RL.3.5	Refers to easily identified parts of stories, dramas, and poems, using terms such as chapter, scene, and stanza; identifies how one part builds on an earlier section.	Refers to parts of stories, dramas, and poems, using terms such as chapter, scene, and stanza; describes how one part builds on an earlier section.	Refers to parts of stories, dramas, and poems when writing or speaking about a text, using terms such as chapter, scene, and stanza; describes how each successive part builds on earlier sections.	Refers to intricate parts of stories, dramas, and poems when writing or speaking about a text, using terms such as chapter, scene, and stanza; describes how each successive part builds on earlier sections.
Range	RL.3.6	Identifies explicitly stated points of view of the narrator or characters.	Distinguishes his or her own point of view from explicitly stated points of view of the narrator or characters.	Distinguishes his or her own point of view from that of the narrator or those of the characters.	Distinguishes his or her own point of view from implicitly stated points of view.
Range	RL.3.7	Uses specific aspects of a text's simple illustrations to understand the text and identifies explicit details about how the illustrations reflect characters, setting or	Uses specific aspects of a text's simple illustrations to understand the text and make lower-level inferences about how the illustrations reflect characters,	Explains how specific aspects of a text's illustrations contribute to what is conveyed by the words in a story (e.g., create mood, emphasize aspects of	Explains how specific aspects of a text's complex illustrations contribute to an understanding of the text; makes higher-level inferences about how the illustrations reflect mood, characters, and setting.

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		mood.	setting, or mood.	a character or setting).	
Range	RL.3.8	N/A	N/A	N/A	N/A
Range	RL.3.9	Identifies the simple and explicit themes, settings, and plots of stories written by the same author or about similar characters (e.g., books from a series).	Describes explicitly stated themes, settings, and plots of stories written by the same author or similar characters (e.g., books from a series).	Compares and contrasts the themes, settings, and plots of stories written by the same author about the same or similar characters (e.g., in books from a series).	Compares and contrasts highly complex, implicitly stated themes, settings, and plots of stories written by the same author about the same or similar characters; makes higher-level inferences to identify support used by authors.

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	RI.3.1	Asks and answers explicit questions to demonstrate understanding of a text.	Asks and answers explicit questions to demonstrate understanding of a text, referring to the text as the basis for answers.	Asks and answers questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.	Asks and answers complex questions to demonstrate understanding of a text, referring explicitly to the text as the basis for answers.

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	RI.3.2	Identifies an explicitly stated main idea of a text; identifies key details to recount the main idea.	Determines the main idea of a text; identifies key details to recount the main idea.	Determines the main idea of a text; recounts key details and explains how they support the main idea.	Determines an implicitly stated main idea of a text; recounts key details and explains how they support the main idea.
Range	RI.3.3	Identifies historical events, scientific ideas, or some steps in technical procedures in a text, using language with an attempt at time or sequence.	Describes simple relationships between historical events, scientific ideas or concepts, or steps in technical procedures in a text, using limited language that pertains to time, sequence, and cause/effect.	Describes the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.	Describes and analyzes complex relationships between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text with immerging application, using academic language that pertains to time, sequence, and cause/effect.
Range	RI.3.4	Uses easily located, explicitly stated details to determine the meaning of basic academic and domain specific words and phrases in a text relevant to a grade 3 topics or subject area.	Uses explicitly stated details to determine the meaning of basic academic and domain specific words and phrases in a text relevant to a grade 3 topics or subject area.	Determines the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topics or subject area.	Determines the meaning of advanced academic and domain-specific words and phrases in a text relevant to a grade 3 topics or subject area.
Range	RI.3.5	Uses basic text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information explicitly stated in the	Uses basic text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given	Uses text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic	Uses complex text features and advanced search tools (e.g., key words, sidebars, hyperlinks) to analyze and interpret information relevant to a given topic efficiently.

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		text.	topic.	efficiently.	
Range	RI.3.6	Identifies an explicitly stated point of view of the author of a text.	Distinguishes his or her own point of view from an explicitly stated point of view of the author of a text.	Distinguishes his or her own point of view from that of the author of a text.	Distinguishes his or her own point of view from an implicitly stated point of view of the author of a text.
Range	RI.3.7	Uses information gained from simple illustrations and the explicit statements within a text to demonstrate understanding of the text.	Uses information gained from simple illustrations and lower-level inferences within a text to demonstrate understanding of the text.	Uses information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).	Uses information gained from complex illustrations and the higher-level inferences within a text to demonstrate understanding of the text.
Range	RI.3.8	Identifies simple connections between particular sentences in a text (e.g., comparison, cause/effect, first/second/third in a sequence).	Identifies the logical connections between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).	Describes the logical connections between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).	Describes complex connections between particular sentences and paragraphs in a text using textual evidence (e.g., comparison, cause/effect, first/second/third in a sequence).
Range	RI.3.9	Identifies the most important points and key details presented in a text.	Describes the most important points and key details presented in two texts on the same topic.	Compares and contrasts the most important points and key details presented in two texts on the same topic.	Compares and contrasts the most important points and key details presented in two texts on the same topic and provides textual evidence to support these comparisons.

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	W.3.1	Writes an opinion that lacks organization, does not include an introduction or conclusion or includes an ineffective one, and provides irrelevant reasons to support the opinion.	Writes a loosely organized opinion piece with a simple introduction and conclusion, and provides relevant and irrelevant reasons to support the opinion.	Writes a well-organized opinion piece that introduces the topic, provides reasons that support the opinion, uses linking words and phrases, and provides a concluding statement.	Writes a well-organized, multi-paragraph opinion piece that effectively introduces the topic, provides reasons that effectively support the opinion, uses linking words and phrases, and provides an effective concluding statement.
Range	W.3.2	Writes an explanation that lacks organization, does not include an introduction or conclusion or includes an ineffective one, and provides irrelevant reasons to support the opinion.	Writes a loosely organized explanatory piece with a simple introduction and conclusion, and provides relevant and irrelevant reasons to support the opinion.	Writes a well-organized explanatory piece that introduces the topic, provides reasons that support the opinion, uses linking words and phrases, and provides a concluding statement.	Writes a well-organized, multi-paragraph explanatory piece that effectively introduces the topic, provides reasons that effectively support the opinion, uses linking words and phrases, and provides an effective concluding statement.
Range	W.3.4-6	Produces writing with guidance and support that includes insufficient development, revision, and collaborative elements.	Produces writing with guidance and support that includes incomplete or insufficient development, revision, and collaborative elements.	Produces writing with guidance and support that includes and exhibits development, revision, and collaborative elements.	Produces writing with guidance and support that includes and exhibits complex development, concise revision, and collaborative elements.

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	W.3.7-8	Conducts some research and recalls some information from experiences and sources, providing evidence that is not relevant or sorted into the provided categories.	Conducts some research and recalls some information from experiences and sources, providing some evidence that may not be sorted into the relevant provided categories.	Conducts research and recalls information from experiences and sources, sorting relevant evidence into provided categories.	Conducts research and recalls information from experiences and sources, sorting relevant evidence into provided categories.

Listening					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	SL.3.2	Identifies details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.	Identifies the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.	Determines the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.	Summarizes the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.
Range	SL.3.3	Answers questions about information from a speaker.	Asks and answers questions about information from a speaker.	Asks and answers questions about information from a speaker, offering appropriate elaboration and detail.	Asks and answers questions about information from a speaker, offering relevant and effective elaboration and detail.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	L.3.1	Demonstrates command of grammar in simple sentences.	Demonstrates command of grammar in simple and compound sentences and of the function of common and straightforward nouns, pronouns, adjectives, adverbs, and conjunctions.	Demonstrates command of grammar in simple, compound, and complex sentences, including the function of nouns (plural and abstract), pronouns, adjectives (comparative and superlative), adverbs (comparative and superlative), conjunctions (coordinating and subordinating), verbs (regular and irregular) and simple verb tenses, and subject-verb and pronoun-antecedent agreement.	Demonstrates strong command of grammar in simple, compound, and complex sentences, including the function of nouns (plural and abstract), pronouns, adjectives (comparative and superlative), adverbs (comparative and superlative), conjunctions (coordinating and subordinating), verbs (regular and irregular) and verb tenses, and subject-verb and pronoun-antecedent agreement.
Range	L.3.2	Capitalizes some words in titles and uses some commas in addresses.	Demonstrates command of capitalization conventions in titles and of commas in addresses.	Demonstrates command of capitalization conventions in titles, commas in addresses, commas and quotation marks in dialogue, and how to form and use possessives.	Demonstrates strong command of capitalization conventions in titles, commas in addresses, commas and quotation marks in dialogue, and how to form and use possessives.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	L.3.2	Spells high-frequency words correctly.	Spells high-frequency words correctly and uses spelling patterns and generalizations in writing unknown words.	Spells high-frequency words correctly; uses spelling patterns and generalizations in writing unknown words and for adding suffixes to bases.	Spells most words correctly; uses spelling patterns and generalizations in writing unknown words and for adding suffixes to bases, including use of complex patterns and irregularly spelled words.
Range	L.3.3	Chooses words/phrases without concern for effect.	Chooses words/phrases for effect and recognizes the differences between spoken and written English.	Chooses words/phrases for effect and recognizes and observes the differences between spoken and written English.	Carefully chooses words/phrases for effect and to strengthen the message of the writing; recognizes and observes the differences between spoken and written English.
Range	L.3.4	Clarifies the meaning of unknown words using immediate context clues.	Clarifies the meaning of multiple-meaning words using sentence-level context clues; clarifies the meaning of unknown words using morphology (grade-level roots and affixes) and/or reference resources.	Clarifies the meaning of unknown and multiple-meaning words using sentence-level context clues, morphology (grade-level roots and affixes), and/or reference resources.	Clarifies the meaning of unknown and multiple-meaning words using sentence- and paragraph-level context clues, morphology (roots and affixes), and/or reference resources.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	L.3.5	Recognizes simple figurative language, simple word relationships, and nuances in word meanings. Identifies real-life connections between words and their use (e.g., describe people who are friendly or helpful).	Demonstrates understanding of simple figurative language, simple word relationships, and nuances in word meanings; recognizes the literal and nonliteral use of words and phrases in context (e.g., take steps); identifies real-life connections between words and their use (e.g., describe people who are friendly or helpful).	Demonstrates understanding of figurative language, word relationships, and nuances in word meanings; distinguishes the literal and nonliteral meanings of words and phrases in context (e.g., take steps); identifies real-life connections between words and their use (e.g., describe people who are friendly or helpful); distinguishes shades of meaning among related words that describe states of mind or degrees of certainty (e.g., knew, believed, suspected, heard, wondered).	Demonstrates understanding of complex figurative language, complex word relationships, and subtle nuances in word meanings; distinguishes the literal and nonliteral meanings of words and phrases in context (e.g., take steps); identifies subtle or complex real-life connections between words and their use (e.g., describe people who are friendly or helpful); distinguishes subtle shades of meaning among related words that describe states of mind or degrees of certainty.

Grade 4 English Language Arts

PLD	Standard	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy		The Level 1 student is below proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for the grade level, is likely able to partially access grade-level content, and engages with higher-order thinking skills with extensive support.	The Level 2 student is approaching proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for the grade level, is likely able to access grade-level content, and engages in higher-order thinking skills with some independence and support.	The Level 3 student is proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for the grade level, is able to access grade-level content, and engages in higher-order thinking skills with some independence and minimal support.	The Level 4 student is highly proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for the grade level, is able to access above grade-level content, and engages in higher-order thinking skills independently.

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	RL.4.1	Explains what the text says explicitly and draws simple inferences from the text.	Explains what the text says explicitly and draws simple inferences; refers to details and examples in text when explaining what the text says explicitly.	Refers to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.	Refers to details and examples in a text when explaining what the text says explicitly and when drawing complex inferences from the text.
Range	RL.4.2	Identifies an explicitly stated theme in a story, drama, or poem; determines the details in the text.	Determines an explicitly stated theme in a story, drama, or poem; determines the key details in the text.	Determines the theme a story, drama, or poem; summarizes the text.	Determines an implicitly stated theme a story, drama, or poem; summarizes the text.
Range	RL.4.3	Identifies a character, setting, or event in a story or drama, drawing on explicitly stated details in the text.	Describes a character, setting, or event in a story or drama, drawing on explicitly stated details in the text.	Describes in depth a character, setting, or event in a story or drama, drawing on specific details in the text.	Describes in depth a character, setting, or event in a story or drama, drawing on implicitly stated details in the text.
Range	RL.4.4	Uses easily located, explicitly stated details to determine the meaning of familiar words and phrases as they are used in a text.	Uses explicitly stated details to determine the meaning of words and phrases as they are used in a text, including those that	Determines the meaning of words and phrases as they are used in a text, including those that allude to significant characters found in	Determines the meaning of unfamiliar words and phrases as they are used in a text, including those that allude to significant characters found in mythology.

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
			allude to significant characters found in mythology.	mythology.	
Range	RL.4.5	Explains obvious differences between poems, drama, and prose, and refers to basic structural elements.	Explains differences between poems, drama, and prose, and refers to basic structural elements.	Explains major differences between poems, drama, and prose, and refers to the structural elements.	Explains how major differences between poems, drama, and prose affect meaning, and refers to the complex structural elements.
Range	RL.4.6	Compares and contrasts explicitly stated points of view from which different stories are narrated; identifies first- and third-person narrations.	Compares and contrasts explicitly stated points of view from which different stories are narrated, including the difference between first- and third-person narrations.	Compares and contrasts the point of view from which different stories are narrated, including the difference between first- and third-person narrations.	Compares and contrasts implicitly stated points of view from which different stories are narrated, including the difference between first- and third-person narrations.
Range	RL.4.7	Identifies connections presented within the text of a story or drama and the visual or oral presentation of the text.	Makes simple connections between the text of a story or drama and the visual or oral presentation of the text.	Makes connections between the text of a story or drama and the visual or oral presentation of the text, identifying where each version reflects specific descriptions and	Makes complex connections between inferred information within the text of a story or drama and the visual or oral presentation of the text, providing textual evidence where each version reflects specific descriptions and directions in the text.

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				directions in the text.	
Range	RL.4.9	Identifies similar explicitly stated themes and topics and patterns of events in stories, myths, and traditional literature from different cultures.	Describes the treatment of similar explicitly stated themes and topics and patterns of events in stories, myths, and traditional literature from different cultures.	Compares and contrasts the treatment of similar themes and topics and patterns of events in stories, myths, and traditional literature from different cultures.	Compares and contrasts the treatment of implicitly stated themes and topics and patterns of events in complex stories, myths, and traditional literature from different cultures; makes higher level inferences to identify support used by authors.

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	RI.4.1	Explains what the text says explicitly and draws simple inferences from the text.	Explains what the text says explicitly, referring to details and examples from the text, and draws simple inferences from the text.	Refers to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.	Refers to details and examples in a text when explaining what the text says explicitly and when drawing complex inferences from the text.
Range	RI.4.2	Identifies an explicitly stated main idea and key details of a text.	Determines an explicitly stated main idea of a text and determines key details; provides a	Determines the main idea of a text and explains how it is supported by key details; summarizes	Determines an implicitly stated main idea of a text and explains, using textual evidence, how it is supported by key details; summarizes the text.

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
			simple summary of the text.	the text.	
Range	RI.4.3	Identifies events, procedures, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.	Describes events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.	Explains events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.	Analyzes events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, using evidence from the text to justify the explanation.
Range	RI.4.4	Uses easily located, explicitly stated details to determine the meaning of frequently used academic and domain-specific words or phrases in a text.	Uses explicitly stated details to determine the meaning of general academic and domain-specific words or phrases in a text.	Determines the meaning of general academic and domain-specific words or phrases in a text.	Determines the meaning of advanced academic and domain-specific words or phrases in a text.
Range	RI.4.5	Identifies the structure of events, ideas, concepts, or information in part of a text.	Identifies the overall structure of events, ideas, concepts, or information in a text or part of a text.	Describes the overall structure of events, ideas, concepts, or information in a text or part of a text	Explains the overall structure of events, ideas, concepts, or information in a text or part of a text and how that contributes to the meaning of the text.

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	RI.4.6	Identifies whether texts written on the same event or topic are a firsthand or secondhand account.	Identifies a firsthand and secondhand account of the same event or topic.	Compares and contrasts a firsthand and secondhand account of the same event or topic; describes the difference in focus and the information provided.	Compares and contrasts a firsthand and secondhand account of the same event or topic; describes, using textual evidence, the difference in focus and the information provided.
Range	RI.4.7	Identifies or describes information presented visually, orally, or quantitatively.	Identifies information presented visually, orally, or quantitatively and describes how the information contributes to an understanding of the text in which it appears.	Interprets information presented visually, orally, or quantitatively and explains how the information contributes to an understanding of the text in which it appears.	Analyzes information presented visually, orally, or quantitatively and explains how the information contributes to the overall understanding of the text in which it appears.
Range	RI.4.8	Identifies reasons and evidence to support particular points in a text.	Describes how an author uses reasons and evidence to support particular points in a text.	Explains how an author uses reasons and evidence to support particular points in a text.	Analyzes how an author uses reasons and evidence to support particular points in a text.

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	RI.4.9	Uses information from one text in order to write or speak about the subject knowledgeably.	Identifies explicitly stated information from two texts on the same topic that could be used to write or speak about the subject knowledgeably with support.	Integrates information from two texts on the same topic in order to write or speak about the subject knowledgeably.	Integrates complex and inferred information and textual evidence from two texts on the same topic in an organized manner in order to write or speak about the subject knowledgeably.

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	W.4.1	Writes an opinion that lacks organization, does not include an introduction or conclusion or includes an ineffective one, provides irrelevant reasons to support the opinion, and does not include connections between opinions and reasons or includes ineffective connections.	Writes a loosely organized opinion piece that introduces and concludes the topic, provides relevant and irrelevant reasons to support the opinion, and states opinions and reasons lacking clear connections.	Writes a well-organized opinion piece that introduces the topic, provides reasons for the opinion that are supported by facts and details, links opinions and reasons, and provides a relevant concluding statement.	Writes a well-organized opinion piece that effectively introduces the topic, provides reasons for the opinion that are effectively supported by facts and details, links opinions with established reasons, and provides an effective concluding statement.

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	W.4.2	Writes an explanation that lacks organization, does not include an introduction or conclusion or includes an ineffective one, provides irrelevant reasons to support the opinion, and does not use domain-specific vocabulary to clarify the text.	Writes a loosely organized explanatory piece that introduces the topic, develops the topic with facts and details that may or may not have support in the text, links ideas with categories of information that may or may not be demonstrated in the text, uses domain-specific vocabulary in an attempt to explain the topic, and provides a concluding statement.	Writes a well-organized explanatory piece that clearly introduces the topic, develops the topic with concrete facts and details, links ideas with categories of information, uses domain-specific vocabulary, and provides a concluding statement.	Writes a well-organized explanatory piece that clearly and effectively introduces the topic, develops the topic with concrete facts and details, links supported ideas with categories of information, uses domain-specific vocabulary efficiently, and provides an effective concluding statement.
Range	W.4.4-6	Produces writing with guidance and support that includes insufficient development, revision, and collaborative elements and has no clear purpose or audience.	Produces writing with guidance and support that includes incomplete or insufficient development, revision, and collaborative elements and an unclear or unfocused	Produces writing with guidance and support that includes and exhibits development, revision, and collaborative elements, a concise purpose, and a clear audience.	Produces strong writing with guidance and support that includes and exhibits complex development, concise revision, and collaborative elements, as well as a clear target audience and a well-established purpose.

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
			purpose or audience.		
Range	W.4.7-8	Conducts some research and recalls some information from experiences and sources, providing evidence that is not relevant or sorted into the provided categories and drawing irrelevant information from literary or informational texts to attempt to support his or her research.	Conducts some research and recalls some information from experiences and sources, providing some evidence that may not be sorted into the relevant provided categories and drawing some relevant information from literary or informational texts to attempt to support his or her research.	Conducts research and recalls information from experiences and sources, sorting relevant evidence into provided categories and drawing information from literary or informational texts to support his or her research.	Conducts research and recalls information from experiences and sources, sorting relevant evidence into provided categories and drawing information from literary or informational texts as strong, relevant support for his or her research.

Listening					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	SL.4.2	Identifies a text read aloud or information presented in a singular media format, including visually, quantitatively, and orally.	Identifies portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.	Paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.	Paraphrases portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally, keeping the same organizational structure.

Listening					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	SL.4.3	Identifies one reason or piece of evidence a speaker provides to support a particular point.	Identifies one reason and evidence a speaker provides to support a particular point.	Identifies the reasons and evidence a speaker provides to support particular points.	Evaluates the strength of the reasons and evidence a speaker provides to support particular points.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	L.4.1	Attempts to meet the conventions of standard English grammar and usage when writing; forms and uses simple prepositional phrases.	Demonstrates an understanding of the conventions of standard English grammar and usage when writing, including using relative pronouns and relative adverbs and forming and using the progressive verb tense; orders adjectives within sentences according to conventional patterns; forms and uses simple prepositional phrases; produces complete sentences, recognizing and correcting fragments and run-ons.	Demonstrates command of the conventions of standard English grammar and usage when writing, including using relative pronouns and relative adverbs, forming and using the progressive verb tenses, and using modal auxiliaries (e.g., can, may, must) to convey various conditions; orders adjectives within sentences according to conventional patterns; forms and uses prepositional phrases; produces complete sentences, recognizing and correcting inappropriate fragments	Demonstrates strong command of the conventions of standard English grammar and usage when writing, including using relative pronouns and relative adverbs, forming and using the progressive verb tenses, and using modal auxiliaries (e.g., can, may, must) to convey various conditions; orders adjectives within sentences according to conventional patterns; forms and uses complex prepositional phrases; produces complete sentences with varying complexity, recognizing and correcting

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				and run-ons; correctly uses frequently confused words (e.g., to, too, two; there, their).	inappropriate fragments and run-ons; correctly uses frequently confused words (e.g., to, too, two; there, their).
Range	L.4.2	Attempts to meet the conventions of standard English capitalization, punctuation, and spelling when writing; uses commas and/or quotation marks to mark direct speech and quotations from a text; spells most words correctly, consulting references as needed.	Demonstrates understanding of the conventions of standard English capitalization, punctuation, and spelling when writing; uses commas and/or quotation marks to mark direct speech and quotations from a text; spells most words correctly, consulting references as needed.	Demonstrates command of the conventions of standard English capitalization, punctuation, and spelling when writing; uses commas and quotation marks to mark direct speech and quotations from a text; uses a comma before a coordinating conjunction in a compound sentence; spells words correctly, consulting references as needed.	Demonstrates strong command of the conventions of standard English capitalization, punctuation, and spelling when writing; uses commas and quotation marks to mark direct speech and quotations from a text; uses a comma before a coordinating conjunction in a compound sentence; spells low-frequency and above grade-level words correctly, consulting references as needed.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	L.4.3	Uses knowledge of language and its conventions when writing, speaking, reading, or listening; chooses words and phrases to form sentences; uses some punctuation.	Uses some knowledge of language and its conventions when writing, speaking, reading, or listening; chooses words and phrases to convey ideas; uses appropriate punctuation; uses a consistently formal or informal tone.	Uses knowledge of language and its conventions when writing, speaking, reading, or listening; chooses words and phrases to convey ideas precisely; chooses punctuation for effect; differentiates between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion).	Uses knowledge of language and its conventions when writing, speaking, reading, or listening; chooses words and phrases to convey ideas precisely; chooses punctuation for effect; differentiates between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion).

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	L.4.4	Clarifies the meaning of unknown words and phrases, choosing from a limited range of strategies; uses immediate context as a clue to the meaning of a word or phrase; consults reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to determine the meaning of words and phrases.	Determines or clarifies the meaning of unknown and multiple-meaning words and phrases; uses immediate context as a clue to the meaning of a word or phrase; recognizes Greek and Latin affixes and roots; consults reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the meaning of key words and phrases.	Determines or clarifies the meaning of unknown and multiple-meaning words and phrases, choosing flexibly from a range of strategies; uses context as a clue to the meaning of a word or phrase; uses common grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word; consults reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.	Determines or clarifies the meaning of unknown and multiple-meaning words and phrases, choosing strategically from a range of strategies; uses sentence- and paragraph-level context as a clue to the meaning of a word or phrase; uses Greek and Latin affixes and roots as clues to the meaning of a word; consults reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.
Range	L.4.5	Recognizes simple figurative language, simple word relationships, and nuances in word meanings; recognizes simple similes and metaphors; recognizes common idioms, adages, and proverbs; understands	Demonstrates understanding of simple figurative language, simple word relationships, and nuances in word meanings; explains the meaning of simple similes and metaphors	Demonstrates understanding of figurative language, word relationships, and nuances in word meanings; explains the meaning of simple similes and metaphors (e.g., as pretty as a	Demonstrates understanding of complex figurative language, complex word relationships, and subtle nuances in word meanings; explains the meaning of similes and metaphors in context;

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		that words have direct opposites (antonyms) and some words have similar but not identical meanings (synonyms).	(e.g., as pretty as a picture) in context; recognizes and explains the meaning of common, simple idioms, adages, and proverbs; demonstrates understanding of words by relating them to their opposites (antonyms) and to words with similar but not identical meanings (synonyms).	picture) in context; recognizes and explains the meaning of common idioms, adages, and proverbs; demonstrates understanding of words by relating them to their opposites (antonyms) and to words with similar but not identical meanings (synonyms).	recognizes and explains the meaning of idioms, adages, and proverbs; demonstrates deep understanding of words by relating them to their opposites (antonyms) and to words with similar but not identical meanings (synonyms).

Grade 5 English Language Arts

PLD	Standard	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy		The Level 1 student is below proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for the grade level, is likely able to partially access	The Level 2 student is approaching proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for the grade level, is likely able to access grade-	The Level 3 student is proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for the grade level, is able to access grade-level content, and	The Level 4 student is highly proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for the grade level, is able to access above grade-

PLD	Standard	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
		grade-level content, and engages with higher-order thinking skills with extensive support.	level content, and engages in higher-order thinking skills with some independence and support.	engages in higher-order thinking skills with some independence and minimal support.	level content, and engages in higher-order thinking skills independently.
-	-	-	-	-	-
-	-	~~For a grade-appropriate, low-complexity texts, the Level 1 student~~	~~For a grade-appropriate, low-to-moderate complexity texts, the Level 2 student~~	~~For a grade-appropriate, moderate-to-high complexity texts, the Level 3 student~~	~~For a grade-appropriate, high-complexity texts, the Level 4 student~~

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	RL.5.1	Explains what the text says explicitly and draws simple inferences.	Explains what the text says explicitly and draws inferences; quotes accurately to support ideas stated explicitly.	Quotes accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.	Quotes accurately from a text when explaining what the text says explicitly and when drawing complex inferences.

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	RL.5.2	Identifies an explicitly stated theme of a story, drama, or poem; determines the details in the text.	Determines an explicitly stated theme of a story, drama, or poem; determines the key details in the text.	Determines a theme of a story, drama, or poem from details in the text, including how characters in a story or drama respond to challenges or how the speaker in a poem reflects upon a topic; summarizes the text.	Determines an implicitly stated theme of a story, drama, or poem, including how characters in a story or drama respond to challenges or how the speaker in a poem reflects upon a topic; summarizes the text.
Range	RL.5.3	Compares and contrasts two or more characters, settings, or events in a story or drama, drawing on simplistic and explicitly stated details in the text.	Compares and contrasts two or more characters, settings, or events in a story or drama, drawing on explicitly stated details in the text.	Compares and contrasts two or more characters, settings, or events in a story or drama, drawing on specific details in the text (e.g., how characters interact).	Compares and contrasts, in depth, two or more characters, settings, or events in a story or drama, drawing on implicitly stated details in the text.
Range	RL.5.4	Uses explicitly stated details to determine the meaning of familiar words and phrases as they are used in a text.	Uses explicitly stated details to determine the meaning of words and phrases as they are used in a text, including figurative language such as metaphors and similes.	Determines the meaning of words and phrases as they are used in a text, including figurative language such as metaphors and similes.	Determines the meaning of unfamiliar words and phrases as they are used in a text, including figurative language such as metaphors and similes.
Range	RL.5.5	Identifies how a series of chapters, scenes, or stanzas affect the basic structure of a particular story, drama, or poem.	Explains how a series of chapters, scenes, or stanzas affect the basic structure of a particular story, drama, or poem.	Explains how a series of chapters, scenes, or stanzas fits together to provide the overall structure of a particular story, drama, or poem.	Explains how a series of chapters, scenes, or stanzas fit together to provide the overall structure of a particular story, drama, or poem;

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
					makes inferences about the interaction.
Range	RL.5.6	Identifies how a narrator's or speaker's point of view influences events.	Describes how a narrator's or speaker's point of view influences events.	Describes how a narrator's or speaker's point of view influences how events are described.	Describes how a narrator's or speaker's point of view influences how complex events are described.
Range	RL.5.7	Identifies how visual and multimedia elements contribute to the meaning of a text.	Describes how visual and multimedia elements contribute to the meaning of a text.	Analyzes how visual and multimedia elements contribute to the meaning, tone, or beauty of a text (e.g., graphic novel, multimedia presentation of fiction, folktale, myth, and poem).	Analyzes and evaluates how visual and multimedia elements contribute to the meaning, tone, or beauty of a text.
Range	RL.5.8	N/A	N/A	N/A	N/A
Range	RL.5.9	Compares and contrasts stories in the same genre.	Compares and contrasts stories in the same genre on their approaches to similar explicitly stated topics.	Compares and contrasts stories in the same genre (e.g., mysteries and adventure stories) on their approaches to similar themes and topics.	Compares and contrasts stories in the same genre on their approaches to similar implicitly stated themes and topics, providing evidence to support his or her claim.

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	RI.5.1	Explains what the text says explicitly and draws simple inferences.	Explains what the text says explicitly and draws inferences; quotes accurately to support ideas stated explicitly from the text.	Quotes accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.	Quotes accurately from a text when explaining what the text says explicitly and when drawing complex inferences.
Range	RI.5.2	Identifies an explicitly stated main idea of a text; determines key details.	Determines an explicitly stated main idea of a text and explains how it is supported by key details; provides a simple summary of the text.	Determines two or more main ideas of a text and explains how they are supported by key details; summarizes the text.	Determines the relationship between two or more main ideas of a text and explains how they are supported by key details; provides a comprehensive summary of the text.
Range	RI.5.3	Identifies the relationships or interactions between two individuals, events, ideas, or concepts in a historical, scientific, or technical text.	Describes the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text.	Explains the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.	Analyzes in detail the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text, providing evidence based on specific information in the text.
Range	RI.5.4	Uses easily located, explicitly stated details to determine the meaning of frequently used academic and domain-specific words	Uses explicitly stated details to determine the meaning of general academic and domain specific words and phrases in a text.	Determines the meaning of general academic and domain-specific words and phrases in a text.	Determines the meaning of advanced academic and domain specific words and phrases in a text.

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		and phrases in a text.			
Range	RI.5.5	Identifies the overall structure of events, ideas, concepts, or information in a text.	Explains the overall structure of events, ideas, concepts, or information in two or more texts.	Compares and contrasts the overall structure (e.g., chronology, comparison, cause/effect, and problem/solution) of events, ideas, concepts, or information in two or more texts.	Compares and contrasts the overall structure of events, ideas, concepts, or information in two or more texts and describes how that structure contributes to overall meaning.
Range	RI.5.6	Identifies the point of view in multiple accounts of an event or topic.	Determines the point of view in multiple accounts of the same event or topic.	Analyzes multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent.	Analyzes multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent and identifying examples where the author reveals the point of view.

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	RI.5.7	Identifies explicit information within print or digital sources in order to locate an answer or solve a problem.	Draws on information from a print or digital source, making simple inferences and demonstrating the ability to locate an answer to a question or to solve a problem.	Draws on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.	Draws on information from multiple print or digital sources, making complex inferences and demonstrating the ability to locate inferred information to answer complex questions or to solve a problem efficiently.
Range	RI.5.8	Identifies which reasons or evidence support a point in a text.	Describes how an author uses reasons and evidence to support particular points in a text.	Explains how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s).	Evaluates the strength of the reasons and evidence an author uses to support particular points in a text.
Range	RI.5.9	Identifies information from two texts in order to write or speak about the subject knowledgably.	Integrates explicitly stated similarities from several texts on the same topic in order to write or speak about the subject knowledgably.	Integrates information from several texts on the same topic in order to write or speak about the subject knowledgably.	Integrates complex or inferred information from several texts on the same topic in order to write or speak knowledgably, using textual evidence about the subject.

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	W.5.1	Writes an opinion that lacks organization that does not include an introduction or conclusion or includes an unclear one, provides irrelevant reasons to support an opinion, and provides facts and reasons that are not connected.	Writes a moderately organized opinion piece that introduces the topic, provides relevant and irrelevant reasons for the opinion that may or may not be logically ordered and/or supported by facts and details, links opinions and reasons, and provides a concluding statement.	Writes a well-organized opinion piece that introduces the topic, provides reasons for the opinion that are logically ordered and supported by facts and details, links opinions and reasons, and provides a relevant concluding statement.	Writes a well-organized opinion piece that effectively introduces the topic, provides reasons for the opinion that are logically and purposefully ordered and supported by facts and details, links opinions and reasons, and provides a relevant and effective concluding statement.
Range	W.5.2	Writes an explanation that lacks organization, does not include an introduction or conclusion or includes an ineffective one, provides irrelevant reasons to support the opinion, and does not use domain-specific vocabulary to clarify the text.	Writes a loosely organized explanatory piece that introduces the topic, develops the topic with facts and details that may or may not have support in the text, links ideas with categories of information which may or may not be demonstrated in the text, uses domain-specific vocabulary in an attempt to explain the topic, and provides a concluding statement.	Writes a well-organized explanatory piece that clearly introduces the topic, develops the topic with concrete facts and details, links ideas with categories of information using phrases and clauses, uses domain-specific vocabulary, and provides a concluding statement.	Writes a well-organized explanatory piece that clearly and effectively introduces the topic, develops the topic with concrete facts and details, links supported ideas with categories of information using complex phrases and clauses, uses domain-specific vocabulary efficiently, and provides an effective concluding statement.

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	W.5.4-6	Produces writing with guidance and support that includes insufficient development, revision, and collaborative elements.	Produces writing with guidance and support that includes incomplete or insufficient development, revision, and collaborative elements.	Produces writing with guidance and support that includes and exhibits development, revision, and collaborative elements.	Produces writing with guidance and support that includes and exhibits complex development, concise revision, and collaborative elements.
Range	W.5.7-8	Conducts some research and recalls some information from experiences and sources, providing evidence that is not relevant or sorted into the provided categories and drawing irrelevant information from literary or informational texts to attempt to support his or her research and analysis.	Conducts some research and recalls some information from experiences and sources, providing some evidence that may not be sorted into the relevant provided categories and drawing some relevant information from literary or informational texts to attempt to support his or her research and analysis.	Conducts research and recalls information from experiences and sources, sorting relevant evidence into provided categories and drawing information from literary or informational texts to support his or her research and analysis.	Conducts research and recalls information from experiences and sources, sorting relevant evidence into provided categories and drawing information from literary or informational texts as strong and relevant support for his or her research and analysis.

Listening					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	SL.5.2	Identifies key details of a written text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.	Determines the key details of a written text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.	Summarize a written text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.	Clearly and coherently summarizes a written text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.
Range	SL.5.3	Identifies the points a speaker makes.	Determines the points a speaker makes and identifies how each claim is supported by reasons and evidence.	Summarizes the points a speaker makes and explains how each claim is supported by reasons and evidence.	Provides a comprehensive summary of the points a speaker makes and explains in detail how each claim is supported by reasons and evidence.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	L.5.1	Demonstrates a basic understanding of the conventions of standard English grammar and usage when writing or speaking; attempts to form and use the perfect verb tenses; attempts to use correlative conjunctions (e.g., either/or, neither/nor).	Demonstrates an understanding of the conventions of standard English grammar and usage when writing or speaking, understanding the function of conjunctions, prepositions, and interjections in general and their function in particular sentences; forms and uses the perfect verb tenses, uses verb tense to convey various times, sequences, states, and conditions, and recognizes inappropriate shifts in verb tense; uses correlative conjunctions (e.g., either/or, neither/nor).	Demonstrates command of the conventions of standard English grammar and usage when writing or speaking, explaining the function of conjunctions, prepositions, and interjections in general and their function in particular sentences; forms and uses the perfect verb tenses, uses verb tense to convey various times, sequences, states, and conditions, and recognizes and corrects inappropriate shifts in verb tense; uses correlative conjunctions (e.g., either/or, neither/nor).	Demonstrates strong command of the conventions of standard English grammar and usage when writing or speaking, explaining the function of conjunctions, prepositions, and interjections in general and their function in particular sentences; forms and uses the perfect verb tenses, uses verb tense to convey various specific times, sequences, states, and conditions, and recognizes and corrects inappropriate shifts in verb tense; uses correlative conjunctions (e.g., either/or, neither/nor).
Range	L.5.2	Demonstrates basic understanding of the conventions of standard English capitalization, punctuation, and spelling when writing; uses punctuation to separate items in a	Demonstrates understanding of the conventions of standard English capitalization, punctuation, and spelling when writing; uses punctuation to separate items in a	Demonstrates command of the conventions of standard English capitalization, punctuation, and spelling when writing; uses punctuation to separate items in a series; uses a	Demonstrates strong command of the conventions of standard English capitalization, punctuation, and spelling when writing; uses punctuation to separate items in a series; uses a

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		series; spells words correctly, consulting references as needed.	series; uses a comma to separate an introductory element from the rest of the sentence; uses a comma to set off the words yes and no, to set off a tag question from the rest of the sentence, and to indicate direct address; spells words correctly, consulting references as needed.	comma to separate an introductory element from the rest of the sentence; uses a comma to set off the words yes and no, to set off a tag question from the rest of the sentence, and to indicate direct address; uses underlining, quotation marks, or italics to indicate titles of works; spells words correctly, consulting references as needed.	comma to separate an introductory element from the rest of the sentence; uses a comma to set off the words yes and no, to set off a tag question from the rest of the sentence, and to indicate direct address; uses underlining, quotation marks, or italics to indicate titles of works; spells words correctly, consulting references as needed.
Range	L.5.3	Uses a basic knowledge of language and its conventions when writing, speaking, reading, or listening; expands and reduces sentences for meaning; compares the language used in stories, dramas, or poems.	Uses knowledge of language and its conventions when writing, speaking, reading, or listening; expands, combines, and reduces sentences for meaning; compares and contrasts the varieties of English (e.g., dialects, registers) used in stories, dramas, or poems.	Uses knowledge of language and its conventions when writing, speaking, reading, or listening; expands, combines, and reduces sentences for meaning, reader/listener interest, and style; compares and contrasts the varieties of English (e.g., dialects, registers) used in stories, dramas, or poems.	Uses deep knowledge of language and its conventions when writing, speaking, reading, or listening; effectively expands, combines, and reduces sentences for meaning, reader/listener interest, and style; compares and contrasts, in depth, the varieties of English (e.g., dialects, registers) used in stories, dramas, or poems.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	L.5.4	Clarifies the meaning of unknown words and phrases, choosing from a limited range of strategies; uses immediate context as a clue to the meaning of a word or phrase; consults reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to determine the meaning of key words and phrases.	Determines or clarifies the meaning of unknown and multiple-meaning words and phrases, choosing flexibly from a range of strategies; uses immediate context as a clue to the meaning of a word or phrase; recognizes Greek and Latin affixes and roots; consults reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the meaning of key words and phrases.	Determines or clarifies the meaning of unknown and multiple-meaning words and phrases, choosing flexibly from a range of strategies; uses context as a clue to the meaning of a word or phrase; uses common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word; consults reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.	Determines or clarifies and applies the meaning of unknown and multiple-meaning words and phrases, choosing strategically from a range of strategies; uses sentence and paragraph level context as a clue to the meaning of a word or phrase; uses Greek and Latin affixes and roots as clues to the meaning of a word; consults reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	L.5.5	Recognizes figurative language, basic word relationships, and nuances in word meanings; recognizes common idioms, adages, and proverbs; understands the relationship between particular words (e.g., synonyms, antonyms, homographs).	Demonstrates understanding of basic figurative language, basic word relationships, and nuances in word meanings; interprets basic figurative language, including similes and metaphors, in context; recognizes common idioms, adages, and proverbs; uses the relationship between particular words (e.g., synonyms, antonyms, homographs) to better understand each of the words.	Demonstrates understanding of figurative language, word relationships, and nuances in word meanings; interprets figurative language, including similes and metaphors, in context; recognizes and explains the meaning of common idioms, adages, and proverbs; uses the relationship between particular words (e.g., synonyms, antonyms, homographs) to better understand each of the words.	Demonstrates understanding of complex figurative language, complex word relationships, and subtle nuances in word meanings; interprets complex figurative language, including similes and metaphors, in context; recognizes and explains the meaning of idioms, adages, and proverbs; uses the relationship between particular words (e.g., synonyms, antonyms, homographs) to better understand each of the words.

Grade 6 English Language Arts

PLD	Standard	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy		The Level 1 student is below proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for the grade level, is likely able to partially access grade-level content, and engages with higher-order thinking skills with extensive support.	The Level 2 student is approaching proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for the grade level, is likely able to access grade-level content, and engages in higher-order thinking skills with some independence and support.	The Level 3 student is proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for the grade level, is able to access grade-level content, and engages in higher-order thinking skills with some independence and minimal support.	The Level 4 student is highly proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for the grade level, is able to access above grade-level content, and engages in higher-order thinking skills independently.

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	RL.6.1	Generally refers to the text to support analysis of what the text says explicitly.	Identifies textual evidence to support analysis of what the text says explicitly.	Cites textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	Cites strong textual evidence to support a complex inference or analysis of the text.
Range	RL.6.2	Identifies a central idea of a text; provides a basic sequence of events of a text.	Identifies a central idea of a text; provides a simple summary of a text distinct from personal opinions or judgments.	Determines a central idea of a text and how it is conveyed through particular details; provides a summary of the text distinct from personal opinions or judgments.	Evaluates central ideas and how they are conveyed through particular details; provides a comprehensive summary of a text distinct from personal opinions or judgments.
Range	RL.6.3	Identifies a basic plot of a particular story or drama and how the main character changes.	Explains how the plot of a particular story or drama unfolds and how the characters change.	Describes how the plot of a particular story or drama unfolds in a series of episodes, as well as how the characters respond or change as the plot moves toward a resolution.	Analyzes how the plot of a particular story or drama unfolds in a series of episodes, as well as how the responses and changes of complex characters contribute to the plot as it moves toward a resolution.

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	RL.6.4	Determines the literal meaning of words and phrases as they are used in a text; identifies the tone of a text.	Distinguishes literal, figurative, and connotative meanings of words and phrases as they are used in a text; identifies the impact of a specific word choice on meaning and tone.	Determines the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyzes the impact of a specific word choice on meaning and tone.	Analyzes the meaning of words and phrases as they are used in a text, including figurative and connotative meanings, and assesses their effectiveness; evaluates the impact of specific word choice on meaning and tone.
Range	RL.6.5	Identifies a particular sentence, chapter, scene, or stanza that contributes to the overall structure of a text.	Describes how a particular sentence, chapter, scene, or stanza contributes to the overall structure of a text.	Analyzes how a particular sentence, chapter, scene, or stanza fits into the overall structure of a text and contributes to the development of the theme, setting, or plot.	Analyzes how a particular sentence, chapter, scene, or stanza affects the overall structure of a text and contributes to the development of the theme, setting, or plot throughout the text.
Range	RL.6.6	Describes a narrator's or speakers explicitly stated point of view in a text.	Describes the point of view of the narrator or speaker in a text.	Explains how an author develops the point of view of the narrator or speaker in a text.	Analyzes how an author develops the point of view of the narrator or speaker in a text, citing evidence to support the analysis.

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	RL.6.7	Compares the experience of reading a story, drama, or poem to listening to or viewing an audio, video, or live version of the text.	Compares and contrasts the experience of reading a story, drama, or poem to listening to or viewing an audio, video, or live version of the text.	Compares and contrasts the experience of reading a story, drama, or poem to listening to or viewing an audio, video, or live version of the text, including contrasting what he or she “sees” and “hears” when reading the text compared to perceiving when listening or watching.	Compares and contrasts the experience of reading a story, drama, or poem to listening to or viewing an audio, video, or live version of the text, including analyzing what he or she “sees” and “hears” when reading the text compared to perceiving when listening or watching. Provides evidence from the different versions of the text to support his or her perceptions.
Range	RL.6.9	Identifies overtly differing textual elements in different forms or genres with similar themes or topics.	Identifies differing textual elements in different forms or genres (e.g., stories and poems; historical novels and fantasy stories) with similar themes or topics.	Compares and contrasts texts in different forms or genres (e.g., stories and poems; historical novels and fantasy stories) in terms of their approaches to similar themes and topics.	Compares, contrasts, and evaluates texts in different forms or genres (e.g., stories and poems; historical novels and fantasy stories) in terms of their approaches to similar themes and topics.

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	RI.6.1	Identifies textual evidence to support analysis of what the text says explicitly.	Cites textual evidence to support analysis of what the text says explicitly as well as simple inferences drawn from the text.	Cites textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	Cites strong and thorough textual evidence to support analysis of what the text says explicitly as well as abstract and complex inferences drawn from the text.
Range	RI.6.2	Identifies a central idea of a text; provides a basic sequence of events.	Identifies a central idea of a text; provides a simple summary of the text distinct from personal opinions or judgments.	Determines a central idea of a text and how it is conveyed through particular details; provides a summary of the text distinct from personal opinions or judgments.	Evaluates central ideas and how they are conveyed through particular details in a text; provides a comprehensive summary of the text distinct from personal opinions or judgments.
Range	RI.6.3	Identifies how a key individual, event, or idea is introduced and illustrated in a text.	Explains how a key individual, event, or idea is introduced, illustrated, and elaborated in a text.	Analyzes in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes).	Analyzes in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes); uses evidence from the text to evaluate relationships among key individuals, events, or ideas.

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	RI.6.4	Determines the literal meaning of words and phrases as they are used in a text.	Distinguishes between literal, figurative, and connotative meanings of words and phrases as they are used in a text.	Determines the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.	Analyzes the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; evaluates the impact of a specific word choice.
Range	RI.6.5	Locates a particular sentence, paragraph, chapter, or section that contributes to the development of the key ideas of a text.	Explains how a particular sentence, paragraph, chapter, or section contributes to the overall structure of a text and contributes to the development of the ideas.	Analyzes how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas.	Articulates why the author uses a particular sentence, paragraph, chapter, or section in the overall structure of a text and explains how it contributes to the development of the ideas, citing evidence from the text to support the response.
Range	RI.6.6	Identifies an author's explicitly stated point of view or purpose in a text.	Identifies an author's point of view or purpose in a text and gives an example of how it is conveyed in the text.	Determines an author's point of view or purpose in a text and explains how it is conveyed in the text.	Analyzes an author's point of view *and* purpose in a text; provides textual evidence to show how the author's purpose is conveyed in the text.

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	RI.6.7	Identifies key information presented in different media or formats (e.g., visually, quantitatively) as well as in words.	Integrates information presented in different media or formats (e.g., visually, quantitatively) as well as in words to show a partially developed understanding of a topic or issue.	Integrates information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.	Synthesizes information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a comprehensive understanding of a topic or issue.
Range	RI.6.8	Identifies specific claims, reasoning, and evidence in a text.	Traces the argument and specific claims, reasoning, and evidence in a text.	Traces and evaluates the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.	Traces and evaluates the argument and specific claims in a text, explaining why the reasoning and evidence supports or does not support the claim.
Range	RI.6.9	Compares and contrasts one author's presentation of events with that of another, identifying explicit similarities and differences.	Compares and contrasts one author's presentation of essential events with that of another.	Compares and contrasts one author's presentation of events with that of another (e.g., a memoir by one person and a biography of that person).	Compares and contrasts one author's presentation of events with that of another (e.g., a memoir by one person and a biography of that person); provides evidence to illustrate the impact of the different presentations.

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	W.6.1	Writes arguments to support claims. a. Introduces claim(s). b. Supports the claim(s) with reasons, using sources or non-textual evidence but demonstrating a basic understanding of the topic or text. c. Uses words, phrases, and clauses to state the relationships among claim(s) and reasons. d. Uses an informal style. e. Provides a concluding statement or section that partially or illogically follows from the argument presented.	Writes arguments to support claims with clear reasons and evidence. a. Introduces claim(s) and organizes the evidence. b. Supports claim(s) with reasons and evidence, using appropriate sources and demonstrating an understanding of the topic or text. c. Uses words, phrases, and clauses to state the relationships among claim(s) and reasons. d. Establishes a formal style. e. Provides a concluding statement or section that partially follows from the argument presented.	Writes arguments to support claims with clear reasons and relevant evidence. a. Introduces claim(s) and organizes the reasons and evidence clearly. b. Supports claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text. c. Uses words, phrases, and clauses to clarify the relationships among claim(s) and reasons. d. Establishes and maintains a formal style. e. Provides a concluding statement or section that follows from the argument presented.	Writes arguments that support claims with clear reasons and relevant evidence. a. Introduces solid claim(s) and organizes the reasons and evidence clearly. b. Supports the claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating a strong understanding of the topic or text. c. Uses words phrases and clauses to clarify and elaborate on the relationships among claim(s) and reasons. d. Establishes and maintains a formal style. e. Provides a well-developed concluding section that closely follows from the

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
					argument presented.

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	W.6.2	Writes informative/explanatory texts to restate a topic and convey ideas, concepts, and information through the selection, organization of content. a. Introduces a topic; organizes ideas, concepts, and information, inconsistently applying strategies such as definition, classification, comparison/contrast, and cause/effect. b. Develops the topic with facts. c. Uses basic transitions to connect the relationships among ideas and concepts. d. Uses some domain-specific vocabulary to inform about or explain the topic.	Writes informative/explanatory texts to explain a topic and convey ideas, concepts, and information through the selection and organization of relevant content. a. Introduces a topic; organizes ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; includes formatting (e.g., headings), graphics (e.g., charts, tables) when useful to aiding comprehension. b. Develops the topic with facts, definitions, concrete details, quotations, or other information and examples. c. Uses appropriate	Writes informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. a. Introduces a topic; organizes ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; includes formatting (e.g., headings) and graphics (e.g., charts, tables) and multimedia when useful to aiding comprehension. b. Develops the topic with relevant facts, definitions, concrete details, quotations, or other information and examples.	Writes informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. a. Introduces a topic; organizes ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; includes formatting (e.g., headings) and graphics (e.g., charts, tables) in a way that enhances the explanation. b. Develops the topic with significant facts, definitions, concrete details, quotations, or other information and examples. c. Uses appropriate

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		e. Uses an informal style. f. Provides a concluding statement or section that partially follows from the information or explanation presented.	transitions to connect the relationships among ideas and concepts. d. Uses some precise language and domain-specific vocabulary to inform about or explain the topic. e. Establishes a formal style. f. Provides a basic concluding statement or section that follows from the information or explanation presented.	c. Uses appropriate transitions to clarify the relationships among ideas and concepts. d. Uses precise language and domain-specific vocabulary to inform about or explain the topic. e. Establishes and maintains a formal style. f. Provides a concluding statement or section that follows from the information or explanation presented.	transitions to clarify and elaborate on the relationships among ideas and concepts. d. Uses precise language and domain-specific vocabulary to enhance the explanation of the topic. e. Establishes and maintains a formal style. f. Provides a well-developed concluding statement or section that follows from the information or explanation presented.

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	W.6.4-6	Produces clear writing in which the development, organization, and style are evident; develops writing with some planning, revising, and editing, including editing for conventions; demonstrates basic command of keyboarding skills.	Produces clear writing in which the development, organization, and style are largely appropriate to task, purpose, and audience; develops writing by planning, revising, editing, rewriting, or trying a new approach, including editing for conventions; demonstrates sufficient command of keyboarding skills to type up to three pages in a single sitting.	Produces clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience; develops and strengthens writing by planning, revising, editing, rewriting, or trying a new approach, including editing for conventions; demonstrates sufficient command of keyboarding skills to type a minimum of three pages in a single sitting.	Produces clear and well-developed writing in which the development, organization, and style are appropriate to task, purpose, and audience; develops and strengthens writing as needed by planning, revising, editing, rewriting, or trying a new approach, including editing for conventions; demonstrates sufficient command of keyboarding skills to type three or more pages in a single sitting.

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	W.6.7-8	Conducts short research projects to answer a question, drawing on several sources; gathers information from multiple sources; paraphrases the conclusions of others while avoiding plagiarism.	Conducts short research projects to answer a question, drawing on several sources; gathers information from multiple sources; assesses the credibility of sources as appropriate; paraphrases the data and conclusions of others while avoiding plagiarism.	Conducts short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate; gathers relevant information from multiple sources; assesses the credibility of sources as appropriate; quotes or paraphrases the data and conclusions of others while avoiding plagiarism.	Conducts research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate; gathers relevant information from multiple sources; assesses the credibility of sources as appropriate; cites the data and conclusions of others while avoiding plagiarism and using standard format for citation.

Listening					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	SL.6.2	Recalls information presented in diverse media and formats and identifies a topic, text, or issue under study.	Recalls information presented in diverse media and formats and describes details related to a topic, text, or issue under study.	Interprets information presented in diverse media and formats and explains how it contributes to a topic, text, or issue under study.	Interprets and evaluates information presented in diverse media and formats and explain how it contributes to a topic, text, or issue under study.
Range	SL.6.3	Identifies a speaker's argument and specific claims.	Identifies a speaker's argument and specific claims and makes some distinctions about claims that are supported by reasons and evidence from claims that are not.	Delineates a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.	Delineates a speaker's argument and specific claims, critiquing claims that are supported by reasons and evidence from claims that are not.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	L.6.1	Demonstrates basic understanding of the conventions of standard English grammar and usage when writing or speaking: inconsistently uses pronouns in the correct case; inconsistently recognizes inappropriate shifts in pronoun number and person; and recognizes variations from standard English, using basic strategies to improve expression in conventional language.	Demonstrates understanding of the conventions of standard English grammar and usage when writing or speaking: ensures that pronouns are in the proper case; uses intensive pronouns; recognizes inappropriate shifts in pronoun number and person; recognizes vague pronouns; and identifies variations from standard English and uses strategies to improve expression in conventional language.	Demonstrates command of the conventions of standard English grammar and usage when writing or speaking: ensures that pronouns are in the proper case; uses intensive pronouns; recognizes and corrects inappropriate shifts in pronoun number and person; recognizes and corrects vague pronouns; and recognizes variations from standard English and uses strategies to improve expression in conventional language.	Demonstrates strong command of the conventions of standard English grammar and usage when writing or speaking: ensures that pronouns are in the proper case; uses intensive pronouns; recognizes and corrects inappropriate shifts in pronoun number and person; and recognizes and corrects vague pronouns; and identifies variations from standard English and uses strategies to improve expression in conventional language.
Range	L.6.2	Demonstrates a limited understanding of the conventions of standard English capitalization, punctuation, and spelling when writing: inconsistently uses punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements; spells correctly.	Demonstrates an understanding of the conventions of standard English capitalization, punctuation, and spelling when writing: generally uses punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements; spells correctly.	Demonstrates command of the conventions of standard English capitalization, punctuation, and spelling when writing: uses punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements; spells correctly.	Demonstrates strong and strategic command of the conventions of standard English capitalization, punctuation, and spelling when writing: uses punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements; spells correctly.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	L.6.3	Uses basic knowledge of language and its conventions when writing, speaking, reading, or listening, applying basic variations in sentence patterns for meaning, interest, reader/listener interest, and style while attempting some consistency in style and tone.	Uses knowledge of language and its conventions when writing, speaking, reading, or listening, sometimes varying sentence patterns for meaning, interest, reader/listener interest, and style while demonstrating some consistency in style and tone.	Uses knowledge of language and its conventions when writing, speaking, reading, or listening, varying sentence patterns for meaning, interest, reader/listener interest, and style while maintaining consistency in style and tone.	Strategically uses knowledge of language and its conventions when writing, speaking, reading, or listening, varying sentence patterns for meaning, interest, reader/listener interest, and style while maintaining strong consistency in style and tone.
Range	L.6.4	With strong support, determines or clarifies the explicit meaning of basic words and phrases, using context, Greek and Latin affixes and roots as clues to the meaning, consulting reference materials as needed.	Generally determines or clarifies the meaning of unknown and multiple-meaning words and phrases, choosing from a range of strategies: uses context as a clue to the meaning of a word or phrase; uses common Greek and Latin affixes and roots as clues to the meaning of the word; consults reference materials as needed; and verifies the preliminary	Determines or clarifies the meaning of unknown and multiple-meaning words and phrases, choosing from a range of strategies: uses context as a clue to the meaning of a word or phrase; uses common Greek and Latin affixes and roots as clues to the meaning of the word; consults reference materials as needed; and verifies the preliminary determination of the	Authoritatively determines or clarifies the meaning of unknown and multiple-meaning words and phrases, choosing from a range of strategies: uses context as a clue to the meaning of a word or phrase; uses common Greek and Latin affixes and roots as clues to the meaning of the word; consults reference materials as needed; and verifies the preliminary

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
			determination of the meaning of a word or phrase.	meaning of a word or phrase.	determination of the meaning of a word or phrase.
Range	L.6.5	Demonstrates a limited understanding of figurative language and word relationships in word meanings, including identifying figures of speech and using the relationship between particular words to better understand each of the words, and inconsistently distinguishing among the connotations of words with similar denotations.	Demonstrates a basic understanding of figurative language, word relationships, and nuances in word meanings, including identifying figures of speech in context, using the relationship between particular words to better understand each of the words, and distinguishing among the connotations of words with similar denotations.	Demonstrates understanding of figurative language, word relationships, and nuances in word meanings, including interpreting figures of speech in context, using the relationship between particular words to better understand each of the words, and distinguishing among the connotations of words with similar denotations.	Demonstrates command of figurative language, word relationships, and nuances in word meanings, including interpreting figures of speech in context, evaluating the relationship between particular words to better understand each of the words, and distinguishing among the connotations of words with similar denotations and applying them in speaking and writing.

Grade 7 English Language Arts

PLD	Standard	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy		The Level 1 student is below proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for the grade level, is likely able to partially access grade-level content and engages with higher-order thinking skills with extensive support	The Level 2 student is approaching proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for the grade level, is likely able to access grade-level content and engages in higher-order thinking skills with some independence and support.	The Level 3 student is proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for the grade level, is able to access grade-level content, and engages in higher-order thinking skills with some independence and minimal support.	The Level 4 student is highly proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for the grade level, is able to access above grade-level content, and engages in higher-order thinking skills independently.
-	-	-	-	-	-
-	-	~~For grade-appropriate, low-complexity texts, the Level 1 student~~	~~For grade-appropriate, low-to-moderate complexity texts, the Level 2 student~~	~~For grade-appropriate, moderate-to-high complexity texts, the Level 3 student~~	~~For grade-appropriate, high-complexity texts, the Level 4 student~~

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	7.RL.1	Generally refers to the text to support analysis of what it says explicitly.	Identifies textual evidence to support analysis of what the text says explicitly.	Cites several pieces of textual evidence to support analysis of what the text says explicitly as well as	Cites strong and thorough textual evidence to support a complex inference or analysis of a text.

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				inferences drawn from the text.	
Range	7.RL.2	Identifies a theme or central idea of a text; provides a basic sequence of events in a text.	Identifies a theme or central idea of a text; provides a simple objective summary of a text.	Determines a theme or central idea of a text and analyzes its development over the course of a text; provides an objective summary of a text.	Evaluates themes or central ideas and their development over the course of a text; provides a comprehensive objective summary of a text.
Range	7.RL.3	Identifies particular elements of a story or drama (e.g., setting or characters).	Explains how particular elements of a story or drama interact (e.g., how setting shapes the characters or plot).	Analyzes how particular elements of a story or drama interact (e.g., how setting shapes the characters or plot).	Evaluates the impact of relationships between particular elements of a story or drama (e.g., how setting shapes the characters or plot).
Range	7.RL.4	With textual support (e.g. context clues, embedded definition), determines the literal meaning of words and phrases as they are used; identifies rhymes and other repetitions of sounds in a specific verse or stanza of a poem or section of a story or drama.	With textual support (e.g. context clues, embedded definition), determines the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; describes the impact of rhymes and other repetitions of sounds (e.g., alliteration) on a specific verse or stanza of a poem or section of a story or drama.	Determines the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyzes the impact of rhymes and other repetitions of sounds (e.g., alliteration) on a specific verse or stanza of a poem or section of a story or drama.	Determines the meaning and analyzes the impact of words and phrases as they are used in a text, including figurative and connotative meanings, and assesses their effectiveness; analyzes and evaluates the impact of rhymes and other repetitions of sounds (e.g., alliteration) on a specific verse or stanza of a poem or section of a story or drama.

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	7.RL.5	Describes a drama's or poem's form or structure (e.g., soliloquy, sonnet).	Describes and identifies how a drama's or poem's form or structure (e.g., soliloquy, sonnet) contributes to its meaning.	Analyzes how a drama's or poem's form or structure (e.g., soliloquy, sonnet) contributes to its meaning.	Analyzes and evaluates how a drama's or poem's form or structure (e.g., soliloquy, sonnet) contributes to its meaning and effectiveness.
Range	7.RL.6	Describes the points of view of different characters or narrators in a text.	Analyzes the points of view of different characters or narrators in a text.	Analyzes how an author develops and contrasts the points of view of different characters or narrators in a text.	Analyzes how the author develops and contrasts the points of view of different, complex characters or narrators in a text and evaluates the effectiveness of the points of view.
Range	7.RL.7	Compares and contrasts a written story, drama, or poem to its audio, filmed, staged, or multimedia version.	Compares and contrasts a written story, drama, or poem to its audio, filmed, staged, or multimedia version, and identifies the techniques unique to each medium (e.g., lighting, sound, color, or camera focus and angles in a film).	Compares and contrasts a written story, drama, or poem to its audio, filmed, staged, or multimedia version, analyzing the effects of techniques unique to each medium (e.g., lighting, sound, color, or camera focus and angles in a film).	Compares and contrasts a written story, drama, or poem to its audio, filmed, staged, or multimedia version, evaluating the effects of techniques unique to each medium (e.g., lighting, sound, color, or camera focus and angles in a film) and critiquing its use by its director.

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	7.RL.9	Compares and contrasts a fictional portrayal of a time, place, or character and a historical account of the same period.	Compares and contrasts a fictional portrayal of a time, place, or character and a historical account of the same period, identifying how the author uses or alters history.	Compares and contrasts a fictional portrayal of a time, place, or character and a historical account of the same period as a means of understanding how authors of fiction use or alter history.	Cites evidence from both a fictional portrayal of a time, place, or character and a historical account of the same period to support an analysis and evaluation of how authors of fiction use or alter history.

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	7.RI.1	Generally refers to the text to support analysis of what it says explicitly.	Identifies textual evidence to support analysis of what the text says explicitly.	Cites several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	Cites strong and thorough textual evidence to support a complex inference or analysis of a text.
Range	7.RI.2	Identifies a central of the text; provides a basic sequence of events or ideas in the text.	Identifies two or more central ideas of the text; provides a simple summary of the text.	Determines two or more central ideas in a text and analyzes their development over the course of the text; provides an objective summary of the text.	Evaluates two or more central ideas and their development over the course of the text; provides a comprehensive, objective summary of the text.
Range	7.RI.3	Identifies the interactions between individuals, events, and ideas in a text (e.g., how ideas influence	Describes the interactions between individuals, events, and ideas in a text (e.g., how ideas influence	Analyzes the interactions between individuals, events, and ideas in a text (e.g., how ideas influence	Evaluates the relationships between individuals, events, and ideas in a text (e.g., how ideas influence

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		individuals or events, or how individuals influence ideas or events).	individuals or events, or how individuals influence ideas or events).	individuals or events, or how individuals influence ideas or events).	individuals or events, or how individuals influence ideas or events).
Range	7.RI.4	With textual support (e.g. context clues, embedded definition), determines the literal meaning of words and phrases as they are used in a text; identifies the impact of a specific word choice on meaning.	With textual support (e.g. context clues, embedded definition), determines the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; describes the impact of a specific word choice on meaning and tone.	Determines the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyzes the impact of a specific word choice on meaning and tone.	Analyzes the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; evaluates the rhetorical effect of a specific word choice on meaning and tone.
Range	7.RI.5	Describes the structure an author uses to organize a text; identifies the major sections of the text.	Describes and identifies the structure an author uses to organize a text; describes how the major sections contribute to the whole and to the development of the ideas.	Analyzes the structure an author uses to organize a text, including how the major sections contribute to the whole and to the development of the ideas.	Evaluates the rhetorical effect of the structure an author uses to organize a text and analyzes how the major sections contribute to the whole and to the development of the ideas; articulates how a different text structure might impact the meaning of the text.
Range	7.RI.6	Identifies an author’s purpose in a text and what distinguishes his or her position from that of	Identifies an author’s point of view or purpose in a text and describes how the	Determines an author’s point of view or purpose in a text and analyzes how the	Analyzes an author’s point of view and purpose in a text; evaluates how effectively the author

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		others.	author distinguishes his or her position from that of others.	author distinguishes his or her position from that of others.	distinguishes his or her position from that of others.
Range	7.RI.7	Generally compares and contrasts a text to an audio, video, or multimedia version of the text.	Compares and contrasts a text to an audio, video, or multimedia version of the text, describing each medium's portrayal of the subject (e.g., how the delivery of a speech affects the impact of the words).	Compares and contrasts a text to an audio, video, or multimedia version of the text, analyzing each medium's portrayal of the subject (e.g., how the delivery of a speech affects the impact of the words).	Compares and contrasts a text to an audio, filmed, staged, or multimedia version, evaluating each medium's portrayal of the subject (e.g., how the delivery of a speech affects the impact of the words) and providing specific evidence to support evaluation.
Range	7.RI.8	Traces the argument and claim in a text, identifying the reasoning and evidence used to support the claim.	Traces and evaluates the argument and claims in a text, describing the reasoning and evidence used to support the claims.	Traces and evaluates the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims.	Explicates and evaluates the argument and specific claims in a complex text; cites specific language in the text in an assessment of why or why not the reasoning is sound and the evidence is relevant and sufficient to support the claims.
Range	7.RI.9	Describes how two or more authors writing about the same topic shape their presentations of key information.	Describes how two or more authors writing about the same topic shape their presentations of key information by emphasizing different	Analyzes how two or more authors writing about the same topic shape their presentations of key information by emphasizing different	Cites textual evidence in an evaluation of the different rhetorical effects of how two or more authors writing about the same topic shape their presentations of key

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
			evidence.	evidence or advancing different interpretations of facts.	information by emphasizing different evidence or advancing different interpretations of facts.

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	7.W.1	Writes arguments that include a claim or extra textual evidence. a. Introduces claim(s) and organizes the reasons and evidence. b. Supports claim(s) with reasoning and non-textual evidence, demonstrating a basic understanding of the topic or text. c. Uses basic transitional words to link claim(s), reasons, and evidence. d. Attempts to establish a formal style. e. Provides a concluding statement or section.	Writes arguments to support claims with extra textual evidence to support a claim. a. Introduces claim(s) and organizes the reasons and evidence logically. b. Supports claim(s) with reasoning and evidence, using accurate, credible sources and demonstrating an understanding of the topic or text. c. Uses words, phrases, and clauses to link claim(s), reasons, and evidence. d. Establishes formal style. e. Provides a concluding statement or section that follows from the argument presented.	Writes arguments to support claims with clear reasons and relevant evidence. a. Introduces claim(s), acknowledges alternate or opposing claims, and organizes the reasons and evidence logically. b. Supports claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text. c. Uses words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), reasons, and evidence. d. Establishes and maintains a formal style. e. Provides a concluding statement or section that	Writes arguments to support claims with clear reasons and relevant evidence. a. Introduces solid claim(s), acknowledges and evaluates alternate or opposing claim(s), and organizes the reasons and evidence logically. b. Supports claim(s) with logical reasoning and specific evidence, using accurate, credible sources and demonstrating an acute understanding of the topic or text. c. Uses precise words, phrases, and clauses to create cohesive links among major sections of the essay and clarify the relationships among claim(s), reasons, and evidence. d. Establishes and maintains a formal style

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				follows from and supports the argument presented.	and objective tone. e. Provides a compelling concluding statement or section that includes analysis of the evidence and follows and supports the argument presented.
Range	7.W.2	writes informative/explanatory text to describe a topic through the selection and organization of content. a. Introduces a topic; attempts an organization of ideas, concepts, and information using strategies such as definition, classification, comparison/contrast, and cause/effect. b. Describes the topic with facts, definitions, concrete details,	writes informative/explanatory text to explain a topic through the selection and organization of relevant content. a. Introduces a topic clearly; organizes ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; includes formatting (e.g., headings) and graphics (e.g., charts, tables) when useful to	writes informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. a. Introduces a topic clearly, previewing what is to follow; organizes ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; includes	Writes informative/explanatory texts to examine a topic and convey complex ideas, concepts, and information with a strongly developed focus through the selection, organization, and analysis of relevant content. a. Introduces a topic with a strongly developed focus using appropriate strategies such as definition, classification, comparison/contrast, and cause and effect; includes

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		quotations, or other information and examples. c. Uses basic transitions to link ideas and concepts. d. Uses topic-appropriate language and vocabulary to inform. e. Attempts a formal style. f. Provides a concluding statement or section.	aiding comprehension. b. Develops the topic with facts, definitions, concrete details, quotations, or other information and examples. c. Uses appropriate transitions to create cohesion. d. Uses topic-appropriate language and domain-specific vocabulary to inform about or explain the topic. e. Establishes formal style. f. Provides a concluding statement or section that follows from the information or explanation presented.	formatting (e.g., headings) and graphics (e.g., charts, tables) when useful to aiding comprehension. b. Develops the topic with relevant facts, definitions, concrete details, quotations, or other information and examples. c. Uses appropriate transitions to create cohesion and clarify the relationships among ideas and concepts. d. Uses precise language and domain-specific vocabulary to inform about or explain the topic. e. Establishes and maintains a formal style. f. Provides a concluding statement or section that follows from and supports the information or explanation presented.	formal formatting (e.g., headings) and graphics (e.g., charts, tables) to enhance comprehension. b. Develops the topic with analysis of relevant facts, complex ideas, definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Uses appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts. d. Uses precise language and domain-specific vocabulary to manage the complexity of the topic. e. Establishes and maintains a formal style and objective tone. f. Provides a compelling

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
					concluding statement or section that follows from, supports, and extends the information or explanation presented.
Range	7.W.4-6	Produces writing in which the development, organization, and style are appropriate to the task; develops writing by applying planning, revising, editing, or rewriting; editing should demonstrate basic command of Language standards 1–3 up to and including grade 7; uses technology to produce writing.	Produces clear writing in which the development, organization, and style are appropriate to task and purpose; develops and strengthens writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose has been addressed; editing should demonstrate basic command of Language standards 1–3 up to and including grade 7; uses technology to produce writing and refer to sources.	Produces clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience; develops and strengthens writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed; editing should demonstrate command of Language standards 1–3 up to and including grade 7; uses technology to produce writing and cite sources.	Produces well-developed and cohesive writing in which the development, organization, and style are appropriate to task, purpose, and audience; develops and strengthens writing as needed by planning, revising, editing, rewriting, or trying a new approach, successfully addressing the intended purpose and audience; editing should demonstrate skillful command of Language standards 1–3 up to and including grade 7; uses technology to produce writing and cite sources as well as connect ideas efficiently.

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	7.W.7-8	Conducts short research projects to answer a question, drawing on several sources; gathers information from multiple sources; assesses the credibility of sources as appropriate; paraphrases the data and conclusions of others while avoiding plagiarism.	Conducts short research projects to answer a question, drawing on several sources; gathers relevant information from multiple sources and redirects inquiry as appropriate; assesses the credibility and accuracy of each source; and quotes or paraphrases the data and conclusions of others while avoiding plagiarism.	Conducts short research projects to answer a question, drawing on several sources and generating additional related, focused ideas; gathers relevant information from multiple sources; assesses the credibility and accuracy of each source; and quotes or paraphrases the data and conclusions of others while avoiding plagiarism and following a standard format for citation.	Conducts short research projects to answer a question, drawing on several sources and generating additional related, focused, and evaluative ideas; gathers relevant information from multiple sources; evaluates the credibility and accuracy of each source; and judiciously quotes or paraphrases the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

Listening					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	7.SL.2	Identifies the main ideas and supporting details presented in diverse media and formats.	Identifies the main ideas and supporting details presented in diverse media and formats and how they relate to the topic.	Analyzes the main ideas and supporting details presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how the ideas clarify a topic, text, or issue under study.	Analyzes and interprets the main ideas and supporting details presented in diverse media and formats and explains how the ideas clarify a topic, text, or issue under study.

Listening					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	7.SL.3	Delineates a speaker's argument and specific claims.	Delineates a speaker's argument and specific claims, identifying the relevance of the evidence introduced.	Delineates a speaker's argument and specific claims, evaluating the soundness of the reasoning and the relevance and sufficiency of the evidence.	Delineates a speaker's argument and specific claims, evaluating the soundness of reasoning and the relevance and sufficiency of the evidence using real world application and/or rhetorical analysis.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	7.L.1	Demonstrates basic understanding of the conventions of standard English grammar and usage when writing or speaking in the following areas: a. Explains the function of phrases and clauses in general and their function in specific sentences. b. Chooses among simple, compound, complex, and compound-complex sentences to signal	Demonstrates understanding of the conventions of standard English grammar and usage when writing or speaking in the following areas: a. Explains the function of phrases and clauses in general and their function in specific sentences. b. Chooses among simple, compound, complex, and compound-complex sentences to signal differing relationships among ideas.	Demonstrates command of the conventions of standard English grammar and usage when writing or speaking: a. Explains the function of phrases and clauses in general and their function in specific sentences. b. Chooses among simple, compound, complex, and compound-complex sentences to signal differing relationships among ideas. c. Places phrases and	Demonstrates strong command of the conventions of standard English grammar and usage when writing or speaking: a. Explains the function of phrases and clauses in general and evaluates their function in specific sentences. b. Chooses among simple, compound, complex, and compound-complex sentences to signal differing relationships among

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		differing relationships among ideas. c. Places phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.	c. Places phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.	clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.	ideas. c. Places phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.
Range	7.L.2	Demonstrates basic understanding of the conventions of standard English capitalization, punctuation, and spelling when writing: a. Uses a comma to separate coordinate adjectives (e.g., “It was a fascinating, enjoyable movie” but not “He wore an old[,] green shirt”). b. Spells correctly.	Demonstrates understanding of the conventions of standard English capitalization, punctuation, and spelling when writing: a. Uses a comma to separate coordinate adjectives (e.g., “It was a fascinating, enjoyable movie” but not “He wore an old[,] green shirt”). b. Spells correctly.	Demonstrates command of the conventions of standard English capitalization, punctuation, and spelling when writing: a. Uses a comma to separate coordinate adjectives (e.g., “It was a fascinating, enjoyable movie” but not “He wore an old[,] green shirt”). b. Spells correctly.	Demonstrates strong command of the conventions of standard English capitalization, punctuation, and spelling when writing: a. Uses a comma to separate coordinate adjectives (e.g., “It was a fascinating, enjoyable movie” but not “He wore an old[,] green shirt”). b. Spells correctly.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	7.L.3	Attempts to use the conventions of language when writing, speaking, reading, or listening: a. Inconsistently chooses language that expresses ideas without wordiness and redundancy.	generally uses knowledge of language and its conventions when writing, speaking, reading, or listening: a. Attempts to choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.	uses knowledge of language and its conventions when writing, speaking, reading, or listening: a. Chooses language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.	uses deep knowledge of language and its conventions when writing, speaking, reading, or listening: a. Strategically chooses language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.
Range	7.L.4	With textual support (e.g. context clues, embedded definitions), tentatively determines or clarifies the meaning of unknown and multiple-meaning words and phrases, choosing flexibly from a range of strategies: a. Uses context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.	Generally determines or clarifies the meaning of unknown and multiple-meaning words and phrases, choosing flexibly from a range of strategies: a. Uses context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. b. Uses common, grade-appropriate Greek or Latin affixes and roots as	Determines or clarifies the meaning of unknown and multiple-meaning words and phrases, choosing flexibly from a range of strategies: a. Uses context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. b. Uses common, grade-appropriate Greek or Latin affixes and roots as	Authoritatively determines or clarifies the meaning of unknown and multiple-meaning words and phrases, choosing flexibly from a range of strategies: a. Uses context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. b. Uses common, grade-appropriate Greek or

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		b. Uses common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., belligerent, bellicose, rebel). c. Consults general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech. d. Inconsistently verifies the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).	clues to the meaning of a word (e.g., belligerent, bellicose, rebel). c. Consults general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech. d. Verifies the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).	clues to the meaning of a word (e.g., belligerent, bellicose, rebel). c. Consults general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech. d. Verifies the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).	Latin affixes and roots as clues to the meaning of a word (e.g., belligerent, bellicose, rebel). c. Consults general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech. d. Verifies the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	7.L.5	Demonstrates limited understanding of figurative language, word relationships, and nuances in word meanings: a. Identifies some figures of speech (e.g., literary, biblical, mythological allusions) in context. b. Uses the relationship between particular basic words (e.g., synonym/ antonym, analogy) to better understand each of the words. c. Inconsistently distinguishes among the connotations (associations) of words with similar denotations (definitions) (e.g., refined, respectful, polite, diplomatic, condescending)	Demonstrates basic understanding of figurative language, word relationships, and nuances in word meanings: a. Identifies figures of speech (e.g., literary, biblical, mythological allusions) in context. b. Uses the relationship between particular words (e.g., synonym/antonym, analogy) to better understand each of the words. c. Distinguishes among the connotations (associations) of words with similar denotations (definitions) (e.g., refined, respectful, polite, diplomatic, condescending).	Demonstrates understanding of figurative language, word relationships, and nuances in word meanings: a. Interprets figures of speech (e.g., literary, biblical, and mythological allusions) in context. b. Uses the relationship between particular words (e.g., synonym/antonym, analogy) to better understand each of the words. c. Distinguishes among the connotations (associations) of words with similar denotations (definitions) (e.g., refined, respectful, polite, diplomatic, condescending).	Demonstrates deep understanding of figurative language, word relationships, and nuances in word meanings: a. Interprets figures of speech (e.g., literary, biblical, mythological allusions) in context. b. Uses the relationship between particular words (e.g., synonym/antonym, analogy) to better understand each of the words. c. Distinguishes and evaluates the connotations (associations) of words with similar denotations (definitions) (e.g., refined, respectful, polite, diplomatic, condescending).

Grade 8 English Language Arts

PLD	Standard	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy		The Level 1 student is below proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for the grade level, is likely able to partially access grade-level content, and engages with higher-order thinking skills with extensive support.	The Level 2 student is approaching proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for the grade level, is likely able to access grade-level content, and engages in higher-order thinking skills with some independence and support.	The Level 3 student is proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for the grade level, is able to access grade-level content, and engages in higher-order thinking skills with some independence and minimal support.	The Level 4 student is highly proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for the grade level, is able to access above grade-level content, and engages in higher-order thinking skills independently.
-	-	-	-	-	-
-	-	~~For grade-appropriate, low-complexity texts, the Level 1 student~~	~~For grade-appropriate, low- to moderate-complexity texts, the Level 2 student~~	~~For grade-appropriate, moderate- to high-complexity texts, the Level 3 student~~	~~For grade-appropriate, high-complexity texts, the Level 4 student~~

Reading: Literary Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	8.RL.1	Cites textual evidence to support an analysis of what the text says explicitly.	Cites multiple examples of textual evidence to support an analysis of what the text says explicitly as well as inferences drawn from the text.	Cites the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.	Cites the textual evidence that most strongly supports a deep analysis of the text as well as complex inferences drawn from the text.
Range	8.RL.2	Identifies a theme or central idea of a text; identifies characters, setting, and plot; provides a basic retelling of the text.	Identifies a theme or central idea of a text; analyzes characters, setting and plot; provides a simple objective summary of the text.	Determines a theme or central idea of a text and analyzes its development over the course of a text, including its relationship to the characters, setting and plot; provides an objective summary of the text.	Determines a theme or central idea and analyzes its development over the course of a text; evaluates its relationship to the narrative elements; provides a comprehensive objective summary of the text.
Range	8.RL.3	Identifies specific lines of dialogue or incidents in a story or drama that propel the action and reveal aspects of the character.	Describes how specific lines of dialogue or incidents in a story or drama propel the action and reveal aspects of the character.	Analyzes how specific lines of dialogue or incidents in a story or drama propel the action, reveal aspects of the character, or provoke a decision.	Analyzes and evaluates the effectiveness of an author’s use of dialogue or incidents in a story or drama to propel the action, reveal aspects of the character, or provoke a decision.

Reading: Literary Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	8.RL.4	With textual support (e.g. context clues, embedded definitions), determines the denotative meaning of words and phrases.	With textual support (e.g. context clues, embedded definitions), determines the meaning of words and phrases, including figurative and connotative meanings; analyzes the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.	Determines the meaning of words and phrases, including figurative and connotative meanings; analyzes the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.	Evaluates the impact of words and phrases, including figurative and connotative meanings; analyzes and evaluates the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.
Range	8.RL.5	Compares and contrasts the content of two texts.	Compares and contrasts the structure of two or more texts, describing the connection to their meaning and style.	Compares and contrasts the structure of two or more texts, analyzing how the differing structure of each text contributes to its meaning and style.	Compares and contrasts the structure of two or more texts, analyzing how the differing structure of each text contributes to its meaning and style and evaluating their effectiveness.
Range	8.RL.6	Describes how differences in the points of view of the characters or the reader affect the text.	Analyzes how differences in the points of view of the characters or the reader affect the text.	Analyzes how differences in the points of view of the characters or the reader (e.g., created through the use	Analyzes how differences in the points of view of the characters and the reader (e.g., created through the use

Reading: Literary Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				of dramatic irony) create such effects as suspense or humor in the text	of dramatic irony) create such effects as suspense or humor and evaluates their impact on the text.
Range	8.RL.7	Describes the extent to which a film of a story of drama stays faithful to or departs from the text or script.	Describes the extent to which a film of a story of drama stays faithful to or departs from the text or script, identifying the choices made by the director or actors.	Analyzes the extent to which a film of a story or drama stays faithful to or departs from the text or script, evaluating the choices made by the director or actors.	Analyzes the extent to which a film of a story of drama stays faithful to or departs from the text or script, evaluating the choices made by the director or actors and proposing alternate treatments.
Range	8.RL.9	Identifies how a modern work of fiction draws on explicit patterns of events or character types from myths, traditional stories, or religious works.	Identifies how a modern work of fiction draws on explicit themes, patterns of events, or character types from myths, traditional stories, or religious works, including how the material is rendered new.	Analyzes how a modern work of fiction draws on themes, patterns of events, or character types from myths, traditional stories, or religious works, including how the material is rendered new.	Cites specific evidence to support an analysis and evaluation of how a modern work of fiction draws on themes, patterns of events, or character types from myths, traditional stories, or religious works, including how the material is rendered new.

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	8.RI.1	Cites textual evidence to support an analysis of what the text says explicitly.	Cites multiple examples of textual evidence to support an analysis of what the text says explicitly as well as inferences drawn from the text.	Cites the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.	Cites the textual evidence that most strongly supports a deep analysis of the text as well as complex inferences drawn from the text.
Range	8.RI.2	Identifies a central idea of a text; provides a basic retelling of the text.	Identifies a central idea of a text and follows its development over the course of a text; provides a simple, objective summary of the text.	Determines a central idea of a text and analyzes its development over the course of a text, including its relationship to supporting ideas; provides an objective summary of the text.	Determines a central idea of a text and analyzes its development over the course of a text, including its relationship to supporting ideas; evaluates the strength of each supporting idea; provides a comprehensive, objective summary of the text.
Range	8.RI.3	Describes how a text makes explicit connections among and distinctions between individuals, ideas, or events (e.g., through comparisons, analogies, or categories).	Analyzes how a text makes explicit connections among and distinctions between individuals, ideas, or events (e.g., through comparisons, analogies, or categories).	Analyzes how a text makes connections among and distinctions between individuals, ideas, or events (e.g., through comparisons, analogies, or categories).	Analyzes how a text makes connections among and distinctions between individuals, ideas, or events (e.g., through comparisons, analogies, or categories) and evaluates their rhetorical impact on the text.

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	8.RI.4	With textual support (e.g. context clues, embedded definitions), determines the literal meaning of words and phrases as they are used in a text; identifies the impact of specific word choices on meaning and tone.	With textual support (e.g. context clues, embedded definitions), determines the meaning of words and phrases as they are used in a text, including common figurative, connotative, and technical meanings; describes the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.	Determines the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyzes the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.	Analyzes the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; evaluates the rhetorical effect of specific word choices on meaning and tone, including analogies or allusions to other texts.
Range	8.RI.5	Describes the structure of a specific paragraph in a text; describes the role of particular sentences in creating that structure.	Describes and identifies the structure of a specific paragraph in a text; describes the role of particular sentences in developing and refining a key concept.	Analyzes in detail the structure of a specific paragraph in a text, including the role of particular sentences in developing and refining a key concept.	Evaluates the rhetorical effect of the structure of a specific paragraph in a text and its role in the text as a whole, including the role of particular sentences in developing and refining a key concept.
Range	8.RI.6	Identifies an author's point of view or purpose in a text; identifies examples where the author acknowledges or	Identifies an author's point of view or purpose in a text and describes how the author acknowledges	Determines an author's point of view or purpose in a text and analyzes how the author acknowledges and	Analyzes an author's point of view or purpose in a text and evaluates the rhetorical effect of how the author acknowledges and

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		responds to conflicting evidence or viewpoints.	and responds to conflicting evidence or viewpoints.	responds to conflicting evidence or viewpoints.	responds to conflicting evidence or viewpoints.
Range	8.RI.7	Identifies a particular topic or idea presented in two different media (e.g. print or digital text, video, multimedia).	Compares and contrasts the use of different media (e.g. print or digital text, video, multimedia) in presenting a particular topic or idea.	Evaluates the advantages and disadvantages of using different media (e.g. print or digital text, video, multimedia) to present a particular topic or idea.	Evaluates the advantages and disadvantages of using different media (e.g. print or digital text, video, multimedia) to present a particular topic or idea, providing specific evidence to support the evaluation.
Range	8.RI.8	Delineates the argument and specific claims in a text, describing the reasoning and evidence used to support the claims.	Delineates and evaluates the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient.	Delineates and evaluates the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognizes when irrelevant evidence is introduced.	Explicates and evaluates the argument and specific claims in a text, citing specific language in an assessment of whether the reasoning is sound and the evidence is relevant and sufficient; recognizes when irrelevant evidence is introduced and justifies reasoning.
Range	8.RI.9	Describes a case in which two or more texts provide conflicting information on the same topic, and identifies where the texts disagree.	Describes a case in which two or more texts provide conflicting information on the same topic, and identifies where the	Analyzes a case in which two or more texts provide conflicting information on the same topic, and identifies where the texts disagree on matters of fact or	Analyzes a case in which two or more texts provide conflicting information on the same topic, and identifies where the texts disagree on matters of fact or interpretation,

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
			texts disagree on matters of fact.	interpretation.	evaluating the strength or reliability of each.

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	8.W.1	Writes arguments to support claims with reasons and evidence. a. Introduces claim(s), states opposing claims, and organizes reasons and evidence. b. Supports claims with extra-textual evidence, and demonstrating a basic understanding of the topic or text. c. Uses basic transitions to link claim(s), counterclaims, reasons and evidence. d. Attempts to establish a formal style. e. Provides a concluding statement or section.	Writes arguments to support claims with reasons and relevant evidence. a. Introduces claim(s), states alternate or opposing claims, and organizes the reasons and evidence logically. b. Supports claims with reasoning and evidence, using sources and demonstrating an understanding of the topic or text. c. Uses words, phrases, and clauses to clarify the relationships among claim(s), counterclaims, reasons and evidence. d. Establishes a formal style. e. Provides a concluding statement or section that supports the argument presented.	Writes arguments to support claims with clear reasons and relevant evidence. a. Introduces claim(s), acknowledges and distinguishes the claim(s) from alternate or opposing claims, and organizes the reasons and evidence logically. b. Supports claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text. c. Uses words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence. d. Establishes and maintains a formal style. e. Provides a concluding	Write arguments to support claims with clear reasons and analysis of relevant evidence. a. Introduces claims, acknowledges and distinguishes the claims from alternate or opposing claims, evaluating their validity, and organizes the reasons and evidence logically. b. Supports claims with a clear position based on logical reasoning and relevant evidence using accurate, credible sources and demonstrating a deep understanding of the topic or text. c. Uses a variety of words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons and evidence. d. Establishes and

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				statement or section that follows from and supports the argument presented.	maintains a formal style and objective tone that enhances the argument. e. provides a compelling concluding statement or section that follows from and supports the argument presented.
Range	8.W.2	Writes informative/explanatory text to describe a topic through the selection and organization of content. a. Introduces a topic; attempts an organization of ideas, concepts, and information. b. Summarizes the topic with facts, definitions, concrete details, quotations, or other information and examples.	Writes informative/explanatory texts to explain a topic and convey ideas, concepts, and information through the selection and organization of content. a. Introduces a topic clearly, previewing what is to follow; organizes ideas, concepts, and information into broader categories. b. Develops the topic with facts, definitions, concrete	Writes informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. a. Introduces a topic clearly, previewing what is to follow; organizes ideas, concepts, and information into broader categories; includes formatting (e.g., headings), graphics (e.g.,	Writes informative/explanatory texts to examine a topic and convey ideas, concepts, and information with a strongly developed focus through the selection, organization, and analysis of highly relevant content. a. Introduces a complex topic clearly, previewing what is to follow; organizes ideas, concepts, and information into broader categories;

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		c. Uses appropriate transitions to create cohesion. d. Uses topic-appropriate language and vocabulary to inform. e. Attempts a formal style. f. Provides a concluding statement or section.	details, quotations, or other information and examples. c. Uses appropriate transitions to create cohesion and clarify the relationships among ideas and concepts. d. Uses topic-appropriate language and domain-specific vocabulary to inform about or explain the topic e. Establishes a formal style. f. Provides a concluding statement or section that follows from the information or explanation presented.	charts, tables), when useful to aiding comprehension. b. Develops the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples. c. Uses appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts. d. Uses precise language and domain-specific vocabulary to inform about or explain the topic. e. Establishes and maintains a formal style. f. Provides a concluding statement or section that follows from and supports the information or explanation presented.	includes formatting (e.g., headings), and graphics (e.g., charts, tables) when useful to enhance comprehension. b. Develops and analyzes the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Effectively uses appropriate and varied transitions to create cohesion and clarify the relationships among complex ideas and concepts. d. Uses precise language and domain-specific vocabulary to manage the complexity of the topic e. Establishes and maintains a formal style

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
					and objective tone while attending to the conventions of the discipline in which they are writing. f. Provides a compelling concluding statement or section that follows from, supports, and extends the information or explanation presented.
Range	8.W.4-6	Produces writing in which the development, organization, and style are appropriate to task and purpose; develops and strengthens writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on purpose and audience; editing should demonstrate basic command of Language standards 1–3 up to and including grade 8; uses technology to produce writing.	Produces clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience; develops and strengthens writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed; editing should demonstrate command of Language standards 1–3 up to and including grade	Produces clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience; develops and strengthens writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed; editing for conventions should demonstrate command of Language standards 1–3 up to and	Produces clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience; develops and strengthens writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed, editing for conventions should demonstrate skillful command of Language standards 1–3

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
			8; uses technology to produce writing and present the relationships between information and ideas.	including grade 8; uses technology to produce writing and present the relationships between information and ideas efficiently.	up to and including grade 8; uses technology to produce writing and present the relationships between information and ideas in a dynamic way.
Range	8.W.7-8	Conducts short research projects to answer a question, drawing on several sources; gathers relevant information from multiple sources and redirects inquiry as appropriate; assesses the credibility and accuracy of each source; and quotes or paraphrase the data and conclusions of others while avoiding plagiarism. Attempts to follow a standard format for citation.	Conducts short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional ideas; gathers relevant information from multiple sources; assesses the credibility and accuracy of each source; and quotes or paraphrases the data and conclusions of others while avoiding plagiarism and following a standard format for citation.	Conducts short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration; gathers relevant information from multiple sources; assesses the credibility and accuracy of each source; and quotes or paraphrases the data and conclusions of others while avoiding plagiarism and following	Conducts short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration and evaluation; gathers and synthesizes relevant information from multiple sources; assesses the credibility and accuracy of each source; and judiciously quotes or paraphrases the data and

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				a standard format for citation.	conclusions of others while avoiding plagiarism and following a standard format for citation.

Listening					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	8.SL.2	Identifies the main ideas and supporting details presented in diverse media and formats.	Identifies the main ideas and supporting details presented in diverse media and formats and the motives behind its presentation.	Analyzes the purpose of information presented in diverse media and formats and evaluates the motives behind its presentation.	Analyzes and interprets the motives, the main ideas, and supporting details presented in diverse media and formats.
Range	8.SL.3	Delineates a speaker's argument and specific claims.	Delineates a speaker's argument and specific claims, identifying whether irrelevant evidence is introduced.	Delineates a speaker's argument and specific claims, evaluating the soundness of the reasoning and the relevance and sufficiency of the evidence; identifies when irrelevant evidence is introduced.	Delineates and evaluates a speaker's argument and specific claims for the soundness of reasoning and the relevance and sufficiency of the evidence; analyzes the relevance of evidence and explains why it was used.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	8.L.1	Demonstrates basic understanding of the conventions of standard English grammar and usage when writing or speaking: a. Identifies the function of verbals (gerunds, participles, infinitives) in general and their function in particular sentences. b. Forms and uses verbs in the active and passive voice. c. Inconsistently forms and uses verbs in the indicative, imperative, interrogative, conditional, and subjunctive mood. d. Recognizes and corrects inappropriate shifts in verb voice and mood.	Demonstrates understanding of the conventions of standard English grammar and usage when writing or speaking: a. Explains the function of verbals (gerunds, participles, infinitives) in general and their function in particular sentences. b. Forms and uses verbs in the active and passive voice. c. Generally forms and uses verbs in the indicative, imperative, interrogative, conditional, and subjunctive mood. d. Recognizes and corrects inappropriate shifts in verb voice and mood.	Demonstrates command of the conventions of standard English grammar and usage when writing or speaking: a. Explains the function of verbals (gerunds, participles, infinitives) in general and their function in particular sentences. b. Forms and uses verbs in the active and passive voice. c. Forms and uses verbs in the indicative, imperative, interrogative, conditional, and subjunctive mood. d. Recognizes and corrects inappropriate shifts in verb voice and mood.	Demonstrates strong command of the conventions of standard English grammar and usage when writing or speaking: a. Explains with high accuracy the function of verbals (gerunds, participles, infinitives) in general and their function in particular sentences. b. Forms and uses verbs in the active and passive voice. c. Expertly forms and uses verbs in the indicative, imperative, interrogative, conditional, and subjunctive mood. d. Recognizes and corrects inappropriate shifts in verb voice and mood.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
	8.L.2	Demonstrates awareness of the conventions of standard English capitalization, punctuation, and spelling when writing: a. Inconsistently uses punctuation (comma, ellipsis, dash) to indicate a pause or break. b. Inconsistently uses an ellipsis to indicate an omission. c. Spells correctly.	Demonstrates basic understanding of the conventions of standard English capitalization, punctuation, and spelling when writing: a. Generally uses punctuation (comma, ellipsis, dash) to indicate a pause or break. b. Uses an ellipsis to indicate an omission. c. Spells correctly.	Demonstrates command of the conventions of standard English capitalization, punctuation, and spelling when writing: a. Uses punctuation (comma, ellipsis, dash) to indicate a pause or break. b. Uses an ellipsis to indicate an omission. c. Spells correctly.	Demonstrates strong command of the conventions of standard English capitalization, punctuation, and spelling when writing: a. Judiciously uses punctuation (comma, ellipsis, dash) to indicate a pause or break. b. Uses an ellipsis to indicate an omission. c. Spells correctly.
Range	8.L.3	Attempts to apply of the conventions of language when writing, speaking, reading, or listening: a. Inconsistently uses verbs in the active and passive voice and in the conditional and subjunctive mood to achieve particular effects (e.g., emphasizing the actor or the action; expressing	Demonstrates basic knowledge of language and its conventions when writing, speaking, reading, or listening: a. Uses verbs in the active and passive voice and in the conditional and subjunctive mood to achieve particular effects (e.g., emphasizing the actor or the	Uses knowledge of language and its conventions when writing, speaking, reading, or listening: a. Uses verbs in the active and passive voice and in the conditional and subjunctive mood to achieve particular effects (e.g., emphasizing the actor or the	Uses deep knowledge of language and its conventions when writing, speaking, reading, or listening: a. Expertly uses verbs in the active and passive voice and in the conditional and subjunctive mood to achieve particular effects (e.g., emphasizing the actor or the action;

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		uncertainty or describing a state contrary to fact).	action; expressing uncertainty or describing a state contrary to fact).	action; expressing uncertainty or describing a state contrary to fact).	expressing uncertainty or describing a state contrary to fact).

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	8.L.4	With textual support (e.g. context clues, embedded definitions), tentatively determines or clarifies the meaning of unknown and multiple-meaning words or phrases, choosing flexibly from a range of strategies: a. Uses context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase b. Uses common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., precede, recede, secede) c. Consults general and specialized reference materials (e.g., dictionaries, glossaries,	Generally determines or clarifies the meaning of unknown and multiple-meaning words or phrases, choosing flexibly from a range of strategies: a. Uses context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase b. Uses common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., precede, recede, secede) c. Consults general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the	Determines or clarifies the meaning of unknown and multiple-meaning words or phrases, choosing flexibly from a range of strategies: a. Uses context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase b. Uses common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., precede, recede, secede) c. Consults general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the	Authoritatively determines or clarifies the meaning of unknown and multiple-meaning words or phrases, choosing flexibly from a range of strategies: a. Uses context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase b. Uses common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., precede, recede, secede) c. Consults general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech d. Verifies the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).	pronunciation of a word or determine or clarify its precise meaning or its part of speech d. Verifies the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).	pronunciation of a word or determine or clarify its precise meaning or its part of speech d. Verifies the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).	of speech d. Verifies the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	8.L.5	Demonstrates limited understanding of figurative language, word relationships, and nuances in word meanings: a. Identifies figures of speech (e.g. verbal irony, puns) in context b. Uses the relationship between particular basic words to better understand each of the words c. Generally distinguishes among the connotations (associations) of words with similar denotations (definitions) (e.g., bullheaded, willful, firm, persistent, resolute).	Demonstrates basic understanding of figurative language, word relationships, and nuances in word meanings: a. Interprets figures of speech (e.g. verbal irony, puns) in context b. Uses the relationship between particular words to better understand each of the words c. Distinguishes among the connotations (associations) of words with similar denotations (definitions) (e.g., bullheaded, willful, firm, persistent, resolute).	Demonstrates understanding of figurative language, word relationships, and nuances in word meanings: a. Interprets figures of speech (e.g. verbal irony, puns) in context b. Uses the relationship between particular words to better understand each of the words c. Distinguishes among the connotations (associations) of words with similar denotations (definitions) (e.g., bullheaded, willful, firm, persistent, resolute).	Demonstrates deep understanding of figurative language, word relationships, and nuances in word meanings: a. Interprets figures of speech (e.g. verbal irony, puns) in context b. Uses the relationship between particular words to better understand each of the words c. Distinguishes and evaluates the connotations (associations) of words with similar denotations (definitions) (e.g., bullheaded, willful, firm, persistent, resolute).

Grade 9 English Language Arts

PLD	Standard	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy		The Level 1 student is below proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for the grade level, is likely able to partially access grade-level content, and engages with higher-order thinking skills with extensive support	The Level 2 student is approaching proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for the grade level, is likely able to access grade-level content, and engages in higher-order thinking skills with some independence and support.	The Level 3 student is proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for the grade level, is able to access grade-level content, and engages in higher-order thinking skills with some independence and minimal support.	The Level 4 student is highly proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for the grade level, is able to access above grade-level content, and engages in higher-order thinking skills independently.

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.RL.1	Cites textual evidence to support analysis of what the text says explicitly as well as simple inferences drawn from the text.	Cites strong textual evidence to support analysis of what the text says explicitly as well as simple inferences drawn from the text.	Cites strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	Cites strong and thorough textual evidence to support a deep analysis of what the text says explicitly as well as complex inferences drawn from the text.
Range	9-10.RL.2	Determines a theme or central idea of a text and describes its development over the course of a text; provides a retelling of the text.	Determines a theme or central idea of a text and describes in detail its development over the course of a text; provides a summary of the text.	Determines a theme or central idea of a text and analyzes in detail its development over the course of a text, including how it emerges and is shaped and refined by specific details; provides an objective summary of the text.	Determines and evaluates a theme or central idea of a text and analyzes in detail its development over the course of a text, including how it emerges and is shaped and refined by specific details; provides a comprehensive objective summary of the text.
Range	9-10.RL.3	Identifies how characters develop, interact with other characters, and advance the plot or develop the theme.	Describes how characters develop over the course of the text, interact with other characters, and advance the plot or develop the theme.	Analyzes how complex characters (e.g., those with multiple or conflicting motivations) develop over the course of the text, interact with other characters, and advance the plot or develop the theme.	Analyzes and evaluates the effectiveness of the author's development of complex characters (e.g., those with multiple or conflicting motivations) over the course of the text, including how they interact to advance the plot or shape the theme.

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.RL.4	With textual support (e.g. context clues, embedded definition, etc.), determines the literal meaning of words and phrases as they are used in the text; describes the impact of specific word choices on meaning.	With textual support (e.g. context clues, embedded definition, etc.), determines the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyzes the cumulative impact of specific word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone).	Determines the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyzes the cumulative impact of specific word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone).	Determines the meaning of complex words and phrases as they are used in the text, including figurative and connotative meanings; analyzes and evaluates the cumulative impact of specific word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone).
Range	9-10.RL.5	Identifies an author's choices concerning how to structure a text, order events within it (e.g., parallel plots), and manipulate time (e.g., pacing, flashbacks).	Describes an author's choices concerning how to structure a text, order events within it (e.g., parallel plots), and manipulate time (e.g., pacing, flashbacks).	Analyzes how an author's choices concerning how to structure a text, order events within it (e.g., parallel plots), and manipulate time (e.g., pacing, flashbacks) create such effects as mystery, tension, or surprise.	Analyzes how an author's choices concerning how to structure a text, order events within it (e.g., parallel plots), and manipulate time (e.g., pacing, flashbacks) create such effects as mystery, tension, or surprise, and evaluates their impact on the text as a whole.

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.RL.6	Describes a particular point of view or cultural experience reflected in a work of literature from outside the United States.	Describes a particular point of view or cultural experience reflected in a work of literature from outside the United States, drawing on general knowledge of world literature.	Analyzes a particular point of view or cultural experience reflected in a work of literature from outside the United States, drawing on a wide reading of world literature.	Analyzes competing points of view or cultural experiences reflected in a work of literature from outside the United States, drawing on a deep understanding of world literary traditions.
Range	9-10.RL.7	Describes the differences in a depiction of a subject or a key scene in two different artistic mediums (e.g., Auden's "Musée des Beaux Arts" and Breughel's *Landscape with the Fall of Icarus*).	Compares and contrasts the differences in a depiction of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment (e.g., Auden's "Musée des Beaux Arts" and Breughel's *Landscape with the Fall of Icarus*).	Analyzes the representation of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment (e.g., Auden's "Musée des Beaux Arts" and Breughel's *Landscape with the Fall of Icarus*).	Analyzes the representation of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment (e.g., Auden's "Musée des Beaux Arts" and Breughel's *Landscape with the Fall of Icarus*), and evaluates its effect on the reader's or viewer's interpretation.
Range	9-10.RL.8	N/A	N/A	N/A	N/A

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.RL.9	Recognizes that an author draws on source material in a specific work (e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare).	Describes how an author draws on and transforms source material in a specific work (e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare).	Analyzes how an author draws on and transforms source material in a specific work (e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare).	Analyzes and evaluates the effectiveness of how an author draws on and transforms source material in a specific work (e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare) in a demonstration of deeper understanding of the text.

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.RI.1	Cites textual evidence to support analysis of what the text says explicitly as well as simple inferences drawn from the text.	Cites strong textual evidence to support analysis of what the text says explicitly as well as simple inferences drawn from the text.	Cites strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	Cites strong and thorough textual evidence to support a deep analysis of what the text says explicitly as well as complex inferences drawn from the text.
Range	9-10.RI.2	Determines a central idea of a text and describes its development; provides a retelling of the text.	Determines a central idea of a text and describes its development over the course of a text; provides a summary of the text.	Determines a central idea of a text and analyzes its development over the course of the text, including how it emerges and is shaped and refined by specific	Determines and evaluates a central idea of a text and analyzes in detail its development over the course of a text, including how it emerges and is shaped and refined by specific details; provides

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				details; provides an objective summary of the text.	a comprehensive, objective summary of the text.
Range	9-10.RI.3	Identifies how the author unfolds an analysis or series of ideas or events, including the order in which the points are made and how they are introduced and developed.	Describes how the author unfolds an analysis or a series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them.	Analyzes how the author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them.	Evaluates the rhetorical effect of how the author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them.
Range	9-10.RI.4	With textual support (e.g. context clues, embedded definition), determines the meaning of words and phrases as they are used in a text; identifies the impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a	With textual support (e.g. context clues, embedded definition), determines the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; describes the cumulative impact of specific word choices	Determines the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyzes the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion	Analyzes the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; evaluates the cumulative rhetorical effect of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		newspaper).	on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).	differs from that of a newspaper).	that of a newspaper).
Range	9-10.RI.5	Describes how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a considerate text (e.g., a section or chapter).	Describes how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter).	Analyzes in detail how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter).	Evaluates the rhetorical impact of how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter).
Range	9-10.RI.6	Identifies an author's point of view or purpose in a text; identifies the author's use of rhetoric to advance that point of view or purpose.	Identifies an author's point of view or purpose in a text and describes how an author uses rhetoric to advance that point of view or purpose.	Determines an author's point of view or purpose in a text and analyzes how an author uses rhetoric to advance that point of view or purpose.	Analyzes an author's point of view or purpose in a text and evaluates the effectiveness of an author's use of rhetoric to advance that point of view or purpose.
Range	9-10.RI.7	Describes various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia).	Compares and contrasts various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), identifying which	Analyzes various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which	Analyzes various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), evaluating the rhetorical effect of the emphasis of different

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
			details are emphasized in each account.	details are emphasized in each account.	details in each account.
Range	9-10.RI.8	Delineates and evaluates the argument and claims in a text, describing the reasoning and evidence used to support the claim.	Delineates and evaluates the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient.	Delineates and evaluates the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identifies false statements and fallacious reasoning.	Explicates and evaluates the argument and specific claims in a text, citing specific language from the text in an assessment of whether the reasoning is valid and the evidence is relevant and sufficient; identifies subtle instances of false statements and fallacious reasoning.
Range	9-10.RI.9	Describes specific aspects of seminal U.S. documents of historical and literary significance (e.g., Washington’s Farewell Address, the Gettysburg Address, Roosevelt’s Four Freedoms speech, King’s “Letter from Birmingham Jail”).	Analyzes specific aspects of seminal U.S. documents of historical and literary significance (e.g., Washington’s Farewell Address, the Gettysburg Address, Roosevelt’s Four Freedoms speech, King’s “Letter from Birmingham Jail”).	Analyzes seminal U.S. documents of historical and literary significance (e.g., Washington’s Farewell Address, the Gettysburg Address, Roosevelt’s Four Freedoms speech, King’s “Letter from Birmingham Jail”), including how they address related themes	Evaluates the reasoning and rhetorical strategies employed in seminal U.S. documents of historical and literary significance (e.g., Washington’s Farewell Address, the Gettysburg Address, Roosevelt’s Four Freedoms speech, King’s “Letter from Birmingham Jail”), including how they address related themes

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				and concepts.	and concepts.

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.W.1	Writes arguments to support claims in an analysis of substantive topics or texts, using reasoning and evidence. a. Introduces claim(s) and creates an organization, establishing relationships among claim(s), reasons, and evidence. b. Develops claim(s), supplying evidence in a manner that anticipates the audience's concerns. c. Uses words, phrases, and clauses to link the major sections of the text and clarify the relationships between claim(s) and reasons, and between reasons and evidence. d. Attempts a formal style and objective tone while demonstrating awareness	Writes arguments to support claims in an analysis of substantive topics or texts, using reasoning and relevant evidence. a. Introduces claim(s), distinguishes the claim(s) from alternate or opposing claims, and creates an organization that establishes relationships among claim(s), counterclaims, reasons, and evidence. b. Develops claim(s) and counterclaims, supplying evidence for each while pointing out the strengths of both in a manner that anticipates the audience's concerns. c. Uses words, phrases, and clauses to link the major sections of the text and clarify the	Writes arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. a. Introduces precise claim(s), distinguishes the claim(s) from alternate or opposing claims, and creates an organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence. b. Develops claim(s) and counterclaims fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns. c. Uses words, phrases, and clauses to link the	Writes highly effective arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. a. Introduces strong and precise claim(s), distinguishes the claim(s) from alternate or opposing claims, and creates an effective organization that establishes strong, clear relationships among claim(s), counterclaims, reasons, and evidence. b. Develops strong claim(s) and counterclaims fairly, supplying thorough evidence for each while pointing out the strengths and limitations of both in a manner that effectively anticipates the audience's

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		of the norms and conventions of standard English. e. Provides a concluding statement or section.	relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establishes a formal style and objective tone while demonstrating awareness of the norms and conventions of the discipline in which they are writing. e. Provides a concluding statement or section that supports the argument presented.	major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establishes and maintains a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provides a concluding statement or section that follows from and supports the argument presented.	knowledge level and concerns. c. Uses precise words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establishes and maintains a rhetorically appropriate formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provides an effective concluding statement or section that follows from and supports the argument presented.

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.W.2	Writes informative/explanatory texts to examine and convey ideas, concepts, and information through the selection, organization, and analysis of content. a. States a topic; attempts an organization of ideas, concepts, and information to make connections and distinctions. b. Develops the topic with information and examples appropriate to the audience's knowledge of the topic. c. Uses appropriate transitions to link the major sections of the texts. d. Uses topic-appropriate language and vocabulary to describe the topic. e. Attempts a formal style	Writes informative/explanatory texts to examine and convey ideas, concepts, and information accurately through the selection, organization, and analysis of content. a. States a topic; organizes ideas, concepts, and information to make connections and distinctions; includes formatting (e.g., headings) and graphics (e.g., figures, tables) to aid comprehension. b. Develops the topic with relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience. c. Uses appropriate transitions to link the major sections of the text, create cohesion, and	Writes informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content. a. Introduces a topic; organizes complex ideas, concepts, and information to make important connections and distinctions; includes formatting (e.g., headings) and graphics (e.g., figures, tables) when useful to aiding comprehension. b. Develops the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.	Writes highly effective informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content. a. Clearly introduces a topic; strategically organizes complex ideas, concepts, and information to make important connections and distinctions; includes important formatting (e.g., headings) and graphics (e.g., figures, tables) when useful to aiding comprehension. b. Thoroughly develops the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		and objective tone while demonstrating awareness of the norms and conventions of standard English. f. Provides a concluding statement or section.	clarify the relationships among complex ideas and concepts. d. Uses topic-appropriate language and domain-specific vocabulary to manage the complexity of the topic. e. Establishes a formal style and objective tone while demonstrating awareness of the norms and conventions of the discipline in which they are writing. f. Provides a concluding statement or section that supports the information or explanation presented.	c. Uses appropriate and varied transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. d. Uses precise language and domain-specific vocabulary to manage the complexity of the topic. e. Establishes and maintains a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. f. Provides a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).	the audience's knowledge of the topic. c. Consistently and effectively uses appropriate and varied transitions to link the major sections of the text, creates cohesion, and clarifies the relationships among complex ideas and concepts. d. Uses precise language, domain-specific vocabulary, and figures of speech to manage the complexity of the topic. e. Establishes and maintains a rhetorically effective formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. f. Provides an effective concluding statement or section that follows from

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
					and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).
Range	9-10.W.3	N/A	N/A	N/A	N/A
Range	9-10.W.4-6	Produces writing in which the development, organization, and style are appropriate to the task and purpose; strengthens writing as needed by revising and editing; uses technology to produce writing.	Produces coherent writing in which the development, organization, and style are appropriate to the task, purpose, and audience; strengthens writing as needed by planning, revising, and editing; uses technology, including the Internet, to produce and publish writing products, taking advantage of technology's capacity to display information flexibly and dynamically.	Produces clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience; develops and strengthens writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience; uses technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display	Produces clear and coherent writing in which the development, organization, and style are highly effective for the task, purpose, and audience; develops and strengthens writing by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience; uses technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				information flexibly and dynamically.	information flexibly and dynamically.
Range	9-10.W.7	Conducts short research projects to answer a given simple question or solve a given simple problem; uses discrete information from sources on the subject, demonstrating a developing understanding of the subject under investigation.	Conducts short as well as more sustained research projects to answer a simple question (including a self-generated question) or solve a simple problem; narrows or broadens the inquiry when appropriate; synthesizes sources on the subject, demonstrating understanding of the subject under investigation.	Conducts short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrows or broadens the inquiry when appropriate; synthesizes multiple sources on the subject, demonstrating understanding of the subject under investigation.	Conducts short as well as more sustained research projects to answer a complex question (including a self-generated question) or solve a complex problem; narrows or broadens the inquiry when appropriate; synthesizes multiple high-quality sources on the subject, demonstrating complete understanding of the subject under investigation.
Range	9-10.W.8	Gathers information from print and digital sources; integrates information into the text, avoiding plagiarism and following a standard format for citation.	Gathers relevant information from multiple print and digital sources, using searches effectively; assesses the usefulness of each source in answering the research question; integrates information into the text to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.	Gathers relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assesses the usefulness of each source in answering the research question; integrates information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following	Gathers highly relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assesses and analyzes the usefulness of each source in answering the research question; seamlessly integrates information into the text selectively to create and maintain the flow of

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				a standard format for citation.	ideas, avoiding plagiarism and following a standard format for citation.

Listening					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.SL.2	Uses multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally).	Uses multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.	Integrates multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.	Effectively integrates multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) to meet the needs of a specific task, audience, and purpose, while evaluating the credibility and accuracy of each source.
Range	9-10.SL.3	Summarizes a speaker's point of view, reasoning, and use of evidence.	Evaluates a speaker's point of view, reasoning, and use of evidence, identifying any fallacious reasoning.	Evaluates a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.	Thoroughly evaluates a speaker's point of view, reasoning, and use of evidence and rhetoric, analyzing any fallacious reasoning or exaggerated or distorted evidence.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.L.1	Attempts to meet the conventions of standard English grammar and usage when writing or speaking a. Uses various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, absolute) and clauses (independent, dependent, noun, relative, adverbial) to add interest to writing or presentations.	Demonstrates basic understanding of the conventions of standard English grammar and usage when writing or speaking. a. Uses parallel structure. b. Uses various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, absolute) and clauses (independent, dependent, noun, relative, adverbial) to convey meanings and add interest to writing or presentations.	Demonstrates command of the conventions of standard English grammar and usage when writing or speaking. a. Uses parallel structure. b. Uses various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, absolute) and clauses (independent, dependent, noun, relative, adverbial) to convey specific meanings and add variety and interest to writing or presentations.	Demonstrates strong command of the conventions of standard English grammar and usage when writing or speaking. a. Uses parallel structure. b. Uses various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, absolute) and clauses (independent, dependent; noun, relative, adverbial) to convey specific meanings and add variety, craft, style, depth of meaning, and interest to writing or presentations.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.L.2	Attempts to meet the conventions of standard English capitalization, punctuation, and spelling when writing.	Demonstrates basic understanding of the conventions of standard English capitalization, punctuation, and spelling when writing. a. Attempts to use a semicolon to link two or more closely related independent clauses. b. Attempts to use a colon to introduce a list or quotation. c. Spells correctly.	Demonstrates command of the conventions of standard English capitalization, punctuation, and spelling when writing. a. Uses a semicolon to link two or more closely related independent clauses. b. Uses a colon to introduce a list or quotation. c. Spells correctly.	Demonstrates strong command of the conventions of standard English capitalization, punctuation, and spelling when writing, using that command to enhance style and meaning. a. Uses a semicolon to link two or more closely related independent clauses. b. Uses a colon to introduce a list or quotation. c. Spells correctly.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.L.3	Uses knowledge of language for comprehension when reading or listening and makes choices for meaning or style.	Uses knowledge of language for comprehension when reading or listening and makes choices for meaning or style; writes and edits work to conform to a formal or informal style.	Applies knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening. Writes and edits work so that it conforms to the guidelines in a style manual (e.g., MLA Handbook, Turabian's Manual for Writers) appropriate for the discipline and writing type.	Applies knowledge of language to demonstrate how language functions in different contexts, to make highly effective choices for meaning or style, and to fully comprehend when reading or listening; writes and edits work so that it conforms to the guidelines in a style manual (e.g., MLA Handbook, Turabian's Manual for Writers) appropriate for the discipline and writing type.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.L.4	Determines the meaning of unknown or multiple meaning grade-level words by using immediate context clues or attempting to use patterns of word changes.	Determines the meaning of unknown grade-level words by using context clues within the same sentence; identifies and attempts to use patterns of word changes that indicate different meanings; or consults general reference materials, both print and digital.	Determines and clarifies the meaning of unknown or multiple-meaning grade level words by using context clues within the text; identifies and correctly uses patterns of word changes that indicate different meanings or parts of speech; consults general and specialized reference materials, both print and digital, to determine its part of speech or its etymology; and/or verifies the preliminary determination of the meaning of a word or phrase.	Determines and clarifies the meanings of unknown and multiple-meaning words, including above grade-level words, by using context clues within the text; identifies and correctly uses patterns of word changes that indicate different meanings or parts of speech; consults general and specialized reference materials, both print and digital, to determine its part of speech or its etymology; and/or verifies the meaning of a word or phrase.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.L.5	Recognizes figurative language and word relationships by identifying figures of speech and nuances in word meanings.	Demonstrates understanding of straightforward figurative language, clear word relationships, and nuances in word meanings by identifying and attempting to interpret figures of speech in texts and recognizing nuances in the meaning of words.	Demonstrates understanding of figurative language, word relationships, and nuances in word meanings. a. Interprets figures of speech in context and analyzes their role in texts. b. Analyzes nuances in the meaning of words with similar denotations.	Demonstrates understanding of complex figurative language, complex word relationships, and subtle nuances in word meanings. a. Interprets and uses figures of speech in context and analyzes their role in texts. b. Analyzes and uses nuances in the meaning of words with similar denotations.

Grade 10 English Language Arts

PLD	Standard	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy		The Level 1 student is below proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for the grade level, is likely able to partially access grade-level content and engages with higher-order thinking skills with extensive support	The Level 2 student is approaching proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for the grade level, is likely able to access grade-level content and engages in higher-order thinking skills with some independence and support.	The Level 3 student is proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for the grade level, is able to access grade-level content, and engages in higher-order thinking skills with some independence and minimal support.	The Level 4 student is highly proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for the grade level, is able to access above grade-level content, and engages in higher-order thinking skills independently.

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.RL.1	Cites textual evidence to support analysis of what the text says explicitly as well as simple inferences drawn from the text.	Cites strong textual evidence to support analysis of what the text says explicitly as well as simple inferences drawn from the text.	Cites strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	Cites strong and thorough textual evidence to support a deep analysis of what the text says explicitly as well as complex inferences drawn from the text.
Range	9-10.RL.2	Determines a theme or central idea of a text and describes its development over the course of a text; provides a retelling of the text.	Determines a theme or central idea of a text and describes in detail its development over the course of a text; provides a summary of the text.	Determines a theme or central idea of a text and analyzes in detail its development over the course of a text, including how it emerges and is shaped and refined by specific details; provides an objective summary of the text.	Determines and evaluates a theme or central idea of a text and analyzes in detail its development over the course of a text, including how it emerges and is shaped and refined by specific details; provides a comprehensive objective summary of the text.
Range	9-10.RL.3	Identifies how characters develop, interact with other characters, and advance the plot or develop the theme.	Describes how characters develop over the course of the text, interact with other characters, and advance the plot or develop the theme.	Analyzes how complex characters (e.g., those with multiple or conflicting motivations) develop over the course of the text, interact with other characters, and advance the plot or develop the theme.	Analyzes and evaluates the effectiveness of the author's development of complex characters (e.g., those with multiple or conflicting motivations) over the course of the text, including how they interact to advance the plot or shape the theme.

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.RL.4	With textual support (e.g. context clues, embedded definition), determines the literal meaning of words and phrases as they are used in the text; describes the impact of specific word choices on meaning.	With textual support (e.g. context clues, embedded definition), determines the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyzes the cumulative impact of specific word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone).	Determines the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyzes the cumulative impact of specific word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone).	Determines the meaning of complex words and phrases as they are used in the text, including figurative and connotative meanings; analyzes and evaluates the cumulative impact of specific word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone).
Range	9-10.RL.5	Identifies an author's choices concerning how to structure a text, order events within it (e.g., parallel plots), and manipulate time (e.g., pacing, flashbacks).	Describes an author's choices concerning how to structure a text, order events within it (e.g., parallel plots), and manipulate time (e.g., pacing, flashbacks).	Analyzes how an author's choices concerning how to structure a text, order events within it (e.g., parallel plots), and manipulate time (e.g., pacing, flashbacks) create such effects as mystery, tension, or surprise.	Analyzes how an author's choices concerning how to structure a text, order events within it (e.g., parallel plots), and manipulate time (e.g., pacing, flashbacks) create such effects as mystery, tension, or surprise, and evaluates their impact on the text as a whole.

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.RL.6	Describes a particular point of view or cultural experience reflected in a work of literature from outside the United States.	Describes a particular point of view or cultural experience reflected in a work of literature from outside the United States, drawing on general knowledge of world literature.	Analyzes a particular point of view or cultural experience reflected in a work of literature from outside the United States, drawing on a wide reading of world literature.	Analyzes competing points of view or cultural experiences reflected in a work of literature from outside the United States, drawing on a deep understanding of world literary traditions.
Range	9-10.RL.7	Describes the differences in a depiction of a subject or a key scene in two different artistic mediums (e.g., Auden's "Musée des Beaux Arts" and Breughel's *Landscape with the Fall of Icarus*).	Compares and contrasts the differences in a depiction of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment (e.g., Auden's "Musée des Beaux Arts" and Breughel's *Landscape with the Fall of Icarus*).	Analyzes the representation of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment (e.g., Auden's "Musée des Beaux Arts" and Breughel's *Landscape with the Fall of Icarus*).	Analyzes the representation of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment (e.g., Auden's "Musée des Beaux Arts" and Breughel's *Landscape with the Fall of Icarus*), and evaluates its effect on the reader's or viewer's interpretation.
Range	9-10.RL.8	N/A	N/A	N/A	N/A

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.RL.9	Recognizes that an author draws on source material in a specific work (e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare).	Describes how an author draws on and transforms source material in a specific work (e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare).	Analyzes how an author draws on and transforms source material in a specific work (e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare).	Analyzes and evaluates the effectiveness of how an author draws on and transforms source material in a specific work (e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare) in a demonstration of deeper understanding of the text.

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.RI.1	Cites textual evidence to support analysis of what the text says explicitly as well as simple inferences drawn from the text.	Cites strong textual evidence to support analysis of what the text says explicitly as well as simple inferences drawn from the text.	Cites strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	Cites strong and thorough textual evidence to support a deep analysis of what the text says explicitly as well as complex inferences drawn from the text.
Range	9-10.RI.2	Determines a central idea of a text and describes its development; provides a retelling of the text.	Determines a central idea of a text and describes its development over the course of a text; provides a summary of the text.	Determines a central idea of a text and analyzes its development over the course of the text, including how it emerges and is shaped and refined by specific	Determines and evaluates a central idea of a text and analyzes in detail its development over the course of a text, including how it emerges and is shaped and refined by specific details; provides

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				details; provides an objective summary of the text.	a comprehensive, objective summary of the text.
Range	9-10.RI.3	Identifies how the author unfolds an analysis or series of ideas or events, including the order in which the points are made and how they are introduced and developed.	Describes how the author unfolds an analysis or a series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them.	Analyzes how the author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them.	Evaluates the rhetorical effect of how the author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them.
Range	9-10.RI.4	With textual support (e.g. context clues, embedded definition, etc.), determines the meaning of words and phrases as they are used in a text; identifies the impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that	With textual support (e.g. context clues, embedded definition, etc.), determines the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; describes the cumulative impact of specific word choices	Determines the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyzes the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion	Analyzes the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; evaluates the cumulative rhetorical effect of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		of a newspaper).	on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).	differs from that of a newspaper).	that of a newspaper).
Range	9-10.RI.5	Describes how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a considerate text (e.g., a section or chapter).	Describes how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter).	Analyzes in detail how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter).	Evaluates the rhetorical impact of how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter).
Range	9-10.RI.6	Identifies an author's point of view or purpose in a text; identifies the author's use of rhetoric to advance that point of view or purpose.	Identifies an author's point of view or purpose in a text and describes how an author uses rhetoric to advance that point of view or purpose.	Determines an author's point of view or purpose in a text and analyzes how an author uses rhetoric to advance that point of view or purpose.	Analyzes an author's point of view or purpose in a text and evaluates the effectiveness of an author's use of rhetoric to advance that point of view or purpose.
Range	9-10.RI.7	Describes various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia).	Compares and contrasts various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), identifying which	Analyzes various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which	Analyzes various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), evaluating the rhetorical effect of the emphasis of different

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
			details are emphasized in each account.	details are emphasized in each account.	details in each account.
Range	9-10.RI.8	Delineates and evaluates the argument and claims in a text, describing the reasoning and evidence used to support the claim.	Delineates and evaluates the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient.	Delineates and evaluates the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identifies false statements and fallacious reasoning.	Explicates and evaluates the argument and specific claims in a text, citing specific language from the text in an assessment of whether the reasoning is valid and the evidence is relevant and sufficient; identifies subtle instances of false statements and fallacious reasoning.
Range	9-10.RI.9	Describes specific aspects of seminal U.S. documents of historical and literary significance (e.g., Washington's Farewell Address, the Gettysburg Address, Roosevelt's Four Freedoms speech, King's "Letter from Birmingham Jail").	Analyzes specific aspects of seminal U.S. documents of historical and literary significance (e.g., Washington's Farewell Address, the Gettysburg Address, Roosevelt's Four Freedoms speech, King's "Letter from Birmingham Jail").	Analyzes seminal U.S. documents of historical and literary significance (e.g., Washington's Farewell Address, the Gettysburg Address, Roosevelt's Four Freedoms speech, King's "Letter from Birmingham Jail"), including how they address related themes and concepts.	Evaluates the reasoning and rhetorical strategies employed in seminal U.S. documents of historical and literary significance (e.g., Washington's Farewell Address, the Gettysburg Address, Roosevelt's Four Freedoms speech, King's "Letter from Birmingham Jail"), including how they address related themes and concepts.

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.W.1	Writes arguments to support claims in an analysis of substantive topics or texts, using reasoning and evidence. a. Introduces claim(s) and creates an organization, establishing relationships among claim(s), reasons, and evidence. b. Develops claim(s), supplying evidence in a manner that anticipates the audience's concerns. c. Uses words, phrases, and clauses to link the major sections of the text and clarify the relationships between claim(s) and reasons, and between reasons and evidence. d. Attempts a formal style and objective tone while demonstrating awareness	Writes arguments to support claims in an analysis of substantive topics or texts, using reasoning and relevant evidence. a. Introduces claim(s), distinguishes the claim(s) from alternate or opposing claims, and creates an organization that establishes relationships among claim(s), counterclaims, reasons, and evidence. b. Develops claim(s) and counterclaims, supplying evidence for each while pointing out the strengths of both in a manner that anticipates the audience's concerns. c. Uses words, phrases, and clauses to link the major sections of the text and clarify the	Writes arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. a. Introduces precise claim(s), distinguishes the claim(s) from alternate or opposing claims, and creates an organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence. b. Develops claim(s) and counterclaims fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns. c. Uses words, phrases, and clauses to link the	Writes highly effective arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. a. Introduces strong and precise claim(s), distinguishes the claim(s) from alternate or opposing claims, and creates an effective organization that establishes strong, clear relationships among claim(s), counterclaims, reasons, and evidence. b. Develops strong claim(s) and counterclaims fairly, supplying thorough evidence for each while pointing out the strengths and limitations of both in a manner that effectively anticipates the audience's knowledge level and

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		of the norms and conventions of standard English. e. Provides a concluding statement or section.	relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establishes a formal style and objective tone while demonstrating awareness of the norms and conventions of the discipline in which they are writing. e. Provides a concluding statement or section that supports the argument presented.	major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establishes and maintains a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provides a concluding statement or section that follows from and supports the argument presented.	concerns. c. Uses precise words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establishes and maintains a rhetorically appropriate formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provides an effective concluding statement or section that follows from and supports the argument presented.

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.W.2	Writes informative/explanatory texts to examine and convey ideas, concepts, and information through the selection, organization, and analysis of content. a. States a topic; attempts an organization of ideas, concepts, and information to make connections and distinctions. b. Develops the topic with information and examples appropriate to the audience's knowledge of the topic. c. Uses appropriate transitions to link the	Writes informative/explanatory texts to examine and convey ideas, concepts, and information accurately through the selection, organization, and analysis of content. a. States a topic; organizes ideas, concepts, and information to make connections and distinctions; includes formatting (e.g., headings) and graphics (e.g., figures, tables) to aid comprehension. b. Develops the topic with relevant facts, extended definitions, concrete details, quotations, or	Writes informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content. a. Introduces a topic; organizes complex ideas, concepts, and information to make important connections and distinctions; includes formatting (e.g., headings) and graphics (e.g., figures, tables) when useful to aiding comprehension. b. Develops the topic with well-chosen, relevant, and	Writes highly effective informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content. a. Clearly introduces a topic; strategically organizes complex ideas, concepts, and information to make important connections and distinctions; includes important formatting (e.g., headings) and graphics (e.g., figures, tables) when useful to aiding comprehension.

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		major sections of the texts. d. Uses topic-appropriate language and vocabulary to describe the topic. e. Attempts a formal style and objective tone while demonstrating awareness of the norms and conventions of standard English. f. Provides a concluding statement or section.	other information and examples appropriate to the audience. c. Uses appropriate transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. d. Uses topic-appropriate language and domain-specific vocabulary to manage the complexity of the topic. e. Establishes a formal style and objective tone while demonstrating awareness of the norms and conventions of the discipline in which they are writing. f. Provides a concluding statement or section that supports the information or explanation presented.	sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Uses appropriate and varied transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. d. Uses precise language and domain-specific vocabulary to manage the complexity of the topic. e. Establishes and maintains a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. f. Provides a concluding statement or section that	b. Thoroughly develops the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Consistently and effectively uses appropriate and varied transitions to link the major sections of the text, creates cohesion, and clarifies the relationships among complex ideas and concepts. d. Uses precise language, domain-specific vocabulary, and figures of speech to manage the complexity of the topic. e. Establishes and maintains a rhetorically effective formal style and objective tone while

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).	attending to the norms and conventions of the discipline in which they are writing. f. Provides an effective concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).
Range	9-10.W.3	N/A	N/A	N/A	N/A

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.W.4-6	Produces writing in which the development, organization, and style are appropriate to the task and purpose; strengthens writing as needed by revising and editing; uses technology to produce writing.	Produces coherent writing in which the development, organization, and style are appropriate to the task, purpose, and audience; strengthens writing as needed by planning, revising, and editing; uses technology, including the Internet, to produce and publish writing products, taking advantage of technology's capacity to display information flexibly and dynamically.	Produces clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience; develops and strengthens writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience; uses technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.	Produces clear and coherent writing in which the development, organization, and style are highly effective for the task, purpose, and audience; develops and strengthens writing by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience; uses technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.W.7	Conducts short research projects to answer a given simple question or solve a given simple problem; uses discrete information from sources on the subject, demonstrating a developing understanding of the subject under investigation.	Conducts short as well as more sustained research projects to answer a simple question (including a self-generated question) or solve a simple problem; narrows or broadens the inquiry when appropriate; synthesizes sources on the subject, demonstrating understanding of the subject under investigation.	Conducts short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrows or broadens the inquiry when appropriate; synthesizes multiple sources on the subject, demonstrating understanding of the subject under investigation.	Conducts short as well as more sustained research projects to answer a complex question (including a self-generated question) or solve a complex problem; narrows or broadens the inquiry when appropriate; synthesizes multiple high-quality sources on the subject, demonstrating complete understanding of the subject under investigation.
Range	9-10.W.8	Gathers information from print and digital sources; integrates information into the text, avoiding plagiarism and following a standard format for citation.	Gathers relevant information from multiple print and digital sources, using searches effectively; assesses the usefulness of each source in answering the research question; integrates information into the text to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.	Gathers relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assesses the usefulness of each source in answering the research question; integrates information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.	Gathers highly relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assesses and analyzes the usefulness of each source in answering the research question; seamlessly integrates information into the text selectively to create and maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.

Listening					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.SL.2	Uses multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally).	Uses multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.	Integrates multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.	Effectively integrates multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) to meet the needs of a specific task, audience, and purpose, while evaluating the credibility and accuracy of each source.
Range	9-10.SL.3	Summarizes a speaker’s point of view, reasoning, and use of evidence.	Evaluates a speaker’s point of view, reasoning, and use of evidence, identifying any fallacious reasoning.	Evaluates a speaker’s point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.	Thoroughly evaluates a speaker’s point of view, reasoning, and use of evidence and rhetoric, analyzing any fallacious reasoning or exaggerated or distorted evidence.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.L.1	Attempts to meet the conventions of standard English grammar and usage when writing or speaking: a. Uses various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, absolute) and clauses (independent, dependent, noun, relative, adverbial) to add interest to writing or presentations.	Demonstrates basic understanding of the conventions of standard English grammar and usage when writing or speaking. a. Uses parallel structure. b. Uses various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, absolute) and clauses (independent, dependent, noun, relative, adverbial) to convey meanings and add interest to writing or presentations.	Demonstrates command of the conventions of standard English grammar and usage when writing or speaking. a. Uses parallel structure. b. Uses various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, absolute) and clauses (independent, dependent, noun, relative, adverbial) to convey specific meanings and add variety and interest to writing or presentations.	Demonstrates strong command of the conventions of standard English grammar and usage when writing or speaking. a. Uses parallel structure. b. Uses various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, absolute) and clauses (independent, dependent; noun, relative, adverbial) to convey specific meanings and add variety, craft, style, depth of meaning, and interest to writing or presentations.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.L.2	Attempts to meet the conventions of standard English capitalization, punctuation, and spelling when writing.	Demonstrates basic understanding of the conventions of standard English capitalization, punctuation, and spelling when writing. a. Attempts to use a semicolon to link two or more closely related independent clauses. b. Attempts to use a colon to introduce a list or quotation. c. Spells correctly.	Demonstrates command of the conventions of standard English capitalization, punctuation, and spelling when writing. a. Uses a semicolon to link two or more closely related independent clauses. b. Uses a colon to introduce a list or quotation. c. Spells correctly.	Demonstrates strong command of the conventions of standard English capitalization, punctuation, and spelling when writing, using that command to enhance style and meaning. a. Uses a semicolon to link two or more closely related independent clauses. b. Uses a colon to introduce a list or quotation. c. Spells correctly.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.L.3	Uses knowledge of language for comprehension when reading or listening and makes choices for meaning or style.	Uses knowledge of language for comprehension when reading or listening and makes choices for meaning or style; writes and edits work to conform to a formal or informal style.	Applies knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening; writes and edits work so that it conforms to the guidelines in a style manual (e.g., MLA Handbook, Turabian's Manual for Writers) appropriate for the discipline and writing type.	Applies knowledge of language to demonstrate how language functions in different contexts, to make highly effective choices for meaning or style, and to fully comprehend when reading or listening; writes and edits work so that it conforms to the guidelines in a style manual (e.g., MLA Handbook, Turabian's Manual for Writers) appropriate for the discipline and writing type.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.L.4	Determines the meaning of unknown or multiple meaning grade-level words by using immediate context clues or attempting to use patterns of word changes.	Determines the meaning of unknown grade-level words by using context clues within the same sentence; identifies and attempts to use patterns of word changes that indicate different meanings; or consults general reference materials, both print and digital.	Determines and clarifies the meaning of unknown or multiple-meaning grade-level words by using context clues within the text; identifies and correctly uses patterns of word changes that indicate different meanings or parts of speech; consults general and specialized reference materials, both print and digital, to determine its part of speech or its etymology; and/or verifies the preliminary determination of the meaning of a word or phrase.	Determines and clarifies the meanings of unknown and multiple-meaning words, including above grade-level words, by using context clues within the text; identifies and correctly uses patterns of word changes that indicate different meanings or parts of speech; consults general and specialized reference materials, both print and digital, to determine its part of speech or its etymology; and/or verifies the meaning of a word or phrase.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	9-10.L.5	Recognizes figurative language and word relationships by identifying figures of speech and nuances in word meanings.	Demonstrates understanding of straightforward figurative language, clear word relationships, and nuances in word meanings by identifying and attempting to interpret figures of speech in texts and recognizing nuances in the meaning of words.	Demonstrates understanding of figurative language, word relationships, and nuances in word meanings. a. Interprets figures of speech in context and analyzes their role in texts. b. Analyzes nuances in the meaning of words with similar denotations.	Demonstrates understanding of complex figurative language, complex word relationships, and subtle nuances in word meanings. a. Interprets and uses figures of speech in context and analyzes their role in texts. b. Analyzes and uses nuances in the meaning of words with similar denotations.

Grade 11 ELA

PLD	Standard	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy		The Level 1 student is below proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for the grade level, is likely able to partially access grade-level content, and engages with higher-order thinking skills with extensive support.	The Level 2 student is approaching proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for the grade level, is likely able to access grade-level content, and engages in higher-order thinking skills with some independence and support.	The Level 3 student is proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for the grade level, is able to access grade-level content, and engages in higher-order thinking skills with some independence and minimal support.	The Level 4 student is highly proficient in applying the English language arts/literacy knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for the grade level, is able to access above grade-level content, and engages in higher-order thinking skills independently.

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	11.RL.1	Cites textual evidence to support analysis of what the text says explicitly as well as simple inferences drawn from the text.	Cites strong textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	Cites strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.	Cites strong and thorough textual evidence to support a deep analysis of what the text says explicitly as well as complex inferences drawn from the text, including determining where the text leaves matters uncertain and how they could be clarified.
Range	11.RL.2	Determines two explicit themes or central ideas of a text and describes their development over the course of the text; provides a simple summary of the text.	Determines two themes or central ideas of a text and analyzes their development over the course of the text; provides a simple objective summary of the text.	Determines two or more themes or central ideas of a text and analyzes their development over the course of the text, including how they interact and build on one another to produce a complex account; provides an objective summary of the text.	Determines two or more subtle themes or central ideas of a text; analyzes and evaluates their development over the course of the text, including how they interact and build on one another to produce a complex account; provides a comprehensive objective summary of the text.

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	11.RL.3	Describes the author's choices regarding how to develop and relate basic elements of a story or drama (e.g., setting, characters, plot).	Analyzes the impact of the author's choices regarding how to develop and relate basic elements of a story or drama (e.g., setting, characters, plot).	Analyzes the impact of the author's choices regarding how to develop and relate elements of a story or drama (e.g., where a story is set, how the action is ordered, how the characters are introduced and developed).	Analyzes and evaluates the impact of the author's choices regarding how to develop and relate elements of a story or drama (e.g., where a story is set, how the action is ordered, how the characters are introduced and developed).
Range	11.RL.4	With textual support (e.g., context clues, embedded definitions), determines the literal meaning of words and phrases as they are used in the text, including figurative and connotative meanings.	With textual support (e.g., context clues, embedded definitions), determines the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyzes the impact of specific word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful (includes Shakespeare as well as other authors.)	Determines the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyzes the impact of specific word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful (includes Shakespeare as well as other authors.)	Determines the meaning of complex words and phrases as they are used in the text, including figurative and connotative meanings; analyzes and evaluates the impact of specific word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful (includes Shakespeare as well as other authors.)

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	11.RL.5	Identifies an author's choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution).	Describes an author's choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution).	Analyzes how an author's choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning as well as its aesthetic impact.	Analyzes and evaluates the effectiveness of an author's choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution), including how they contribute to its overall structure and meaning as well as its aesthetic impact.
Range	11.RL.6	Identifies a clear case in which grasping point of view requires distinguishing what is directly stated in a text from what is really meant (e.g., satire, sarcasm, irony, or understatement).	Identifies a subtle case in which grasping point of view requires distinguishing what is directly stated in a text from what is really meant (e.g., satire, sarcasm, irony, or understatement).	Analyzes a case in which grasping point of view requires distinguishing what is directly stated in a text from what is really meant (e.g., satire, sarcasm, irony, or understatement).	Analyzes a case in which grasping point of view requires distinguishing what is directly stated in a text from what is really meant (e.g., satire, sarcasm, irony, or understatement), and evaluates its rhetorical effect and aesthetic impact.

Reading: Literature					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	11.RL.7	Describes differences in interpretations of a story, drama, or poem (e.g., recorded or live production of a play or recorded novel or poetry), identifying how each version interprets the source text.	Compares and contrasts multiple interpretations of a story, drama, or poem (e.g., recorded or live production of a play or recorded novel or poetry), describing how each version interprets the source text.	Analyzes multiple interpretations of a story, drama, or poem (e.g., recorded or live production of a play or recorded novel or poetry), evaluating how each version interprets the source text.	Analyzes multiple, subtly different interpretations of a story, drama, or poem (e.g., recorded or live production of a play or recorded novel or poetry), evaluating each version's interpretation of the source text and how that interpretation affects the overall meaning.
Range	11.RL.9	Demonstrates knowledge of some eighteenth-, nineteenth-, and early-twentieth-century foundational works of American literature, including how two texts treat similar topics.	Demonstrates knowledge of a core group of eighteenth-, nineteenth-, and early-twentieth-century foundational works of American literature, including how two texts from the same period treat similar themes or topics.	Demonstrates knowledge of eighteenth-, nineteenth,- and early-twentieth-century foundational works of American literature, including how two or more texts from the same period treat similar themes or topics.	Demonstrates thorough knowledge of eighteenth-, nineteenth-, and early-twentieth-century foundational works of American literature, citing evidence from two or more texts from the same period in an analysis of their treatment of similar themes or topics.

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	11.RI.1	Cites textual evidence to support analysis of what the text says explicitly as well as simple inferences drawn from the text.	Cites strong textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	Cites strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.	Cites strong and thorough textual evidence to support a deep analysis of what the text says explicitly as well as complex inferences drawn from the text, including determining where the text leaves matters uncertain and how they could be clarified.
Range	11.RI.2	Determines two explicit central ideas of a text and describes their development over the course of the text; provides a simple summary of the text.	Determines two central ideas of a text and analyzes their development over the course of the text; provides a simple, objective summary of the text.	Determines two or more central ideas of a text and analyzes their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provides an objective summary of the text.	Determines two or more subtle central ideas of a text; analyzes and evaluates their development over the course of the text, including how they interact and build on one another to produce a complex analysis; provides a comprehensive, objective summary of the text.

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	11.RI.3	Describes a set of ideas or sequence of events and identifies how specific individuals, ideas, or events interact and develop in specific sections of the text.	Analyzes a set of ideas or sequence of events and explains how specific individuals, ideas, or events interact and develop in specific sections of the text.	Analyzes a complex set of ideas or sequence of events and explains how specific individuals, ideas, or events interact and develop over the course of the text.	Evaluates the rhetorical effect of the presentation of a complex set of ideas or sequence of events and explains how specific individuals, ideas, or events interact and develop over the course of the text.
Range	11.RI.4	With textual support (e.g. context clues, embedded definitions), determines the meaning of words and phrases as they are used in a text; identifies how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines *faction* in “Federalist No. 10”).	With textual support (e.g. context clues, embedded definitions), determines the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; describes how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines *faction* in “Federalist No. 10”).	Determines the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyzes how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines *faction* in “Federalist No. 10”).	Analyzes the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; evaluates the rhetorical effect of how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines *faction* in “Federalist No. 10”).

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	11.RI.5	Analyzes the structure the author uses in his or her exposition or argument.	Analyzes and evaluates the effectiveness of the structure an author uses in his or her exposition or argument.	Analyzes and evaluates the effectiveness of the structure an author uses in his or her exposition or argument, including whether the structure makes points clear, convincing, and engaging.	Analyzes and evaluates the effectiveness of both the structure an author uses in his or her exposition or argument and alternate structures, including whether the structure makes points clear, convincing, and engaging.
Range	11.RI.6	Identifies an author's point of view or purpose in a text in which the rhetoric is particularly effective; identifies the contribution of the text's style and content.	Identifies an author's point of view or purpose in a text in which the rhetoric is particularly effective, describing how style and content contribute to the power, persuasiveness, or beauty of the text.	Determines an author's point of view or purpose in a text in which the rhetoric is particularly effective, analyzing how style and content contribute to the power, persuasiveness, or beauty of the text.	Analyzes an author's point of view or purpose in a text in which the rhetoric is particularly effective; evaluates the effectiveness of the author's style and content, including their contribution to the power, persuasiveness, or beauty of the text.
Range	11.RI.7	Uses information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.	Integrates multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.	Integrates and evaluates multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.	Synthesizes, integrates, and evaluates multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem; evaluates the

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
					effect of the proposed answer or solution.
Range	11.RI.8	Delineates and evaluates the reasoning in seminal U.S. texts, describing the application of constitutional principles and use of legal reasoning (e.g., in U.S. Supreme Court majority opinions and dissents).	Delineates and evaluates the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning (e.g., in U.S. Supreme Court majority opinions and dissents).	Delineates and evaluates the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning (e.g., in U.S. Supreme Court majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy (e.g., the Federalist, presidential addresses).	Explicates and evaluates the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning (e.g., in U.S. Supreme Court majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy (e.g., the Federalist, presidential addresses); extrapolates and evaluates the effects of these decisions on public life.

Reading: Informational Text					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	11.RI.9	Describes the themes, purposes, and rhetorical features of seventeenth-, eighteenth-, and nineteenth-century foundational U.S. documents of historical and literary significance (including The Declaration of Independence, the Preamble to the Constitution, the Bill of Rights, and Lincoln's Second Inaugural Address).	Performs a basic analysis of the themes, purposes, and rhetorical features in seventeenth-, eighteenth-, and nineteenth-century foundational U.S. documents of historical and literary significance (including The Declaration of Independence, the Preamble to the Constitution, the Bill of Rights, and Lincoln's Second Inaugural Address).	Analyzes seventeenth-, eighteenth-, and nineteenth-century foundational U.S. documents of historical and literary significance (including The Declaration of Independence, the Preamble to the Constitution, the Bill of Rights, and Lincoln's Second Inaugural Address) for their themes, purposes, and rhetorical features.	Refers to specific textual evidence in an analysis of seventeenth-, eighteenth-, and nineteenth-century foundational U.S. documents of historical and literary significance (including The Declaration of Independence, the Preamble to the Constitution, the Bill of Rights, and Lincoln's Second Inaugural Address), evaluating the implications of their themes, purposes, and rhetorical features.

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	11.W.1	Writes arguments to support claims in an analysis of substantive topics or texts, using reasoning and evidence. a. Introduces claim(s), states the significance of the claim(s), and establishes relationships among some claim(s), reasons, and evidence. b. Develops claim(s), supplying evidence in a manner that anticipates the audience's concerns. c. Uses words, phrases, and clauses to link sections of the text and clarify the relationships between claim(s) and reasons, and between reasons and evidence. d. Attempts a formal style and objective tone while demonstrating awareness	Writes arguments to support claims in an analysis of substantive topics or texts, using reasoning and relevant evidence. a. Introduces claim(s), states the significance of the claim(s), distinguishes the claim(s) from alternate or opposing claims, and creates an organization that establishes relationships among claim(s), counterclaims, reasons, and evidence. b. Develops claim(s) and counterclaims, supplying evidence for each while pointing out the strengths of both in a manner that anticipates the audience's concerns. c. Uses words, phrases, and clauses to link	Writes arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. a. Introduces precise claim(s), establishes the significance of the claim(s), distinguishes the claim(s) from alternate or opposing claims, and creates an organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence. b. Develops claim(s) and counterclaims fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns.	Writes highly effective arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. a. Introduces strong and precise claim(s), establishes the significance of the claim(s), distinguishes the claim(s) from alternate or opposing claims, and creates an effective organization that establishes strong, clear relationships among claim(s), counterclaims, reasons, and evidence. b. Develops strong claim(s) and counterclaims fairly, supplying thorough evidence for each while establishing the strengths and limitations of both in

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		of the norms and conventions of standard English. e. Provides a concluding statement or section.	sections of the text and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establishes a formal style and objective tone while demonstrating awareness of the norms and conventions of the discipline in which they are writing. e. Provides a concluding statement or section that supports the argument presented.	c. Uses words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establishes and maintains a formal style and objective tone while attending to the norms and conventions of the discipline in which he or she is writing. e. Provides a concluding statement or section that follows from and supports the argument presented.	a manner that effectively anticipates the audience's knowledge level and concerns. c. Uses precise words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establishes and maintains a rhetorically appropriate formal style and objective tone while attending to the norms and conventions of the discipline in which he or she is writing. e. Provides an effective concluding statement or section that follows from and supports the argument presented.

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
					f. Evaluates and reflects on the writing and how well it addresses the purpose, audience, and task.

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	11.W.2	Writes informative/explanatory texts to examine and convey ideas, concepts, and information through the selection, organization, and analysis of content. a. States a topic; organizes ideas, concepts, and information to make connections and distinctions. b. Develops the topic by selecting relevant facts, extended definitions, concrete details, quotations, or other information and examples. c. Uses appropriate transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and	Writes informative/explanatory texts to examine and convey ideas, concepts, and information accurately through the effective selection, organization, and analysis of content. a. Introduces a topic; organizes ideas, concepts, and information to make connections and distinctions; includes formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia in an attempt to aid comprehension. b. Develops the topic by selecting significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience.	Writes informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content. a. Introduces a topic; organizes complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; includes formatting (e.g., headings) and graphics (e.g., figures, tables) when useful to aiding comprehension. b. Develops the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or	Writes highly effective informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content. a. Clearly introduces a topic; strategically organizes complex ideas, concepts, and information to make important connections and distinctions; includes important formatting (e.g., headings) and graphics (e.g., figures, tables) when useful to aiding comprehension. b. Develops the topic strategically by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		concepts. d. Uses topic-appropriate language, vocabulary, and techniques such as metaphor, simile, and analogy to describe the topic.e. Attempts a formal style and objective tone while demonstrating awareness of the norms and conventions of standard English. f. Provides a concluding statement or section.	c. Uses appropriate transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. d. Uses topic-appropriate language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic. e. Establishes a formal style and objective tone while demonstrating awareness of the norms and conventions of the discipline in which he or she is writing. f. Provides a concluding statement or section that supports the information or explanation presented.	other information and examples appropriate to the audience's knowledge of the topic. c. Uses appropriate and varied transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.d. Uses precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic. e. Establishes and maintains a formal style and objective tone while attending to the norms and conventions of the discipline in which he or she is writing. f. Provides a concluding statement or section that follows from and supports the information or	other information and examples appropriate and relevant to the audience's knowledge of the topic. c. Consistently and effectively uses appropriate and varied transitions to link the major sections of the text, creates cohesion, and clarifies the relationships among complex ideas and concepts. d. Effectively uses precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic and achieve a desired rhetorical effect. e. Establishes and maintains a rhetorically effective formal style and objective tone while attending to the norms and conventions of the

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				explanation presented (e.g., articulating implications or the significance of the topic).	discipline in which he or she is writing. f. Provides an effective concluding statement or section that articulates the significance of the topic, and follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).
Range	11.W.4-6	Produces writing in which the development, organization, and style is appropriate to the task and purpose; strengthens writing as needed by revising and editing; uses technology to produce and update writing products.	Produces coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience; strengthens writing as needed by planning, revising, editing; uses technology, including the Internet, to produce, publish, and update writing products in response to ongoing feedback, including new arguments or information.	Produces clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience; develops and strengthens writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience; uses technology, including the Internet, to produce, publish, and update	Produces clear and coherent writing in which the development, organization, and style are highly effective for the task, purpose, and audience; develops and strengthens writing by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience; uses technology, including the Internet, to produce, publish, and effectively

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				individual or shared writing products in response to ongoing feedback, including new arguments or information.	update individual or shared writing products in response to ongoing feedback, including new arguments or information.
Range	11.W.7	Conducts short research projects to answer a given simple question or solve a given simple problem; uses discrete information from sources on the subject, demonstrating a developing understanding of the subject under investigation.	Conducts short as well as more sustained research projects to answer a simple question (including a self-generated question) or solve a simple problem; narrows or broadens the inquiry when appropriate; synthesizes sources on the subject, demonstrating an understanding of the subject under investigation.	Conducts short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrows or broadens the inquiry when appropriate; synthesizes multiple sources on the subject, demonstrating understanding of the subject under investigation.	Conducts short as well as more sustained research projects to answer a complex question (including a self-generated question) or solve a complex problem; narrows, broadens, or reformulates the inquiry when appropriate; synthesizes multiple high quality sources on the subject, demonstrating complete understanding

Writing					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
					of the subject under investigation.
Range	11.W.8	Gathers information from multiple print and digital sources; assesses the strengths of each source in terms of the task, purpose, and audience; integrates information into the text avoiding plagiarism and following a standard format for citation.	Gathers relevant information from multiple print and digital sources, using searches effectively; assesses the strengths and limitations of each source in terms of the task, purpose, and audience; integrates information into the text to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.	Gathers relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assesses the strengths and limitations of each source in terms of the task, purpose, and audience; integrates information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.	Gathers highly relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assesses the strengths and limitations of each source in terms of the task, purpose, and audience; seamlessly integrates information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and adhering to a standard format for citation.

Listening					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	11.SL.2	Uses multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems.	Uses multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.	Integrates multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.	Effectively integrates multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.
Range	11.SL.3	Describes a speaker's point of view, reasoning, and use of evidence and rhetoric.	Describes a speaker's point of view, reasoning, and use of evidence and rhetoric, including the stance, premises, links among ideas, word choice, points of emphasis, and tone used.	Evaluates a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.	Evaluates and critiques a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing and analyzing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	11.L.1	Attempts to meet the conventions of standard grade level English grammar and usage when writing or speaking. a. Demonstrates the understanding that usage is a matter of convention. b. Clarifies issues of usage, consulting references (e.g., Merriam-Webster's Dictionary of English Usage, Garner's Modern American Usage) as needed.	Demonstrates awareness of the conventions of standard grade level English grammar and usage when writing or speaking. a. Demonstrates the understanding that usage is a matter of convention, can change over time, and is sometimes contested. b. Resolves issues of complex or contested usage, consulting references (e.g., Merriam-Webster's Dictionary of English Usage, Garner's Modern American Usage) as needed.	Demonstrates command of the conventions of standard grade level English grammar and usage when writing or speaking. a. Applies the understanding that usage is a matter of convention, can change over time, and is sometimes contested. b. Resolves issues of complex or contested usage, consulting references (e.g., Merriam-Webster's Dictionary of English Usage, Garner's Modern American Usage) as needed.	Demonstrates strong command of the conventions of standard grade level English grammar and usage when writing or speaking. a. Applies the understanding that usage is a matter of convention, can change over time, and is sometimes contested. b. Resolves issues of complex or contested usage, consulting references (e.g., Merriam-Webster's Dictionary of English Usage, Garner's Modern American Usage) as needed.
Range	11.L.2	Attempts to meet the conventions of standard English capitalization, punctuation, and spelling when writing.	Demonstrates awareness of the conventions of standard English capitalization, punctuation, and spelling when writing.	Demonstrates command of the conventions of standard English capitalization, punctuation, and spelling when writing.	Demonstrates strong command of the conventions of standard English capitalization, punctuation, and spelling when writing. a. Observes hyphenation

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
			a. Attempts to observe hyphenation conventions. b. Spells correctly.	a. Observes hyphenation conventions. b. Spells correctly.	conventions. b. Spells correctly.
Range	11.L.3	Uses knowledge of language for comprehension when reading or listening.	Uses knowledge of language to make effective choices for meaning or style, and to comprehend more fully when reading or listening; varies syntax for effect, consulting references (e.g., Tufte's Artful Sentences) for guidance as needed.	Applies knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening; varies syntax for effect, consulting references (e.g., Tufte's Artful Sentences) for guidance as needed; applies an understanding of syntax to the study of complex texts when reading.	Applies deep knowledge of language to understand how language functions in different contexts, to make highly effective choices for meaning or style, and to aid deep comprehension when reading or listening; varies syntax for effect, consulting references (e.g., Tufte's Artful Sentences) for guidance as needed; applies a thorough understanding of syntax to the study of complex texts when reading.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	11.L.4	Determines the meaning of unknown and multiple-meaning words and phrases by using immediate context clues and consulting general reference materials, both print and digital, to find the pronunciation of a word or determine its meaning or its standard usage; and verifying the preliminary determination of the meaning of a word or phrase.	Determines the meaning of unknown and multiple-meaning words and phrases by using context clues within the same sentence; identifying patterns of word changes that indicate different meanings or parts of speech; consulting general and specialized reference materials, both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, its etymology, or its standard usage; and verifying the preliminary determination of the meaning of a word or phrase.	Determines or clarifies the meaning of unknown and multiple-meaning grade level words and phrases by using context clues as a clue to the meaning of a word or phrase; identifying and correctly using patterns of word changes that indicate different meanings or parts of speech; consulting general and specialized reference materials, both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, its etymology, or its standard usage; and verifying the preliminary determination of the meaning of a word or phrase.	Determines or clarifies the meaning of unknown and multiple-meaning words and phrases, including above grade level content, by using context clues as a clue to the meaning of a word or phrase; identifying and correctly using patterns of word changes that indicate different meanings or parts of speech; consulting general and specialized reference materials, both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, its etymology, or its standard usage; and verifying the preliminary determination of the meaning of a word or phrase.

Language					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	11.L.5	Recognizes figurative language and word relationships; recognizes figures of speech in context; recognizes nuances in the meaning of words with similar denotations.	Demonstrates understanding of straightforward figurative language, clear word relationships, and nuances in word meanings; interprets figures of speech in context; recognizes nuances in the meaning of words with similar denotations.	Demonstrates understanding of figurative language, word relationships, and nuances in word meanings; interprets figures of speech in context and analyze their role in the text; analyzes nuances in the meaning of words with similar denotations.	Demonstrates a deep understanding of figurative language, complex word relationships, and complex nuances in word meanings; interprets complex figures of speech in context and analyzes their role in the text; analyzes nuances in the meaning of words with similar denotations.

Grade 3 Mathematics

PLD	Standard	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy		The Level 1 student is below proficient in applying mathematics knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for the grade-level/course, is likely able to partially access grade-level content, and engages with higher-order	The Level 2 student is approaching proficient in applying mathematics knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for the grade level/course, is able to access grade-level content, and engages in higher-order thinking skills with some	The Level 3 student is proficient in applying mathematics knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for the grade level/course, is able to access grade-level content, and engages in higher-order thinking skills with some	The Level 4 student is highly proficient in applying mathematics knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for the grade level/course, is able to access above grade-level content, and engages in higher-order thinking skills

PLD	Standard	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
		thinking skills with extensive support.	independence and support.	independence and minimal support.	independently.

Operations and Algebraic Thinking					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	3.OA.1	Interprets products of single-digit whole numbers (using factors up to 5) with visual support.	Interprets products of single-digit whole numbers (using factors up to 9) with visual support.	Interprets products of single-digit whole numbers using equal groups of objects, arrays of objects and comparison.	Interprets products of whole numbers within 100, representing context using pictures, numbers, and words.
Range	3.OA.2	Interprets whole-number quotients of whole numbers (with a divisor up to 5) with a visual support.	Interprets whole-number quotients of whole numbers (with a divisor up to 9) with visual support.	Interprets quotients of whole-number division problems using equal groups of objects, arrays of objects and comparison.	Interprets quotients of whole-number division problems, representing context using pictures, numbers, and words.
Range	3.OA.3	Multiplies and divides within 100 to solve word problems involving equal groups and arrays when a visual model is given	Multiplies and divides within 100 to solve word problems involving equal groups and arrays (with factors and divisors that	Multiplies and divides within 100 to solve single-step word problems involving equal groups, arrays, and	Multiplies and divides within 100 to solve multi-step word problems involving equal groups, arrays, and measurement

Operations and Algebraic Thinking					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		(with factors and divisors that are less than or equal to 5).	are less than or equal to 9).	measurement quantities.	quantities.
Range	3.OA.4	Determines the unknown whole number in a multiplication or division equation, when the unknown number is the product or quotient.	Determines the unknown whole number in a multiplication or division equation, in any position, when the factor or divisor is less than or equal to 5.	Determines an unknown whole number, in any position, in a multiplication and division equation.	Determines an unknown whole number in a multiplication and division equation. Students will use the given context to generate an equation or create a word problem.
Range	3.OA.5	Applies the properties of operations to multiply and divide with factors or divisors less than or equal to 5.	Applies the properties of operations to multiply and divide when factors and divisors are less than or equal to 9.	Applies the properties of operations as strategies to multiply and divide. Determines an appropriate strategy for a given situation.	Applies multiple strategies of operations within a word problem.
Range	3.OA.6	Solves division as unknown factor problems by finding missing number in the second factor position (with factors that are less than or equal to 5) with visual support.	Solves division as unknown factor problems by finding missing numbers in any position (with factors less than 10) with visual support.	Understands that division can be expressed as an unknown factor problem by using the relationship between multiplication and division.	Solves division as unknown factor problems by using the relationship between multiplication and division, models multiplication and division in a variety of ways.
Range	3.OA.7	Multiplies and divides single-digit numbers using a variety of strategies and supports.	Fluently multiplies and divides all single-digit numbers using variety strategies.	Knows from memory all products of two single-digit numbers, fluently multiplies products within 100, fluently divides dividends that are	Fluently multiplies and divides within 100 using a wide range of contexts.

Operations and Algebraic Thinking					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				less than 100.	
Range	3.OA.8	Solves two-step word problems using addition and subtraction with simple context and concrete objects or visual representations.	Solve two-step word problems using the four operations with simple context and visual representations (with the unknown in a variety of positions).	Solve two-step word problems using equations in the four operations (with the unknown in a variety of positions, using a letter standing for the unknown quantity). Recognizes the reasonableness of answers using mental computation and estimation strategies.	Creates two-step word problems using multiple operations.
Range	3.OA.9	Identifies additive arithmetic patterns using visual supports, such as an addition table.	Identifies multiplicative and subtractive arithmetic patterns using visual supports.	Identifies arithmetic patterns and explains them using properties of operations.	Creates and extends arithmetic patterns, explains patterns using properties of operations.

Number and Operations in Base Ten					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	3.NBT.1	Uses place value understanding to round a two-digit number to the nearest 10.	Uses place value understanding to round a three-digit number to the nearest 100.	Uses place value understanding to round whole numbers (up to 1,000) to the nearest 10 or 100.	Uses rounding strategies in real-world situations.

Number and Operations in Base Ten					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	3.NBT.2	Adds and subtracts two digit numbers using visual models or support.	Adds and subtracts numbers within 1,000 using visual models or support.	Fluently adds and subtracts within 1,000 using strategies and algorithms based in place value, properties of operations, and/or the relationship between addition and subtraction.	Fluently adds and subtracts within 1,000; explains the method used in finding the sum or difference; recognizes and identifies an error and shows the correct answer.
Range	3.NBT.3	Skip counts by 10, 20 or 50 to multiply single-digit whole numbers by multiples of 10 in the range 10–90.	Uses grouping strategies (associative property) to multiply single-digit whole numbers by multiples of 10 in the range 10-90.	Multiplies single-digit whole numbers by multiples of 10 in the range 10-90 using any of a variety of place value strategies and properties of operations.	Multiplies single-digit whole numbers by multiples of 10 in the range 10-90 using strategies based on place value and properties of operations; shows product using multiple strategies.

Number and Operations/Fractions					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	3.NF.1	Identifies the numerator and identifies the denominator.	Identifies that the numerator is the number of equal parts being considered; identifies that the denominator is the number of equal parts that make up the whole.	Understands 1/*b* is equal to one part when the whole is partitioned into *b* equal parts (where the denominators are 2, 3, 4, 6 or 8).	Applies understanding of unit fractions to real world situations and problems.
Range	3.NF.2a 3.NF.2b	Identifies the fraction on the number line where the increments are equal to the denominator.	Represents a fraction on a partitioned number line.	Represents a fraction on a number line by partitioning into equal parts.	Represents a set of fractions with unlike denominators on a number line by

Number and Operations/Fractions					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
					partitioning into equal parts.
Range	3.NF.3a 3.NF.3b	Understands, recognizes, and generates equivalent fractions using denominators of 2, 4, and 8 given visual models.	Understands, recognizes, and generates equivalent fractions using denominators of 2, 4, and 8.	Understand, recognizes, and generates equivalent fractions using denominators of 2, 3, 4, 6, and 8; explains why the fractions are equivalent using a visual model.	Understands, recognizes, and generates equivalent fractions using denominators of 2, 3, 4, 6, and 8; explains why the fractions are equivalent.
Range	3.NF.3c	Expresses and recognizes fractions that are equivalent to 1.	Expresses and recognizes fractions that are equivalent to whole numbers.	Expresses whole numbers as fractions; recognizes fractions that are equivalent to whole numbers.	Identifies equivalent fractions by creating fraction models to compare fractions with different denominators that pertain to the same whole.
Range	3.NF.3d	Compares two fractions with the same denominator and records results using symbols.	Compares two fractions with the same numerator and records results using symbols.	Compares two fractions that have the same numerator or same denominator using symbols and visual fraction models.	Compares two fractions that have the same numerator or same denominator using symbols.

Measurement and Data & Geometry					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	3.MD.1	Tells, writes, and measures time to the nearest minute.	Tells, writes, and measures time to the nearest minute. Solves one-step word problems involving addition or subtraction of time intervals with scaffolding.	Tells, writes, and measures time to the nearest minute. Solves one-step word problems involving addition and subtraction of time intervals in minutes.	Tells, writes, and measures time to the nearest minute. Solves two-step real world problems involving addition and subtraction of time intervals in minutes.
Range	3.MD.2	Using grams, kilograms or liters, measures and estimates liquid volumes and masses of objects using models.	Using grams, kilograms or liters, measures and estimates liquid volumes and masses of objects and solves simple one-step word problems using either addition or subtraction.	Using grams, kilograms or liters: measures, estimates, and solves one-step word problems involving liquid volumes and masses of objects using any of the four operations.	Using grams, kilograms or liters: measures, estimates, and solves two-step word problems involving liquid volumes and masses of object using any of the four operations.
Range	3.MD.3	Completes a scaled picture graph and a scaled bar graph (with a scale factor of 1 or 5) to represent data set with supports, such as using a model as a guide.	Completes a scaled picture graph and a scaled bar graph to represent data set, with supports, such as using a model as a guide. Solves one-step “how many more” and “how many less” problems using information presented in scaled bar graphs.	Creates a scaled picture graph and a scaled bar graph to represent a data set. Solves one- and two-step “how many more” and how many less” problems using information presented in scaled bar graphs.	Creates a scaled picture graph and a scaled bar graph to represent a data set. Solves multi-step “how many more” and how many less” problems using information presented in scaled bar graphs.

Measurement and Data & Geometry					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	3.MD.4	Generates measurement data by measuring lengths to the nearest half-inch. Shows the data by making a line plot, where the horizontal scale is marked in appropriate units (whole number or halves) with supports.	Generates measurement data by measuring lengths to the nearest half- and quarter-inch. Shows the data by making a line plot, where the horizontal scales is marked in appropriate units (whole numbers, halves, and quarters) with supports.	Generates measurement data by measuring lengths to the nearest half- and quarter-inch. Shows the data by making a line plot, where the horizontal scale is marked in appropriate units (whole number, halves or quarters).	Generates measurement data by measuring lengths to the nearest half- and quarter- inch. Shows the data by making a line plot, and marking the horizontal scale in appropriate units (whole number, halves or quarters). Uses the line plot to answer questions or solve problems.
Range	3.MD.5a 3.MD.5b 3.MD.6	Understands what a square unit is and that a plane figure can be covered without gaps or overlaps to find an area.	Understands area is measured using square units, finds area of a rectangle by counting the square units.	Understands area is measured using square units, finds area of a plane figure by counting the square units.	Finds the area of two plane figures by counting the square units and compares their sizes.
Range	3.MD.7a 3.MD.7b	Finds the area of a rectangle by tiling.	Finds the area of a rectangle by tiling and shows that the area is the same as would be found by multiplying the side lengths.	Finds areas of rectangles by multiplying the side lengths, in the context of solving real-world and mathematical problems, and represents whole number products as rectangular areas in mathematical reasoning.	Finds the area of two plane figures of different sizes, and compares their sizes.

Measurement and Data & Geometry					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
	3.MD.7c 3.MD.7d	Finds the area of two rectangles by tiling.	Finds the area of two rectangles by tiling and adds the areas of the rectangles.	Multiplies the side lengths of a rectangle composed of two rectangles and uses the distributive property to find the overall area; decomposes a rectangle into two rectangular parts and finds the area of the new rectangles.	Creates a word problem using the distributive property to find the area of rectangles.
Range	3.MD.8	Finds the perimeter and area of polygons (given the side lengths).	Solves mathematical problems involving perimeters of polygons, including finding the perimeter and area (given the side lengths); compares and contrasts area and perimeter.	Solves real-word and mathematical problems involving perimeters of polygons, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.	Constructs rectangles that have the same perimeter but different areas and the reverse.
Range	3.G.1	Identifies examples of quadrilaterals; recognizes that examples of quadrilaterals have shared attributes, and that the shared attributes can define a larger category.	Understands the properties of quadrilaterals and the subcategories of quadrilaterals.	Recognizes and sorts examples of quadrilaterals that have shared attributes and that the shared attributes can define a larger category; draws examples of quadrilaterals that don’t belong to the categories of rhombuses, rectangles, and squares.	Recognizes and sorts examples of quadrilaterals that have shared attributes and that the shared attributes can define a larger category; draws examples and non-examples of quadrilaterals that are not rhombuses, rectangles, or squares.

Measurement and Data & Geometry					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	3.G.2	Partitions shapes into parts with equal areas and expresses the area as a unit fraction of the whole (limited to halves and quarters).	Partitions shapes into parts with equal areas and expresses the area as a unit fraction of the whole (limited to halves, quarters, and eighths).	Partitions shapes into parts with equal areas and expresses the area as a unit fraction (with denominator of 2, 3, 4, 6, or 8) of the whole.	Partitions shapes in multiple ways into parts with equal areas and expresses the area as a unit fraction of the whole.

Grade 4 Mathematics

PLD	Standard	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy		The Level 1 student is below proficient in applying mathematics knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for the grade-level/course, is likely able to partially access grade level content and engages with higher-order thinking skills with extensive support.	The Level 2 student is approaching proficient in applying mathematics knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for the grade level/course, is able to access grade-level content and engages in higher-order thinking skills with some independence and support.	The Level 3 student is proficient in applying mathematics knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for the grade level/course, is able to access grade-level content, and engages in higher-order thinking skills with some independence and minimal support.	The Level 4 student is highly proficient in applying mathematics knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for the grade level/course, is able to access above grade-level content, and engages in higher-order thinking skills independently.

Operations and Algebraic Thinking					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	4.OA.1	Recognizes that any two factors and their product can be read as a comparison using supports.	Recognizes that any two factors and their product can be read as a comparison; represents those comparisons as equations using supports.	Recognizes that any two factors and their product can be read as a comparison; represents verbal comparisons as equations.	Recognizes that any two factors and their product can be read as a comparison; uses multiple strategies and creates his or her own strategies to represent and describe those comparisons.

Operations and Algebraic Thinking					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	4.OA.2	Multiplies or divides to solve word problems involving multiplicative comparison (where the unknown is the product or quotient), given visual representations.	Multiplies or divides to solve word problems involving multiplicative comparison (where the unknown is in a variety of positions), given visual representations.	Multiplies or divides to solve word problems involving multiplicative comparison, where the unknown is in a variety of positions.	Creates own context for multiplicative comparison.
Range	4.OA.3	Solves multi-step word problems (which may or may not include remainders) using the four operations with simple context and scaffolding. The sum, difference, product, or quotient is always the unknown.	Solves multi-step word problems (which may include interpreting remainders) using the four operations with simple context and scaffolding. The sum, difference, product, or quotient is always the unknown. Uses rounding where appropriate.	Solves multi-step word problems (including interpreting remainders) using the four operations. The unknown is in a variety of positions, and can be represented by a symbol/letter. Uses estimation strategies when appropriate. Recognizes the reasonableness of answers using mental computation and estimation strategies.	Solves complex multi-step word problems with multiple possible solutions and determines which would be the most reasonable based upon given criteria.
Range	4.OA.4	Finds factor pairs for multiples of 10 in the range of 1 to 100. Determines whether a whole number in the range of 1 to 25 is prime or composite, given visual representations (such as arrays, hundreds	Finds all factor pairs for whole numbers in the range of 1 to 100. Determines whether a whole number in the range of 1 to 50 is prime or composite, given visual representations (such as arrays, hundreds	Recognizes that a whole number is a multiple of each of its factors and determines a given whole number in the range of 1 to 100 is a multiple of a given single-digit number (i.e., given 56, determine whether or not 8 is a	Applies the concepts of both factors and prime and composite numbers in problem-solving contexts.

Operations and Algebraic Thinking					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		chart, number line).	chart, number line).	factor). Determines whether a whole number in the range of 1 to 100 is prime or composite.	
Range	4.OA.5	Generates a number or shape pattern that follows a given rule, using visual models.	Generates a number or shape pattern that follows a given rule.	Generates a number or shape pattern that follows a given rule; identifies apparent features that are not explicit in the rule.	Generates a number or shape pattern that combines two operations for a given rule.

Number and Operations in Base Ten					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	4.NBT.1	Recognizes that a digit in one place represents 10 times as much as it represents in the place to its right (within 10,000), with visual representations.	Recognizes that a digit in one place represents 10 times as much as it represents in the place to its right (within 100,000).	Recognizes that a digit in one place represents 10 times as much as it represents in the place to its right (for numbers up to and including 1,000,000).	Uses place value strategies in context to determine the place value of any given digit.
Range	4.NBT.2	Reads and writes multi-digit whole numbers using base ten numerals, and number names; compares two multi-digit numbers (up to 10,000), using symbols to record	Reads and writes multi-digit whole numbers using base ten numerals, number names, and expanded form; compares two multi-digit numbers (up to 100,000) using	Reads and writes multi-digit whole numbers using base ten numerals, number names, and expanded form; compares two multi-digit numbers (up to a million) using	Applies comparisons to real-world and mathematical contexts.

Number and Operations in Base Ten					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		the results.	symbols to record the results.	symbols to record the results.	
Range	4.NBT.3	Uses place value understanding to round multi-digit whole numbers to any place within 10,000.	Uses place value understanding to round multi-digit whole numbers to any place within 100,000.	Uses place value understanding to round whole numbers up to any place within 1,000,000.	Uses rounding strategies in real-world situations.
Range	4.NBT.4	Fluently adds and subtracts multi-digit whole numbers using the standard algorithm without regrouping.	Fluently adds and subtracts multi-digit whole numbers using the standard algorithm with supports.	Fluently adds and subtracts multi-digit whole numbers using the standard algorithm.	Recognizes and identifies an error and shows the correct answer.
Range	4.NBT.5	Multiplies a whole number (of up to three digits) by a single-digit whole number, using strategies based on place value and the properties of operations.	Multiplies a whole number (of up to four digits) by a single-digit whole number, using strategies based on place value and the properties of operations.	Multiplies a whole number (of up to four digits) by a single-digit whole number and multiplies two double-digit numbers, in context, using strategies based on place value and the properties of operations; illustrates and explains the calculation by using equations, rectangular arrays, and/or area models.	Interprets a context and explains strategies used to solve.

Number and Operations in Base Ten					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	4.NBT.6	Finds whole number quotients and remainders (with up to double-digit dividends and single-digit divisors), using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division.	Finds whole number quotients and remainders (with up to three-digit dividends and single-digit divisors), using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division.	Finds whole number quotients and remainders (with up to four-digit dividends and single-digit divisors), in context, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrates and explains the calculation by using equations, rectangular arrays and/or area models.	Interprets a context and explains strategies used to solve.

Number and Operations—Fractions					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	4.NF.1	Uses area fraction models to represent equivalent fractions by partitioning unit fraction pieces into smaller equal pieces.	Uses area fraction models to represent equivalent fractions by partitioning unit fraction pieces into smaller pieces (and understands that this is the same), and multiplies by 1 represented as a fraction.	Uses area fraction models and double number lines to generate and explain why fraction *a*/*b* is equivalent to a fraction *(n x a)/(n x b)*, where *n* is a non-negative whole number.	Uses a variety of strategies to generate and explain why fraction *a/b* is equivalent to a fraction *(n x a)/(n x b)*, where *n* is a non-negative whole number.

Number and Operations—Fractions					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	4.NF.2	Uses visual fraction model to compare two fractions with different numerators and different denominators (2, 3, 4, 6 and 8), using <, >, and =, with the understanding that the fractions must refer to the same whole.	Compares two fractions with different numerators and different denominators (grade 4 fraction expectations), using benchmark fractions and <, >, and =, with the understanding that the fractions must refer to the same whole.	Compares two fractions with different numerators and different denominators (grade 4 fraction expectations), using benchmark fractions and <, >, and =, with the understanding that the fractions must refer to the same whole. Justifies answers using visual fraction models.	Extends understanding to compare and order fractions with different numerators and different denominators (grade 4 fraction expectations), <, >, and =, with the understanding that the fractions must refer to the same whole. Recognizes and generates equivalent fractions
Range	4.NF.3a 4.NF.3b	Adds and subtracts fractions with like denominators by joining and separating parts referring to the same whole using visual and/or manipulative models.	Adds and subtracts fractions with like denominators by joining and separating parts referring to the same whole using visual and/or manipulative models. Decomposes a fraction into a sum of fractions with the same denominator in more than one way and records the decomposition using an equation.	Adds and subtracts fractions with like denominators by joining and separating parts referring to the same whole. Decomposes a fraction into a sum of fractions with the same denominator in more than one way and records the decomposition using an equation.	Adds and subtracts fractions with like denominators by joining and separating parts referring to the same whole. Decomposes a fraction into a sum of fractions with the same denominator in multiple ways and records the decomposition using an equation.

Number and Operations—Fractions					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
	4.NF.3c	Converts a mixed number into an equivalent fraction.	Converts mixed numbers into equivalent fractions and adds and subtracts them.	Adds and subtracts mixed numbers with like denominators by replacing each mixed number with an equivalent fraction, and/or by using the properties of operations and the relationship between addition and subtraction.	Adds and subtracts mixed numbers with like denominators by replacing each mixed number with an equivalent fraction, and by using the properties of operations and the relationship between addition and subtraction.
Range	4.NF.3d	Solves word problems involving addition and subtraction of fractions (referring to the same whole and having like denominators of 2, 3, 4, 6, or 8) with visual fraction models.	Solves word problems involving addition and subtraction of fractions (referring to the same whole and having like denominators, as per grade 4 fraction expectations) with visual fraction models.	Solves word problems involving addition and subtraction of fractions (referring to the same whole and having like denominators, as per grade 4 fraction expectations) using equations.	Solve multi-step word problems involving addition and subtraction of fractions (referring to the same whole and having like denominators, as per grade 4 fraction expectations) using equations.
Range	4.NF.4a 4.NF.4b 4.NF.4c	Understands a fraction *a/b* as a multiple of *1/b* by using visual fraction models.	Understands a fraction *a/b* as a multiple of *1/b*, and uses this understanding to multiply a fraction by a whole number, using visual fraction model.	Understands and solves simple word problems by recognizing that fraction *a/b* is a multiple of *1/b,* and uses that construct to multiply a fraction by a whole number (in general, *n x a/b* is *(n x a)/b*).	Understands and solves more complex word problems by recognizing that fraction *a/b* is a multiple of *1/b,* and uses that construct to multiply a fraction by a whole number (in general, *n x a/b* is *(n x a)/b*).

Number and Operations—Fractions					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	4. NF.5	Expresses a fraction with denominator 10 as an equivalent fraction with denominator 100 by using a model.	Adds two fractions with respective denominators 10 and 100 by first finding equivalent fractions with like denominators by using a model.	Adds two fractions with respective denominators 10 and 100 by first finding equivalent fractions with like denominators.	Solves missing addend problems with respective denominators 10 and 100 by first finding equivalent fractions with like denominators.
Range	4.NF.6	Uses decimal notation for fractions with a denominator of 10, with supports.	Uses decimal notation for fractions with denominators of 10 or 100, with supports.	Uses decimal notation for fractions with denominators of 10 or 100.	Demonstrates knowledge of decimal notation for fractions with denominators of 10 or 100 by converting a number with decimal notation to a decimal fraction.
Range	4.NF.7	Compares two decimals with the same number of places (tenths or hundredths) using supports.	Compares two decimals to the hundredth (using <, >, and =) by reasoning about their size using models. Recognizes that the decimals must refer to the same whole.	Compares two decimals in the tenths and the hundredths (using <, >, and =) by reasoning about their size. Recognizes that the decimals must refer to the same whole, and records the results using the correct symbols.	Orders decimal set composed of tenths and hundredths by reasoning about their size. Recognizes that the decimals must refer to the same whole.

Measurement and Data & Geometry					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	4.MD.1	Knows relative size of measurement units, within one system of units.	Expresses measurements in a larger unit in terms of a smaller unit, within a single system, using supports and adjacent units.	Expresses measurements in a larger unit in terms of a variety of smaller units, within a single system, and records that data in a two-column table.	Given a context, determines the appropriate unit needed and expresses the measurement to the level of accuracy needed.
Range	4.MD.2	Uses the four operations to solve word problems (involving distance, liquid volumes, masses of objects, intervals of time and money), including problems involving whole numbers, using supports.	Uses the four operations to solve word problems (involving distance, liquid volumes, masses of objects, intervals of time and money), including problems involving simple fractions or decimals, using supports.	Uses the four operations to solve word problems (involving distance, liquid volumes, masses of objects, intervals of time and money), including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represents measurement quantities using diagrams.	Uses the four operations to solve multi-step word problems (involving distance, liquid volumes, masses of objects, intervals of time and money), including problems involving fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represents measurement quantities using diagrams.
Range	4.MD.3	Applies the area and perimeter formulas when given all side measurements, using supports.	Applies the area and perimeter formulas for rectangles in real- world and mathematical problems, using supports.	Applies the area and perimeter formulas for rectangles in real-world and mathematical problems, including those where the area/perimeter and one factor (length or width) are known.	Applies the area and perimeter formulas for rectilinear shapes in real-world and mathematical problems.

Measurement and Data & Geometry					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	4.MD.4	Makes a line plot to display a data set of measurements in fractions of a unit (with like denominators of 2 or 4).	Makes a line plot to display a data set of measurements in fractions of a unit (with like denominators of 2 or 4), and uses addition and subtraction of fractions to solve problems involving information in the line plot.	Makes a line plot to display a data set of measurements in fractions of a unit (with like denominators limited to 2, 4 and 8), and uses addition and subtraction of fractions to solve problems involving information in the line plot.	Uses data in a line plot to solve a multi-step word problem.
Range	4.MD.5a 4.MD.5b 4.MD.6	Measures benchmark angles.	Understands that angles are measured in reference to a circle, and can measure angles in whole number degrees using a protractor.	Understands that angles are measured in reference to a circle, and can measure angles in whole number degrees using a protractor. Sketches angles of specific measure.	Recognizes how angles are formed, understands that angles are measured in reference to a circle, and can measure angles in whole number degrees using a protractor. Sketches angles of specific measure.
Range	4.MD.7	Recognizes that angle measure is additive. Solves addition real-world mathematical problems to find unknown angles on a diagram with no more than two angles, within a 90-degree angle.	Recognizes that angle measure is additive. Solves addition and subtraction real-world mathematical problems to find unknown angles on a diagram with no more than two angles, within a 180-degree angle.	Recognizes that angle measure is additive. Solves addition and subtraction real-world mathematical problems to find unknown angles on a diagram.	Given angle parameters, decomposes into multiple angles and gives the measure of each angle in relationship to the whole.

Measurement and Data & Geometry					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	4.G.1	Identifies points, lines, line segments, rays, perpendicular and parallel lines; classifies angles (right, acute, obtuse).	Identifies and draws points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines.	Draws points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines; identifies these in two-dimensional figures.	Creates a two-dimensional shape when given specific attributes.
Range	4.G.2	Identifies two-dimensional figures, including right triangles.	Classifies two-dimensional figures based on the presence or absence of parallel or perpendicular lines; identifies triangles.	Classifies two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of specified size; identifies triangles.	Constructs two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of specified size; identifies triangles.
Range	4.G.3	Identifies line-symmetric regular figures.	Identifies line-symmetric figures and draws lines of symmetry for regular two-dimensional figures.	Identifies line-symmetric figures and draws lines of symmetry for two-dimensional figures.	Constructs a figure with a given number of lines of symmetry.

Grade 5 Mathematics

PLD	Standard	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy		The Level 1 student is below proficient in applying mathematics knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for the grade-level/course, is likely able to partially access grade-level content, and engages with higher-order thinking skills with extensive support.	The Level 2 student is approaching proficient in applying mathematics knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for the grade level/course, is able to access grade-level content, and engages in higher-order thinking skills with some independence and support.	The Level 3 student is proficient in applying mathematics knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for the grade level/course, is able to access grade-level content, and engages in higher-order thinking skills with some independence and minimal support.	The Level 4 student is highly proficient in applying mathematics knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for the grade level/course, is able to access above grade-level content, and engages in higher-order thinking skills independently.

Operations and Algebraic Thinking					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	5.OA.1	Evaluates a simple numerical expression using parentheses, brackets, **or** braces (without nesting).	Evaluates a numerical expression using parentheses, brackets, **or** braces (without nesting).	Uses parentheses, brackets, **or** braces in numerical expressions (without nesting), and evaluates expressions with these symbols.	Inserts parentheses, brackets, **or** braces (without nesting), in numerical expressions to make a statement true.

Operations and Algebraic Thinking					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	5.OA.2	Writes a numerical expression, using one operation, from a written statement (e.g., divide 144 by 12).	Writes simple numerical expressions and interprets numerical expressions, without evaluating them.	Writes numerical expressions (limited to two operations; e.g., divide 144 by 12, and then subtract 9) and interprets numerical expressions, without evaluating them.	Writes numerical expressions using multiple operations, involving real-world and mathematical contexts.
Range	5.OA.3	Continues two numerical patterns (when given a table), using two given rules.	Continues two numerical patterns using two given rules.	Generates two numerical patterns using two given rules. Identifies apparent relationships between corresponding terms.	Generates two numerical patterns using two multi-step given rules, in mathematical contexts. Explains the relationship between corresponding terms.

Number and Operations in Base Ten					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	5.NBT.1	Uses visual models or calculation (in any multi-digit whole number) to demonstrate a digit in one place represents 10 times as much as it represents in the place to its right, **or** 1/10 of what it represents in the place to its left.	Uses visual models or calculation (in any multi-digit whole number) to recognize that a digit in one place represents 10 times as much as it represents in the place to its right **and** 1/10 of what it represents in the place to its left.	Recognizes (in any multi-digit number, including decimals to thousandths) that a digit in one place represents 10 times as much as it represents in the place to its right **and** 1/10 of what it represents in the place to its left.	Recognizes (in any multi-digit number, including decimals to thousandths) that a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left, in real-world or mathematical context problems.

Number and Operations in Base Ten					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	5.NBT.2	Continues a given pattern that shows the number of zeroes of the product when multiplying a number by powers of 10.	Recognizes patterns in the number of zeroes of products when multiplying a number by powers of 10. Can use whole number exponents greater than zero to denote powers of 10.	Explains patterns in the number of zeroes of the product when multiplying a number by powers of 10, and explains patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Uses whole number exponents to denote powers of 10, including 10 to the power of zero.	Interprets a multiplication problem to identify the factor of 10 by which one number is greater or lesser than another.
Range	5.NBT.3a	Reads decimals to the thousandths place.	Reads and writes decimals to the thousandths place, using base-ten numerals and number names.	Reads and writes decimals to the thousandths place, using base-ten numerals, number names, and expanded form (e.g., 347.392 = 3 X 100 + 4 X 10 + 7 X 1 + 3 X (1/10) + 9 X (1/100) + 2 X (1/1000).	Writes numbers in expanded form in a variety of formats (e.g., 347.392 = 7 X 1 + 3.4 X 100 + 3 X (1/10) + 2 X (1/1000) + (1/100) X 9).
Range	5.NBT.3b	Compares two decimals to the tenths place, using >, =, and < symbols to record the results of comparisons.	Compares two decimals to the hundredths place, using >, =, and < symbols to record the results of comparisons.	Compares two decimals to the thousandths place (with varying place values), using >, =, and < symbols to record the results of comparisons.	Compares and orders decimals to the thousandths place (with varying place values), from least to greatest or vice versa.

Number and Operations in Base Ten					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	5.NBT.4	Uses place value understanding to round multi-digit numbers to the tenths place.	Uses place value understanding to round multi-digit whole numbers to the hundredths place.	Uses place value understanding to round multi-digit numbers up to any place (within content limits).	Uses rounding strategies in real-world situations.
Range	5.NBT.5	Multiplies two two-digit numbers using a standard algorithm.	Multiplies three-digit by two-digit whole numbers, using a standard algorithm.	Fluently multiplies multi-digit whole numbers using a standard algorithm.	Fluently multiplies multi-digit whole numbers, in real-world and mathematical contexts, using a standard algorithm.
Range	5.NBT.6	Finds whole-number quotients of whole numbers (with up to two digit dividends and two-digit divisors), using rectangular arrays or area models.	Finds whole-number quotients of whole numbers (with up to three digit dividends and two-digit divisors), using strategies based on place value and the properties of operations.	Finds whole-number quotients of whole numbers (with up to four digit dividends and two-digit divisors), using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrates and explains the calculation by using equations, rectangular arrays, and/or area models.	Finds whole-number quotients of whole numbers (with up to four digit dividends and two-digit divisors) in context.

Number and Operations in Base Ten					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	5.NBT.7	Adds, subtracts, multiplies, and divides decimals to the tenths place, using concrete models, drawings, **or** strategies based on place value.	Adds, subtracts, multiplies, and divides decimals to the hundredths place, using concrete models or drawings, strategies based on place value, and/or the relationship between addition and subtraction; relates the strategy to a written method.	Adds, subtracts, multiplies, and divides decimals to the hundredths place, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relates the strategy to a written method and explains the reasoning used.	Adds, subtracts, multiplies, and divides decimals to the hundredths place, using multiple strategies, in a real-world or mathematical context.

Number and Operations—Fractions					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	5.NF.1	Adds/subtracts fractions with unlike denominators, where one denominator is a multiple of the other denominator. Determines a common denominator, with use of a visual model (no regrouping or mixed numbers involved).	Adds/subtracts fractions with unlike denominators, where one denominator is a multiple of the other denominator (no regrouping involved).	Adds and subtracts fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.	Adds or subtracts at least 3 or more fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.

Number and Operations—Fractions					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	5.NF.2	Solves word problems involving addition and subtraction of fractions with unlike denominators, where one denominator is a multiple of the other denominator, using visual representations. Determines a common denominator (excluding mixed numbers).	Solves word problems involving addition and subtraction of fractions with unlike denominators, where one denominator is a multiple of the other denominator (excluding regrouping).	Solves word problems involving addition and subtraction of fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. Assesses and justifies reasonableness of the answer by using benchmark fractions, visual models, or equations.	Solves word problems involving addition or subtraction with at least 3 or more fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.
Range	5.NF.3	Rewrites a fraction as a division problem; uses manipulatives or visual models to solve problems involving division of whole numbers, leading to answers in the form of fractions or mixed numbers.	Solves word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers.	Interprets a fraction as division of the numerator by the denominator ($a/b = a \div b$); solves word problems involving division of whole numbers, leading to answers in the form of fractions or mixed numbers.	Creates his or her own model to demonstrate division of fractions.

Number and Operations—Fractions					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	5.NF.4a 5.NF.4b	Shows the product of a fraction by a whole number by repeated addition, using visual fraction models.	Shows the product of two fractions by using an area model.	Shows the product of two fractions using an area model and creates a story context for this equation. Finds the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and shows that the area is the same as would be found by multiplying the side lengths. Multiplies fractional side lengths to find areas of rectangles, and represents fraction products as rectangular areas.	Creates a real-world context and models representing multiplication of fractions. Demonstrates reasoning about fractions in both an additive and multiplicative sense with different wholes, and displays the quantities with visual models.
Range	5.NF.5.a 5.NF.5b	Interprets multiplication scaling by comparing the size of a product to the size of one factor on the basis of the size of the second factor, without performing the indicated multiplication (where both factors are whole numbers).	Interprets multiplication scaling by comparing the size of a product to the size of one factor on the basis of the size of the second factor, without performing the indicated multiplication (where one factor is a fraction less than one).	Interprets multiplication scaling by comparing the size of a product to the size of one factor on the basis of the size of the second factor, without performing the indicated multiplication, focusing on one factor being a fraction greater than or lesser than one.	Interprets multiplication scaling by comparing the size of a product to the size of one factor on the basis of the size of the second factor by performing the indicated multiplication with two fractions.

Number and Operations—Fractions					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	5.NF.6	Solves real-world problems involving multiplication of fractions by using visual fraction models or equations to represent the problem (limited to fractions with single-digit numerators or denominators).	Solves real-world problems involving multiplication of fractions by using visual fraction models or equations to represent the problem.	Solves real-world problems involving multiplication of fractions and mixed numbers.	Uses several mixed numbers, often with multi-digit numerators or denominators, to solve real-world problems.
Range	5.NF.7	Solves real-world problems involving division of whole numbers by unit fractions, using visual fraction models and equations to represent the problem.	Solves real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, using visual fraction models and equations to represent the problem (limited to single digit whole numbers and denominators).	Solves real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, using visual fraction models and equations to represent the problem.	Creates real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, using visual fraction models and equations to represent the problem.

Measurement and Data & Geometry					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	5.MD.1	Converts among different-sized standard measurement units within a given measurement system.	Converts among different-sized standard measurement units within a given measurement system. Uses these conversions to solve single-step problems, using manipulatives or visual models.	Converts among different-sized standard measurement units within a given measurement system. Uses these conversions in solving multi-step, real-world problems.	Creates real-world multi-step problems. Chooses the appropriate measurement unit based on the given context.
Range	5.MD.2	Plots data on a given line plot with a data set of measurements in fractions of a unit (1/2, 1/4, 1/8), where the given data set is limited to a common denominator. Solves addition and subtraction comparison problems using the data.	Makes a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, or 1/8), where the given data set is limited to a common denominator. Solves problems using all four operations.	Makes a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Uses operations on fractions to solve problems involving information presented in line plots (division is limited to a whole number divided by a fraction or a fraction divided by a whole number).	Makes a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solves multi-step word problems using the four operations and interprets the solution to the data.
Range	5.MD.3 5.MD.4	Uses unit cubes to find the volume of rectangular prisms with whole number edges (limited to single digit dimensions).	Uses unit cubes (number of unit cubes, edge length, height) to find the volume of rectangular prisms. Uses the information that the number of unit cubes	Uses unit cubes (number of unit cubes, edge length, height) to find the volume of rectangular prisms. Represents the volume of a solid figure as *n* cubic units	Compares the volumes of different prisms by using unit cubes.

Measurement and Data & Geometry					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
			is related to the edge length; uses visual models.	(including cubic cm, cubic, in., cubic ft., and improvised units).	
Range	5.MD.5	Solves volume problems of a right rectangular prism by using unit cubes.	Solves volume problems by relating the number of unit cubes in a prism to the multiplication of the edge lengths.	Solves real-world and mathematical problems by applying the formulas for volume. Finds the volume of two non-overlapping right rectangular prisms by adding the volumes of the two non-overlapping parts.	Creates real-world mathematical problems that would be solved by finding volume.
Range	5.G.1 5.G.2	Identifies the key components of the coordinate plane (*x*-axis, *x*-coordinate, *y*-axis, *y*-coordinate and origin). Locates given points in the first quadrant of the coordinate plane.	Interprets coordinate values of points in the first quadrant (e.g., reading line graphs), in context.	Represents real-world and mathematical problems by locating and graphing points in the first quadrant of the coordinate plane.	Using real-world data, creates a representation and draws conclusions based on the data presented.
Range	5.G.3 5.G.4	Identifies two-dimensional (fifth grade) figures based on properties limited to sides and angles.	Classifies some two-dimensional (fifth grade) figures into categories based on their properties (sides and angles).	Understands that attributes belonging to a category of two-dimensional (fifth grade) figures also belong to all subcategories of that category and classifies two-dimensional (fifth grade) figures in the	Draws or constructs specific two-dimensional figures according to the definitions provided, attributes described, or categories given.

Measurement and Data & Geometry					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				hierarchy based on these properties.	

Grade 6 Mathematics

PLD	Standard	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy		The Level 1 student is below proficient in applying mathematics knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for the grade-level/course, is likely able to partially access grade-level content, and engages with higher-order thinking skills with extensive support.	The Level 2 student is approaching proficient in applying mathematics knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for the grade level/course, is able to access grade-level content, and engages in higher-order thinking skills with some independence and support.	The Level 3 student is proficient in applying mathematics knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for the grade level/course, is able to access grade-level content, and engages in higher-order thinking skills with some independence and minimal support.	The Level 4 student is highly proficient in applying mathematics knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for the grade level/course, is able to access above grade-level content, and engages in higher-order thinking skills independently.

Ratios and Proportional Relationships					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	6.RP.1	Describes the concept of ratio using one symbol or basic language notation.	Describes the concept of ratio using a limited variety of representations.	Uses the concept of a ratio, ratio language and notation to precisely describe a ratio relationship between two quantities.	Uses and connects between representations for ratio situations. For example, 7 blue marbles and 8 red marbles (e.g., 7:8, 7/8, 8:7, 7 to 8, 8/15, 8 red marbles to 15 total marbles).
Range	6.RP.2	Identifies unit rates.	Determines a unit rate.	Understands the concept of a unit rate associated with a ratio and uses rate language in context.	Finds a unit rate with multiple steps.
Range	6.RP.3a 6.RP.3b	Identifies proportional relationships presented in graphical, tabular, or verbal formats. Finds missing values in tables and plots values on the coordinate plane involving whole numbers.	Uses a limited variety of representations to solve ratio and unit rate mathematical problems involving whole numbers. Finds missing values in tables and plots values on the coordinate plane.	Uses ratio and rate reasoning to solve real-world and mathematical problems. Solves unit rate problems, including those involving unit pricing and constant speed. Creates a table of equivalent ratios.	Creates and solves real-world word problems using ratio and rate reasoning.
Range	6.RP.3c	Knows the meaning of percent of a quantity as a rate per hundred.	Finds the percent of a quantity.	Determines the percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity). Solves problems involving finding the whole, given a part and the percent.	Solves non-routine real-world or mathematical problems involving percent.

Ratios and Proportional Relationships					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	6.RP.3d	Identifies ratio relationships presented in graphical, tabular, or verbal formats using measurement units.	Uses representations to convert measurement units. Manipulates and transforms units appropriately when multiplying or dividing quantities.	Uses ratio reasoning to convert measurement units.	Applies ratio reasoning to real-world word problems where students convert measurement units.

The Number System					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	6.NS.1	Solves mathematical problems in contexts (involving division of whole numbers by unit fractions), using visual fraction models and equations to represent the problem.	Solves mathematical problems in contexts (involving division of fractions by non-zero whole numbers and division of whole numbers by fractions), using visual fraction models and equations to represent the problem.	Solves and interprets division of fractions word problems (involving division of fractions by fractions).	Solves and interprets real-world multi-step division of fractions word problems (involving more heavily-focused mixed numbers).

The Number System					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	6.NS.2	Finds whole-number quotients and remainders (with up to **four**-digit dividends and **one**-digit divisors), using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrates and explains the calculation by using equations, rectangular arrays, and/or area models.	Finds whole-number quotients of whole numbers (with up to **four**-digit dividends and **two**-digit divisors), using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrates and explains the calculation by using equations, rectangular arrays, and/or area models.	Fluently divides multi-digit numbers using the standard algorithm.	Fluently divides multi-digit numbers using the standard algorithm, and assesses the reasonableness of the result.
Range	6.NS.3	Adds, subtracts, and multiplies using strategies based on place value, the properties of operations, and/or the relationship between operations. Limit decimals to hundredths.	Add, subtracts, multiplies, and divides, using strategies based on place value, the properties of operations, and/or the relationship between operations. Limit decimal dividend by whole number.	Fluently adds, subtracts, multiplies, and divides multi-digit decimals, using the standard algorithm for each operation.	Solves word problems with multi-digit decimals by adding, subtracting, multiplying, and dividing using the standard algorithm for each operation.

The Number System					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	6.NS.4	Finds common factors (less than or equal to 50) and common multiples (less than or equal to 10), using a visual model or strategies.	Finds the greatest common factor of two whole numbers (less than or equal to 50) and the least common multiple of two whole numbers (less than or equal to 10).	Finds the greatest common factor of two whole numbers (less than or equal to 100) and the least common multiple of two whole numbers (less than or equal to 12). Uses the distributive property to express a sum of two whole numbers (1 to 100) with a common factor, as a multiple of a sum of two whole numbers with no common factor. For example, express 36 + 8 as 4 (9 + 2).	Interprets a context to construct an equivalent expression, using greatest common factors and least common multiples, and the distributive property.
Range	6.NS.5	Places integers on the number line (with whole number increments), extending the counting pattern to integers.	Places integers on the number line. In a given situation (e.g. elevation, sea level), student is able to determine the meaning of zero.	Demonstrates that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge). Uses positive and negative numbers to represent quantities in	Recognizes patterns and makes generalizations about characteristics of positive and negative numbers (may use any rational number, including fractions and decimals.)

The Number System					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				real-world contexts, explaining the meaning of 0 in each situation (may use any rational number, including fractions and decimals.)	
Range	6.NS.6	Plots points in all four quadrants. Plots integer pairs on a coordinate plane (with one unit increments on both axes) and on a horizontal number line.	Plots points in all four quadrants. Plots ordered pairs, including rational numbers, on a coordinate plane, and on both horizontal and vertical number lines. Recognizes that two points are reflections across one axis on the coordinate plane.	Plots points in all four quadrants. Understands signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane. Recognizes that when two ordered pairs differ only by signs, the locations of the points are related by reflections. across one or both axes.	Solves real-world problems involving the coordinate plane. Recognizes that when two ordered pairs differ only by signs, the locations of the points are related by reflections across both axes.
Range	6.NS.7	Compares two rational numbers on a number line diagram. Writes the comparison using mathematical notation.	Determines the greater or lesser rational number, including absolute values in a real-world context. Uses mathematical notation and words to	Writes, interprets, and explains statements of order for rational numbers in real-world contexts. Interprets absolute value as magnitude for a	Draws conclusions about a real-world situation involving absolute values of rational numbers and compares values.

The Number System					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		Finds the absolute value of a rational number using representations.	express these statements of order.	positive or negative quantity in a real-world situation. Distinguishes comparisons of absolute value from statements about order.	
Range	6.NS.8	Determines the distances between two points on the coordinate plane by counting the spaces between points.	Solves mathematical problems by graphing points in all four quadrants on the coordinate plane. Finds distances between points with the same first or second coordinate.	Solves real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Includes use of coordinates and absolute value to find distances between points with the same first or second coordinate.	Applies absolute value to the coordinate grid to real-world multi-step problems. For example, constructs a polygon (with given side lengths) across axes.

Expressions and Equations					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	6.EE.1	Recognizes exponential notation as repeated multiplication (e.g., $2 \times 2 \times 2 = 2^3$).	Writes and evaluates a single term in numerical expressions involving whole-number exponents (e.g., $7^2 = 49$ or $49 = 7^2$).	Writes and evaluates numerical expressions involving whole-number exponents.	Writes and evaluates numerical expressions involving whole-number exponents in real-world contexts.
Range	6.EE.2a 6.EE.2b	Identifies an expression that matches a written statement, with numbers and with letters standing for numbers, using correct mathematical terms.	Writes expressions from written statements that record a single operation (with numbers and with letters standing for numbers). Recognizes	Writes expressions that record operations (with numbers and with letters standing for numbers).	Writes expressions that record operations (with numbers and with letters standing for numbers), involving real world and mathematical contexts.

Expressions and Equations					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
			one or more parts of an expression as single entities.		
Range	6.EE.2c	Evaluates expressions at specific values of their variables (e.g., substitution).	Evaluates expressions at specific values of their variables, and includes expressions that arise from formulas used in real-world problems.	Performs arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (order of operations).	Evaluates multi-step real-world problems (involving rational numbers and whole number exponents).
Range	6.EE.3 6.EE.4	Identifies when two expressions are equivalent.	Applies properties of operations to identify equivalent expressions.	Applies the properties of operations to identify and generate equivalent expressions.	Uses a real-world context to construct multiple equivalent expressions.
Range	6.EE.5	Uses substitution to determine whether **a given number** makes an equation or inequality (with a single operation) true.	Solves an equation or inequality, using substitution to determine whether a given number **in a specified set** makes an equation or inequality (with a single operation) true.	Solves an equation or inequality as a process of answering a question: Which values from a specified set, if any, make the equation or inequality true?	Creates a set of values that makes an equation or inequality true.

Expressions and Equations					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	6.EE.6	Identifies a single operation expression (with one variable), in a real-world mathematical problem.	Writes a single operation expression (with one variable) to portray a real-world mathematical problem.	Uses variables to represent numbers and write expressions when solving a real-world or mathematical problem; understands that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.	Creates a real-world situation that corresponds to a given expression.
Range	6.EE.7	Solves $x + p = q$, $x—p = q$ and $px = q$, $p/x = q$ (with whole numbers) with a visual/manipulative model.	Solves $x + p = q$, $x—p = q$ and $px = q$, $p/x = q$ (with non-negative whole numbers and unit fractions and decimals).	Solves real-world and mathematical problems by writing and solving equations of the form $x + p = q$, $x—p = q$ and $px = q$, $p/x = q$, for cases in which p, q, and x are all non-negative, rational numbers.	Interprets and solves real-world and mathematical problems with multiple steps
Range	6.EE.8	Recognizes that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions, and identifies solutions of such inequalities on number line diagrams.	Given a number line diagram, writes an inequality of the form $x > c$ or $x < c$; **or,** given an inequality of the form $x > c$ or $x < c$, graphs solutions on a number line diagram.	Writes an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognizes that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions, and represents solutions of such inequalities on	Writes a real-world problem to represent a constraint given an inequality of the form $x > c$ or $x < c$.

Expressions and Equations					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
				number line diagrams.	
Range	6.EE.9	Given a graph/table, identifies an algebraic expression for the two quantities in a real-world problem that change in relationship to one another.	Given a graph/table in a real- world or mathematical problem, identifies dependent and independent variables, and writes an algebraic equation to represent how these quantities change in relationship to one another.	Given a real-world situation, a student writes an equation to express the relationship between the dependent and independent variables, using graphs and tables, and relates these to the equation.	Creates a real-world context using dependent and independent variables.

Geometry & Statistics and Probability					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	6.G.1	Finds the area of triangles, special quadrilaterals, and polygons that have been composed or decomposed into rectangles or triangles, given all the measurements.	Finds the area of triangles and special quadrilaterals by composing or decomposing into triangles and/or rectangles.	Finds the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; a student applies these techniques in the context of solving real-world and mathematical problems.	Solves geometric multi-step, real-world and mathematical problems including decimal and fractional measurements.

Geometry & Statistics and Probability					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	6.G.2	Visually represents the volume of a right rectangular prism with **whole number** edge lengths.	Represents and finds the volume of a right rectangular prism with one fractional edge length. Shows that the volume of their representation is the same as multiplying the edge lengths.	Finds the volume of a right rectangular prism with fractional edge lengths. Applies the formulas $V = lwh$ and $V = Bh$ in the context of solving real-world and mathematical problems.	Given the volume of a right rectangular prism with fractional edge lengths, finds the missing fractional edge length in the context of solving real-world and mathematical problems.
Range	6.G.3	Draws polygons in the coordinate plane given coordinates for the vertices.	Uses coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate.	Use coordinates in the context of solving real-world and mathematical problems.	Finds the missing vertex, of a regular polygon, when given the other vertices in the coordinate plane in a real world context.
Range	6.G.4	Represents three-dimensional figures using nets made up of rectangles and triangles.	Uses nets to find the surface area of three-dimensional figures.	Solves real-world and mathematical problems using nets and three-dimensional figures.	Solves real-world and mathematical problems using nets and three-dimensional figures including fractional and decimal measurements.
Range	6.SP.1	Recognizes a statistical question from a list of questions.	Changes a question from a non-statistical question to a statistical question.	Recognizes a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.	Writes a statistical question given a context.

Geometry & Statistics and Probability					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	6.SP.2	Identifies the corresponding graph from a given set of data or given a graph, a student identifies its corresponding data.	Demonstrates that a set of data collected to answer a statistical question has a distribution which can be described by using measures of center and spread.	Demonstrates that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.	Creates a set of data with a given center, spread, and shape.
Range	6.SP.3	Recognizes that a measure of center is the mean, median, and mode while a measure of variation is the range.	Recognizes and can find the mean, median, and/or mode; and can find the range.	Recognizes that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.	Determines how additional data points affect the measure of center in a numerical data set.
Range	6.SP.4	Identifies an appropriate display of numerical data in plots on a number line, including dot plots **or** histograms **or** box plots.	Constructs a display of numerical data on a number line, including dot plots and/or histograms.	Displays numerical data in plots on a number line, including dot plots, histograms, and box plots.	Constructs a histogram or box plot from data displayed in a dot plot.
Range	6.SP.5a 6.SP.5b 6.SP.5c 6.SP.5d	Summarizes the data in a line plot by counting the number of observations; identifies the range and measure of center used.	Summarizes a numerical data set by counting the number of observations; identifies the range and measures of center and any striking deviations (e.g., outliers).	Summarizes numerical data sets in relation to their context.	Creates a set of data from a given box plot.

Grade 7 Mathematics

7th Grade PLD	Standard	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy		The Level 1 student is below proficient in applying the English language arts/literacy, mathematics, and science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for the grade-level/course, is likely able to partially access grade-level content, and engages with higher-order thinking skills with extensive support.	The Level 2 student is approaching proficient in applying the English language arts/literacy, mathematics, and science knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for the grade level/course, is able to access grade-level content, and engages in higher-order thinking skills with some independence and support.	The Level 3 student is proficient in applying the English language arts/literacy, mathematics, and science knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for the grade level/course, is able to access grade-level content, and engages in higher-order thinking skills with some independence and minimal support.	The Level 4 student is highly proficient in applying the English language arts/literacy, mathematics, and science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for the grade level/course, is able to access above grade-level content, and engages in higher-order thinking skills independently.
Ratio and Proportional Relationships					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	7.RP.1	Computes unit rates with ratios of fractions having like units.	Computes unit rates with ratios of fractions including lengths with like or different units.	Computes unit rates with ratios of fractions including lengths, areas, and other quantities measured in like	Computes unit rates with ratios of two mixed numbers having like or different units.

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
				or different units.	
Range	7.RP.2a and b	Decides whether two quantities are in a proportional relationship and identifies the constant of proportionality (unit rate) in a representation that includes (0, 0).	Decides whether two quantities are in a proportional relationship and identifies the constant of proportionality (unit rate) in any simple representation, i.e. tables, equations, diagrams, verbal descriptions, graphs.	Decides whether two quantities are in a proportional relationship and identifies the constant of proportionality (unit rate) in any complex representation, (i.e. tables, equations, diagrams, verbal descriptions, graphs).	Extends the given representation or creates a different representation that would represent the same proportional relationship.
Range	7.RP.2c	Identifies the equation that models a relationship from a given representation with a proportional relationship.	Models a proportional relationship using an equation when given a simple table, graph, or verbal description.	Models a proportional relationship using an equation given a complex table, graph, or verbal description.	Creates a representation with a context that would represent a given proportional equation.
Range	7.RP.2d	Explains what any point (x, y) on the graph of a proportional relationship means in terms of the situation, but not identify the unit rate.	Explains what any point (x, y) on the graph of a proportional relationship means in terms of the situation, and can identify the unit rate when given the point (1,r).	Explains what any point (x, y) on the graph of a proportional relationship means in terms of the situation and identify the unit rate.	Identifies a point (x, y) on the same graph as the point (1, r) for a proportional relationship and interprets the meaning of (x, y) in terms of the situation.
		Uses proportional	Uses proportional	Uses proportional	Creates equivalent

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	7.RP.3	relationships to solve simple ratio and percent problems.	relationships to solve simple ratio and percent problems in context.	relationships to solve multi-step ratio and percent problems in context.	proportional equations that could be used to solve the same ratio/percent problem in context.
Number System					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	7.NS.1a, b, c, and d	Adds or subtracts rational numbers using a number line or other manipulatives.	Adds or subtracts simple rational numbers.	Adds or subtracts rational numbers and determines the reasonableness of the solution. Recognizes that the sum of a number and its opposite equals zero, understand p + q as the number located a distance |q| from p in a positive or negative direction, and understand subtraction as adding the additive inverse.	Justifies the steps taken to add or subtract rational numbers.
Range	7.NS.2 a, b, c, and d	Multiplies or divides rational numbers using a number line or other manipulatives.	Multiplies or divides simple rational numbers.	Multiplies or divides rational numbers and determines the reasonableness of the solution. Understands that –(q/p)	Interprets products and quotients of rational numbers in a real-world context.

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
				= (–p)/q= p/(–q). Converts a rational number to a decimal using long division and knows that the rational number terminates in 0 or eventually repeats. Knows that division by zero is undefined.	
Range	7.NS.3	Solves simple real-world and mathematical problems involving the four operations with rational numbers using the number line or other manipulatives.	Solves simple real-world and mathematical problems involving the four operations with rational numbers.	Solves real-world and multi-step mathematical problems involving the four operations with rational numbers.	Creates a story problem to model a given number sentence.

Grade 8 Mathematics

8th Grade PLD		Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy	Standard	The Level 1 student is below proficient in applying the English language arts/literacy, mathematics, and science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for the grade-level/course, is likely able to partially access grade-level content, and engages with higher-order thinking skills with extensive support.	The Level 2 student is approaching proficient in applying the English language arts/literacy, mathematics, and science knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for the grade level/course, is able to access grade-level content, and engages in higher-order thinking skills with some independence and support.	The Level 3 student is proficient in applying the English language arts/literacy, mathematics, and science knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for the grade level/course, is able to access grade-level content, and engages in higher-order thinking skills with some independence and minimal support.	The Level 4 student is highly proficient in applying the English language arts/literacy, mathematics, and science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for the grade level/course, is able to access above grade-level content, and engages in higher-order thinking skills independently.
Number System					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	8.NS.1	Identifies square roots of nonsquare numbers and pi as irrational numbers. Understands that every number has a decimal expansion. Identifies rational or irrational	Compares and orders rational and irrational numbers. Identifies irrational decimal expansions as approximations. Identifies rational and irrational	Places irrational numbers on a number line. Uses approximations of irrational numbers to estimate the value of an expression. Converts decimals into rational	Explains how to get more precise approximations of square roots. Notices and explains the patterns that exist when writing rational numbers as fractions.

		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		numbers. Converts familiar rational numbers with one repeating digit to fraction form.	numbers and converts less familiar rational numbers to fraction form.	numbers.	
Range	8.NS.2	COMBINED WITH 8.NS.1			
Expressions and Equations					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	8.EE.1	Knows the properties of natural number exponents.	Applies the properties of natural number exponents to generate equivalent numerical expressions.	Knows and applies the properties of integer exponents to generate equivalent numerical expressions.	Uses properties of integer exponents to order or evaluate multiple numerical expressions with integer exponents.

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	8.EE.2	Evaluates square roots of small perfect squares.	Solves mathematical equations (without context) of the form x2 = p and x3 = p, where p is a positive rational number and the solutions are rational.	Uses square root and cube root symbols to represent solutions to equations of the form x2 = p and x3 = p, where p is a positive rational number and knows that $\sqrt{2}$ is irrational.	Explains how square roots and cube roots relate to each other and to their radicands.
Range	8.EE.3	Explains how square roots and cube roots relate to each other and to their radicands.	Uses numbers expressed in the form of a single digit times an integer power of 10 to estimate very small quantities.	Expresses how many times a number written as an integer power of 10 is than another number written as an integer power of 10.	Converts between decimal notation and scientific notation and compares numbers written in different notations.

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	8.EE.4	Represents very large and very small quantities in scientific notation and use appropriate units.	Multiplies and divides numbers in scientific notation.	Performs operations with numbers expressed in scientific notation, including problems with numbers written in both decimal and scientific notation and interprets scientific notation that has been generated by technology.	Calculates and interprets values written in scientific notation within a context.
Range	8.EE.5	Graphs proportional relationships, interpreting the unit rate as the slope.	Graphs proportional relationships, interpreting the unit rate as the slope and compare two different proportional relationships using the same representation.	Graphs proportional relationships, interpreting the unit rate as the slope of the graph and compare two different proportional relationships represented in different ways.	Compares and contrast situations in which similar triangles would and would not yield the same slope.

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	8.EE.6	Determines the slope of a line given a graph.	Derives the equation *y=mx* for a line through the origin.	Recognizes and explains why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane and derives the equation y = mx + b for a line intercepting the vertical axis at b.	Compares and contrast situations in which similar triangles would and would not yield the
Range	8.EE.7a and b	Solves simple linear equations with integer coefficients.	Solves multi-step linear equations with rational coefficients and identifies equations that have one solution, infinitely many solutions, or no solutions.	Solves multi-step linear equations with rational coefficients and variables on both sides and provides examples of equations that have one solution, infinitely many solutions, or no solutions.	Justifies why an equation has one solution, infinitely many solutions, or no solution.

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	8.EE.8a, b, and c	Identifies systems of equations that have one, infinite, or no solutions from graph. Estimates the solution of a system given a graph.	Solves a system of linear equations algebraically, by inspection, and graphically.	Provides examples of systems of equations that have one solution, infinitely many solutions, or no solutions. Creates and utilizes a system of linear equations.	Solves real-world and mathematical problems leading to two linear equations in two variables.

Functions					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	8.F.1	Identifies whether a relation is a function from a graph or a mapping.	Identifies whether a function is a relation from any representation.	Explains that a function is a rule that assigns to each input exactly one output and that the graph of a function is the set of ordered pairs consisting of an input and the corresponding output.	Creates any representation of a relation and explain why it is a function or is not a function.
Range	8.F.2	Given a function expressed as an equation, creates a graph.	Given a representation of a function, creates another representation of that function.	Compares properties (i.e. slope, *y*-intercept, values) of two functions each represented in a different way (algebraically, graphically, numerically in tables, or verbal descriptions).	Justifies whether two functions represented in different ways are equivalent or not by comparing their properties.

		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	8.F.3	Determines whether a function is linear or nonlinear from a graph.	Determines whether a function is linear or nonlinear from an equation in the form y = mx + b.	Determines whether or not a function is linear or nonlinear (from a graph, table and equation). Give examples of functions that are not linear.	Explains why the function is linear or nonlinear.
Range	8.F.4	Determines the rate of change of the function from a graphical description of the linear function.	Determines the rate of change and initial value of the function from two (*x*, *y*) values. Creates a graph of identified information.	Interprets the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values. Constructs a function to model a linear relationship between two quantities.	Identifies what prevents a set of values in either a table or graph from being linear and adjusts the values to make them linear.

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	8.F.5	Describes qualitatively the functional relationship between two quantities by analyzing some features of a graph (e.g., linear and nonlinear).	Describes qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear).	Sketches a graph that exhibits given qualitative features of a function.	Interprets qualitative features of a function in a context.
Geometry					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	8.G.1	Identifies the lines or line segments that correspond from one translation to another.	Identifies the angles that correspond from one transformation to another using reflection and/or translation.	Can verify experimentally the properties of rotations, reflections, and translations.	Can recognize and explain the properties of rotations, reflections, and translations in real-world graphic illustrations and visual representations.

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	8.G.2	Identifies two congruent figures using rotations, reflections, or transformations	Identifies a transformation between two congruent figures.	Describes a sequence of rigid transformations between two congruent figures.	Can recognize and explain congruent figures in real-world graphic illustrations and visual representations
Range	8.G.3	Identifies a visual representation of a dilation, translation, rotation, or reflection.	Describes the effect of reflections and translations on two-dimensional figures using coordinates and coordinate notation.	Describes the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates and coordinate notation.	Describes the effect of multiple transformations including dilation on two-dimensional figures using coordinates and coordinate notation.

		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	8.G.4	Recognizes that it takes a combination of transformations and dilation to produce a similar figure.	Identifies dilations of figures by a given scale factor and transformations.	Describes a sequence of rigid transformations and dilation that results in similar figures.	Recognizes that a dilation with a scale factor of 1 leads to congruence.
Range	8.G.5	Knows that the sum of angles of a triangle equals 180, and identifies angle pairs when parallel lines are cut by a transversal.	Finds unknown angle measures in a triangle and unknown angle measures for angle pairs when parallel lines are cut by a transversal.	Gives an informal argument for: · sum of angles of a triangle equals 180; · the measure of an exterior angle of a triangle is equal to the sum of the measures of the non-adjacent angles; and · congruent angle relationships when parallel lines are cut by a transversal.	Gives an informal argument that a triangle can only have one 90 angle. Gives an informal argument for the pairs of angles that are supplementary when parallel lines are cut by a transversal.

		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	8.G.6	Knows the Pythagorean Theorem and that it applies to right triangles.	Understands the proof of the Pythagorean Theorem and its converse.	Understands and explains the proof of the Pythagorean Theorem and its converse.	Models a proof of the Pythagorean Theorem and its converse using a pictorial representation.
Range	8.G.7	Calculates unknown hypotenuse side length given the Pythagorean Theorem.	Calculates unknown side lengths using the Pythagorean Theorem given at least two different side lengths of a right triangle.	Applies the Pythagorean Theorem to real-world situations in two and three dimensions to determine unknown side lengths.	Recognizes situations and applies the Pythagorean Theorem in multi-step problems.

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	8.G.8	Applies the Pythagorean Theorem to find the distance between two points in a coordinate system with the right triangle drawn where the Pythagorean Theorem is given.	Applies the Pythagorean Theorem to find the distance between two points in a coordinate system with the right triangle drawn where the Pythagorean Theorem is not given.	Applies the Pythagorean Theorem to find the distance between two points in a coordinate system.	Finds the coordinates of a point which is a given distance (non-vertical and non- horizontal) from another point.
Range	8.G.9	Finds the volume of cylinder.	Finds the volume of a cone, cylinder or sphere.	Knows the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world mathematical problems.	Describes the relationship between the formulas for volumes of cones, cylinders, or spheres. Explains the derivation of the formulas for cones, cylinders, and spheres.

Statistics and Probability					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	8.SP.1	Constructs a scatter plot.	Constructs a scatter plot and describes the pattern as positive, negative, or no relationship.	Describes patterns in a scatter plot such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	Constructs and interprets scatter plots for bivariate measurements data to investigate patterns of association between two quantities.
Range	8.SP.2	Recognizes a straight line can be used to describe a linear association on a scatter plot.	Draws a straight line on a scatter plot that closely fits the data points.	Judges how well the trend line fits the data by looking at the closeness of the data points.	Compares more than one trend line for the same scatter plot and justify the best one.

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	8.SP.3	Identifies the slope and *y*-intercept of a linear model on a scatter plot. Given a linear model and its scatter plot, identify the slope and *y*-intercept.	Identifies possible data points given a linear model. Given a linear model, creates possible data points.	Interprets the meaning of the slope as a rate of change and the meaning of the *y*-intercept in the context given a linear model.	Creates and uses a linear model based on a set of bivariate data to solve a problem in a context.
Range	8.SP.4	Completes a partially filled-in two-way table and interpret the table by row or column.	Constructs a two-way table of categorical data.	Interprets and describes relative frequencies for possible associations from a two-way table.	Interprets and compares relative frequencies to identify patterns of association.

Grade 4 Science

PLD Type	Objective	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy	*Note: Students who are designated Below Proficient (Level 1) will be able to perform up to the level described by the Proficiency Level Descriptor (PLD). Level 1 is the lowest reported proficiency designation, some students may perform below the provided description.*	The Level 1 Student is below proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for his or her grade level, is likely able to partially access grade-level content, and engages with higher-order thinking skills with extensive support.	The Level 2 Student is approaching proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for his or her grade level, is likely able to access grade-level content, and engages in higher-order thinking skills with some independence and support.	The Level 3 Student is proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for his or her grade level, is able to access grade-level content, and engages in higher-order thinking skills with some independence and minimal support.	The Level 4 Student is highly proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for his or her grade level, is able to access above grade-level content, and engages in higher-order thinking skills independently.
Water Cycle					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	I.1 Describe the relationship between heat energy, evaporation, and condensation of water on Earth.	Identifies that water is stored in various locations. Describes the sun as an energy source that results in evaporation. Identifies examples of the states of water.	Recognizes relative percentages of water found in various locations on Earth. Creates a model showing the sun as an energy source that results in evaporation. Gives examples of the states of water	Compares the locations and percentages of water found in various locations on Earth. Investigates and records data showing the effect of temperature on the state of water.	Compares and contrasts the effects of temperature change on evaporation and condensation. Collects, records, and interprets data from an experiment of changing states of water. Forms predictions of

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
			pertaining to evaporation and condensation.	Records evidence of evaporation and condensation.	states of water from data.
Range	I.2 Describe the water cycle.	Identifies the processes of evaporation, condensation, and precipitation. Draws a simple diagram or model of the water cycle.	Describes the processes of evaporation, condensation, and precipitation. Explains how water passes through the water cycle and is distributed to different locations. Constructs and labels a diagram modeling the water cycle.	Constructs a model of the processes of evaporation, condensation, and precipitation. Identifies that evaporation occurs from people, plants, ice, and ground water. Supports predictions and inferences based on the water cycle with data and evidence. Using provided resources, constructs a complex diagram of the water cycle including the concept that the total amount of water on Earth is constant.	Independently constructs a complex diagram of the water cycle. Explains how the water cycle affects human activities.

Weather					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	II.1 Observe, measure, andrecord the basic elements of weather.	Identifies clouds using a cloud chart. Observes and records data on simple elements of weather using a provided resource. Recognizes examples showing that air is a substance. Differentiates between severe weather phenomena and normal weather conditions.	Observes and records data on the basic elements of weather, including identifying basic cloud types. Demonstrates that air is a substance. Lists characteristics of different severe and normal weather conditions.	Observes, measures, and records dataon the basic elements of weather. Compares and contrasts different cloud types. Compares and contrasts severe weather and normal weather conditions. Uses a variety of examples to show that air is a substance (e.g., flying a kite, blowing up a balloon).	Interprets data on the basic elements ofweather to make weather inferences. Compares, contrasts, and reports on the air temperature differences recorded during a thunderstorm and a rainstorm. Experiments, investigates, and explains air as a substance and its effect on weather.
Range	II.2 Interpret recorded weather data for simple patterns.	Collects data and completes a pre-made graph, including cloud patterns, precipitation, and temperature. Identifies that strong winds typically indicate a change in weather. Identifies how air temperatures affect the type of precipitation. Identifies seasonal weather patterns.	Collects and graphs data on cloud type, temperature, and precipitation. Characterizes daily and seasonal weather patterns. Describes the wind patterns that result in an approaching front and the accompanying change in weather.	Graphs daily weather change based on collected weather data including precipitation, temperature, and wind direction and force.	Collects and analyzes weather data to make inferences about daily and seasonal patterns. Given a real-world situation, infers and predicts the connections of weather change due to wind, temperature, and precipitation on seasonal weather patterns.
Range	II.3 Evaluate weather predictions based upon observational	Identifies the tools meteorologists use to collect basic weather data. Uses a weather	Use tools meteorologists use to collect weather data. Describes	Collects weather data and uses it to predict short-term weather. Compares the	Develops an accurate forecast based on collected data to predict long-term weather.

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
	data.	prediction to influence daily decisions.	how weather and forecasts affect people's lives. Makes simple predictions of short-term weather.	accuracy of his or her own prediction to that of a professional weather forecast.	Justifies predictions using observable evidence.
Rocks, Soils, and Plant Growth					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	III.1 Identify basic properties of minerals and rocks.	Observes and describes basic characteristics of sedimentary, igneous, metamorphic rocks, and minerals.	Sorts rocks according to characteristics of sedimentary, igneous, and metamorphic rocks. Distinguishes between rocks and minerals.	Compares and contrasts the characteristics of minerals and rocks. Names common rocks found in Utah.	Based on the evidence of colors, layers, observable crystals, holes, texture, etc., classifies common rocks found in Utah as sedimentary, igneous, or metamorphic.
Range	III.2 Explain how the processes of weathering and erosion change and move materials that become soil.	Identifies the processes of physical weathering from a visual representation.	Distinguishes between weathering and erosion and identifies the causes of each.	Models erosion. Explains that weathering and erosion contribute to soil formation. Predict the sources of sand and rocks in a locally collected soil sample.	Creates a scenario to show how processes of weathering and erosion can occur. Designs an investigation of a local soil sample leading to predictions of soil formation.
Range	III.3 Observe the basic components of soil and relate the components to plant growth.	From a list or visual representation, identifies the living, nonliving, and once-living components of soil.	Labels the layers of a soil profile. Lists the components of soil.	Explains how the components of soil contribute to the growth of plants. Constructs a model of a soil profile with the different layers and explains how the layers	Investigates ways plants can grow without soil. Explains the role of mineral nutrients in plant growth.

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
				differ in composition. Describes how plant roots help control erosion.	
Fossils					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	IV.1 Describe Utah fossils and explain how they were formed.	Identifies fossils as evidence of once-living organisms by matching visual representations of fossils to the original organisms. Identifies Utah locations where fossils are found.	Identifies fossils as evidence of once-living organisms and compares them to familiar living organisms.	Compares evidence of once-living organisms to familiar living organisms using shape, size, and structure. Explains the three ways fossils are formed. Constructs a map showing where fossils are found in Utah.	Constructs a fossil map of Utah and explain why certain areas have more fossils than others.
Range	IV.2 Explain how fossils can be used to make inferences about past life, climate, geology, and environments..	Identifies the environment of a once-living organism from a visual representation of fossils.	Uses visual representations of fossils to explain how Utah's environments and climate have changed over time. States one theory for the extinction of dinosaurs.	Explains two theories for the extinction of dinosaurs and other prehistoric organisms. Explains why fossils are usually found in sedimentary rock.	Justifies why fossils are usually found in sedimentary rock. Creates questions that can be investigated using geologic evidence to explain the extinction of prehistoric organisms.
Utah Wetlands, Forests, and Deserts					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**

		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	V.1 Describe the physical characteristics of Utah's wetlands, forests, and deserts.	Identifies a wetland, forest, or desert based on its physical characteristics from a visual representation.	Identifies and describes two physical characteristics of Utah wetlands, forests, and deserts.	Locates and compares Utah's wetlands, forests, and deserts using multiple examples of physical characteristics. Creates a basic model of wetlands, forests, and deserts.	Creates a detailed model of wetlands, forests, and deserts and explains why certain plants and animals are suited to those regions.
Range	V.2 Describe the common plants and animals found in Utah environments and how these organisms have adapted to the environment in which they live.	Identifies common plants and animals that inhabit each of Utah's environments.	Describes characteristics of common plants and animals in specific Utah environments and lists physical features that allow them to live in these environments.	Describes interactions between the plants and animals in Utah environments. Explains the effect elevation has on plant and animal life.	Uses a food chain to describe interactions between the plants and animals in Utah environments. Describes steps being taken to protect endangered Utah species.
Range	V.3 Use a simple scheme to classify Utah plants and animals.	Classifies familiar Utah plants and animals into simple groups, such as vertebrates and invertebrates or tree/shrub/grass.	Classifies Utah plants and animals using a simple classification scheme, such as a dichotomous key.	Classifies unfamiliar Utah plant and animals using a simple classification scheme, such as a dichotomous key. Explains how scientists use these schemes.	Classifies familiar and unfamiliar Utah plants and animals using a cladogram. Explains and evaluates how and why scientists use classification schemes.

		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	V.4 Observe and record the behavior of Utah animals.	With support, observes the behavior of Utah animals and records data in a pre-made graphic organizer.	Observes, compares, and describes the behavior of Utah animals and records data in a pre-made graphic organizer.	Observes, records, and describes the behavior and adaptations of Utah animals. Compares the similarities and differences between amphibians and reptiles. Sorts insects and spiders using classification schemes. Identifies animal adaptations that help Utah mammals survive the winter.	Explains animal adaptations that help Utah mammals survive the winter, and analyzes how these adaptations are beneficial.

Grade 5 Science

PLD Type	Objective	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy	*Note: Students who are designated Below Proficient (Level 1) will be able to perform up to the level described by the Proficiency Level Descriptor (PLD). Level 1 is the lowest reported proficiency designation, some students may perform below the provided description.*	The Level 1 student is below proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for his or her grade level, is likely able to partially access grade-level content, and engages with higher-order thinking skills with extensive support.	The Level 2 student is approaching proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for his or her grade level, is likely able to access grade-level content, and engages in higher-order thinking skills with some independence and support.	The Level 3 student is proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for his or her grade level, is able to access grade-level content, and engages in higher-order thinking skills with some independence and minimal support.	The Level 4 student is highly proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for his or her grade level, is able to access above grade-level content, and engage in higher-order thinking skills independently.
Chemical and Physical Changes					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	I.1 Describe that matter is neither created nor destroyed even though it may undergo change.	Explains that matter cannot be created or destroyed but that it can be changed. Performs simple experiments that demonstrate a change in matter.	Compares the total weight of an object to the weight of its individual parts after being disassembled. Performs an experiment to compare the weight of a quantity of matter	Investigates the combined weights of a liquid and a solid after the solid has been dissolved and then recovered from the liquid. Compares weights of a substance before and after a chemical change	Forms hypotheses about changes in the weights of substances following physical or chemical changes. Designs and conducts experiments to test hypotheses about chemical and physical properties. Uses

		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
			before and after melting or freezing. Performs an experiment involving chemical changes in which the total weight of the materials before and after reaction is the same.	occurs.	observations to make and justify predictions about the weight of substances in an investigation.
Range	I.2 Evaluate evidence that indicates a physical change has occurred.	States that the three states of matter are solid, liquid, and gas. Provides an example of each state of matter.	Lists the physical properties of each state of matter. Draws a simple diagram showing the dispersion of molecules in each state of matter.	Compares changes in substances that indicate a physical change has occurred. Describes the appearance of a substance before and after a physical change.	Creates models and graphs to illustrate and explain how a physical change has occurred.
Range	I.3 Investigate evidence for changes in matter that occur during a chemical reaction.	Identify examples of chemical changes in daily life.	Identifies the observable evidence of a chemical reaction (temperature change, light production, give off gas, or change colors).	Explains why the measured weight of the remaining products is less than the original reactants when a gas is produced in a chemical change. Compares physical changes to chemical changes. Hypothesizes how changing one of the materials in a chemical reaction will change the results.	Designs and conducts experiments to test hypotheses about chemical changes. Uses observations to make and justify explanations concerning chemical changes. Creates models and graphs to illustrate and explain how a chemical change has occurred.

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Processes that Reshape Earth's Surface					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	II.1 Describe how weatheringand erosion change Earth's surface.	Given a picture and list of options, identifies which geologic changes occur quickly and which occur slowly. Recognizes geological features that are changed by weathering and erosion.	Describes how earthquakes, landslides, and volcanoes change Earth's surface quickly. Identifies objects, processes, and forces that weather and erode Earth's surface. Explains how canyons may be formed by streams, rivers, or glaciers.	Explains how weathering and erosion create a variety of geological features on Earth's surface, such as valleys, canyons, buttes, and arches. Using supporting evidence, describes which objects, processes, and forces formed specific geological features.	Analyzes the relationship between timeand geological features. Predicts the future appearance of landscapes based on patterns of weathering and erosion evident in the area.
Range	II.2 Explain how volcanoes, earthquakes, and uplift affect Earth's surface.	Given a list of options, identifies which geologic features are created by volcanoes, earthquakes, and uplift.	Classifies geologic features created by volcanoes (i.e. islands, craters, and domes); earthquakes (i.e. faults and valleys); and uplift (i.e. mountains and canyons). Identifies technology that can predict volcanoes and earthquakes.	Explains and describes how volcanoes, earthquakes, and uplift change landforms. Explains how scientists use technology to predict earthquakes and volcanic activity.	Predicts the future appearance of landscapes based on evidence from earthquake faults and volcanic activity. Evaluates the accuracy of predictions concerning earthquakes and volcanic activity based on data collected using technology. Uses physical evidence to explain why particular geologic features were formed in a certain way.

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	II.3 Relate the building up and breaking down of Earth's surface over time to the various physical land features.	Identifies which natural processes erode rock over long periods of time. Identifies which land features are created over long periods of time.	Uses a provided time line with visual representations to sort the sequence and time required for building and breaking down of geologic features. Identifies that deposition fills bodies of water with sediment.	Explains how layers of exposed rock are the result of natural processes acting over long periods of time. Describes the role of deposition in changing Earth's surface. Predicts how the Earth's surface would appear if there were no mountain uplift, weathering, or erosion.	Analyzes layers of exposed rock to predict the relative ages of different layers. Independently creates a time line depicting the formation of a specified geologic features. Describes positive and negative effects to Earth's surface of deposition.
Magnetism					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	III.1 Investigate and compare the behavior of magnetism using magnets.	Identifies the differences and similarities of permanent magnets, temporary magnets, and electromagnets.	Defines "attract" and "repel." Investigates magnets' abilities to push or pull iron objects they are not touching. Creates diagrams of magnets showing attraction and repulsion. Labels poles appropriately.	Compares and contrasts permanent, temporary, and electromagnets. Investigates how magnets will both attract and repel other magnets. Compares permanent magnets and electromagnets.	Describes historic and modern real world uses of magnets. Distinguishes uses of magnets that are supported by sound scientific principles.

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	III.2 Describe how themagnetic field of Earth and a magnet are similar.	Creates a simple diagram of the Earth and its magnetic field. Explains key features of his or her diagram. Explains why a compass needle points north.	Experiments with, diagrams, and labels the magnetic field of various types of magnets. Builds a simple compass. Investigates the effects of magnets on the needle of a compass.	Compares and contrasts the magnetic fields of various types of magnets. Compares Earth's magnetic field to the magnetic field of various types of magnets. Explains how a compass works. Explains the effects of magnets on the needle of a compass and compares this to the effects of Earth's magnetic field on the needle of a compass.	Investigates how the strength of a magnet varies with distance from the magnet. Explains why some materials are suitable for use as a compass needle.
Electricity					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	IV.1 Describe the behavior of static electricity as observed in nature and everyday occurrences.	Defines static electricity as stationary electricity. Describes evidence of static electricity in everyday life.	Lists several examples of static electricity found in everyday life. Identifies lightning as an example of static electricity found in nature. Describes various ways that static electricity can be produced.	Describes the behavior of charged objects to attract or repel without touching. Investigates how various materials react differently to statically charged objects.	Designs and conducts experiments to test hypotheses about statically charged objects. Uses observations to make and justify explanations concerning behavior of statically charged objects. Creates models and graphs to illustrate and explain behavior of statically charged

		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
					objects.
Range	IV.2 Analyze the behavior of current electricity.	Identifies a complete circuit. Recognizes that some materials conduct electricity and some do not.	Diagrams and labels a complete electrical circuit. Identifies materials that conduct electricity and materials that do not conduct electricity.	Uses provided supplies to create a complete electrical circuit including a switch and a load. Predicts the effect of changing one or more component in an electric circuit. Investigates properties of materials that conduct the flow of electricity and materials that insulate the flow of electricity.	Troubleshoots problems with an electrical circuit and determines a solution to make it a working circuit. Predicts the effect of changing one or more of the components in an electric circuit, and explains reasons for these changes.

Inherited Traits					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	V.1 Using supporting evidence, show that traits are transferred from a parent organism to its offspring.	Sorts like organisms by their physical traits. Identifies similar traits of parent and offspring. Recognizes that some organisms do not initially resemble their parents.	Retrieves data on a chart showing traits among a given population. Identifies similar traits of parent and offspring. Identifies examples of offspring that don't initially resemble their parents. Recognizes that some traits are inherited and some behaviors are learned or induced by environmental factors. Recognizes that seeds grown from the same parent plant may produce plants that do not appear identical.	Collects data and charts traits of given populations. Identifies similar traits of parent and offspring. Compares various examples of offspring that don't resemble parents but grow to resemble parents. Contrasts inherited traits with traits that are learned or induced by environmental factors. Investigates variations and similarities in plants grown from seeds of parent plants.	Identifies the potential implications of traits of given populations. Describes the life cycles of organisms whose offspring don't initially resemble parents but grow to resemble parents. Designs and conducts experiments to test hypotheses about specific traits. Uses observations to make and justify explanations concerning whether or not a trait is determined by heredity, learned, or induced by environmental factors.
Range	V.2 Describe how somecharacteristics could give a species a survival advantage in a particular environment.	Identifies traits that allow an organism to survive in its habitat. Identifies environmental differences that may affect organisms' survival. Identifies traits of a specific organism.	Identifies traits of similar species forphysical abilities and specialized body structures that increase the survival of one species in a specific environment over another species. Describes how a	Compares the traits of similar species for instinctual behaviors that increase the survival of one species in a specific environment over another species. Explains how some environments give one	Synthesizes understanding of physical abilities, instinctual behaviors and specialized body structures to create a theoretical organism well adapted to a given environment. Analyzes the physical attributes

			particular physical attribute may provide an advantage for survival in one environment but not in another. Discusses survival traits of a specific plant or animal.	species a survival advantage over another.	of an organism to determine the environment for which it is best suited.

Grade 6 Science

PLD Type	Objective	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy	*Note: Students who are designated Below Proficient (Level 1) will be able to perform up to the level described by the Proficiency Level Descriptor (PLD). Level 1 is the lowest reported proficiency designation, some students may perform below the provided description.*	The Level 1 student is below proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for his or her grade level, is likely able to partially access grade-level content, and engages with higher-order thinking skills with extensive support.	The Level 2 student is approaching proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for his or her grade level, is likely able to access grade-level content, and engages in higher-order thinking skills with some independence and support.	The Level 3 student is proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for his or her grade level, is able to access grade-level content, and engages in higher-order thinking skills with some independence and minimal support.	The Level 4 student is highly proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for his or her grade level, is able to access above grade-level content, and engages in higher-order thinking skills independently.
Moon Change Cycle					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	I.1 Explain patterns of changes in the appearance of the moon as it orbits Earth.	Identifies the pattern of change in the moon's appearance as seen from Earth.	Sequences pictorial representations of the changes in the moon's appearance as seen from Earth. While using observable evidence, explains the movement of the moon in relation to Earth. Completes an	Describes the pattern of change in the moon's appearance. Independently completes an investigation, constructs a chart, and interprets data depicting the phases of the moon.	Predicts future changes in the moon's appearance as seen from Earth based on observable patterns. Designs and carries out an investigation, constructs a chart, and collects and interprets data depicting the

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
			investigation with support to depict phases of the moon.		phases of the moon.
Range	I.2 Demonstrate how the relative positions of Earth, the moon, and the sun create the appearance of the moon's phases.	When given an example, identifies whether an object is rotating on its axis or revolving in an orbit. Recognizes that objects in the sky change positions.	Explains and illustrates the terms "rotation" and "revolution." Summarizes the movement and relative positions of the Earth, moon, and sun throughout a month.	Compares and models the movement and relative positions of Earth, the moon, and the sun to describe why the moon's appearance changes as seen from Earth.	Provides examples of the difference between the motion of an object rotating on its axis and an object revolving in orbit. Relates the relative motions of Earth, the moon, and the sun to the changing appearance of the moon, planets, and stars.
Earth's Tilted Axis					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	II.1 Describe the relationship between the tilt of Earth's axis and its yearly orbit around the sun.	States that it takes Earth one year to revolve around the sun. Recognizes that the Earth is tilted on its axis. Identifies that the part of Earth angled toward the sun receives the most heat.	Describes the yearly revolution (orbit) of Earth around the sun. Recognizes that Earth's axis is tilted relative to its yearly orbit around the sun. Given an illustration, identifies locations at which Earth receives	Recognizes that the tilt of Earth's axis in its yearly orbit around the sun affects the amount of heat locations on Earth receive. Investigates the relationship between the amount of heat received from a	Infers how the yearly revolution (orbit) around the sun and the tilt of a planet's axis toward the sun affects the energy available to the planet. Demonstrates and explains the relationship between

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
			the most heat.	light source and the angle at which light strikes a surface.	the amount of heat absorbed and the angle to the light source.
Range	II.2 Explain how therelationship between the tilt of Earth's axis and its yearly orbit around the sun produces the seasons.	Recognizes that the angle of the Earth's tilt in relation to the sun causes the seasons. Recognizes that the hours of daylight varies for each season. Identifies that seasons are opposite in the Northern and Southern Hemispheres.	Compares Earth's position in relationship to the sun during each season. Compares the hours of daylight and illustrates the angle that the sun's rays strike the surface of Earth during each season in the Northern Hemisphere. Uses a drawing and/or models to explain that changes in the angle at which light from the sun strikes Earth and the length of daylight determines seasonal differences.	Uses collected data to compare patterns relating to seasonal daylight changes. Uses a drawing and/or models to explain the relationships between the changes in the angle at which light from the sun strikes Earth, the amount of energy absorbed, and the seasonal differences in temperatures and daylight hours. Uses a model to explain why the seasons are reversed in the Northern and Southern Hemispheres.	Relates Earth's position in relationship to the sun during each season to the hours of daylight and illustrates the angle that the sun's rays strike the surface of Earth during each season in the Northern and Southern Hemispheres. Designs an investigation and collects data comparing patterns relating to seasonal daylight changes. Creates a model to explain why the seasons are reversed in the Northern and Southern Hemispheres.

Solar System					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	III.1 Describe and compare the components of the solar system.	Given the planet's names, sequences them in order from the sun. Given a bank of options, identifies characteristics of comets, asteroids, and meteors. Defines manmade satellites. Given a list of options, identifies possible uses for manmade satellites.	Identifies the planets in the solar system by name and relative location from the sun. Classifies the planets as rocky or gaseous. Retrieves information from a graph depicting the size and the distance between objects in the solar system. Explains the characteristics of comets, asteroids, and meteors. Identifies uses of manmade satellites orbiting Earth and various planets.	Using references, describes the physical properties of the planets. Uses models and graphs that accurately depict scale to compare the sizes and distance between objects in the solar system. Compares and contrasts the characteristics of comets, asteroids, and meteors. Reports on the use of manmade satellites orbiting Earth and various planets.	Creates a model to accurately depict the planets in the solar system by relative size and location from the sun (the model does not need to be to exact scale). Compares and contrasts the physical properties of the planets. Analyzes and evaluates the use of manmade satellites orbiting Earth and various planets.
Range	III.2 Describe the use of technology to observe objects in the solar system and relate this to science's understanding of the solar system.	Identifies instruments used to observe and explore the moon and planets. When given a list, identifies examples of how technology has been and is being used to investigate the solar system.	Describes the use of instruments to observe and explore the moon and planets. Explains how technology helps people understand the solar system. Lists ways technology has been and is being used to investigate the solar system.	Relates science's understanding of the solar system to the instrumentation and technology used to investigate it. Reports on ways technology has been and is being used to investigate the solar system.	Describes the advantages and gives specific examples of instruments used to observe and explore the moon and planets. Analyzes the role of computers in understanding the solar system. Relate science's understanding of the solar system to the

		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
					potential advantages and limitations of technology used to investigate it. Evaluates ways technology has been and is being used to investigate the solar system.
Range	III.3 Describe the forces thatkeep objects in orbit in the solar system.	Recognizes that gravity holds Earth inorbit around the sun, and the moon in orbit around Earth. Recognizes that objects with mass have a gravitational pull on other objects. States that gravity keeps the solar system together.	Explains that forces hold the Earth inorbit around the sun, and the moon in orbit around Earth. Recognizes that objects with greater mass have a greater gravitational force on other objects. Identifies the role gravity plays in the structure of the solar system.	Describes the forces holding Earth inorbit around the sun, and the moon in orbit around Earth. Relates a celestial object's mass to its gravitational force on other objects. Describes the role gravity plays in the structure of the solar system.	Generalizes the concept of forcesholding Earth in orbit around the sun, and the moon in orbit around Earth to other situations. Predicts the effect of changing an object's mass on its gravitational pull on other objects. Analyzes the role gravity plays in the structure of the solar system.

Universe					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	IV.1 Compare the size and distance of objects within systems in the universe.	Identifies a light year as a measure of large distances. Identifies that objects in our solar system are not equally spaced apart in space. States that the solar system is smaller than the Milky Way, and that the Milky Way is smaller than the universe.	Recognizes that light years are used to measure distances to objects outside our solar system. Compares relative distances between solar system objects. Given a model, sequences solar system objects by relative size and distance.	Explains why light years are used to measure great distances. Compares the relative size and distance of objects in the universe, Milky Way, and solar system.	Predicts the time it would take to get to an object in space if traveling at the speed of light when given the distance in light years. Describes why it is not practical to represent the distances between objects in the solar system in a single model. Explains why distances between objects in space make space travel difficult.
Range	IV.2 Describe the appearance and apparent motion of groups of stars in the night sky relative to Earth and how various cultures have understood and used them.	Describes a constellation.	Identifies that ancient cultures grouped stars in the night sky and used them to navigate. Explains that stars in a constellation are at different distances from Earth.	Explains why constellations change based on the season. Describes ways people have grouped stars and used these groupings of stars for navigation and calendars.	Predicts the movement of a constellation, in a given night, based on Earth's rotation. Analyzes the patterns and movements of constellations, over a given amount of time, to infer the relative movement of Earth. Predicts the appearance of a constellation in different seasons.

Microorganisms					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	V.1 Observe and summarize information about microorganisms.	Defines what a microorganism is.	Identifies the functions of structures and characteristics of microorganisms.	Labels a microorganism within a given environment. Describes and/or illustrates the characteristics and functions of microorganisms. Identifies the organism's requirements for survival.	Predicts what will happen to a given microorganism based on experimental data and information concerning their characteristics and functions. Reports on microorganisms' requirements for survival.
Range	V.2 Demonstrate the skillsneeded to plan and conduct an experiment to determine a microorganism's requirements in a specific environment.	Formulates a question about microorganisms and their requirements.	With support, poses a hypothesis and carries out a simple investigation of microorganisms and their requirements. Records data in a provided template. Summarizes his or her findings from the investigation.	Independently formulates a research question and hypothesis. Plans and carries out an investigation about microorganisms and their requirements. Displays the results of his or her investigation in an appropriate format. Explains his or her findings.	Analyzes and predicts what will happen with further testing of his or her hypothesis. Infers which microorganisms will best survive in certain environments.

		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	V.3 Identify positive and negative effects of microorganisms and how science has developed positive uses for some microorganisms and overcome the negative effects of others.	Identifies that some microorganisms can have positive and negative effects for humans. Identifies an example of microorganisms used in food production.	Identifies that some microorganisms have positive and negative effects on people, food production and the environment. Gives an example of how microorganisms are helpful and harmful to people, food, and the environment.	Describes how microorganisms are used in food production. Identifies how some microorganisms are the causes of diseases, while others are helpful in medicine and food production. Describes how microorganisms have harmful effects on food. Describes how microorganisms serve as decomposers and are helpful to the environment.	Predicts how microorganisms will affect our environment in the future. Uses evidence and data analysis concerning the uses, studies, and effects of microbes to make inferences about ecological issues. Describes ways microbes can be used to affect and change the world around us. Explains interactions between microorganisms and human environments.
Heat, Light, and Sound					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	VI.1 Investigate the movement of heat between objects by conduction, convection, and radiation.	Compares thermal insulators and conductors.	Defines and identifies examples of conduction, convection, and radiation.	Creates a model showing the movement of heat from warmer to cooler objects by conduction and convection. Following provided instructions, conducts an experiment on the movement of heat energy. Explains that	Designs and conducts an investigation on the movement of heat energy. Compares and contrasts the movement of heat by conduction, convection, and radiation. Forms conclusions of how conduction, convection, and

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
				heat transfer can occur without direct contact between the source and object.	radiation are relevant to his or her environment.
Range	VI.2 Describe how light can be produced, reflected, refracted, and separated into visible light of various colors.	Compares properties of light from various sources (brightness, intensity, direction, color).	Identifies and defines reflection and refraction of light. Compares the reflection of light from various surfaces.	Describes and analyzes how light is produced, reflected, refracted, and separated into visible light of various colors. Predicts and tests the behavior of light as it interacts with various substances. Predicts and tests the appearance of various materials when light of different colors is shone on them.	Analyzes data from a given experiment to determine or predict a given property or behavior of light.
Range	VI.3 Describe the production of sound in terms of vibration of objects that create vibrations in other materials.	Describes how sound is made from vibration and moves in all directions from the source in waves. Constructs a simple musical instrument.	Compares the volume of a sound to theamount of energy used to create the vibration of the object producing the sound.	Explains the relationships between the size and shape of a vibrating object, the pitch and volume of the sound produced, and the force and energy used to create it.	Builds a musical instrument, demonstrates and reports on how it produces the type(s) of sound (s) produced.

Grade 7 Science

PLD Type	**Objective**	**Below Proficient**	**Approaching Proficient**	**Proficient**	**Highly Proficient**
Policy	*Note: Students who are designated Below Proficient (Level 1) will be able to perform up to the level described by the Proficiency Level Descriptor (PLD). Level 1 is the lowest reported proficiency designation, some students may perform below the provided description.*	The Level 1 student is below proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for his or her grade level, is likely able to partially access grade- level content, and engages with higher- order thinking skills with extensive support	The Level 2 student is approaching proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for his or her grade level, is likely able to access grade-level content, and engages in higher-order thinking skills with some independence and support.	The Level 3 student is proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for his or her grade level, is able to access grade-level content, and engages in higher-order thinking skills with some independence and minimal support.	The Level 4 student is highly proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for his or her grade level, is able to access above grade-level content, and engages in higher-order thinking skills independently.
			Structure of Matter		
		The Level 1 student:	**The Level 2 student:**	**The Level 3 student:**	**The Level 4 student:**
Range	I.1 Describe the structure of matter in terms of atoms and molecules.	Recognizes that atoms are too small to see and that matter can exist in different physical states.	Recognizes the difference between atoms and molecules. Explains how our knowledge of the structure of matter has developed over time.	Diagrams the particles in different states of matter. Describes the limitations of using models to represent atoms. Draws conclusions about how our knowledge of the atom	Gathers, analyzes, and evaluates information from historical experiments that have contributed to our knowledge of the structure of matter and reports on his or her findings.

		The Level 1 student:	The Level 2 student:	The Level 3 student:	The Level 4 student:
				has changed models over time.	
Range	I.2 Accurately measure the characteristics of matter in different states.	Recognizes that the mass of an object is related to its density. Accurately uses instruments to measure mass and volume of a substance/object.	Given the formula for density and the mass and volume of an object, calculates the density of the object. Given multiple objects of similar size and the mass of those objects, compares the relative densities of the objects.	Given samples of matter in different states, measures the mass and volume, calculates the density, and compares the relative densities of the samples. Explains how mass and volume relate to density.	Designs and conducts an experiment to measure the mass and volume of gases and calculates the density of the gases.
Range	I.3 Investigate the motion of particles.	Recognizes that particles are in constant motion and that the amount of motion is related to the temperature of the particles.	Recognizes that diffusion occurs when a substance moves from an area of high concentration to an area of low concentration.	Compares the volume of a substance at different temperatures and relates it to the particle motion. Recognizes that diffusion occurs because of particle motion. Recognizes that materials expand and contract as their temperatures change and the effect this has on solid materials.	Designs and conducts an experiment investigating the diffusion of particles. Formulates and tests a hypothesis on the relationship between temperature and motion. Predicts the effects of repeated expansion and contraction of solids on human-made structures.
Properties of Matter and Earth's Structure					

		The Level 1 student:	**The Level 2 student:**	**The Level 3 student:**	**The Level 4 student:**
		The Level 1 student:	**The Level 2 student:**	**The Level 3 student:**	**The Level 4 student:**
Range	II.1 Examine the effects of density and particle size on the behavior of materials in mixtures.	Recognizes that particle sorting is related to particle size and density. Observes and describes the sorting of Earth materials in a mixture.	Given the formula for density, calculates the density of Earth materials and compares them to the densities of various objects of known density.	Given a model of a streambed, road cut, or beach, indicates where different materials would generally be located based on density and size.	Designs and conducts an experiment that provides data on the natural sorting of various Earth materials. Predicts locations where Earth materials would be sorted by natural processes.
Range	II.2 Analyze how density affects Earth's structure.	Recognizes that Earth has layers and that these layers are organized by density.	Given a model of Earth's layers, compares the densities of Earth's atmosphere, water, crust, and interior layers.	Relates density to the relative positioning of Earth's atmosphere, water, crust, and interior.	Distinguishes between models of Earth with accurate and inaccurate attributes and creates an accurate model showing the layering of Earth's atmosphere, water, crust, and interior.
Organ, Tissue, and Cell Structure and Function					
		The Level 1 student:	**The Level 2 student:**	**The Level 3 student:**	**The Level 4 student:**

		The Level 1 student:	The Level 2 student:	The Level 3 student:	The Level 4 student:
Range	III.1 Observe and describe cellular structures and functions.	Uses provided instruments to observe various types of cells. Observes and identifies the cell membrane and cell nucleus.	Selects and uses appropriate instruments to observe various types of cells. Describes basic features of observed cells. Observes and identifies the cytoplasm of cells. Given diagrams of plant and animal cells, compares similarities and differences. Explains that osmosis happens in cells. Identifies that plant cells produce their own food.	Observes, describes, and compares various types of cells. Observes and distinguishes the cell wall, cell membrane, nucleus, chloroplast, and cytoplasm of cells. Differentiates between plant and animal cells based on cell wall and cell membrane. Models the cell processes of diffusion and osmosis and relates them to the motion of particles. Gathers information to report on how the basic functions of organisms are carried out within cells.	Compares and contrasts various types of cells. Describes the cell wall, cell membrane, nucleus, chloroplast, and cytoplasm of cells. Explains the purpose of the differences between plant and animal cells based on cell wall and cell membrane. Plans and conducts an investigation modeling the cell processes of diffusion and osmosis. Given a passage, cites evidence and reports on how the functions of organisms are carried out within cells.

		The Level 1 student:	The Level 2 student:	The Level 3 student:	The Level 4 student:
Range	III.2 Identify and describe the function and interdependence of various organs and tissues.	Recognizes that a cell is the simplest level of organization and an organism is the most complex. Matches a particular structure to the appropriate level, limited to cells and organisms. Recognizes that needs of organisms at the cellular level for food, air, and waste removal are met by tissues and organs.	Recognizes that a cell is the simplest level of organization, an organ is more complex, and an organism is the most complex. Matches a particular structure to the appropriate level, limited to cells, organs, and organisms. Relates the structure of an organ to its component parts and the larger system of which it is a part, limited to circulatory and respiratory systems. Recognizes that the needs of organisms at the cellular level for food, air, and waste removal are met by tissues and organs.	Orders the levels of organization from simple to complex beginning with a cell and ending with an organism. Matches a particular structure to the appropriate level. Relates the structure of an organ to its component parts and the larger system of which it is a part. Describes how the needs of organisms at the cellular level for food, air, and waste removal are met by tissues and organs.	Compares and contrasts the levels of organization from simple to complex. Matches a particular structure to the appropriate level and provides reasoning for the distinction. Relates and discusses the structure and function of an organ to its component parts and the larger system of which it is a part. Gathers, analyzes, and evaluates information about how the needs of organisms at the cellular level for food, air, and waste removal are met by tissues and organs.
Effect of Inherited Traits on Survival					
		The Level 1 student:	**The Level 2 student:**	**The Level 3 student:**	**The Level 4 student:**

		The Level 1 student:	The Level 2 student:	The Level 3 student:	The Level 4 student:
Range	IV.1 Compare how sexual and asexual reproduction passes genetic information from parent to offspring.	Recalls that reproduction passes genetic information from parent to offspring. Generalizes the definition of a trait. Recognizes that organisms reproduce differently. Recognizes that inherited structural traits are passed from parents to offspring.	Compares how sexual and asexual reproduction passes genetic information from parent to offspring from given examples. When given a list, identifies inherited traits. Contrasts the exchange of genetic information in sexual and asexual reproduction from provided examples. Selects examples of organisms that reproduce sexually and those that reproduce asexually from a given list. Gives examples of inherited structural traits of offspring and their parents.	Compares how sexual and asexual reproduction passes genetic information from parent to offspring. Distinguishes between inherited and acquired traits. Contrasts the exchange of genetic information in sexual and asexual reproduction. Cites examples of organisms that reproduce sexually and those that reproduce asexually. Compares inherited structural traits of offspring and their parents.	Compares and contrasts how sexual and asexual reproduction pass genetic information from parent to offspring and provides examples of each. Cites examples of inherited and acquired traits and rationalizes the categorization of each. Gathers, analyzes, and evaluates multiple examples of organisms that reproduce sexually and those that reproduce asexually. Compares and contrasts inherited structural traits of offspring and their parents.

		The Level 1 student:	**The Level 2 student:**	**The Level 3 student:**	**The Level 4 student:**
Range	IV.2 Relate the adaptability of organisms in an environment to their inherited traits and structures.	Recognizes simple examples of the adaptability of organisms in an environment to their inherited traits and structures. Given a list, makes simple predictions of why traits may help an organism survive. Given a list, chooses examples of traits that provide an advantage for survival in one environment. Recalls that both humans and nature can cause changes in genetic traits. Recognizes that the structure of organs relates to an organism's ability to survive.	Recognizes that inherited traits and structures allow organisms to adapt in an environment. Identifies why certain traits such as structure of teeth, body structure, or coloration are more likely to offer an advantage for survival of an organism. Cites examples of traits that provide an advantage for survival in one environment but not for other environments. Recognizes examples of changes in genetic traits due to natural and human-made influences such as mimicry in insects or breeding of dairy cows to produce more milk. Relates the structure of organs to an organism's ability to survive in a specific environment.	Relates the adaptability of organisms in an environment to his or her inherited traits and structures. Predicts why certain traits such as structure of teeth, body structure, or coloration are more likely to offer an advantage for survival of an organism. Cites examples of traits that provide an advantage for survival in one environment but not others. Cites examples of changes in genetic traits due to natural and human-made influences such as mimicry in insects, plant hybridization to develop a specific trait, or breeding of dairy cows to produce more milk. Relates the structure of organs to an organism's ability to survive in a specific environment.	Synthesizes how the adaptability of organisms in an environment relates to their inherited traits and structures. Evaluates why certain traits such as structure of teeth, body structure, or coloration are more likely to offer an advantage for survival of an organism. Evaluates and analyzes examples of traits that provide for long-term survival in one environment but not for other environments. Gathers and analyzes examples of changes in genetic traits due to natural and human-made influences.

Classification Systems					
		The Level 1 student:	**The Level 2 student:**	**The Level 3 student:**	**The Level 4 student:**
Range	V.1 Classify based on observable properties.	Classifies very simple items based on observations. Places names of nonliving objects into simple lists based on observed similarities. Identifies living, once-living, and nonliving things. Recognizes that observations are needed to classify things. Recalls that things can be classified in different ways.	Classifies simple items based on observable properties. Organizes nonliving objects based on external structures such as hard or soft. Compares living, once-living, and nonliving things. Summarizes the importance of observation in classification. Explains that there are many ways to classify things.	Classifies items based on observable properties. Categorizes nonliving objects based on external structures such as hard or soft. Defends the importance of observation in scientific classification. Demonstrates that there are many ways to classify things.	Classifies unfamiliar items based on observable properties. Constructs a diagram to categorize nonliving objects based on complex external structures. Devises a comparison between living, once living, and nonliving things. Defends and evaluates the importance of observation in scientific classification. Evaluates different ways to classify things.
Range	V.2 Use and develop a simple classification scheme.	Recognizes that classification schemes are used to classify things. Recognizes that there are rules for classification and gives a reason for classifying things.	Uses a provided simple classification system to classify a given item based on observed structural characteristics. Identifies simple rules for classification. Given examples, relates the importance of classification systems to the development of science knowledge.	Develops and uses a simple classification system based upon observed structural characteristics. Generalizes rules for classification. Relates the importance of classification systems to the development of science knowledge. Recognizes that classification is a tool made by scientists to	Develops and uses a classification system for a variety of items based upon observed structural characteristics. Synthesizes and applies rules for classification. Justifies the importance of classification systems to the development of science knowledge. Evaluates classification

		The Level 1 student:	The Level 2 student:	The Level 3 student:	The Level 4 student:
			Recognizes that classification is a tool made by science to understand nature.	describe perceived patterns in nature.	as a tool constructed by scientists to describe perceived patterns in nature.
Range	V.3 Classify organisms using an orderly pattern based upon structure.	Classifies organisms given simplified illustrations. Identifies types of organisms that are not plants or animals given simplified illustrations. Arranges simplified illustrations of organisms according to kingdom. Uses a simplified classification key or field guide to identify an organism. Recalls that changes can occur in classification systems due to new knowledge.	Classifies organisms using a simple orderly pattern based upon structure. Identifies types of organisms that are not classified as either plant or animal given support. Arranges organisms according to kingdom, given illustrations. Gives an example of changes in classification systems due to new information.	Classifies organisms using an orderly pattern based upon structure. Arranges organisms according to kingdom. Uses a classification key or field guide to identify organisms. Reports on changes in classification systems as a result of new information or technology.	Classifies multiple organisms using an orderly pattern based upon structure. Identifies unfamiliar types of organisms that are not classified as either plant or animal such as bacteria, fungi, and protists. Arranges unfamiliar organisms according to kingdom. Uses a complex classification key or field guide to identify organisms. Evaluates changes in classification systems as a result of new information or technology.

Grade 8 Science

PLD Type	Objective	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy	*Note: Students who are designated Below Proficient (Level 1) will be able to perform up to the level described by the Proficiency Level Descriptor (PLD). Level 1 is the lowest reported proficiency designation, some students may perform below the provided description.*	The Level 1 student is below proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for his or her grade level, is likely able to partially access grade-level content, and engages with higher- order thinking skills with extensive support.	The Level 2 student is approaching proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for his or her grade level, is likely able to access grade-level content, and engages in higher-order thinking skills with some independence and support.	The Level 3 student is proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for his or her grade level, is able to access grade level content, and engages in higher-order thinking skills with some independence and minimal support.	The Level 4 student is highly proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for his or her grade level, is able to access above grade-level content, and engages in higher-order thinking skills independently.

Changes in Matter					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	I.1 Describe the chemical and physical properties of various substances.	Recognizes that matter can have different physical properties. Recognizes that matter can have different chemical properties.	Differentiates between chemical and physical properties of matter. Matches examples of physical properties with a given list. Matches examples of chemical properties with a given list. Using a list, classifies familiar substances based on their chemical and physical properties.	Describes and gives examples of physical properties of matter including color, hardness, mass, phase, evaporates and melts at room temperature. Describes and gives examples for chemical properties of matter such as reactivity with water, flammable, non-flammable, color change, gas given off, odor change. Classifies unfamiliar substances based on their chemical and physical properties.	Uses reasoning and evidence to explain why reactivity with water, other elements, molecules and compounds is a chemical property. Applies knowledge of physical and chemical properties to report on uncommon substances.

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	I.2 Observe and evaluate evidence of chemical and physical change.	Identifies changes in matter when given examples. Recognizes that a change in shape/size is a physical change. Identifies a change of phase as a physical change.	Categorizes changes as chemical or physical. Realizes that a change in shape/size is a physical change. Identifies that evidence of a chemical change includes color change, heat or light given off.	Differentiates between chemical and physical changes. Gives examples of physical changes including phase change, change in shape, or size. Gives examples of evidence of chemical changes including color change, heat or light given off, change in odor, gas given off, rust forming, combustion, respiration, photosynthesis. Explains that physical properties can be altered by a chemical change in a substance.	Analyzes observations of changes and explains how each gives evidence of a chemical or physical change. Investigates changes in physical properties resulting from chemical changes.
Range	I.3 Investigate and measure the effects of increasing or decreasing the amount of energy in a physical or chemical change, and relate the kind of energy added to the motion of the particles.	Recognizes that heat, light, and sound are forms of energy associated with chemical and physical changes. Explains that matter is made of atoms and molecules using a diagram. Interprets a graph showing temperature change of a	Identifies examples of energy associated with chemical and physical changes. Recalls that atoms and molecules move more rapidly as temperature increases. Identifies sections of a graph showing where temperature is	Explains why atoms and molecules move more rapidly as temperature rises and heat energy increases. Explains that the melting and boiling points of water define the conditions in which liquid water exists. Uses a graph of temperature of a substance to infer phases and phase changes. Explains evidence of heat during a chemical reaction. Conducts an experiment, and reports the effect of adding or removing energy on chemical and physical changes.	Measures temperature and graphs the relationship between the states of water and changes in its temperature. Gathers and explains evidence showing that heat may be given off or taken in during a chemical change and a physical change. Plans and conducts an experiment of the effect of adding or removing energy on chemical and physical changes and reports on the results.

		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
		substance.	increasing and/or decreasing. Recalls that temperature does not change during phase change.		
Range	I.4 Identify the observable features of chemical reactions.	Identifies the reactants and products of a given chemical reaction. Identifies the presence of the same atoms in products and reactants. Recognizes that mass is conserved in a chemical reaction. Recognizes that chemical reaction rates can be affected by	With guidance, experiments with variables affecting reaction rate. Matches heating, cooling, stirring, and concentration to their effects on chemical reactions. Explains simple examples of mass conservation in common significant chemical reactions	Demonstrates that mass is constant in a chemical reaction as long as nothing is added or removed. Predicts the result of heating, cooling, stirring, crushing, and concentration in familiar situations. Experiments with the effect of heating, cooling, stirring, crushing, and concentration on chemical reactions, and explains the results of his or her experiment. Reports on one application of chemistry to everyday life.	Explains why mass does not change in a chemical reaction as long as nothing is added or removed. Predicts the effects of heating, cooling, stirring, crushing, and concentration in unfamiliar situations. Generalizes the reasons why heating, cooling, stirring, crushing, and concentration affect chemical reaction rates. Explains how scientists and engineers have applied chemistry to everyday life.

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
		heating or cooling the reactants. Cites examples of common significant chemical reactions: photosynthesis, respiration, rusting.	(e.g. photosynthesis, respiration, rusting). Identifies examples of chemistry applied to daily life.		
Energy Transfers and Transformations					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	II.1 Compare ways that plants and animals obtain and use energy.	Recalls that both plants and animals use energy. Identifies the role of the sun in photosynthesis. Recognizes that respiration is a process in animals that changes food energy into heat and movement. Uses a diagram to trace the path of energy from	Compares the different ways that plants and animals obtain and use energy. Explains the importance of light energy in photosynthesis. Explains that respiration in animals changes food into energy. Creates a diagram tracing the path of energy from the	Analyzes similar ways that plants and animals obtain and use energy. Explains the importance of photosynthesis, which uses light energy as part of the chemical process that builds plant materials. Explains how respiration in animals converts food energy into mechanical and heat energy. Explains the path of energy from the sun to mechanical energy in an organism.	Gathers, analyzes, and evaluates information about the different ways that plants and animals obtain and use energy. Devises and performs an experiment on how respiration in animals is a process that converts food energy into mechanical and heat energy. Designs a diagram that traces the path of energy from the sun to mechanical energy in an organism.

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
		the sun to food for an organism.	sun to an organism.		
Range	II.2 Generalize the dependent relationships between organisms.	Recalls and identifies the relationships between producers and consumers and with support, gives an example. Recognizes a food chain. Given support, tests the effects of air, temperature, water, or light on plant growth. Recognizes that different types of scientists can work in the same	Compares the relationships between producers and consumers and gives examples. Identifies the relationship between predator and prey given a food chain or food web. With support, constructs a food chain to show flow of energy. Given minimal support, tests a hypothesis on the effects of air, temperature,	Describes the dependent relationships between organisms. Categorizes the relationships between organisms such as producer/consumer, predator/prey, mutualism/parasitism/decomposer and provides common examples of each. Uses models to trace the flow of energy in food chains and food webs. Formulates and tests a hypothesis on the effects of air, temperature, water, or light on plant seed germination and growth rates. Describes ways that different scientists may investigate the same ecosystem.	Analyzes the dependent relationships between producers and consumers, predator and prey, mutualism/parasitism/decomposer and provide multiple examples of each. Designs, analyzes, and evaluates models to trace the flow of energy in food chains and food webs. Generalizes multiple ways that different scientists have investigated the same ecosystem.

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
		ecosystem.	water, or light on plant growth. Recognizes that there are multiple ways that scientists investigate the same ecosystem.		
Range	II.3 Analyze human influence on the capacity of an environment to sustain living things.	Recalls that humans influence living things. Gives an example of how humans have changed the environment. Identifies evidence in an article about humans affecting the environment. With support, compares the effects of	Explains that humans have an influence on the living things in the environment. Lists examples of humans changing the environment to affect organisms. Identifies inferences and evidence in a newspaper or magazine article about the effect of humans on the	Analyzes human influence on the capacity of an environment to sustain living things. Describes specific examples of how humans have changed the capacity of an environment to support specific life forms. Distinguishes between inference and evidence in a newspaper or magazine article relating to the effect of humans on the environment. Infers human activities by observing effects on a specific food web. Evaluates and presents arguments for and against allowing a	Gathers, analyzes, and evaluates data about the influence of humans on the capacity of an environment to sustain living things. Finds and presents evidence of specific examples of how humans have changed the capacity of an environment to support specific life forms. Finds coherence between inference and evidence presented in a newspaper or magazine article relating to the effect of humans on the environment. Predicts the potential effects of humans on a specific food web.

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
		humans on food chains. Identifies arguments for and against allowing a species to become extinct.	environment. Predicts the effects of human-made changes to a simple food web. With support, generates arguments for and against allowing a specific species of plant or animal to become extinct.	specific species of plant or animal to become extinct, and relates the argument to the of flow energy in an ecosystem.	

Rock and Fossil Formation					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	III.1 Compare rocks and minerals and describe how they are related.	Identifies that most rocks are composed of minerals. Recognizes that rocks can be sedimentary, metamorphic, and igneous.	Given a classification chart, classifies rocks as sedimentary, metamorphic, or igneous. Observes and describes the minerals found in rocks.	Classifies unfamiliar rocks as sedimentary, metamorphic, or igneous. Given a classification chart, categorizes rocks and minerals based on shape, color, luster, texture, and hardness.	Using a classification chart, applies the properties of rock categorization by identifying and conducting a proper test to infer whether a given sample is sedimentary, metamorphic, or igneous.
Range	III.2 Describe the nature of the changes that rocks undergo over long periods of time.	Using a simple diagram of the rock cycle, recognizes that energy flows through the Earth and plays a role in changing rock materials over time. Gives simple descriptions of how fossils are formed. Defines weathering.	Using a simple diagram of the rock cycle, explains the flow of energy through the Earth and sedimentary processes as rock materials change over time. Completes a partially filled diagram of the rock cycle. Identifies the role of weathering in soil formation.	Using a diagram of the rock cycle, explains the role of energy in the formation of different rock types. Describes how other forces (such as gravity) drive change on Earth's surface. Explains the role of weathering in the rock cycle. Diagrams sedimentary processes in the formation of fossils, soil, and other surface formations. Distinguishes the formation of different rock types and the energy used to make the rocks.	Constructs a model, applying the role of energy, to demonstrate the processes of the rock cycle, fossil formation, and other sedimentary processes to analyze how rocks change over time.

		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	III.3 Describe how rock and fossil evidence is used to infer Earth's history.	Given an example of dated rock layers and dated fossils, matches the fossils to the layers they would be found in. Recognizes that deposition forms sedimentary layers. Recognizes that older rock layers are frequently below younger rock layers.	Given an example of rock layers containing fossils, identifies the distinct layers of sedimentary rock and recognizes features that show folding or faulting. Explains why older rock layers are frequently below younger rock layers. Explains that fossils can be used to infer age of rock layers. Recognizes that younger rock layers are more likely to contain fossils resembling existing species.	Given an example of rock layers containing fossils, explains the changes to Earth's surface, including deposition, layering, folding, and faulting. Hypothesizes why the fossils in more recently deposited layers most closely resemble existing species. Identifies the assumptions scientists make to determine relative ages of rock layers. Proposes why more recently deposited rock layers are more likely to contain fossils resembling existing species than older rock layers.	Given an example of rock layers containing fossils, infers the processes that formed the rock layers and fossils, and the relative age of the layers and fossils. Infers which fossils are most closely related to living species and what changes to Earth's surface the fossil evidence shows. Constructs a model to describe folding, deposition, and faulting.

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	III.4 Compare rapid and gradual changes to Earth's surface.	Recognizes that volcanoes and earthquakes change the Earth's surface and release energy from inside the Earth. Recognizes that small changes over time can add up to major changes to Earth's surface.	Given a model, identifies the energy buildup and release in earthquakes. Defines what volcanoes and earthquakes are and describes in simple terms how they transfer energy from inside the Earth. Explains how small changes over time can add up to major changes to Earth's surface. Identifies reasons why best engineering and ecological practices may not always be followed in the building of certain manmade structures.	Compares and contrasts gradual and rapid changes to Earth's surface and relates these changes to the release of Earth's interior energy through volcanic eruptions and earthquakes. Models the process of energy buildup and release in earthquakes. Given examples, explains the reasons why best engineering and ecological practices may not have been followed in the building of certain manmade structures. Models how small changes over time add up to major changes to Earth's surface.	Creates a model or illustration incorporating the transfer of mechanical energy to demonstrate how many small changes accumulate to create major changes to Earth's surface and the impact the energy transfer has on building and engineering projects.

Energy, Force, and Motion					
		The Level 1 Student:	**The Level 2 Student:**	**The Level 3 Student:**	**The Level 4 Student:**
Range	IV.1 Investigate the transfer of energy through various materials.	States that different types of energy are transferred as waves through various mediums. Identifies the spread of energy away from an energy-producing source.	Provides examples of energy transferred by conduction, convection, and radiation. Draws a wave; labels wavelength. Recognizes that white light can be separated into the visible color spectrum.	Relates the energy of a wave to its wavelength. Explains how wavelength determines the color of visible light. Gives examples of energy spreading from a source by conduction, convection, and radiation, and how various mediums affect the transfer of energy.	Conducts an investigation of energy transferred by conduction, convection, or radiation. Analyzes the evidence of change in energy of a wave as it travels through various mediums and relates the change of energy to the properties of the wave.
Range	IV.2 Examine the force exerted on objects by gravity.	Defines mass and weight. States that gravity is a force exerted on objects. Follows instructions to build a simple structure that supports a minimal load.	Describes the difference between mass and weight. Recognizes that mass and distance affect the force of gravity exerted on an object. Identifies characteristics of a structure that make it able to support greater loads.	Compares and contrasts mass and weight. Explains how mass and distance affect the force exerted on an object by gravity. Designs and builds a simple structure to support a load. Designs and builds a machine that uses gravity to accomplish a task.	Designs and builds a complex structure to support a load. Applies an understanding of how distance and mass affect the force of gravity by engineering a machine that uses gravity to accomplish a task.

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
			Identifies how machines use gravity to accomplish a task.		
Range	IV.3 Investigate the application of forces that act on objects, and the resulting motion.	Recognizes that levers and inclined planes make work easier. Recognizes that friction can be used to control the motion of an object.	Makes and records observations of simple machines creating a mechanical advantage. Describes ways that friction can control motion. Recognizes a complex machine as a combination of simple machines.	Design and builds a complex machine that uses levers, inclined planes, and friction to control the motion of an object. Calculates the mechanical advantage of levers while manipulating the fulcrum.	Analyzes the principles of force and motion for each component of a complex machine built by the student. Calculates the mechanical advantage of levers used in the machine. Investigates the principles used to engineer changes in forces and motion: efficiency, mechanical advantage, cost vs. benefit, desired outcome and task accomplishment.

		The Level 1 Student:	The Level 2 Student:	The Level 3 Student:	The Level 4 Student:
Range	IV.4 Analyze various forms of energy and how living organisms sense and respond to energy.	Defines potential and kinetic energy. Recognizes that organisms sense and respond to energy.	Recognizes that energy can transform from one form to another. Classifies examples of potential and kinetic energy. Identifies examples of organisms sensing and responding to various forms of energy.	Analyzes the cyclic nature of potential and kinetic energy. Given a diagram, identifies the conversions of energy from one form to another. Identifies technological advances that enable humans to sense various forms of energy. Describes and explains the relationship between the sensing mechanism, the energy being detected and the energy provided when organisms sense and respond to various forms of energy.	Designs and builds a model that demonstrates the cyclic nature of potential and kinetic energy. Analyzes the changes in energy demonstrated by the model. Draws and labels a complex diagram identifying the conversion of energy from one form to another. Investigates different types of technology developed to help humans sense various types of energy.

APPENDIX D: AGENDAS

Agenda

Standard Setting for ELA 3–11 Panels

ELA 3–5
ELA 6–8
ELA 9–11

DAY 1—Wednesday, August 13th, 2014, Grades 3–11 ELA, SAGE

8:00–8:30 Orientation for table leaders

8:00–8:30 Registration and morning refreshments

- *Panelists receive folders, sign security affidavit*

8:30–8:45 Welcome and introductions from Utah State Office of Education (USOE)

8:45–9:45 Large group introductory training

- *Welcome and introductions*
- *Purpose of standard-setting workshop*
- *Description of the SAGE test design*
- *General overview of standard-setting procedures and key concepts*
    - *Proficiency Level Descriptors*
    - *"Just Barely"*
    - *Ordered Item Book*
    - *Response probability*
    - *Bookmark task*
    - *Panelist feedback and impact data*

9:45–10:00 Break and separate into small group rooms

10:00–11:00 Panelists experience online operational test environment

11:00–11:45 Review and parsing of Proficiency Level Descriptors (PLDs)

- *Training on development of PLDs*
- *Independent review of PLDs*
- *Independent parsing of PLDs*
- *Group review of parsed PLDs*

11:45–12:30 Lunch

12:30–1:15 Discussion of students who are "just barely" characterized by PLDs

1:15–4:30 Review of Ordered Item Book (OIB)

- *Training on composition of the OIB*
- *Training on review of the OIB*
    - *What do students need to know and be able to do to respond correctly to each question?*
    - *Why is each item more difficult than the preceding item?*
- *Instruction in accessing the OIB*
- *Independent review of OIB*

4:30 Adjourn

Day 2—Thursday, August 14, 2014, Grades 3–11 ELA, SAGE	
8:15–8:30	Registration and morning refreshments
8:30–8:45	Review panelist paperwork (reimbursement and demographic information)

8:45–10:00	Training on Bookmark Placement task
	• *Review of Bookmark Placement key concepts*
	    o *Proficiency Level Descriptors*
	    o *Ordered Item Book*
	• *Training on "Just Barely"*
	• *Training on RP67*
	• *Training on Bookmark Placement judgment task, and procedure for recording bookmarks*

10:00–11:15	Round 1 Bookmark Placement for Proficient, Approaching Proficient, and Highly Proficient (Anchor Grades: 4, 8, and 11) • *Review of Bookmark procedures and key concepts* • *Completion of Bookmark Placement Readiness Form* • *Round 1 Bookmark Placement*
11:15–11:30	Panelist Break
11:30–12:30	Round 2 Bookmark Placement for Proficient, Approaching Proficient, and Highly Proficient (Anchor Grades: 4, 8, and 11) • *Training on use of panelist agreement feedback data* • *Presentation and discussion of Round 1 panelist agreement feedback data* • *Completion of Bookmark Placement Readiness Form* • *Round 2 Bookmark Placement*
12:30–1:15	Lunch
1:15–2:45	Review and parsing of Proficiency Level Descriptors (PLDs) for adjacent grades 3, 7, and 10 • *Independent review of PLDs* • *Independent parsing of PLDs* • *Group review of parsed PLDs*
2:45–4:30	Review of Ordered Item Booklet for adjacent grades 3, 7, and 10
4:30	Adjourn for panelists not participating in Anchor Grade Moderation
4:30–5:30	Anchor Grade Moderation with all ELA table leaders
5:30	Adjourn for table leaders

Day 3—Friday, August 14, 2014, Grades 3–11 ELA, SAGE	
8:15–8:30	Registration and morning refreshments

8:30–9:30	Round 1 Bookmark Placement for Proficient, Approaching Proficient, and Highly Proficient (Adjacent Grades: 3, 7, 10)
	• *Training on use of interpolated bookmark page numbers*
	  o *Debrief of Moderation session outcomes*
	  o *Presentation of interpolated bookmark page numbers*
	  o *Discussion of Bookmark Placement task for interpolated page numbers*
	• *Completion of Bookmark Placement Readiness Form*
	• *Round 1 Bookmark Placement*

9:30–9:45	Panelist Break
9:45–10:30	Round 2 Bookmark Placement for Proficient, Approaching Proficient, and Highly Proficient (Adjacent Grades: 3, 7, 10) • *Presentation and discussion of Round 1 panelist feedback data* • *Completion of Bookmark Placement Readiness Form* • *Round 2 Bookmark Placement*
10:30–11:30	Review and parsing of Proficiency Level Descriptors (PLDs) for adjacent grades 5, 6, and 9 • *Independent review of PLDs* • *Independent parsing of PLDs* *Group review of parsed PLDs*
11:30–12:15	Lunch
12:15–2:45	Review of Ordered Item Booklet for adjacent grades 5, 6, and 9
2:45–3:00	Panelist Break
3:00–3:45	Round 1 Bookmark Placement for Proficient, Approaching Proficient, and Highly Proficient (Adjacent Grades: 5, 6, and 9) • *Presentation and discussion of Round 1 panelist feedback data* • *Completion of Bookmark Placement Readiness Form* • *Round 2 Bookmark Placement*
3:45–4:00	Panelist Break
4:00–4:45	Round 2 Bookmark Placement for Proficient, Approaching Proficient, and Highly Proficient (adjacent grades 5, 6, and 9) • *Presentation and discussion of Round 1 panelist feedback data* • *Completion of Bookmark Placement Readiness Form* • *Round 2 Bookmark Placement*
4:45–5:00	Panelists complete workshop evaluations, and adjourn for panelists not participating in final moderation
5:00–6:00	Final Moderation with all ELA table leaders
6:00	Adjourn for table leaders

Agenda

Standard Setting for High School Math Panel

Math I
Math II
Math III

	DAY 1—Monday, August 11th, 2014, High School Math, End-of-Course
8:00–8:30	Orientation for table leaders
8:00–8:30	Registration and morning refreshments • *Panelists receive folders, sign security affidavit*
8:30–8:45	Welcome and introductions from Utah State Office of Education (USOE)

8:45–9:45	Large group introductory training
	• *Welcome and introductions*
	• *Purpose of standard-setting workshop*
	• *Description of the SAGE test design*
	• *General overview of standard-setting procedures and key concepts*
	  ○ *Proficiency Level Descriptors*
	  ○ *"Just Barely"*
	  ○ *Ordered Item Book*
	  ○ *Response probability*
	  ○ *Bookmark task*
	  ○ *Panelist feedback and impact data*

9:45–10:00	Break, and separate into small group rooms
10:00–11:00	Panelists experience online operational test environment
11:00–11:45	Review and parsing of Proficiency Level Descriptors (PLDs) • *Training on development of PLDs* • *Independent review of PLDs* • *Independent parsing of PLDs* • *Group review of parsed PLDs*
11:45–12:30	Lunch
12:30–1:15	Discussion of students who are "just barely" characterized by PLDs

1:15—4:30	Review of Ordered Item Book (OIB)
	• *Training on composition of the OIB*
	• *Training on review of the OIB*
	  ○ *What do students need to know and be able to do to respond correctly to each question?*
	  ○ *Why is each item more difficult than the preceding item?*
	• *Instruction in accessing the OIB*
	• *Independent review of OIB*

4:30	Adjourn

Day 2—Tuesday, August 12, 2014, High School Math, End-of-Course	
8:15–8:30	Registration and morning refreshments
8:30–8:45	Review panelist paperwork (reimbursement and demographic information)

8:45–10:00	Training on Bookmark Placement task
	• *Review of Bookmark Placement key concepts*
	  ○ *Proficiency Level Descriptors*
	  ○ *Ordered Item Book*
	• *Training on "Just Barely"*
	• *Training on RP67*
	• *Training on Bookmark Placement judgment task, and procedure for recording bookmarks*

10:00–11:15	Round 1 Bookmark Placement for Proficient, Approaching Proficient, and Highly Proficient • *Review of Bookmark procedures and key concepts* • *Completion of Bookmark Placement Readiness Form* • *Round 1 Bookmark Placement*
11:15–11:30	Panelist Break, and concurrent production of feedback data
11:30–12:30	Round 2 Bookmark Placement for Proficient, Approaching Proficient, and Highly Proficient • *Training on use of panelist agreement feedback data* • *Presentation and discussion of Round 1 panelist agreement feedback data* • *Completion of Bookmark Placement Readiness Form* • *Round 2 Bookmark Placement*
12:30–1:15	Lunch, and Adjourn for table leaders not participating in Moderation
1:15–2:15	Moderation with table leaders
2:15	Adjourn

Agenda

Standard Setting for High School Science Panel

Biology
Earth Science
Chemistry
Physics

DAY 1—Monday, August 11th, 2014, High School Science, End-of-Course	
8:00–8:30	Orientation for table leaders
8:00–8:30	Registration and morning refreshments • *Panelists receive folders, sign security affidavit*
8:30–8:45	Welcome and introductions from Utah State Office of Education (USOE)

8:45–9:45	Large group introductory training
	• *Welcome and introductions*
	• *Purpose of standard-setting workshop*
	• *Description of the SAGE test design*
	• *General overview of standard-setting procedures and key concepts*
	    o *Proficiency Level Descriptors*
	    o *“Just Barely”*
	    o *Ordered Item Book*
	    o *Response probability*
	    o *Bookmark task*
	    o *Panelist feedback and impact data*

9:45–10:00	Break, and separate into small group rooms
10:00–11:00	Panelists experience online operational test environment
11:00–11:45	Review and parsing of Proficiency Level Descriptors (PLDs) • *Training on development of PLDs* • *Independent review of PLDs* • *Independent parsing of PLDs* • *Group review of parsed PLDs*
11:45–12:30	Lunch
12:30–1:15	Discussion of students who are “just barely” characterized by PLDs

1:15–4:30	Review of Ordered Item Book (OIB)
	• *Training on composition of the OIB*
	• *Training on review of the OIB*
	    o *What do students need to know and be able to do to respond correctly to each question?*
	    o *Why is each item more difficult than the preceding item?*
	• *Instruction in accessing the OIB*
	• *Independent review of OIB*

4:30	Adjourn

Day 2—Tuesday, August 12, 2014, High School Science, End of Course	
8:15 – 8:30	Registration and morning refreshments
8:30–8:45	Review panelist paperwork (reimbursement and demographic information)

8:45–10:00	Training on Bookmark Placement task
	• *Review of Bookmark Placement key concepts*
	    o *Proficiency Level Descriptors*
	    o *Ordered Item Book*
	• *Training on "Just Barely"*
	• *Training on RP67*
	• *Training on bookmark Placement judgment task, and procedure for recording bookmarks*

10:00–11:15	Round 1 Bookmark Placement for Proficient, Approaching Proficient, and Highly Proficient • *Review of Bookmark procedures and key concepts* • *Completion of Bookmark Placement Readiness Form* • *Round 1 Bookmark Placement*
11:15–11:30	Panelist Break, and concurrent production of feedback data
11:30–12:30	Round 2 Bookmark Placement for Proficient, Approaching Proficient, and Highly Proficient • *Training on use of panelist agreement feedback data* • *Presentation and discussion of Round 1 panelist agreement feedback data* • *Completion of Bookmark Placement Readiness Form* • *Round 2 Bookmark Placement*
12:30–1:15	Lunch, and Adjourn for table leaders not participating in Moderation
1:15–2:15	Moderation with table leaders
2:15	Adjourn

Agenda

Standard Setting for Math Grades 3–8 Panels

Subpanel A: Grades 3–4 Math
Subpanel B: Grades 5–6 Math
Subpanel C: Grades 7–8 Math

DAY 1—Wednesday, August 13th, 2014, Grades 3–8 Math, SAGE

8:00–8:30 Orientation for table leaders

8:00–8:30 Registration and morning refreshments

- *Panelists receive folders, sign security affidavit*

8:30–8:45 Welcome and introductions from Utah State Office of Education (USOE)

8:45–9:45 Large group introductory training

- *Welcome and introductions*
- *Purpose of standard-setting workshop*
- *Description of the SAGE test design*
- *General overview of standard-setting procedures and key concepts*
    - *Proficiency Level Descriptors*
    - *"Just Barely"*
    - *Ordered Item Book*
    - *Response probability*
    - *Bookmark task*
    - *Panelist feedback and impact data*

9:45–10:00 Break, and separate into small group rooms

10:00–11:00 Panelists experience online operational test environment

11:00–11:45 Review and parsing of Proficiency Level Descriptors (PLDs)

- *Training on development of PLDs*
- *Independent review of PLDs*
- *Independent parsing of PLDs*
- *Group review of parsed PLDs*

11:45–12:30 Lunch

12:30–1:15 Discussion of students who are "just barely" characterized by PLDs

1:15–4:30 Review of Ordered Item Book (OIB)

- *Training on composition of the OIB*
- *Training on review of the OIB*
    - *What do students need to know and be able to do to respond correctly to each question?*
    - *Why is each item more difficult than the preceding item?*
- *Instruction in accessing the OIB*
- *Independent review of OIB*

4:30 Adjourn

Day 2—Thursday, August 14, 2014, Grades 3–8 Math, SAGE	

8:15–8:30 Registration and morning refreshments

8:30–8:45 Review panelist paperwork (reimbursement and demographic information)

8:45–10:00 Training on Bookmark Placement task

- *Review of Bookmark Placement key concepts*
    - *Proficiency Level Descriptors*
    - *Ordered Item Book*
- *Training on "Just Barely"*
- *Training on RP67*
- *Training on bookmark placement judgment task, and procedure for recording bookmarks*

10:00–11:15 Round 1 bookmark placement for Proficient, Approaching Proficient, and Highly Proficient (Anchor Grades: 4, 5, and 8)

- *Review of Bookmark procedures and key concepts*
- *Completion of Bookmark Placement Readiness Form*
- *Round 1 Bookmark Placement*

10:00–11:00 Round 2 bookmark placement for Proficient, Approaching Proficient, and Highly Proficient (Anchor Grades: 4, 5, and 8)

- *Training on use of panelist agreement feedback data*
- *Presentation and discussion of Round 1 panelist agreement feedback data*
- *Completion of Bookmark Placement Readiness Form*

Round 2 bookmark placement

-

11:30–12:30 Lunch

12:30–1:15 Review and parsing of Proficiency Level Descriptors for adjacent grades 3, 6, and 7

- *Independent review of PLDs*
- *Independent parsing of PLDs*
- *Group review of parsed PLDs*

1:15–2:45 Review of Ordered Item Booklet for adjacent grades 3, 6, and 7

2:45–4:30 Review of Ordered Item Book

- *Training on composition of the OIB*
- *Training on review of the OIB*
    - *What do students need to know and be able to do to respond correctly to each question?*
    - *Why is each item more difficult than the preceding item?*
- *Instruction in accessing the OIB*
- *Independent review of OIB*

4:30 Adjourn for panelists not participating in Anchor Grade Moderation

4:30–5:30 Anchor Grade Moderation with all math table leaders

5:30 Adjourn for table leaders

Day 3—Friday, August 14, 2014, Grades 3–8 Math, SAGE	
8:15–8:30	Registration and morning refreshments

8:30–9:30	Round 1 Bookmark Placement for Proficient, Approaching Proficient, and Highly Proficient (Adjacent Grades: 3, 6, and 7)
	• *Training on use of interpolated bookmark page numbers*
	  ○ *Debrief of Moderation session outcomes*
	  ○ *Presentation of interpolated bookmark page numbers*
	  ○ *Discussion of Bookmark Placement task for interpolated page numbers*
	• *Completion of Bookmark Placement Readiness form*
	• *Round 1 Bookmark Placement*

9:30–9:45	Panelist Break
9:45–10:30	Round 2 Bookmark Placement for Proficient, Approaching Proficient, and Highly Proficient (adjacent grades: 3, 6, and 7) • *Presentation and discussion of Round 1 panelist feedback data* • *Completion of Bookmark Placement Readiness Form* • *Round 2 Bookmark Placement*
10:30–11:30	Panelists complete workshop evaluations, and adjourn for panelists not participating in final moderation
11:30–12:15	Lunch
12:15–1:15	Final Moderation with all Math table leaders
1:15	Adjourn for table leaders

Agenda

Standard Setting for Science 4–8 Panels

Science 4–6
Science 7–8

	DAY 1—Wednesday, August 13th, 2014, Grades 4–8 Science, SAGE
8:00–8:30	Orientation for Table Leaders
8:00–8:30	Registration and morning refreshments • *Panelists receive folders, sign security affidavit*
8:30–8:45	Welcome and introductions from Utah State Office of Education (USOE)

8:45–9:45	Large group introductory training
	• *Welcome and introductions*
	• *Purpose of standard-setting workshop*
	• *Description of the SAGE test design*
	• *General overview of standard-setting procedures and key concepts*
	  ○ *Proficiency Level Descriptors*
	  ○ *"Just Barely"*
	  ○ *Ordered Item Book*
	  ○ *Response probability*
	  ○ *Bookmark task*
	  ○ *Panelist feedback and impact data*

9:45–10:00	Break, and separate into small group rooms
10:00–11:00	Panelists experience online operational test environment
11:00–11:45	Review and parsing of Proficiency Level Descriptors (PLDs) • *Training on development of PLDs* • *Independent review of PLDs* • *Independent parsing of PLDs* • *Group review of parsed PLDs*
11:45–12:30	Lunch
12:30–1:15	Discussion of students who are "just barely" characterized by PLDs

1:15–4:30	Review of Ordered Item Book (OIB)
	• *Training on composition of the OIB*
	• *Training on review of the OIB*
	  ○ *What do students need to know and be able to do to respond correctly to each question?*
	  ○ *Why is each item more difficult than the preceding item?*
	• *Instruction in accessing the OIB*
	• *Independent review of OIB*

4:30	Adjourn

Day 2—Thursday, August 14, 2014, Grades 4–8 Science, SAGE	
8:15–8:30	Registration and morning refreshments
8:30–8:45	Review panelist paperwork (reimbursement and demographic information)

8:45–10:00	Training on Bookmark Placement task
	• *Review of Bookmark Placement key concepts*
	  ○ *Proficiency Level Descriptors*
	  ○ *Ordered Item Book*
	• *Training on "Just Barely"*
	• *Training on RP67*
	• *Training on bookmark placement judgment task, and procedure for recording bookmarks*

10:00–11:15	Round 1 bookmark placement for Proficient, Approaching Proficient, and Highly Proficient (Anchor Grades: 4 and 8) • *Review of Bookmark procedures and key concepts* • *Completion of Bookmark Placement Readiness Form* • *Round 1 Bookmark Placement*
11:15–11:30	Panelist Break
11:30–12:30	Round 2 Bookmark placement for Proficient, Approaching Proficient, and Highly Proficient (Anchor Grades: 4 and 8) • *Training on use of panelist agreement feedback data* • *Presentation and discussion of Round 1 panelist agreement feedback data* • *Completion of Bookmark Placement Readiness Form* • *Round 2 Bookmark Placement*
12:30–1:15	Lunch
1:15–2:45	Review and parsing of Proficiency Level Descriptors (PLDs) for adjacent grades 5 and 7 • *Independent review of PLDs* • *Independent parsing of PLDs* • *Group review of parsed PLDs*
2:45–4:30	Review of Ordered Item Booklet for adjacent grades 5 and 7
4:30	Adjourn for panelists not participating in Anchor Grade Moderation
4:30—5:30	Anchor Grade Moderation with all Science table leaders
5:30	Adjourn for table leaders

Day 3—Friday, August 14, 2014, Grades 3–11 ELA, SAGE	
8:15–8:30	Registration and morning refreshments

8:30–9:30	Round 1 Bookmark Placement for Proficient, Approaching Proficient, and Highly Proficient (Adjacent Grades: 5 and 7)
	• *Training on use of interpolated bookmark page numbers*
	  ○ *Debrief of Moderation session outcomes*
	  ○ *Presentation of interpolated bookmark page numbers*
	  ○ *Discussion of Bookmark Placement task for interpolated page numbers*
	• *Completion of Bookmark Placement Readiness Form*
	• *Round 1 Bookmark Placement*

9:30–9:45	Panelist Break
9:45–10:30	Round 2 Bookmark Placement for Proficient, Approaching Proficient, and Highly Proficient (Adjacent Grades: 5 and 7) • *Presentation and discussion of Round 1 panelist feedback data* • *Completion of Bookmark Placement Readiness Form* • *Round 2 Bookmark Placement*
10:30–11:30	Review and parsing of Proficiency Level Descriptors (PLDs) for adjacent grade 6 • *Independent review of PLDs* • *Independent parsing of PLDs* • *Group review of parsed PLDs* Panelists for grades 7 and 8 complete workshop evaluations, and adjourn for panelists not participating in final moderation
11:30–12:15	Lunch
12:15–2:45	Review of Ordered Item Booklet for adjacent grade 6
2:45–3:00	Panelist Break
3:00–3:45	Round 1 Bookmark Placement for Proficient, Approaching Proficient, and Highly Proficient (adjacent grade 6) • *Presentation and discussion of Round 1 panelist feedback data* • *Completion of Bookmark Placement Readiness Form* • *Round 2 Bookmark Placement*
3:45–4:00	Panelist Break
4:00–4:45	Round 2 Bookmark Placement for Proficient, Approaching Proficient, and Highly Proficient (Adjacent Grade 6) • *Presentation and discussion of Round 1 panelist feedback data* • *Completion of Bookmark Placement Readiness Form* • *Round 2 Bookmark Placement*
4:45–5:00	Panelists complete workshop evaluations, and adjourn for panelists not participating in final moderation
5:00–6:00	Final Moderation with all Science table leaders
6:00	Adjourn for table leaders

Illustrative Agenda for Stakeholders Meeting

9:00 AM– 11:00 AM	Stakeholders Meeting—Monday, August 18, 2014
	• *Brief review of standard-setting procedures* • *Review of Proficiency Level Descriptors* • *Review of impact data* • *Presentation of recommended standards and impact* • *Table leader reflection on standard-setting procedures* • *Stakeholders discussion of the recommended standards and impact* • *Stakeholders make recommendations for moderating standards*

APPENDIX E: STANDARD-SETTING PANELISTS

End-of-Course Mathematics Panel

First Name	Last Name	Table	Grades/Subject	Gender	Ethnicity	District Name	Member Type	Teaching Experience
Gail	Albrecht	Table A	Secondary Math I	Female	White	Sevier	Assistant Superintendent	20
Sandra	Coxson	Table A	Secondary Math I	Female	White	Nebo	Teacher	24
Linda	Eyring	Table A	Secondary Math I	Female		Granite School District	Teacher	30
Marty	Larkin	Table A	Secondary Math I	Female	White		University Faculty	41
Craig	Free	Table B	Secondary Math I	Male	White	Davis School District		
Megann	Johns	Table B	Secondary Math I	Female	White	Syracuse Arts Academy	Teacher	3
Ron	Twitchell	Table B	Secondary Math I	Male	White	Frovo City School District	Director of Instructions Administrator	25
Katrina	Holliman	Table B	Secondary Math I	Female	White	Jordan School District	Teacher	12

First Name	Last Name	Table	Grades/Subject	Gender	Ethnicity	District Name	Member Type	Teaching Experience
Eric	Blackham	Table A	Secondary Math II	Male	White	South Sarpete School District	Teacher	10
Jay	Blain	Table A	Secondary Math II	Male	White		Utah Education Association	20
Kenley	Brown	Table A	Secondary Math II	Male	White	Alpine School District	Research and Evaluation	8
Vernon	Kunz	Table A	Secondary Math II	Male	White	Davis School District	Special Education Teacher	27
Carolyn	Bushman	Table B	Secondary Math II	Female	White	Tooele	Teacher	23
Ted	Gilbert	Table B	Secondary Math II	Male	White	Karl G. Maese Preparatory Academy	Teacher	6
Thao	Le	Table B	Secondary Math II	Female	Asian	Ogden	Teacher	4
Dawn	Teuscher	Table B	Secondary Math II	Female	White		University Faculty	10
Don	Busenbark	Table A	Secondary Math III	Male	White	Duchesne County	Teacher	21
Maggie	Cummings	Table A	Secondary Math III	Female	Hispanic		University Faculty	14

First Name	Last Name	Table	Grades/Subject	Gender	Ethnicity	District Name	Member Type	Teaching Experience
Jerry	Frydrych	Table A	Secondary Math III	Male	White	Salt Lake City School District	Math Supervision Administrator	10
Nan	Koebbe	Table A	Secondary Math III	Female	White	Cache County	Teacher	14
Lars	Nordfelt	Table A	Secondary Math III	Male	White	Park City School District	Teacher	18
Steve	Jackson	Table B	Secondary Math III	Male	White	Alpine School District	Math Specialist Administrator	30
Vickie	Lyons	Table B	Secondary Math III	Female	White	Alpine School District	Teacher	21
Amy	Summers	Table B	Secondary Math III	Female	White	Alpine School District	Teacher	10
Janet	Young	Table B	Secondary Math III	Female	White	Wasatch Co. School District	Teacher	16

End-of-Course Science Panel

First Name	Last Name	Table	Grades/Subject	Gender	Ethnicity	District Name	Member Type	Teaching Experience
Bonnie	Bourgeous	Table A	Biology	Female	White	Utah Military Academy	Teacher	24
Brian	Packer	Table A	Biology	Female	Multiple	Davis School District	ESOL/Bilingual Education	12
Bart	Reynolds	Table A	Biology	Male	White		University Faculty	10
Bryan	Bowles	Table B	Biology	Male	White	Davis School District	Superintendent	13
Jason	Carwin	Table B	Biology	Male	White	Jordan School District	Teacher	16
Melinda	Fatani	Table B	Biology	Female	White	Jordan School District	Special Education Teacher	14
Kim	Jensen	Table B	Biology	Female	White	Davis School District	Teacher	12
Evan	Whitaker	Table B	Biology	Male	White	Alpine School District	Teacher	29
Vynessa	Campos	Table C	Biology	Female	White	Jordan School District	Teacher	18
Jerry	Miller	Table C	Biology	Male	White	Granite School District	Teacher	24
Kim	Rose	Table C	Biology	Female	White	Tooele	Teacher	6

First Name	Last Name	Table	Grades/Subject	Gender	Ethnicity	District Name	Member Type	Teaching Experience
Barbara	Warner	Table C	Biology	Female	White	Kane	Teacher	21
Jana	Barrow	Table A	Chemistry	Female	White	Davis School District	Teacher	15
Janette	Duffin	Table A	Chemistry	Female	White	Davis School District	Teacher	23
Julie	Laub	Table A	Chemistry	Female	White	Davis School District	Teacher	3
Robert	Madsen	Table A	Chemistry	Male	White	Uintah School District	Teacher	8
Melissa	Beck	Table B	Chemistry	Female	White	Jordan School District	Teacher	4
Lisa	Mahony	Table B	Chemistry	Female	White	Jordan School District	Teacher	20
Karl	Medinger	Table B	Chemistry	Male	White	Nuames	Teacher	5
Rosie-Marie	Sluga	Table B	Chemistry	Female	African-American	Murray	Substitute Teacher	5
Kristin	Ahmed	Table C	Chemistry	Female	White	Granite School District	Teacher	4
Steve	Revelli	Table C	Chemistry	Male	White	Alpine School District	Teacher	29
Linda	Walter	Table C	Chemistry	Female	White	Nebo	Teacher	29

First Name	Last Name	Table	Grades/Subject	Gender	Ethnicity	District Name	Member Type	Teaching Experience
Matt	Affolter	Table A	Earth Science	Male	White	Granite School District	Teacher	3
Alisha	Anderson	Table A	Earth Science	Female	White	Granite School District	Teacher	1
Bruce	Bohm	Table A	Earth Science	Male	White	Cache County	Teacher	25
Brittany	Bohne	Table A	Earth Science	Female	White	Granite School District	Teacher	2
Jacob	Bishop	Table B	Earth Science	Male	White	Boxer Elder School District	Teacher	13
Adela	Genoves	Table B	Earth Science	Female	Hispanic	Granite School District	Teacher	6
Jill	Howells	Table B	Earth Science	Female	White	Jordan School District	Teacher	13
Al	Ladeau	Table C	Earth Science	Male		Weber	Retired Teacher	19
David	Page	Table C	Earth Science	Male	White	Granite School District	Teacher	4
Brad	Saurer	Table C	Earth Science	Male	White	Granite School District	Teacher	4

First Name	Last Name	Table	Grades/Subject	Gender	Ethnicity	District Name	Member Type	Teaching Experience
Ron	Wolff	Table C	Earth Science	Male	White	Boxer Elder School District	Retired Teacher	9
Dan	Broadbent	Table A	Physics	Male		Alpine School District	Teacher	5
Nedra	Call	Table A	Physics	Female			Curriculum Director Administrator	8
Susan	Callister	Table A	Physics	Female	White	Davis School District	Teacher	11
Jelena	Jensen	Table A	Physics	Female	White	Granite School District	Teacher	22
William	Chandler	Table B	Physics	Male	White	Cache County	Teacher	7
Marc	Mayntz	Table B	Physics	Male	White	Provo City	Teacher	17
Wilson	McConkie	Table B	Physics	Male	White	Davis School District	Teacher	15
Duane	Merrell	Table B	Physics	Male	White		University Faculty	30
Kristin	Swenson	Table B	Physics	Female	White		University Faculty	6

First Name	Last Name	Table	Grades/Subject	Gender	Ethnicity	District Name	Member Type	Teaching Experience
Matthew	Rytting	Table C	Physics	Male	White	Alpine School District	Teacher	2
Nicholas	Smith	Table C	Physics	Male	White	Canyons School District	Teacher	3
LeAnna	Squires	Table C	Physics	Female	White	Canyons School District	Teacher	24

English Language Arts Panel

First Name	Last Name	Subject/Grades	Table	Gender	Ethnicity	District Name	Member Type	Teaching Experience
Cydnee	Carter	ELA 3–5	Table A	Female	White	Davis	ELA Coordinator	6
Mara	Guzman	ELA 3–5	Table A	Female	Hispanic	Salt Lake City	Paraprofessional	15
Cherstine	Willis	ELA 3–5	Table A	Female	White	Alpine	Clinical Faculty Associate	3
Elias	Zani	ELA 3–5	Table A	Male	White	Salt Lake City	Literacy Coach	14
Christine	Fitzgerald	ELA 3–5	Table B	Female	White	Davis	ELA Coordinator	1

First Name	Last Name	Subject/Grades	Table	Gender	Ethnicity	District Name	Member Type	Teaching Experience
Adrienne	Kumik	ELA 3–5	Table B	Female	White	Granite	Literacy Coach	11
Victor	Larsen	ELA 3–5	Table B	Male	Asian	Alpine	Teacher on Special Assignment	8
Sheri	Mattle	ELA 3–5	Table B	Female	White	Jordan	Parent	
Janiel	Gunther	ELA 3–5	Table C	Female	White	Davis	ELA Coordinator	9
Shannon	Rhodes	ELA 3–5	Table C	Female	White	Cache County	Teacher	5
Nadine	Walters	ELA 3–5	Table C	Female	American Indian/Alaska Native	Washington	ELA Coordinator	6
Timothy	Morrism	ELA 6–8	Table	Male	White		University Professor	
Timothy	Morrism	ELA 6–8	Table	Male	White	Salt Lake City		30
Kimberlee	Irvine	ELA 6–8	Table A	Female	White	Weber	Teacher	16
Kevin	Rich	ELA 6–8	Table A	Male	White	Alpine	Teacher	10
Elaine	Tucker	ELA 6–8	Table A	Female	White	Alpine	Teacher	24

First Name	Last Name	Subject/Grades	Table	Gender	Ethnicity	District Name	Member Type	Teaching Experience
Teresa	Vaughn	ELA 6–8	Table A	Female	White	Granite	Special Education Teacher	15
Lorraine	Wallace	ELA 6–8	Table A	Female	White		University Faculty	18
Angela	Hartley	ELA 6–8	Table B	Female	White	Jordan	Teacher	3
Lisa	Johnson	ELA 6–8	Table B	Female	White	Granite	ESOL/Bilingual Education	13
Terrilyn	Lee	ELA 6–8	Table B	Female	White	Salt Lake City	Assessment	21
Justine	Schwarz	ELA 6–8	Table B	Female	White	Uintah	Teacher	26
Bruce	Eschler	ELA 6–8	Table C	Male	White	Murray	Teacher	10
Brian	Ludlow	ELA 6–8	Table C	Male	White		University Faculty	10
Machelle	Maxwell	ELA 6–8	Table C	Female	White	Uintah	Teacher	27
Jamie	Sintay	ELA 6–8	Table C	Female	White	Alpine	Teacher	3
Jason	Carpenter	ELA 9–11	Table A	Male	White	Murray City	Teacher	6

First Name	Last Name	Subject/Grades	Table	Gender	Ethnicity	District Name	Member Type	Teaching Experience
Nancy	Champi	ELA 9–11	Table A	Female	White	Weber	Teacher	8
Melinda	Dummer	ELA 9–11	Table A	Female	White	Jordan	Teacher	14
Bonnie	Garcia	ELA 9–11	Table A	Female	White	Alpine	Instructional Coach	3
Kathrin	Paul	ELA 9–11	Table B	Female	White	Granite	Teacher	5
Melanie	Stokes	ELA 9–11	Table B	Female	White	Davis	Teacher	9
Carrie	Weldon	ELA 9–11	Table B	Female	White	Uintah	Literacy Coach	2
John	Meisner	ELA 9–11	Table C	Male	White	Iron	Professional Development Administrator	7
Patricia	Thorpe	ELA 9–11	Table C	Female	White	Weber	Teacher	21
Precindia	Parks	ELA 9–11	Table B	Female	White	Granite	Teacher	7
Janna	Neville	ELA 9–11	Table C	Female	White	Washington	Secondary ELA Coordinator	6 mos.

Mathematics Panel

First Name	Last Name	Subject/Grades	Table	Gender	Ethnicity	District Name	Member Type	Teaching Experience
Debbie	Campbell	Math 3–4	Table A	Female	White	Cache County	Teacher	23
Carrie	Fox	Math 3–4	Table A	Female	White	Salt Lake City	University Instructor	4
Michelle	Pendergast	Math 3–4	Table A	Female	White	Davis	Teacher	10
Carrie	Ziegler	Math 3–4	Table A	Female	White	Salt Lake City	Mathematics Coach	6
Carrie	Stevenson	Math 3–4	Table B	Female	White	Davis	Curriculum Writer	4
Linda	Hendry	Math 3–4	Table C	Female	White	Salt Lake City	Mathematics Coach	1
Olivia	Jackson	Math 3–4	Table C	Female	White	Davis	Teacher	8
Cynthia	Price	Math 3–4	Table A	Female	White	Davis	Teacher	17
Don	Vincent	Math 3–4	Table A	Male	White	Box Elder	Teacher	8
Brenda	Bennett	Math 3–4	Table B	Female	White	Cache County	Teacher	10

First Name	Last Name	Subject/Grades	Table	Gender	Ethnicity	District Name	Member Type	Teaching Experience
Amy	Kinder	Math 3–4	Table B	Female	White	Salt Lake City	Mathematics Coach	9
Holley	Morrison	Math 3–4	Table B	Female	White	Cache County	Teacher	20
Shannon	Ference	Math 3–4	Table C	Female	White		Student Teacher	7
Stevane	Godina	Math 3–4	Table C	Female	White	Salt Lake City	Mathematics Coach	12
Michael	Jorgensen	Math 3–4	Table C	Male	White	Wasatch	G&T Specialist	6
Tanya	Miner	Math 3–4	Table C	Female	White	Lakeview	Teacher	9
Dori	Feichko	Math 5–6	Table A	Female	White	Carbon	Teacher	9
Brian	Heinsohn	Math 5–6	Table A	Male	White	Cache County	Teacher	5
Rebecca	Jackson	Math 5–6	Table A	Female	White	Davis	Teacher	14
Jeff	Johnson	Math 5–6	Table B	Male	White	Weber	Teacher	17
Karen	Merritt	Math 5–6	Table B	Female	White	Cache County	Teacher	16

First Name	Last Name	Subject/Grades	Table	Gender	Ethnicity	District Name	Member Type	Teaching Experience
Amy	Slavick	Math 5–6	Table B	Female	White	Box Elder	Teacher	13
Kris	Orton	Math 5–6	Table C	Female	White	Davis	Teacher	17
Candy	Peters	Math 5–6	Table C	Female	White	Davis	Teacher	27
Mary Ellen	Summers	Math 5–6	Table C	Female	White	Box Elder	Teacher	29
Rise	Timpke	Math 5–6	Table C	Female	White	Davis	Teacher	17
Marilyn	Blakley	Math 7–8	Table A	Female	White	North Summit	Teacher	17
Megan	Fairbourn	Math 7–8	Table A	Female	White	Davis	Teacher	13
Susan	Gossling	Math 7–8	Table A	Female	White	Weber School District	Teacher	20
Marty	Larkin	Math 7–8	Table A	Female	White		University Faculty	41
Collette	Remy	Math 7–8	Table A	Female		Weber	Teacher	6
Amber	Capell	Math 7–8	Table B	Female	White	Nebo	Teacher	10

First Name	Last Name	Subject/Grades	Table	Gender	Ethnicity	District Name	Member Type	Teaching Experience
Karen	Feld	Math 7–8	Table B	Female	White	Alpine	Teacher	8
Jennifer	Hooper	Math 7–8	Table B	Female	White		Teacher	25
Teena	Ivers	Math 7–8	Table B	Female	White	Cache County	Teacher	20
Tiffany	Thornock	Math 7–8	Table B	Female	White	Weber	Teacher	8
Stacey	Jackson	Math 7–8	Table C	Female	White	Weber	Teacher	13
Dee	Jukes-Cooper	Math 7–8	Table C	Female	White	Cache County	Teacher	12
Janet	Montgomery	Math 7–8	Table C	Female	White	Washington County	Teacher	16
Kate	Nielson	Math 7–8	Table C	Female	White	State Charter School	Teacher	8
Lisa	Prochett	Math 7–8	Table C	Female	White	Davis	Teacher	10

Science Panel

First Name	Last Name	Grades/Subject	Table	Gender	Ethnicity	District Name	Member Type	Teaching Experience
Tara	Best	Science 4–6	Table A	Female	American Indian or Alaska Native	Davis	Teacher	2
Cynthia	Bowser	Science 4–6	Table A	Female	Other	Jordan	Teacher	9
Laura	Montero	Science 4–6	Table A	Female	Other	Ogden City	Teacher	5
Barbara	Lindeman	Science 4–6	Table B	Female	Native Hawaiian or Other Pacific Islander	Alpine	Teacher	10
Ken	O’Brien	Science 4–6	Table B	Male	White	Salt Lake City	District Science Specialist	23
Katie	Rogers	Science 4–6	Table B	Female	White	Alpine	Teacher	11
Mitzi	Schoneman	Science 4–6	Table B	Female	White	Davis	Teacher	7
Paul	Nance	Science 4–6	Table C	Male	White	Jordan	Teacher	26
Debbra	Smith	Science 4–6	Table C	Female	White	Granite	Teacher	9
Carrie	Sorensen	Science 4–6	Table C	Female	White	Murray	Teacher	15

First Name	Last Name	Grades/Subject	Table	Gender	Ethnicity	District Name	Member Type	Teaching Experience
Marilyn	Taft	Science 4–6	Table C	Female	White	Salt Lake City	Teacher	11
Judith	Hess	Science 7–8	Table C	Female	White	Granite	Teacher	28
Stuart	Bailey	Science 7–8	Table A	Male	White	Willard	Teacher	35
Adrian	Bancroft	Science 7–8	Table A	Male	White	Salt Lake City	Data Specialist	9
Kenneth	Bennion	Science 7–8	Table A	Male	White	Davis	Teacher	2
Tim	Best	Science 7–8	Table A	Male	America Indian or Alaskan Native	Davis	Healthy Lifestyles Supervisor	16
Lisa	Covert	Science 7–8	Table B	Female	White	Alpine	Teacher	10
Roger	Donohoe	Science 7–8	Table B	Male	White	Cache County	Teacher	21
Thane	Hutchinson	Science 7–8	Table B	Male	White	Logan City	Teacher	15
Ellen Mae	Johnson	Science 7–8	Table B	Female	White	Granite	Teacher	15
Bridget	Fielding	Science 7–8	Table C	Female	White	Alpine	Teacher	2

First Name	Last Name	Grades/Subject	Table	Gender	Ethnicity	District Name	Member Type	Teaching Experience
Marvin	Lowe	Science 7–8	Table C	Male	White	Logan City	Teacher	26
Lee	Montgomery	Science 7–8	Table C	Male	White	Southern Utah University	Professor	22
Carol	Overson	Science 7–8	Table C	Female	White	Granite	Teacher	28

APPENDIX F: SECURITY PLAN

The security of materials used during the standard-setting workshops is critical. For this reason, AIR's security plan begins during the preparation for the workshops and concludes with the storage of materials following the workshops. The plan is based on strict guidelines that are embedded throughout all activities related to the standard-setting process.

Fundamental to ensuring the security of materials is the training of AIR staff so that all staff members implement the same security procedures. By extension, the training of all participants in the standard-setting workshops on the security protocols was critical to ensuring the security of all sensitive assessment materials. AIR expects to provide training for workshop panelists at the initial large-group training sessions. Additionally, table leaders received specialized training in the monitoring of secure materials during workshop sessions.

Security Procedures

AIR, with support from USOE, implemented numerous security procedures for the standard-setting workshops. USOE approved all the elements of this security plan. Once the elements were approved, AIR implemented all the security activities described in the remainder of this document.

These security procedures are indicated below.

Prior to the workshop:

- It is critical for all AIR staff to be fully versed in the security arrangements, because each AIR staff member is responsible for contributing to the security of the documents. Therefore, all participating AIR staff were trained in the security procedures prior to the workshops.
- The AIR staff attending the meeting monitored everyone who has access to the rooms used for standard setting. Janitorial staff were not be allowed to enter any rooms used for standard setting with secure materials, unless an AIR staff member was present.

- All secure materials were numbered for tracking purposes, with identification numbers assigned to specific panelists. Assigning specific documents to each panelist allowed for the tracking and accounting of all documents at any time during the standard-setting process.
- Prior to the workshops, table leaders received special training in the management of secure materials. In leading panelists through the standard-setting process, table leaders were responsible for ensuring that all materials remain at the table. They were also responsible for the inventory of secure materials at the end of each session.

During the workshop:

- Name badges were provided to indicate clearance levels (i.e., access to rooms). They were made available for standard-setting participants, AIR staff, USOE staff, and any observers approved in advance by USOE. The badges enabled AIR staff to quickly identify anyone not approved for access to a particular room and to direct participants and observers to the appropriate rooms.
- Only AIR staff members were authorized to open and close the rooms used for standard setting each day.
- AIR staff reminded panelists of the security procedures at the start of each day and after any significant break in standard-setting activities.
- Following training on test security, it is critical to document panelists' understanding of an agreement to security procedures. For this reason, all panelists were required to sign an affidavit of nondisclosure prior to engaging in standard-setting activities. The affidavit clearly states that participants will not

  (i) reveal bibliographic information or content of any passages considered for use on the Utah assessments;
  (ii) reveal the content of any Utah assessment items;
  (iii) reveal the content of any secure material or information from the Utah assessments or from the workshop;
  (iv) disclose any individual or group recommended Proficiency standards; and
  (v) disclose any student performance data used in the workshop.

- All materials were maintained in a locked workroom when not in use during the workshops. This room was near the standard-setting workrooms. Maintaining materials in a single location ensured their security and facilitate tracking of all materials.
- All materials were logged out from the workroom at the start of each day and logged back in at the end of each day, as necessary. This room and the tracking of materials were managed by AIR staff. Additionally, only AIR staff was allowed to log materials in and out of the workroom.
- Secure test and non-test materials (e.g., item booklets, item maps, anchor papers, and passages) were used only in the relevant panel conference rooms. When not in use, these materials were returned to the workroom for storage.
- Exits in each panel conference room were minimized as allowable by the fire code. Reducing room accessibility, and thus unauthorized entry, facilitated the monitoring of materials.
- During breaks (e.g., lunch), an AIR staff member was assigned to each panel conference room to ensure the security of the standard-setting materials. No panel conference room was left unattended by AIR staff while secure materials were present.
- Table leaders accounted for panelists' materials at the beginning and end of each session. Table leaders provided a sign-in/sign-out sheet to inventory panelists' materials.
- AIR allowed observers entry to the standard-setting workshops using an USOE-approved list of observers. This list specified clearance levels for each observer for each day.
- AIR staff was assigned to panel conference rooms to carefully monitor exits and ensure the security of materials at all times. This monitoring was heightened during peak transition times (e.g., scheduled breaks, lunch).

Following the workshop:

- All standard-setting materials were stored or destroyed according to USOE direction. Any materials not immediately destroyed following the standard-setting workshops were stored in a secure location at AIR.
- For archival purposes, at least one copy of each set of standard-setting materials was be retained by AIR.

AFFIDAVIT OF NONDISCLOSURE

Standard-Setting Workshop

________________________________ Panel

________________________________ Workshop Dates

I, ____, affirm that during and after the standard-setting workshop I will not

(a) reveal bibliographic information or content of any passages considered for use on the Utah assessments;

(b) reveal the content of any items considered for use on the Utah assessments;

(c) reveal the content of any secure material or information from the Utah assessments or from the workshop;

(d) disclose any individual or group recommended Proficiency standards; and

(e) disclose any student performance data used within the workshop.

_______________ Date

____ Signature

APPENDIX G: WORKSHOP EVALUATION RESULTS

1. END-OF-COURSE MATH & SCIENCE: AUGUST 11–12, 2014

1. At the end of the workshop,

	Strongly Disagree	Disagree	Agree	Strongly Agree	Percentage Agree
I understood the purpose of this standard setting workshop.		1	14	55	99%
The procedures used to recommend performance standards were fair and unbiased.		1	27	42	99%
The training provided me with the information I needed to recommend performance standards.			22	48	100%
Taking the online assessment helped me to better understand what students need to know and be able to do to answer each item.		1	22	46	99%
The Proficiency Level Descriptors provided a clear picture of expectations for student achievement at each level.		8	42	20	89%
I was able to develop an understanding of skills demonstrated by students who are “Just Barely” described by the Proficiency Level Descriptors.		3	38	29	96%
I understood how to review each page in the Ordered Item Book (OIB) to determine what students must know and be able to do to answer each item correctly.			18	52	100%
When determining whether students can respond successfully to an item, I understood that this meant that 2/3rds of a group of students could answer correctly and/or a student could answer correctly 2 out of 3 times.		1	20	49	99%
I understood how to place my bookmarks.			21	49	100%
I found the panelist feedback data and discussion helpful in my decisions about where to place my bookmarks.		1	20	49	99%

	Strongly Disagree	Disagree	Agree	Strongly Agree	Percentage Agree
I found the impact data and discussions helpful in my decisions about where to place my bookmarks.		2	24	42	97%
I felt comfortable expressing my opinions throughout the workshop.			19	51	100%
Everyone was given the opportunity to express his or her opinions throughout the workshop.		1	16	53	99%

2. Please rate the clarity of the following components of the workshop.

	Very Unclear	Somewhat Unclear	Somewhat Clear	Very Clear	Percentage Clear
Instructions provided by the Workshop Leader		1	7	62	99%
Proficiency Level Descriptors (PLDs)		4	24	42	94%
Ordered Item Booklet (OIB)			8	62	100%
Feedback data (panelist agreement data)			14	55	100%
Impact data		1	15	54	99%

3. How important was each of the following factors in your placement of the bookmarks?

	Not Important	Somewhat Important	Very Important	Percentage Important
Proficiency Level Descriptors (PLDs)	2	26	42	97%
Your perception of the difficulty of the items	1	20	48	99%
Your experiences with students	1	14	55	99%

	Not Important	Somewhat Important	Very Important	Percentage Important
Discussions with other panelists	2	11	57	97%
External benchmark data	6	40	23	91%
Feedback data	3	34	32	96%
Impact data	4	32	33	94%

4. How appropriate was the amount of time you were given to complete the following components of the standard setting process?

	Too Little	About Right	Too Much	Percentage Too Little	Percentage About Right	Percentage Too Much
Large group orientation		26	44	0%	37%	63%
Experiencing the online assessment	16	51	3	23%	73%	4%
Review of the Proficiency Level Descriptors	7	56	7	10%	80%	10%
Discussion of skills demonstrated by students who are “just barely” described by the PLDs	9	54	7	13%	77%	10%
Review of the Ordered Item Booklet (OIB)	1	63	6	1%	90%	9%
Placement of your bookmarks in each round		63	7	0%	90%	10%
Round 1 discussion	6	63	1	9%	90%	1%
Round 2 discussion	4	62	3	6%	90%	4%

5. Please read the following statement carefully and indicate your response.

	Strongly Disagree	**Disagree**	**Agree**	**Strongly Agree**	**Percent Agree**
I am confident that students classified as Proficient are proficient in the knowledge and skills described the Utah Core Standards.		1	43	26	99%
I am confident that students classified as Approaching Proficient are fairly classified as approaching proficiency in the knowledge and skills described the Utah Core Standards.		2	40	28	97%
I am confident that students classified as Highly Proficient exceed proficiency in the knowledge and skills described the Utah Core Standards.		3	32	35	96%

2. GRADES 3–11 ELA, GRADES 3–8 MATH, & GRADES 4–6 SCIENCE: AUGUST 13–15, 2014

1. At the end of the workshop,

	Strongly Disagree	Disagree	Agree	Strongly Agree	Percentage Agree
I understood the purpose of this standard setting workshop.			10	90	100%
The procedures used to recommend performance standards were fair and unbiased.		3	29	67	97%
The training provided me with the information I needed to recommend performance standards.			12	88	100%
Taking the online assessment helped me to better understand what students need to know and be able to do to answer each item.	1	3	19	77	96%
The Proficiency Level Descriptors provided a clear picture of expectations for student achievement at each level.		3	45	52	97%
I was able to develop an understanding of skills demonstrated by students who are "Just Barely" described by the Proficiency Level Descriptors.			36	64	100%
I understood how to review each page in the Ordered Item Book (OIB) to determine what students must know and be able to do to answer each item correctly.			13	87	100%
When determining whether students can respond successfully to an item, I understood that this meant that 2/3rds of a group of students could answer correctly and/or a student could answer correctly 2 out of 3 times.			11	89	100%
I understood how to place my bookmarks.			15	85	100%
I found the panelist feedback data and discussion helpful in my decisions about where to place my bookmarks.			12	88	100%

	Strongly Disagree	Disagree	Agree	Strongly Agree	Percentage Agree
I found the impact data and discussions helpful in my decisions about where to place my bookmarks.			19	81	100%
I felt comfortable expressing my opinions throughout the workshop.	1	1	21	77	98%
Everyone was given the opportunity to express his or her opinions throughout the workshop.		3	15	81	97%

2. Please rate the clarity of the following components of the workshop.

	Very Unclear	Somewhat Unclear	Somewhat Clear	Very Clear	Percentage Clear
Instructions provided by the Workshop Leader			7	93	100%
Proficiency Level Descriptors (PLDs)		2	20	78	98%
Ordered Item Booklet (OIB)			5	95	100%
Feedback data (panelist agreement data)			6	94	100%
Impact data			7	93	100%

3. How important was each of the following factors in your placement of the bookmarks?

	Not Important	Somewhat Important	Very Important	Percentage Important
Proficiency Level Descriptors (PLDs)	3	25	70	97%
Your perception of the difficulty of the items		16	82	100%
Your experiences with students		11	88	100%

	Not Important	Somewhat Important	Very Important	Percentage Important
Discussions with other panelists		15	84	100%
External benchmark data	3	47	48	97%
Feedback data		27	72	100%
Impact data		39	60	100%
Interpolated page numbers provided for adjacent grades	6	39	47	93%

4. How appropriate was the amount of time you were given to complete the following components of the standard setting process?

	Too Little	About Right	Too Much	Percentage Too Little	Percentage About Right	Percentage Too Much
Large group orientation		47	53	0%	47%	53%
Experiencing the online assessment	4	92	4	4%	92%	4%
Review of the Proficiency Level Descriptors	4	89	7	4%	89%	7%
Discussion of skills demonstrated by students who are “just barely” described by the PLDs	7	80	13	7%	80%	13%
Review of the Ordered Item Booklet (OIB)	3	94	3	3%	94%	3%
Placement of your bookmarks in each round		94	6	0%	94%	6%
Round 1 discussion	2	96	2	2%	96%	2%
Round 2 discussion	2	96	2	2%	96%	2%

5. Please read the following statement carefully and indicate your response.

	Strongly Disagree	**Disagree**	**Agree**	**Strongly Agree**	**Percentage Agree**
I am confident that students classified as Proficient are proficient in the knowledge and skills described the Utah Core Standards.			37	63	100%
I am confident that students classified as Approaching Proficient are fairly classified as approaching proficiency in the knowledge and skills described the Utah Core Standards.		1	35	64	99%
I am confident that students classified as Highly Proficient exceed proficiency in the knowledge and skills described the Utah Core Standards.			36	64	100%

Appendix 7-B

2018 SAGE Standard Setting Report

UTAH STANDARD SETTING

Utah Student Assessment of Growth and Excellence (SAGE), Science Grades 6–8)

September 11–12, 2018

This technical report was produced on behalf of the Utah State Board of Education.

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1. Executive Summary

1.1. Overview

AIR conducted a standard-setting workshop to recommend proficiency standards for Utah's new Student Assessment of Growth and Excellence (SAGE) science assessments for grades 6–8. The workshop was conducted September 11–12, 2018, at the Hotel RL, 161 West 600 S., Salt Lake City, Utah.

Utah's new SAGE science assessments are designed to measure Utah's Science with Engineering Education (SEEd) Standards for students in grades 6–8, which were adopted by the Utah State Board of Education (USBE) in December 2015. Test items were developed by Utah educators working in conjunction with AIR test development staff. They were developed to ensure that each student is administered a test meeting all elements of Utah's SAGE science test blueprint, which was constructed to align to Utah's SEEd science standards.

Utah educators, serving as standard-setting panelists, followed a standardized and rigorous procedure to recommend proficiency standards demarcating each performance level. To recommend proficiency standards for the new science assessments, panelists participated in the Assertion Mapping Procedure, an adaptation of the Item-Descriptor (ID) Matching procedure (Ferrara and Lewis, 2012). Consistent with ordered-item procedures generally (e.g., Mitzel, Lewis, Patz, and Green, 2001), workshop panelists reviewed and recommended proficiency standards using an ordered set of scoring assertions derived from student interactions within item clusters. Because the new science item clusters represent multiple, interdependent interactions through which students engage in scientific phenomena, scoring assertions cannot be meaningfully evaluated independently of the item cluster from which they are derived. Thus, panelists were presented ordered scoring assertions for each cluster separately, rather than for the test overall. Panelists mapped each scoring assertion to the most appropriate performance level descriptor.

Thirty-three Utah science educators were selected to serve as science standard setting panelists.[1] The panelists represented a group of experienced teachers and curriculum specialists, as well as school administrators and other stakeholders. The composition of the panel ensured that a diverse range of perspectives contributed to the standard-setting process. The panel was also representative in terms of gender, race/ethnicity, and region of the state.

Panelists reviewed Performance Level Descriptors (PLDs) that describe the degree to which students have achieved Utah's SEEd standards. The PLDs were reviewed and revised in a separate workshop conducted by USBE prior to the standard-setting workshop. Working through the ordered assertions for each cluster, panelists mapped each assertion to one of the four performance levels—Below Proficient, Approaching Proficient, Proficient, and Above Proficient—with respect to Utah's SEEd standards. The panelists performed the assertion mapping in two rounds of standard setting during the two-day workshop. Panelists' mapping of the scoring assertions was used to identify the location of the three proficiency standards used to classify student achievement—Approaching Proficient, Proficient, and Above Proficient. Following Round 2, panelists engaged in a moderation session to review and modify

[1] While 33 panelists were recruited, three were unable to complete the workshop, resulting in 30 total panelists.

recommended proficiency standards to facilitate the adoption of an articulated set of proficiency standards across grades and subject areas.

1.2. Standard-Setting Workshops

1.2.1. Overall Structure of the Workshops

The key features of the workshops included the following:

- The standard-setting procedure produced three proficiency standards (Approaching Proficient, Proficient, and Above Proficient) used to classify student science performance on the Utah SAGE assessments.
- Panelists recommended proficiency standards in two rounds.
- Benchmark information, including the approximate location of National Assessment of Educational Progress (NAEP) and SAGE science proficiency standards, was provided to panelists as part of their review of the ordered assertions.
- Impact data (the percentage of students reaching each performance standard) was provided to the panelists during the first round of recommending proficiency standards.
- The standard-setting workshops were conducted online using AIR’s online standard-setting tool. A laptop computer was provided to each panelist at the workshops.
- Following Round 2, panelists engaged in a moderation session to review and modify recommended proficiency standards to achieve an articulated system of standards across grades and subject areas.

1.2.2. Results of the Standard-Setting Workshops

Table 1 shows the proficiency standards recommended by the standard-setting panelists.

Table 1. Recommended Proficiency Standards for Science

Grade	Approaching Proficient	Proficient	Above Proficient
6	841	849	862
7	841	851	861
8	842	851	861

Table 2 shows the percentage of students that we estimate will reach or exceed each of the proficiency standards in 2018. Figure 1 represents those values graphically.

Table 2. Percentage of Students Reaching or Exceeding Each Performance Standard in Science

Grade	Approaching Proficient	Proficient	Above Proficient
6	74	52	23
7	73	50	23
8	72	50	23

Figure 1. Percentage of Students Reaching or Exceeding Each Performance Standard in 2018

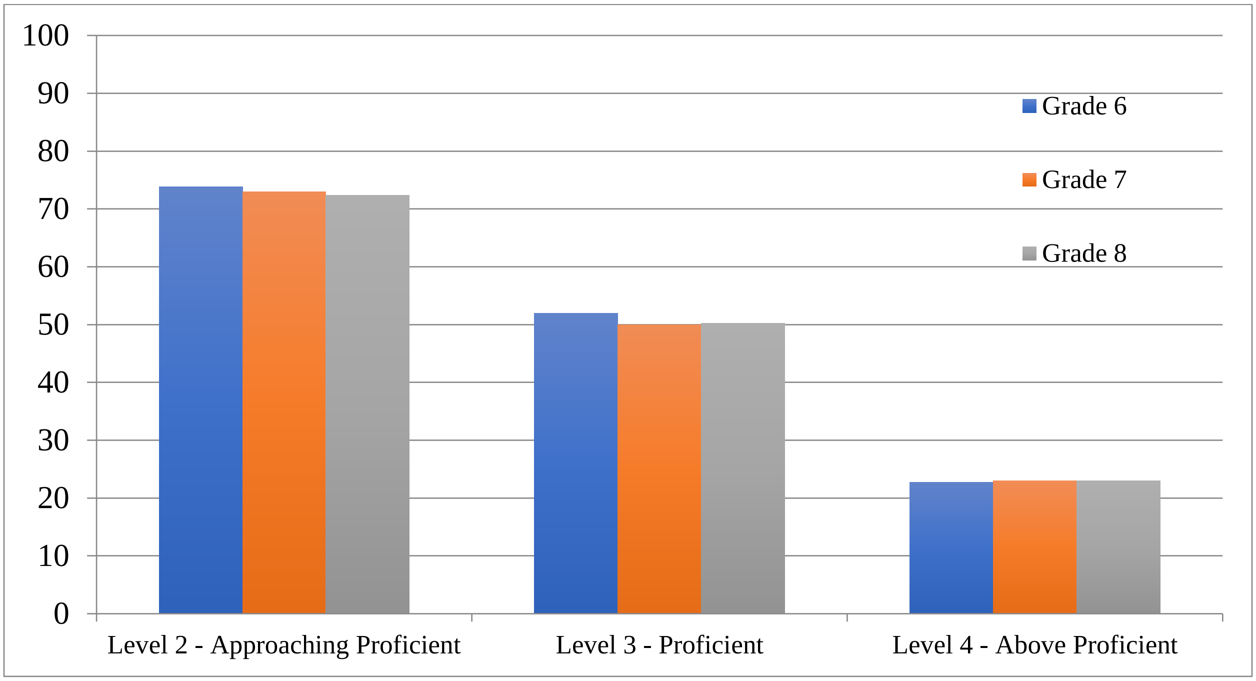
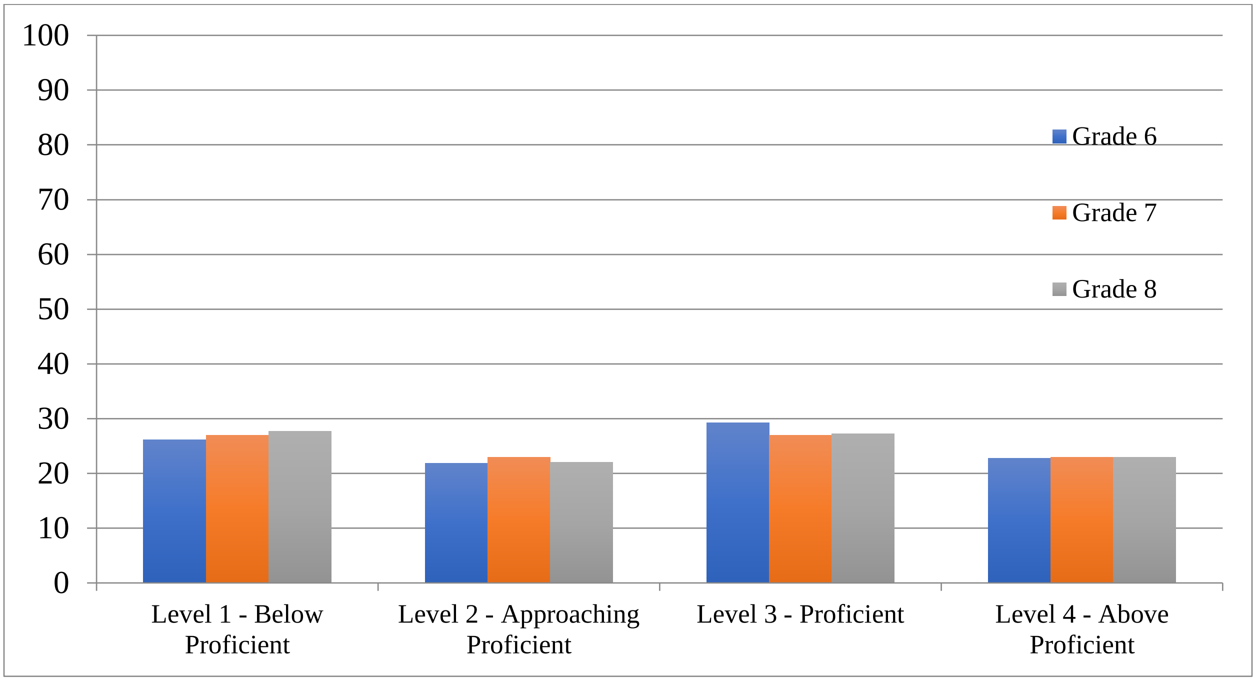


Table 3 shows the percentage of students in each grade classified in each of the recommended performance levels. Figure 2 shows these percentages graphically.

Table 3. Percentage of Students Classified into Each Performance Level

Grade	Below Proficient	Approaching Proficient	Proficient	Above Proficient
6	26	22	29	23
7	27	23	27	23
8	28	22	27	23

Figure 2. Percentage of Students Classified into Each Performance Level



2. Introduction

The SAGE is Utah's computer-adaptive assessment system aligned to the state's new core standards. The SAGE science assessments were designed to measure the Utah State Science with Engineering Education (SEEd) Standards, which were adopted in December 2015. The tests measure academic progress for students in grades 6–8 and were first administered in 2018. Information about the SAGE tests can be found at the following link: https://www.schools.utah.gov/assessment/assessments.

New tests require new proficiency standards to link performance on the test to the content standards. USBE contracted the American Institutes for Research (AIR) to establish cut scores for the grades 6–8 SAGE science assessments. To fulfill this responsibility, AIR implemented a defensible, valid, and technically sound method; provided training on standard setting to all participants; oversaw the process; computed real-time feedback data to inform the process; and produced a technical report documenting the method, approach, process, and outcomes.

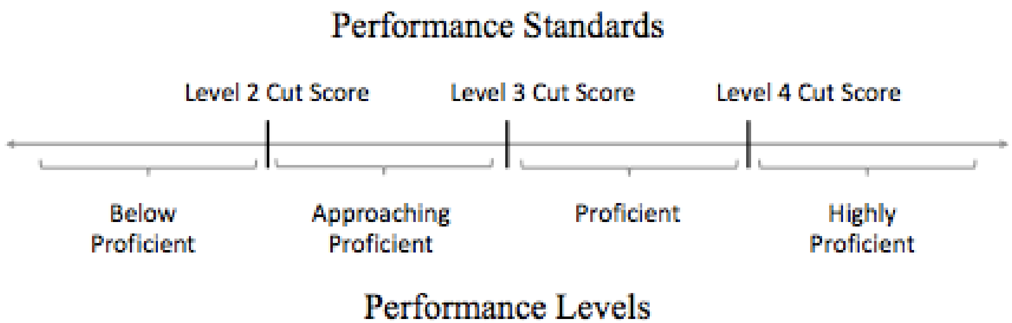
The purpose of this report is to document the standard-setting process and resulting achievement standard recommendations.

3. Standard Setting

Thirty educators from Utah (9–11 educators per grade) convened in Salt Lake City, Utah, on September 11–12, 2018, to complete two rounds of standard setting to recommend three achievement standards for the SAGE science assessments.

Standard setting is the process used to define achievement on the SAGE science assessments. Performance levels are defined by proficiency standards, or cut scores, that specify how much of the content standards students must know and be able to perform to meet each performance level. As shown in Figure 3, three proficiency standards are sufficient to define four performance levels.

Figure 3. Three Proficiency standards Defining Utah's Four Performance Levels



The cut scores are derived from the knowledge and skills measured by the test items that students at each performance level are expected to be able to answer correctly.

3.1. Methods

A new method of standard setting is necessary for tests based on the Next Generation Science Standards (NGSS) due to the structure of the content standards and, subsequently, the structure of test items assessing the standards. Tests based on the NGSS, such as the SAGE science assessments, adopt a three-dimensional conceptualization of science understanding, including science practices, crosscutting concepts, and disciplinary core ideas. Accordingly, the new science assessments are composed mostly of item clusters representing a series of interrelated student interactions directed toward describing, explaining, and predicting scientific phenomena.

Within each item cluster, a series of explicit assertions are made about the knowledge and skills that a student has demonstrated based on specific features of the student's responses across multiple interactions. For example, a student may correctly graph data points, indicating that they can construct a graph showing the relationship between two variables, but may make an incorrect inference about the relationship between the two variables, thereby not supporting the assertion that the student can correctly interpret relationships expressed graphically.

While other assessments, including especially ELA/writing, are composed of items probing a common stimulus, the degree of interdependence among such items is limited, and student performance on such items can be evaluated independently of student performance on other items within the stimulus set. This is not the case with the new science item types, which may, for example, involve multiple steps in which students interact with the products of previous steps. However, unlike with traditional stimulus- or passage-based items, the conditional dependencies among the interactions and resulting assertions of an item cluster are too substantial to ignore because those item interactions and assertions are more intrinsically related to each other. The interdependence of student interactions within items has consequences both for scoring and for recommending proficiency standards.

The effects of item clusters can be accounted for by including additional dimensions in the IRT model to account for cluster-specific variation. These dimensions are considered to be nuisance dimensions unrelated to student ability. Examples of IRT models that follow this approach are the bi-factor model (Gibbons & Hedeker, 1992) and the testlet model (Bradlow, Wainer, & Wang, 1999), which is a special case of the bi-factor model (Rijmen, 2010).

Because the item clusters represent performance tasks, the Body of Work (BoW) method could also be used to recommend proficiency standards. However, the BoW method is manageable only with small numbers of performance tasks and quickly becomes onerous when the number of clusters approaches 10 or more.

To address these challenges, AIR psychometricians designed a new method for setting standards on new tests of the NGSS, including the SAGE science assessments. The test-centered Assertion Mapping Procedure (AMP), is an adaptation of the Item-Descriptor (ID) Matching procedure (Ferrara and Lewis, 2012) that preserves the integrity of the item clusters while also taking advantage of ordered, item-based procedures such as the Bookmark method used for the ELA/writing and mathematics tests.[2]

Consistent with ordered-item procedures (e.g., Mitzel, Lewis, Patz, and Green, 2001), workshop panelists review and recommend proficiency standards using an ordered set of score assertions derived from student interactions within a representative set of item clusters. These scoring assertions are not test items but rather inferences that are (or are not) supported by students' responses in one or more interactions within an item cluster. Because item clusters represent multiple, interdependent interactions through which students engage in scientific phenomena, scoring assertions cannot be meaningfully evaluated independently of the cluster from which they are derived. Thus, panelists review ordered scoring assertions for each cluster separately rather than for the test overall. Panelists then map each scoring assertion to the most appropriate PLD during two rounds of standard setting. Judgments are made independently with the goal of convergence over the two rounds of rating, rather than consensus.[3]

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[2] The AMP takes advantage of the Bookmark method's reliance on judgments made by experts, resulting in panelist and stakeholder confidence in the outcomes. Methods based on expert judgments are frequently used in high-stakes assessments and have been found to be technically sound in litigation (Karantonis & Sireci, 2006; Mitzel, Lewis, Patz, & Green, 2001; Perie, 2005).

[3] AIR has implemented two rounds of standard setting as best practice for more than 15 years. The approach has been approved by state Technical Advisory Committees and federal accountability peer reviewers. Panels typically converge in Round 2 with only modest improvements in Round 3, and the moderation session provides the opportunity for any necessary articulation that has not occurred after Round 2. In addition to lessening panelist burden from repeating a cognitively demanding task for a third time, using two rounds also introduces significant cost efficiency by reducing the number of days needed for standard setting. Panelists completing two rounds report levels of confidence in the outcomes that are similar to the confidence expressed by panelists participating in three rounds. Psychometric evaluation of the reliability and variability in results from two and three rounds is generally consistent. AIR has used two rounds in standard setting in over 12 states and 20 NCLB-approved assessments.

3.2. Workshop Structure

One large meeting room served as an all-participant training room. Three breakout rooms served as workspaces for the grade-level panels. As shown in Figure 4, each room contained three tables. Four panelists were recruited for each table, but not all were able to attend, resulting in two tables of four and one table of three for grade 8, two tables of three and one table of four for grade 7, and three tables of three for grade 6.

Figure 4. Room Structure

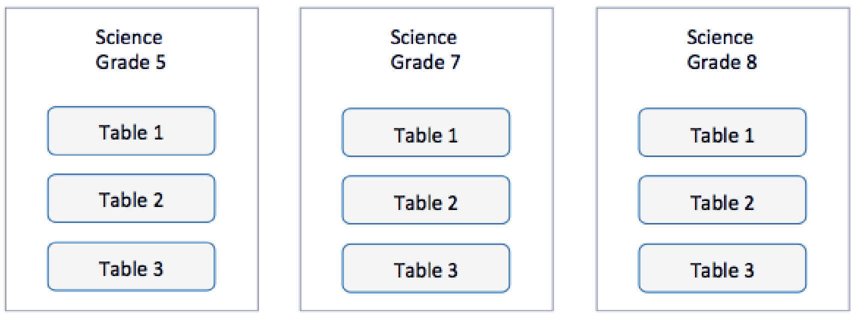

Table 4 summarizes the composition of the tables and the number of facilitators and panelists assigned to each table. The 30 standard-setting panelists included table leaders and panelists who taught in the content area and grade level for which standards were being set.

Table 4. Table Assignments

Room	Grade	Tables	Table Leaders	Panelists	Facilitator	Facilitator Assistant
1	6	3	3	11	Margaret McMahon	Ashley Gillam
2	7	3	3	10	Kevin Chandler	Matt Anderson
3	8	3	3	9	Joshua Smith	Luca Melo

3.3. Participants and Roles

3.3.1. Utah State Board of Education Staff

USBE staff attended the workshop to monitor and observe the process, provide policy context, and answer questions. They included:

- Scott Roskelley, Science Specialist, Assessment
- Megan Lopez, ELA Content Specialist, Assessment
- Lisa McLachlan, Assessment and Reporting Specialist, Assessment
- Tracy Gooley, Special Education Specialist, Assessment
- Cyd Carter, Test Development Coordinator, Assessment
- Jennifer Graviet, State Board of Education, Member

- Jennifer Andrus, Executive Secretary, Assessment
- Alisa Ellis, State Board of Education, Member
- Richard Scott, K–12 Science Curriculum Specialist, Teaching and Learning

3.3.2. AIR Staff

AIR facilitated the workshop and each of the grade-level rooms, provided psychometric and statistical support, and oversaw technical set-up and logistics. AIR team members included:

- Dr. Stephan Ahadi, Managing Director of Psychometrics, facilitated and oversaw the workshop. He provided training to all participants, including the facilitators, the table facilitators, and all the participants; supervised the psychometric analyses conducted during and after the workshop; and presented impact and benchmark data to panelists after each round.
- Dr. Yuan Hong provided psychometric services, and Nicholas Kalich, Alesha Ballman, and Kevin Clayton oversaw analytics technology and supported psychometrics.
- Program Director Robin Seldin and Project Assistant Margaux Nielsen managed process and logistics throughout the meeting.
- Drew Azar set up, tested, and troubleshot technology during the workshop.

3.3.3. Room Facilitators

AIR provided a room facilitator to guide the process in each room, as well as an assistant facilitator for each table. Facilitators were content experts experienced in leading standard-setting processes and could answer any questions about the process, the items, or what the items are intended to measure. They also monitored time and motivated panelists to complete tasks within the scheduled time. They included the following facilitators:

- Meghan McMahon, who served as the grade 6 facilitator, and Ashley Gillam, who served as assistant room facilitator
- Kevin Chandler, who served as the grade 7 facilitator, and Matt Anderson, who served as assistant room facilitator
- Dr. Joshua Smith, who served as the grade 8 room facilitator, and Lucas Melo, who served as assistant room facilitator

Prior to the workshop, it was necessary to ensure that each facilitator was extensively knowledgeable of the constructs, processes, and technologies used in standard setting. Thorough training is essential to standardize the training and procedures across the grade/subject area committees. All facilitators and assistant facilitators participated in a full-day process training and a technology training prior to each workshop.

3.3.4. Table Leaders

USBE pre-selected table leaders from the participant pool for their specialized knowledge or experience with the assessment, items, or standards. Table leaders also served as panelists and set individual cut scores or assigned assertions.

As with room facilitators, it was necessary to ensure that each table leader was knowledgeable of the constructs, processes, and technologies used in standard setting and able to adhere to a standardized process across the grade/subject committees.

Table leaders trained as a group early in the morning of the first day. Training consisted of an overview of their responsibilities and some process guidance.

Table leaders provided the following support throughout the workshop:

- Help panelists see the "big picture"
- Monitor the security of materials
- Monitor panelists' understanding and report issues or misunderstandings to room facilitators
- Maintain a supportive atmosphere of professionalism and respect
- Serve as moderators, if needed, on the last day of the workshop

3.3.5. Educator Participants

To set proficiency standards, USBE recruited a diverse set of participants from across the state. To ensure that a diverse range of perspectives contributed to the standard-setting process and product, panelists included educators, coaches, specialists, and administrators. In recruiting panelists, USBE targeted the recruitment of participants to be representative of the gender and geographic representation of the teacher population found in Utah. Table 5 summarizes the characteristics of the panels.

Table 5. Panelist Characteristics

	Percentage of Panelists		
	Grade 6	**Grade 7**	**Grade 8**
Male	44%	30%	27%
District Size			
Large	33%	30%	18%
Medium	11%	40%	45%
Small	56%	30%	36%
District Urbanicity			
Urban	22%	20%	27%
Suburban	33%	60%	45%
Rural	44%	20%	27%
Stakeholder Group			
Educator	56%	50%	63%
Administrator	11%	10%	0%
Coach	0%	10%	18%
Specialist	33%	30%	18%

For the results of any judgment-based method to be valid, the judgments must be made by individuals who are qualified to make them. Participants in the Utah standard-setting workshop were highly qualified and brought a variety of expertise in instruction, curriculum, assessment, and special student populations. Most had professional experience in addition to teaching, and many had taught for 6 years or more. Table 6 summarizes the qualifications of the panelists.

Table 6. Panelist Qualifications

	Percentage of Panelists		
	Grade 6	**Grade 7**	**Grade 8**
Years of Teaching Experience			
5 Years or Less	22%	20%	18%
6 to 10 Years	33%	40%	36%
11 Years or More	44%	40%	45%
Years of Professional Experience			
5 Years or Less	67%	70%	81%
6 to 10 Years	11%	30%	9%
11 Years or More	22%	0%	9%
Highest Degree Earned			
Bachelor's	56%	30%	45%
Master's	44%	70%	54%
Experience with ELLs	66%	50%	91%
Experience with SWDs	66%	50%	91%
Experience with Low-SES Students	66%	30%	91%

Note: ELLs = English Language Learners, SWDs = Students with Disabilities, SES = Socio-Economic Status.

Appendix A: Standard-Setting Panelists provides the characteristics of individual panelists.

3.4. Materials

3.4.1. Ordered Scoring Assertion Booklets

Like the Bookmark method, the AMP uses booklets of ordered test materials for setting standards. Instead of test items, the AMP uses ordered scoring assertion booklets (OSABs) that contain ordered scoring assertions grouped within item clusters, which are ordered by difficulty.

All grade 6–8 science items are clusters, sets of highly related items associated with a common set of stimuli representing a single natural phenomenon. Clusters are ordered by difficulty within strand (Physical Science, Life Science, and Earth and Space Science) so that panelists saw all clusters for one strand, followed by the next strand. Within a cluster, the assertions are ordered by difficulty. Easier assertions (appearing earlier in the booklets) are those that the most students were able to demonstrate, and difficult assertions (appearing later in the booklets) are those that the fewest students were able to demonstrate.

Not all clusters have assertions that will map to all performance levels. For example, a cluster may have assertions that map to “Below Proficient,” “Approaching Proficient,” and “Proficient,” but not “Above Proficient.” Clusters may have as few as four assertions or as many as 20 assertions. Each assertion is worth one score-point. The OSABs contained between 70–75 assertions. The grade 6 OSAB contained 75 assertions, the grade 7 OSAB contained 71 assertions, and the grade 8 OSAB contained 75 assertions.

3.4.2. Utah's Science Standards

The purpose of the SAGE science assessments is to measure student understanding of the Utah State Science with Engineering Education (SEEd) Standards, adopted in December 2015 for students in grades 6–8. The standards are available at https://www.schools.utah.gov/curr/science.

3.4.3. Performance Level Descriptors

With the adoption of the new standards in science and the development of new statewide assessments to assess achievement of those standards, USBE must adopt a similar system of proficiency standards to determine whether students have met the learning goals defined by the new standards in science.

Determining the nature of the categories in which students are classified is a prerequisite to standard setting. These categories, or performance levels, are associated with PLDs that define the content area knowledge, skills, and processes that students at each performance level can demonstrate.

PLDs link the standards to the achievement standards. There are four types of PLDs:

1. Policy PLDs: Brief descriptions of each performance level that do not vary across grade or content area.
2. Range PLDs: Provided to panelists to review and refine during the workshop, these detailed grade- and content-area-specific descriptions communicate exactly what students performing at each level know and can do.
3. Target PLDs: Typically created during and used for standard setting only, these describe what a student just barely scoring into each performance level knows and can do.
4. Reporting PLDs: Abbreviated PLDs (typically 350 or fewer characters) created following state approval of the proficiency standards and used to describe student performance on score reports.

Utah uses four performance levels to describe student performance: "Below Proficient," "Approaching Proficient," "Proficient," and "Highly Proficient." PLDs were reviewed and revised in a separate workshop conducted prior to the standard-setting workshop. During the workshop, panelists drafted the "Below Proficient" descriptors and refined draft PLDs.

3.5. Workshop Technology

Panelists used AIR's online application for standard setting. Each panelist used an AIR laptop or Chromebook on which they took the test, reviewed the item clusters and ancillary materials, and mapped assertions to performance levels.

Within the application, panelists could review each item cluster and scoring assertion, examine the content alignment of each assertion, assign assertions to performance levels, and review impact and benchmark data. Additionally, they had access to a difficulty visualizer, a graphic representation of the difficulty of each assertion relative to the other assertions in the OSAB.

Panelists also reviewed their own assertion placement, their table's placement, the other tables' placements, and the overall placement across all tables.

All panelists were able to add notes and comments on the items or assertions as they reviewed them and to examine reference and benchmark data on the screen following each round.

One full-time IT specialist from AIR oversaw laptop setup and testing, answered questions, and ensured that technological processes ran smoothly and without interruption throughout the meeting.

3.6. Events

The standard-setting workshop occurred over two days. Table 7 summarizes each day's events, and this section describes each event in greater detail. Appendix B: Workshop Agenda provides the full workshop agenda.

Table 7. Standard-Setting Agenda Summary

Day 1: Tuesday, September 11	▪ Table leader training ▪ Orientation and introductions ▪ Time to take the test ▪ PLD review and Discussion ▪ OSAB and item cluster review
Day 2: Wednesday, September 12	▪ Assertion mapping training ▪ Assertion mapping practice ▪ Readiness evaluation ▪ Round 1 assertion mapping ▪ Round 1 feedback, impact data, and benchmark data review and discussion ▪ Round 2 assertion mapping ▪ Round 2 feedback, impact data, and benchmark data review and discussion ▪ Standard-setting workshop evaluations ▪ Final moderation

3.6.1. Orientation

Scott Roskelley, Science Specialist for the USBE Assessment Division, and Dr. Stephan Ahadi, from AIR, welcomed panelists to the workshop. Dr. Ahadi described the purpose and objectives of the meeting, explained the process to be implemented to meet those objectives, and outlined the events that would happen each day. He outlined the responsibilities of the three groups of people at the workshop (i.e., panelists, AIR staff, and USBE personnel), explained that the panelists were selected because they were experts and described how the process to be implemented over the two days was designed to elicit and apply their expertise to recommend new cut scores. Finally, Dr. Ahadi and Mr. Roskelley described how standard setting works and what would happen once the panelists finalized their recommendations.

3.6.2. Confidentiality and Security

Confidentiality and security were addressed once during orientation and again by the facilitators in each room. Standard setting uses live test items from the operational SAGE tests and requires confidentiality to maintain their security. Participants were NOT allowed to do the following during and after the workshop:

- Discuss the test items outside of the meeting
- Remove any secure materials from the room during breaks or at the end of the day
- Discuss judgments or cut scores (their own or others') with anyone outside of the meeting

- Discuss secure materials with non-participants
- Use cell phones in the meeting rooms
- Take notes on anything other than provided materials
- Bring any other materials to the workshop

Participants could have general conversations about the process and the days' events, but workshop leaders warned them against discussing details, particularly those involving items, cut scores, and any other confidential information.

3.6.3. Take the Test

Following the large-group training, panelists broke out into their assigned rooms where they took a form of the test that students took in 2018 in the subject area and grade for which they would be setting proficiency standards. They took the tests online via the same test delivery engine used to deliver operational tests to students, and the testing environment closely matched that of students when they took the test. While testing, panelists could not discuss the items, hold any conversations, or access their phones.

Taking the same test that students take provides the opportunity to interact with and become familiar with the test items and the look and feel of the student experience while testing.

3.6.4. Review Content Standards and PLDs

After completing the test, panelists completed a thorough review of the standards and PLDs for their grade and subject area. They identified key words describing the skills necessary for performance at each level and discussed the skills and knowledge that differentiated performance in each of the four levels.

Reviewing the content standards ensured that participants understood what students in Utah are expected to know and be able to do, and reviewing the achievement standards ensured that they understood how much knowledge and skill students are expected to demonstrate at each level of achievement.

3.6.5. OSAB Review

After reviewing the PLDs, panelists independently reviewed the item clusters and assertions in the OSAB. They took notes on each assertion to document the interactions required by each and described why an assertion might be more or less difficult than a previous assertion. They also noted how each assertion related to the PLDs.

After reviewing the item interactions and scoring assertions individually, panelists engaged in discussion with table members about the skills required for and the relationships among the reviewed test materials and performance levels. This process ensured that panelists built a solid understanding of how the scoring assertions relate to the item interactions and how the items related to the PLDs, as well as helped to facilitate a common understanding among workshop panelists.

3.6.6. Training

The objective of standard setting is aspirational: to identify what all students *should* know and be able to do, not what a student or group of students actually knows and can do. Facilitators provided the following review process to guide the mapping of assertions to PLDs:

1. How does the student interaction give rise to the assertion? Did they plot, select, or write something?
2. Why is this assertion more difficult to achieve than the previous one?
3. Which PLD most ably describes that assertion?

Panelists were to match each assertion to the proficiency level best supported by the assertion using the PLDs, the difficulty visualizer, their notes from the OSAB review, and their professional judgment.

Panelists could not place assertions in a lower performance level than the previous assertion (called a mapping inversion). After placing an assertion into a performance level, all following assertions must be in the same or a higher performance level. Should inversions occur, panelists reconsidered the mapping to see if they may have prematurely increased a performance level. A seemingly out-of-order assertion that panelists were unable to resolve could be skipped, but this option was to be used as a last resort. While some assertions may seem out of order, assertion order was determined by item difficulty, which is calculated from actual student performance on the items and is not determined by content or cognitive process. The ordering of assertions in the OSAB does not follow the sequence of instruction or the order of item presentation on the test.

To keep panelists focused on the standard setting and not on item critique, panelists could refer item-related questions or comments to workshop facilitators and USBE staff to investigate. Cut scores were not to be placed on any item or assertion that panelists disagreed with or felt might be incorrect or unfair. Finally, panelists were not to set standards for individual students they knew, or for students in their classrooms, but to set proficiency standards for all students across the state.

3.6.7. Readiness Assessment

This quiz assessed panelists' understanding in multiple ways. Panelists must be able to

- answer questions about the assertion mapping process;
- identify the most and least difficult assertions using the difficulty visualizer; and
- indicate on a diagram how proficiency standards differentiate proficiency levels.

Room facilitators review the quizzes and provide additional training for incorrect responses on the quiz. However, all the panelists answered all the items correctly.

3.6.8. Practice Round

Following the readiness assessment, panelists practiced mapping assertions in the OSAB. The purpose of the practice round was to ensure that panelists were comfortable with the technology, item types, and assertions prior to mapping any assertions. Panelists asked questions, and the room facilitators provided clarifications and further instructions until everyone had completed the practice round.

3.6.9. Readiness Assertion

After completing the practice round and prior to mapping assertions, panelists completed a readiness assertion form. On this form, panelists asserted that the training was sufficient for them to understand the following concepts and tasks:

- The knowledge and skills described by the PLDs, and the skills and interactions that differentiate performance levels
- The structure, use, and importance of the OSAB
- The process to map assertions from the OSAB to the PLDs

The readiness form for Round 2 focused on affirming understanding of the impact and benchmark data supplied after Round 1. On this form, all panelists affirmed the following:

- Understanding of the impact, benchmark and feedback data
- Understanding of the Round 2 task
- Readiness to complete the Round 2 task

Room facilitators reviewed the readiness forms and were prepared to provide additional training to panelists not asserting understanding or readiness. However, every panelist affirmed readiness before mapping assertions in both rounds of the workshop.

3.6.10. Round 1

In Round 1, panelists mapped assertions independently. A proprietary algorithm utilized RP50 at grade 6 and 7 and RP67 at grade 8 to minimize misclassifications to calculate cut scores based on the assertion mappings.[4] To generate the cut scores for a panelist, their assertion classifications are ordered by difficulty (across discipline and cluster), and the points on the difficulty scale that demarcate one achievement level from another become the cut scores. Similarly, to identify the cut score for a table or a room, all the assertion classifications are ordered by difficulty, and the points on the difficulty scale that minimize misclassification between adjacent achievement levels become the cut score. This algorithm calculated cut scores by panelist, table, and the room. Applying these cut scores to the 2018 SAGE test data created impact data describing the percentage of students in each performance level.

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[4] Typically, the probability used in standard setting is .67 (RP67, Huynh, 1994). RP67 is the item difficulty point where 67% of the students would earn the score point. The reason to adopt RP50 for the grade 6 and 7 SAGE was that many of the items were more difficult than students' abilities. As such, RP50 better aligned with the PLDs and therefore led to more appropriate achievement cut scores. Using RP50 prevented panelists from setting the first cut score on the lowest difficulty items on the test. This approach has been taken by other high-stakes tests, such as the Smarter Balanced Assessment Consortium's assessment (see Cizek & Koons, 2014).

Table 8 shows the proficiency standards and associated impact and benchmark data for Round 1.

Table 8. Round 1 Results

Table	Cut Score			Impact Data (Percentage At or Above)			Benchmark Data (SAGE Science)		
	AP	P	HP	AP	P	HP	Basic	Proficient	Advanced
G6	**840**	**849**	**865**	**76**	**54**	**17**	71	52	28
1	*842*	*849*	*858*	*70*	*54*	*31*			
2	*840*	*849*	*867*	*76*	*54*	*13*			
3	*840*	*849*	*865*	*76*	*54*	*17*			
G7	**839**	**848**	**857**	**79**	**58**	**34**	71	48	29
1	*836*	*848*	*854*	*85*	*58*	*42*			
2	*839*	*848*	*857*	*79*	*58*	*34*			
3	*837*	*848*	*857*	*82*	*58*	*34*			
G8	**842**	**851**	**859**	**72**	**50**	**28**	72	48	30
1	*842*	*851*	*859*	*72*	*50*	*28*			
2	*836*	*850*	*867*	*86*	*53*	*11*			
3	*836*	*850*	*859*	*86*	*53*	*28*			

Note: The grade-level row summarizes the room data (across all three tables). Impact data applies the recommended cut scores to the 2018 SAGE test data and describes the percentage of students that would fall in each performance level. Benchmark data describes the percentage at or above each performance level using data from the 2015 grade 8 NAEP and 2018 SAGE; grades 6 and 7 are interpolated from the grades 4 and 8 NAEP. Performance level abbreviation key: Approaching Proficient (AP), Proficient (P), Highly Proficient (HP).

Panelists discussed the benchmark data, impact data, and articulation associated with the Round 1 proficiency standards. This information informed placement of the Round 2 cut scores.

3.6.11. Round 2

After completing the Round 1 assertion mapping, workshop facilitators provided panelists with additional instruction for completing Round 2. First, they described the goal of Round 2 as one of convergence, not consensus, on a common achievement standard. A second goal was movement towards articulation across grade levels.

Workshop facilitators also provided panelists with additional information to inform the Round 2 judgments. This information included the judgments made by the other members of their table, the judgment from the other grade-level/subject area tables, and the judgment overall, across all tables. Facilitators identified the Round 1 cut scores that varied the most across panelists and tables, and panelists discussed the rationales for their mappings. Workshop leaders reminded panelists that content is one of multiple considerations in setting proficiency standards—perhaps the most important, but not the only consideration.

Panelists also received impact data showing the percentage of students who, based on the spring 2018 SAGE, would score at or above each performance level given the Round 1 judgments and benchmark data describing student performance on a measure other than the one they were setting proficiency standards on. Impact data is useful in evaluating the reasonableness of the proficiency standards and can be compared to the historical percentages of students scoring into each performance level. Benchmark data included the percentage of students scoring in each performance level on the 2015 NAEP (grades 6 and 7 are interpolated from grades 4 and 8 NAEP).

This information was to inform, but not to determine, their Round 2 decisions. Panelists discussed this information and the impact the Round 1 cut scores may have on Utah students before beginning Round 2.

Table 9 shows the cut scores and associated impact and benchmark data for Round 2.

Table 9. Round 2 Results

Table	Cut Score			Impact Data (Percentage At or Above)			Benchmark Data (SAGE)			Benchmark Data (NAEP)		
	AP	P	HP	AP	P	HP	AP	P	HP	Basic	Proficient	Advanced
G6	**841**	**849**	**862**	**74**	**54**	**23**	71	52	28	82	48	2
1	*842*	*849*	*858*	*70*	*54*	*31*						
2	*840*	*849*	*862*	*76*	*54*	*23*						
3	*841*	*849*	*858*	*74*	*54*	*31*						
G7	**839**	**849**	**857**	**79**	**55**	**34**	71	48	29	82	49	3
1	*839*	*848*	*857*	*79*	*58*	*34*						
2	*839*	*851*	*857*	*79*	*50*	*34*						
3	*839*	*851*	*857*	*79*	*50*	*34*						
G8	**842**	**851**	**865**	**72**	**50**	**15**	72	48	30	82	50	3
1	*842*	*851*	*863*	*72*	*50*	*19*						
2	*842*	*851*	*865*	*72*	*50*	*15*						
3	*842*	*851*	*859*	*72*	*50*	*28*						

Note: The grade-level row summarizes the room data (across all three tables). Impact data applies the recommended cut scores to the 2018 SAGE test data and describes the percentage of students that would fall in each performance level. Benchmark data describes the percentage at or above each performance level using data from the 2015 grade 8 NAEP and 2018 SAGE; grades 6 and 7 are interpolated from the grades 4 and 8 NAEP. Performance level abbreviation key: Approaching Proficient (AP), Proficient (P), Highly Proficient (HP).

3.6.12. Moderation

To be adoptable, achievement standards for a statewide system must be coherent across grades and subjects. There should be no irregular peaks and valleys, and they should be orderly across subjects with no dramatic differences in expectation. The following are characteristics of well-articulated standards:

- The cut scores for each achievement level increase smoothly with each increasing grade.
- The cut scores should result in a reasonable percentage of students at each achievement level; reasonableness can be determined by the percentage of students in the achievement levels on historical tests or contemporaneous tests measuring the same or similar content.
- Barring significant content standard changes (e.g., major changes in rigor), the percentage proficient on new tests should not be radically different from the percentage proficient on historical tests.

Panelists receive the information necessary for articulation prior to Round 2. Often, panelists intuitively create well-articulated sets of achievement standards, but sometimes minor changes to the Round 2 recommendations greatly improve articulation. On the last day of the workshop, table leaders and panelists met to discuss and resolve issues or needs related to cross-grade articulation, resulting in the final recommendations provided in Table 10.

Table 10. Moderated Results

Table	Cut Score			Impact Data (Percentage At or Above)		
	AP	**P**	**HP**	**AP**	**P**	**HP**
G6	841	849	862	74	52	23
G7	841	851	861	73	50	23
G8	842	851	861	72	50	23

Note: Performance level abbreviation key: Approaching Proficient (AP), Proficient (P), Highly Proficient (HP).

Figure 5 shows the percentage of students in each grade that would meet or exceed each of the recommended proficiency standards.

Figure 5. Percentage of Students Reaching or Exceeding Each Performance Standard in 2018

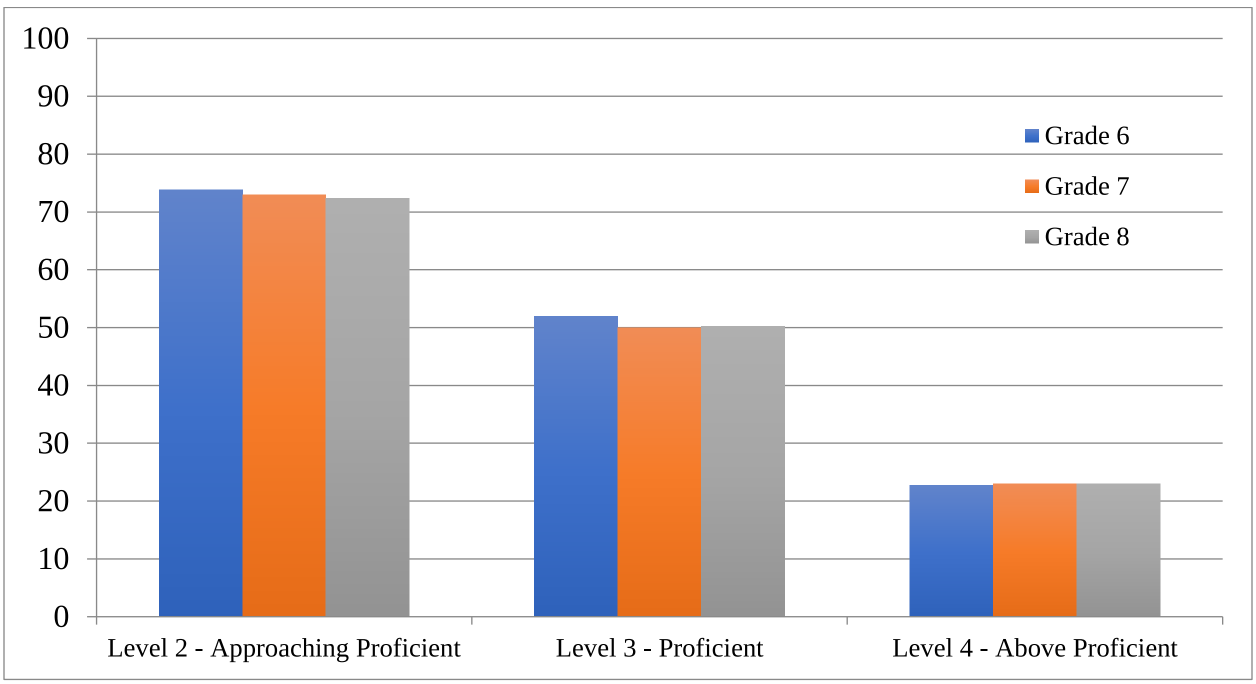
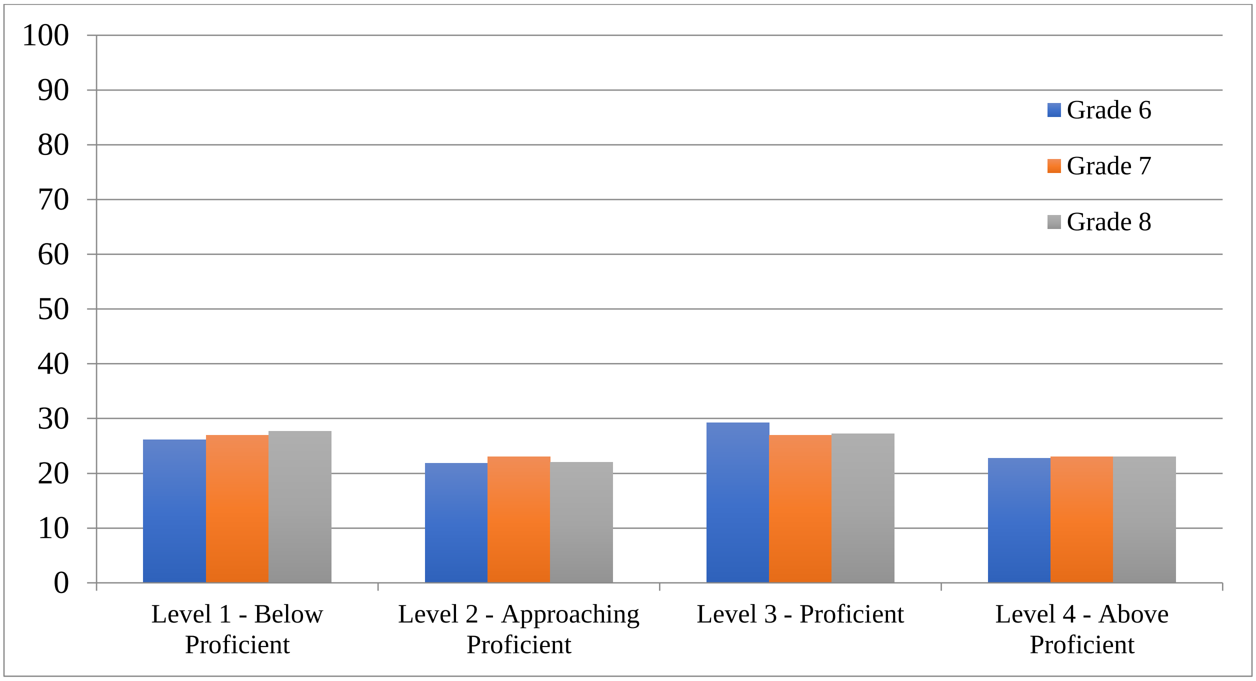


Figure 6 shows the percentage of students in each grade classified into each of the recommended performance levels.

Figure 6. Percentage of Students Classified into Each Performance Level



3.7. Workshop Evaluations

After finishing all activities, panelists independently completed online meeting evaluations in which they described and evaluated their experience taking part in the standard setting. Table 11 through Table 15 summarize the results of the evaluations.

One participant represents approximately 10% (between 9% and 11%, depending on grade) of the total responses, and as such, divergent responses endorsed by more than one panelist (i.e., less than 89%) are discussed in the text.

Panelists reported high levels of understanding of the workshop components, though five panelists indicated that the PLDs were somewhat unclear to them (four from grade 8 and one from grade 7, see Table 11).

Table 11. Evaluation: Clarity of Materials and Processes

Please rate the clarity of the following components of the workshop.	Percentage "Somewhat Clear" or "Very Clear"		
	Grade 6	Grade 7	Grade 8
Instructions provided by the Workshop Leader	100%	100%	100%
Performance Level Descriptors (PLDs)	100%	89%	64%
Ordered Scoring Assertion Booklets (OSABs)	100%	100%	100%
Panelist agreement data	90%	100%	100%
Impact data (percentage of students that would achieve at the level indicated by the OSAB page)	100%	100%	100%

Note: Abbreviation Key: Number of responses: G6 = 10, G7 = 9, G8 = 11. Evaluation options included "Very Clear," "Somewhat Clear," "Somewhat Unclear," and "Very Unclear."

As shown in Table 12, most panelists felt that the time allocated to various workshop tasks was about right, though a few panelists had suggestions regarding time allocation:

- five panelists reported that the large-group orientation was too long;
- six panelists indicated that there had been too much time to take the test (while one indicated not having enough time);
- four panelists reported having too much or not enough time to review PLDs;
- two panelists reported having too much or not enough time to review the OSABs;
- five panelists indicated having too much time to place their scoring assertion mapping decisions, and one panelist indicated not having enough time to do so; and
- five panelists reported having too little time for their Round 1 discussion, and four panelists reported having too much time for the same discussion.

Table 12. Evaluations: Appropriateness of Process

How appropriate was the amount of time you were given to complete the following components of the standard setting process?	**Percentage "About Right"**		
	Grade 6	**Grade 7**	**Grade 8**
Large group orientation	70%	78%	100%
Experiencing the online assessment	80%	89%	64%
Review of the Performance Level Descriptors (PLDs)	70%	78%	73%
Review of the Ordered Scoring Assertion Booklets (OSABs)	80%	100%	81%
Placement of your scoring assertion mapping decisions in each round	70%	89%	81%
Round 1 discussion	60%	78%	73%

Note: Number of responses: G6 = 10, G7 = 9, G8 = 11. Evaluation options included "About Right," "Too Much," and "Too Little."

Panelists appreciated the value of multiple factors used to set proficiency standards (see Table 13). Curiously, three educator panelists indicated that their experience with students was not important in making their scoring assertion mapping decisions.

Table 13. Evaluations: Importance of Materials

How important was each of the following factors in your placement of the scoring assertion mapping decisions?	**Percentage "Somewhat Important" or "Very Important"**		
	Grade 6	**Grade 7**	**Grade 8**
Performance Level Descriptors (PLDs)	100%	100%	100%
Your perception of the difficulty of the items	100%	100%	100%
Your experience with students	100%	100%	72%
Discussions with other panelists	100%	100%	100%
External benchmark data	90%	100%	91%
Room agreement data (room and individual scoring assertion mapping placements)	100%	100%	91%
Impact data (percentage of students that would achieve at the level indicated by the OSAB page)	100%	100%	100%

Note: Number of responses: G6 = 10, G7 = 9, G8 = 11. Evaluation options included "Not Important," "Somewhat Important," and "Very Important."

With one exception, panelists overwhelmingly endorsed the statements relating to the workshop described in Table 14. Seven panelists (four from grade 8, two from grade 6 and one from grade 7) disagreed with the statement that the PLDs provided a clear picture of expectations for student achievement at each level.

Table 14. Evaluations: Understanding Processes and Tasks

At the end of the workshop, please rate your agreement with the following statements.	Percentage "Agree" or "Strongly Agree"		
	Grade 6	Grade 7	Grade 8
I understood the purpose of this standard-setting workshop.	100%	100%	100%
The procedures used to recommend proficiency standards were fair and unbiased.	90%	100%	100%
The training provided me with the information I needed to recommend proficiency standards.	100%	100%	100%
Taking the online assessment helped me to better understand what students need to know and be able to do to answer each question.	100%	100%	100%
The Performance Level Descriptors (description of what students within each performance level are expected to know and be able to do) provided a clear picture of expectations for student achievement at each level.	80%	89%	64%
I understood how to review each assertion in the Ordered Scoring Assertion Booklet (OSAB) to determine what students must know and be able to do to answer each item correctly.	100%	100%	100%
I understood how to place my scoring assertion mapping decisions.	100%	100%	100%
I found the benchmark data and discussions helpful in my decisions about where to place my scoring assertion mapping decisions.	100%	100%	100%
I found the panelist agreement data (room and individual scoring assertions mapping placements) and discussion helpful in my decisions about where to place my scoring assertion mapping decisions.	100%	100%	100%
I found the impact data (percentage of students that would achieve at the level indicated by the OSAB) and discussions helpful in my decisions about where to place my scoring assertion mapping decisions.	100%	100%	100%
I felt comfortable expressing my opinions throughout the workshop.	100%	89%	100%
Everyone was given the opportunity to express his or her opinions throughout the workshop.	100%	100%	100%

Note: Number of responses: G6 = 10, G7 = 9, G8 = 11. Evaluation options included "Strongly Agree," "Agree," "Disagree," and "Strongly Disagree."

Participants affirmed that the performance levels corresponded to the student expectations described by the standards (Table 15). However, two grade 6 panelists disagreed that students classified as Approaching Proficient were fairly classified as approaching proficiency in the knowledge and skills described by the standards.

Table 15. Evaluations: Student Expectations

Please read the following statement carefully and indicate your response.	Percentage "Agree" or "Strongly Agree"		
	Grade 6	Grade 7	Grade 8
I am confident that students classified as Proficient are proficient in the knowledge and skills described the Science with Engineering Education (SEEd) Standards.	90%	100%	91%
I am confident that students classified as Approaching Proficient are fairly classified as approaching proficiency in the knowledge and skills described the Science with Engineering Education (SEEd) Standards.	80%	89%	91%
I am confident that students classified as Highly Proficient exceed proficiency in the knowledge and skills described the Science with Engineering Education (SEEd) Standards.	100%	100%	90%

Note: Number of responses: G6 = 10, G7 = 9, G8 = 11. Evaluation options included "Strongly Agree," "Agree," "Disagree," and "Strongly Disagree."

3.7.1. Workshop Participant Feedback

Finally, panelists responded to two open-ended questions: "What suggestions do you have to improve the training or standard-setting process?" and "Do you have any additional comments? Please be specific."

Seventeen participants responded to the first question and 13 participants responded to the second question.

While most participants indicated that the process was clear and did not identify areas of improvement, some suggested that there be more time for discussion, that rooms be kept quieter during individual work, and that there be less downtime and more breaks. Participants expressed gratitude for being involved in setting proficiency standards and for interacting with so many educators from across the state. They appreciated the organization, well-prepared materials, and technology, and many panelists complimented the professionalism and expertise of the facilitators.

Additional participant comments included:

"Y'all did a great job and showed tremendous commitment to the task!"

"I thought the scaffolded process over the two days was really helpful. Thank you!"

"I enjoyed this process. Thank you! You did a wonderful job at explaining and clarifying information. I felt comfortable expressing my opinions."

4. Validity Evidence

Validity evidence for standard setting is established in multiple ways. First, the standard setting should adhere to the standards established by appropriate professional organizations and be consistent with the recommendations for best practices in the literature and established validity criteria. Second, the process should provide the evidence required of states that is necessary to meet federal peer review requirements. Each of these is described in the following sections.

4.1. Evidence of Adherence to Professional Standards and Best Practices

The SAGE science assessments standard-setting workshop was designed and executed in a manner consistent with established practices and best practice principles (Hambleton & Pitoniak, 2006; Hambleton, Pitoniak, & Copella, 2012; Kane, 2001; Mehrens, 1995). The process also adhered to the following professional standards related to standard setting recommended by the AERA/APA/NCME Standards for Educational and Psychological Testing (2014):

- Standard 5.21: When proposed score interpretations involve one or more cut scores, the rationale and procedures used for establishing cut scores should be documented clearly.
- Standard 5.22: When cut scores defining pass-fail or proficiency levels are based on direct judgments about the adequacy of item or test performances, the judgmental process should be designed so that the participants providing the judgments can bring their knowledge and experience to bear in a reasonable way.
- Standard 5.23: When feasible and appropriate, cut scores defining categories and distinct substantive interpretations should be informed by sound empirical data concerning the relation of test performance to the relevant criteria.

The sections of this report documenting the rationale and procedures used in the standard-setting workshop address Standard 5.21. The AMP standard-setting procedure is appropriate for tests of this type—with interrelated sets of three-dimensional item clusters and scaled using item response theory (IRT). Section 3.1 provides the justification for and the additional benefits of selecting the AMP method to establish the cut scores; Sections 3.6 through 0 document the process followed to implement the method.

The design and implementation of the AMP procedure address Standard 5.22. The method directly leverages the subject-matter expertise of the panelists placing assertions into performance levels and incorporates multiple, iterative rounds of ratings in which panelists modify their judgments based on feedback and discussion. Panelists apply their expertise in multiple ways throughout the process, including

- understanding the test and test items (from an educator and student perspective),
- describing the knowledge and skills measured by the test,
- identifying the skills associated with each test item,
- describing the skills associated with student performance in each performance level,
- identifying which test items students in each performance level should be able to answer correctly, and
- evaluating and applying feedback and reference data to the Round 2 recommendations and considering the impact of the recommended cut scores on students.

Additionally, panelists' readiness evaluations provided evidence of a successful orientation to the process and understanding of the process, and their workshop evaluations provided evidence of confidence in the process and resulting recommendations.

The recruitment process resulted in panels which were representative of important regional and demographic groups and were knowledgeable about the subject area and students' developmental levels. Section 3.3.5 summarizes details about panel demographics and qualifications.

The provision of benchmark and impact data to panelists after Round 1 addresses Standard 5.23. This empirical data provides necessary and additional context describing student performance given the recommended standards.

4.2. Evidence in Terms of Peer Review Critical Elements

The United States Department of Education (USDOE) provides guidance for the peer review of state assessment systems. This guidance is intended to support states in meeting statutory and regulatory requirements under Title I of the Elementary and Secondary Education Act of 1965 (ESEA, USDOE, 2015). The following critical elements are relevant to standard setting; evidence supporting each element immediately follows.

- Critical Element 1.2: Substantive involvement and input of educators and subject-matter experts.

Utah educators played a critical role in establishing performance levels for the SAGE tests. They created the item clusters, reviewed and revised the PLDs, mapped assertions to performance levels to delineate performance at each performance level, considered benchmark data and the impact of their recommendations, and formally recommended achievement standards.

Many subject-matter experts contributed to the development of Utah's proficiency standards. Contributing educators were subject-matter experts in their content area, the content standards and curriculum that they teach, and the developmental and cognitive capabilities of their students. AIR's facilitators were subject-matter experts in the subjects tested and in facilitating effective standard-setting workshops. The psychometricians performing the analyses and calculations throughout the meeting were subject-matter experts in the measurement and statistics principles required for the standard-setting process.

- Critical Element 6.2: Achievement standards setting. The State used a technically sound method and process that involved panelists with appropriate experience and expertise for setting its academic and alternate academic achievement standards to ensure that they are valid and reliable.

Evidence to support this critical element includes the following:

1. The rationale for and technical sufficiency of the AMP method selected to establish proficiency standards (Section 3.1)
2. Documentation that the method used for setting cut scores allowed panelists to apply their knowledge and experience in a reasonable manner and supported the establishment of reasonable and defensible cut scores (Sections 3.6 and 4.1)
3. Panelists self-reported readiness to undertake the task (Section 3.6.7) and confidence in the workshop process and outcomes (Section 0) supporting the validity of the process

4. The standard-setting panels consisting of panelists with appropriate experience and expertise, including content experts with experience teaching the Utah's academic content standards and prioritized standards in the tested grades and subjects, and individuals with experience and expertise teaching special and general education students in Utah (Section 3.3.5)

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Appendix A: Standard-Setting Panelists

Workshop Participants: Grade 6						
Name	**Position**	**Gender**	**Highest Degree**	**Ethnic Category**	**Years Teaching Experience**	**Years Professional Experience**
Vickie Carling	Teacher	Female	Bachelor's degree	White	21+ years	0 years
William Michael Docksey	Teacher	Male	Bachelor's degree	White	6–10 years	0 years
Jill Garner	Teacher	Female	Master's degree	White	21+ years	0 years
Jesse Hennefer	Administrator	Male	Master's degree	White	6–10 years	11–15 years
Hilary Justesen	Teacher	Female	Bachelor's degree	White	1–5 years	0 years
Gina Mason	Specialist	Female	Master's degree	White	21+ years	6–10 years
Paul Nance	Specialist	Male	Master's degree	White	21+ years	16–20 years
Randy T. Williams	Teacher	Male	Bachelor's degree	White	6–10 years	0 years
Allison Woolsey	Teacher; Specialist	Female	Bachelor's degree	White	1–5 years	0 years

Workshop Participants: Grade 7						
Name	**Position**	**Gender**	**Highest Degree**	**Ethnic Category**	**Years Teaching Experience**	**Years Professional Experience**
Kasey Alder	Teacher	Female	Bachelor's degree	White	1–5 years	0 years
Vincent P. Ardizzone	Administrator	Male	Master's degree	White	6–10 years	6–10 years
Rod Buttars	Teacher; Specialist	Male	Master's degree	White	11–15 years	Less than 1 year
Ryan Christiansen	Specialist	Male	Master's degree	White	6–10 years	6–10 years
Misty Haacke	Teacher	Female	Bachelor's degree	White	6–10 years	0 years
Jan Hermansen	Teacher	Female	Bachelor's degree	White	6–10 years	0 years
Jill Parker Howells	Teacher	Female	Master's degree	White	16–20 years	0 years
Maggie Huddleston	Teacher	Female	Master's Degree	White	16–20 years	0 years
Jennifer Mackay	Teacher; Coach	Female	Master's degree	White	11–15 years	Less than 1 year
Ashley Russon	Teacher; Specialist	Female	Master's degree	White	1–5 years	6–10 years

Workshop Participants: Grade 8

Name	Position	Gender	Highest Degree	Ethnic Category	Years Teaching Experience	Years Professional Experience
Jaren Barker	Teacher	Male	Bachelor's degree	White	11–15 years	0 years
Melissa Cartwright	Teacher; Specialist	Female	Bachelor's degree	White	6–10 years	1–5 years
Lisa Covert	Coach	Female	Master's degree	White	11–15 years	1–5 years
Ian Davey	Specialist	Male	Bachelor's degree	White	1–5 years	1–5 years
Tracy Evert	Teacher	Female	Master's degree	White	21+ years	6–10 years
Michelle Giles	Teacher	Female	Bachelor's degree	White	1–5 years	0 years
Realaine Goettsche	Teacher	Female	Master's degree	White	21+ years	0 years
Hulya Kablan	Teacher	Female	Master's degree	White	11–15 years	0 years
Maben Larsen	Teacher	Male	Bachelor's degree	White	6–10 years	0 years
Elizabeth Walsh	Coach	Female	Master's degree	White	6–10 years	11–15 years
Heather Williams	Teacher	Female	Master's degree	White	6–10 years	1–5 years

Appendix B: Workshop Agenda

AIR
AMERICAN INSTITUTES FOR RESEARCH®

Utah State Board of Education

2018 Standard Setting for Utah
Student Assessment of Growth and Excellence

SCIENCE EDUCATOR PANEL AGENDA

September 11 - 12, 2018
Hotel RL

Tuesday, September 11, 2018

8:00 – 8:30 a.m. Orientation for Table Leaders

8:00 – 8:30 a.m. Registration and morning refreshments
- Panelists receive folders, sign security affidavit

8:30 – 8:45 a.m. Welcome and introductions from Utah State Board of Education

8:45 – 9:30 a.m. Large group introductory training
- Welcome and Introductions
- Purpose of standard setting workshop
- Description of the NGSS test design
- General overview of standard setting procedures and key concepts
  - Performance Level Descriptors
  - Item Clusters
    - Item Interactions
    - Scoring Assertions
  - Item Cluster Review
  - Assertion Mapping – 2 Rounds
  - Benchmark Information
  - Panelist feedback and impact data

9:30 – 9:45 a.m. Break, and separate into small group rooms

9:45 – 11:15 a.m. Panelists experience online operational test environment

11:15 – 12:15 p.m. Review Performance Level Descriptors
- Differentiate knowledge and skills between levels
- Create Level 1 PLD

12:15 – 1:00 p.m. Lunch

1:00 – 2:00 p.m. Continue discussion of PLDs

AIR AMERICAN INSTITUTES FOR RESEARCH® — Utah State Board of Education

2:00 – 4:30 p.m. Review of Item Clusters
- Composition of the Item Clusters
- Training on how to review Item Clusters
  - How do the item interactions support the scoring assertion?
  - Why is this assertion more difficult than the previous assertions?
  - How does the scoring assertion relate to the PLDs?
- Instruction in accessing the Item Clusters
- Review of Item Clusters

4:30 p.m. Adjourn

Wednesday, September 12, 2018

8:00 – 10:00 a.m. Continued review of Item Clusters with morning refreshments

10:00 – 10:45 a.m. Training on Assertion Mapping task
- Review of Assertion Mapping key concepts
  - Performance Level Descriptors
  - Ordered Scoring Assertions
  - Benchmark Information
- Training on Assertion Mapping tool

10:45 – 11:00 a.m. Break

11:00 – 12:30 p.m. **Round 1** Assertion Mapping
- Review of Assertion Mapping procedures, key concepts, and impact data
- Completion of Assertion Mapping Readiness Form
- Round 1 Assertion Mapping

12:30 – 1:30 p.m. Lunch

1:30 – 3:30 p.m. **Round 2** Assertion Mapping
- How to use panelist agreement feedback and impact data
- Presentation and discussion of Round 1 panelist agreement feedback and impact data
- Completion of Assertion Mapping Readiness Form
- Round 2 Assertion Mapping

3:30 – 4:00 p.m. Workshop Evaluations

4:00 – 4:30 p.m. Across Grade Moderation with all Science table leaders

4:30 p.m. Adjourn

Appendix 7-C

2021 RISE Standard Setting Report

Readiness Improvement Success Empowerment (RISE) Science Assessment

2020–2021

Grades 4-5
Setting Proficiency Standards

Utah State Board of Education

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1. Executive Summary

In June 2019, the Utah State Board of Education (USBE) adopted the new Science with Engineering Education (SEEd) Standards for students in grades 4–5. The new standards adopt a three-dimensional conceptualization of science understanding, including science and engineering practices, crosscutting concepts, and disciplinary core ideas. With the adoption of the new science standards, and the development of new statewide assessments to measure achievement of those standards, the USBE convened a standard-setting workshop to recommend a system of proficiency standards for determining whether students have met the learning goals defined by the SEEd Standards.

Under contract to USBE, Cambium Assessment, Inc. (CAI) conducted the standard-setting workshop to recommend proficiency standards for the Readiness Improvement Success Empowerment (RISE) Science Assessments in grades 4 and 5. The workshop was conducted remotely on July 21 – July 22, 2021.

Utah's RISE Science Assessments are designed to measure the attainment of the new SEEd Standards adopted by the USBE. The assessments are made up of item clusters, which represent a series of interrelated student interactions directed toward describing, explaining, and predicting scientific phenomena. Test items were developed by CAI, in conjunction with a group of states working to implement three-dimensional science standards. Test items were developed to ensure that each student is administered a test meeting all elements of the RISE Science Assessment blueprints, which were constructed to align with the SEEd Standards.

Utah science educators, serving as standard-setting panelists, followed a rigorous standardized procedure to recommend proficiency standards demarcating each performance level. To recommend proficiency standards for the new science assessments, panelists participated in the Assertion-Mapping Procedure, an adaptation of the Item-Descriptor (ID) Matching procedure (Ferrara & Lewis, 2012). Consistent with ordered-item procedures generally (e.g., Mitzel, Lewis, Patz, & Green, 2001), workshop panelists reviewed and recommended proficiency standards using an ordered set of scoring assertions derived from student interactions within items. Because the new science item clusters represent multiple, interdependent interactions through which students engage in scientific phenomena, scoring assertions cannot be meaningfully evaluated independently of the item interactions from which they are derived. Thus, panelists were presented ordered scoring assertions for each item separately rather than for the test overall. Panelists mapped each scoring assertion to the most apt performance-level descriptor (PLD).

Panelists reviewed PLDs describing the degree to which students have achieved the Utah SEEd Standards. The USBE reviewed and revised Range PLDs before the standard-setting workshop. After reviewing the range PLDs, standard-setting panelists worked to identify the knowledge and skills characteristic of students just qualifying for entry into each performance level.

Working through the ordered scoring assertions for each item, panelists mapped each assertion into one of the four performance levels—Below Proficient, Approaching Proficient, Proficient, and Highly Proficient. The mapping of scoring assertions was based on the consideration of test content. Panelists were provided additional contextual information, including the percentage of students who performed at or above the performance level associated with each assertion (impact data), as well as the projected National Assessment of Educational Progress (NAEP) science and the Utah Student Assessment of Growth and Excellence (SAGE) science performance level corresponding to each assertion. The panelists performed the assertion mapping in two rounds of standard setting. Panelists' mapping of the scoring assertions was used to identify the location of the three proficiency standards used to classify student performance—Approaching Proficient, Proficient, and Highly Proficient. Following Round 1, panelists were provided with feedback about the mappings of their fellow panelists and discussed their mappings as a group. Following Round 2, panelists engaged in a moderation session to review and modify recommended proficiency standards to facilitate the adoption of an articulated set of proficiency standards across grades and assessment systems. No modifications to the proficiency standards were recommended during the moderation session.

Twenty-two Utah science educators were selected to serve as science standard-setting panelists, with 11 participants for the grade 4 panel and 11 participants for the grade 5 panel. The panelists represented a group of experienced teachers and curriculum specialists, as well as district administrators and other stakeholders. The composition of the panel ensured that a diverse range of perspectives and deep experience with the three-dimensional Utah SEEd Standards contributed to the standard-setting process.

1.1 Standard-Setting Workshop

1.1.1 Overall Structure of the Workshop

The key features of the workshops included the following:

- The standard-setting procedure produced three recommended proficiency standards (Approaching Proficient, Proficient, and Highly Proficient) that will be used to classify student performance on the Utah RISE Science Assessments.
- Panelists recommended proficiency standards in two rounds.
- Contextual information, including the percentage of students who performed at or above the performance level associated with each individual assertion (impact data) and the projected NAEP science and the Utah SAGE science performance level corresponding to each assertion (benchmark information), were provided to panelists as part of their review of the ordered assertions.
- The standard-setting workshop was conducted using CAI's online standard-setting tool. Because the workshop was conducted remotely, each panelist accessed the tool using their own computers.
- Following Round 2, panelists engaged in a moderation session for reviewing and modifying recommended proficiency standards to achieve an articulated system of standards across grades and assessment systems. No modifications to the proficiency standards were recommended during the moderation session.

1.1.2 Results of the Standard-Setting Workshop

Table 1 displays the proficiency standards recommended by the standard-setting panelists.[1]

Table 1. Proficiency Standards Recommended for Science

Grade	Level 2 Approaching Proficient	Level 3 Proficient	Level 4 Highly Proficient
4	543	553	562
5	543	552	563

Table 2 indicates the percentage of students that will reach or exceed each proficiency standard in 2021.

Figure 1 represents those values graphically.

Table 2. Percentage of Students Reaching or Exceeding Each Recommended Science Proficiency Standard in 2021

Grade	Level 2 Approaching Proficient	Level 3 Proficient	Level 4 Highly Proficient
4	71	43	20
5	71	45	18

[1] Following the standard-setting workshop, final panelist-recommended proficiency standards were submitted to the USBE. A vertical articulation meeting was conducted based on these standards. Following the vertical articulation, the proficiency standards were approved by the Board. Details of the post-standard-setting workshop activities are included in Section **Error! Reference source not found.**, **Error! Reference source not found.**.

Figure 1. Percentage of Students Reaching or Exceeding Each Recommended Science Proficiency Standard in 2021

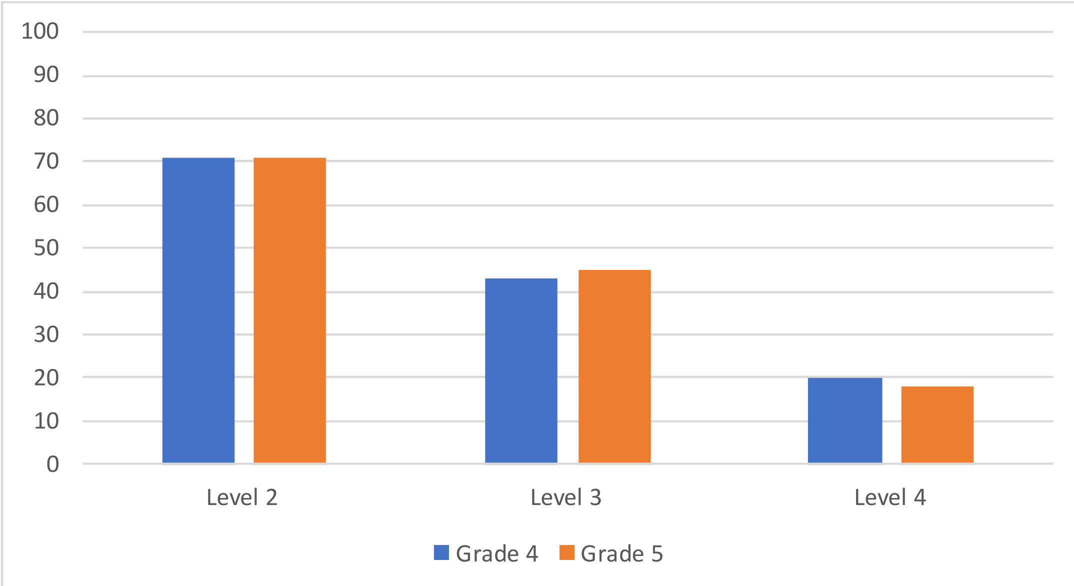
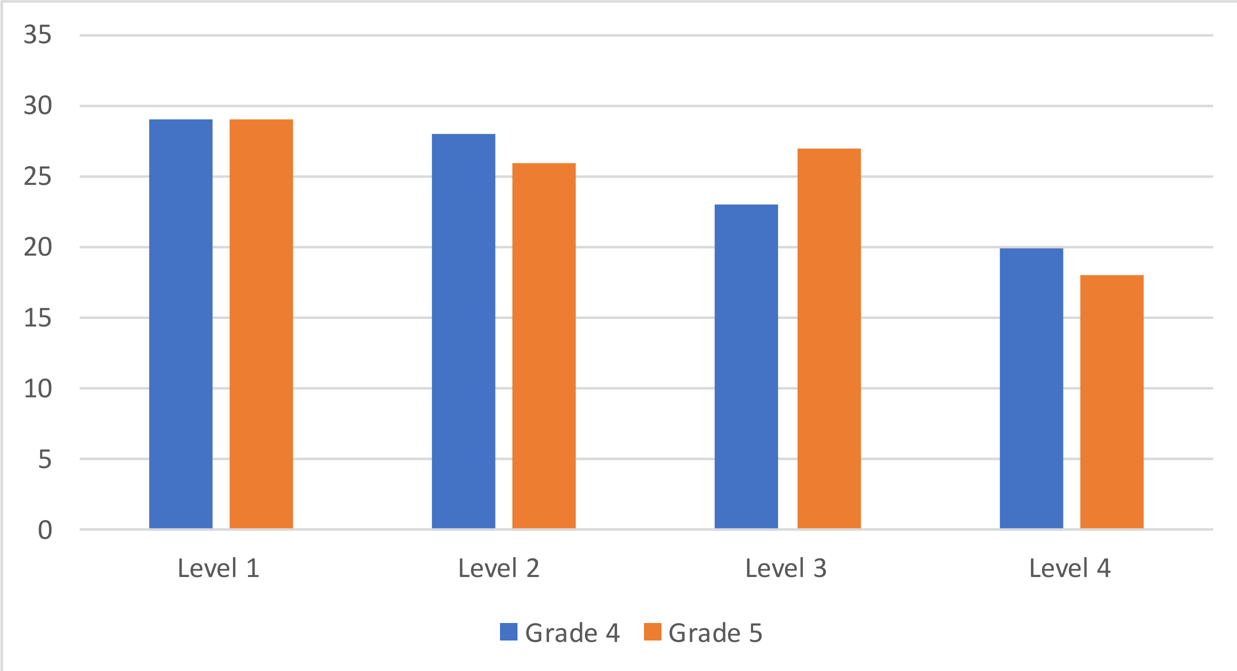


Table 3 indicates the percentage of students classified within each of the performance levels in 2021. The values are displayed graphically in Figure 2.

Table 3. Percentage of Students Classified Within Each Science Performance Level in 2021

Grade	Level 1 Below Proficient	Level 2 Approaching Proficient	Level 3 Proficient	Level 4 Highly Proficient
4	29	28	23	20
5	29	26	27	18

Figure 2. Percentage of Students Classified Within Each Science Performance Level in 2021



2. Introduction

The Utah State Board of Education (USBE) adopted three-dimensional science standards as the new Science with Engineering Education (SEEd) Standards for students in grades 4 and 5 in June of 2019. The USBE and its assessment vendor, Cambium Assessment, Inc. (CAI), developed and administered a new assessment to measure the new standards. In school year 2020–2021, they administered new assessments aligned to the three-dimensional science standards to all grade 4 and 5 students in Utah.

Utah provides information about the RISE Science Assessments at: https://www.schools.utah.gov/assessment/assessments.

New tests require new proficiency standards to link achievement on the test to the content standards. USBE contracted with CAI to establish cut scores for the new tests. To fulfill this responsibility, CAI implemented an innovative, defensible, valid, and technically sound method; provided training on standard setting to all participants; oversaw the process; computed real-time feedback data to inform the process; and produced a technical report documenting the method, approach, process, and outcomes. Proficiency standards were recommended for grades 4 and 5 in July 2021.

The purpose of this report is to document the standard-setting process for the RISE Science Assessment and resulting proficiency standard recommendations.

3. The Science with Engineering education Standards

The Readiness Improvement Success Empowerment (RISE) Science Assessment assesses the learning objectives described by the Utah Science with Engineering Education (SEEd) Standards, adopted by the USBE for students in grades 4 and 5 in June 2019.

Information about the Utah SEEd Standards is available at: https://www.schools.utah.gov/curr/science.

The three-dimensional science standards, based on *A Framework for K–12 Science Education* (National Research Council, 2012), reflect the latest research and advances in modern science education and differ from previous science standards in multiple ways. First, rather than describe general knowledge and skills that students should know and be able to do, they describe specific performances that demonstrate what students know and can do. The SEEd Standards refer to these performed knowledge and skills as *standards*. Second, while unidimensionality is a typical goal of standards (and the items that measure them), the SEEd Standards are intentionally multi-dimensional. Each standard incorporates all three dimensions from *A Framework for K–12 Science Education* (National Research Council, 2012)—a science or engineering practice, a disciplinary core idea, and a crosscutting concept. Third, while traditional standards do not consider other subject areas, the SEEd Standards connects to other subjects like the Common Core mathematics and English language arts (ELA) standards.

Figure 3 shows the structure of the SEEd Standards for a single grade 4 standard, 4.2.4.

Figure 3. Structure of the Utah SEEd Standards

■ **Standard 4.2.4** **Design** a device that converts energy from one form to another. *Define the problem, identify criteria and constraints, develop possible solutions using models, analyze data from testing solutions, and propose modifications for optimizing a solution*. Emphasize identifying the initial and final forms of energy. Examples could include solar ovens that convert light energy to heat energy or a simple alarm system that converts motion energy into sound energy. (PS3.B, PS3.D, ETS1.A, ETS1.B, ETS1.C)

Source. https://www.schools.utah.gov/file/e5d886e2-19c3-45a5-8364-5bcb48a63097

4. The Utah RISE Science Assessment

Due to the unique features of the three-dimensional Utah Science with Engineering Education (SEEd) Standards, items and tests based on three-dimensional standards, such as the RISE Science Assessments, must also incorporate similarly unique features. The most impactful of these changes is that new science tests are multi-dimensional and are thus made up of *item clusters* representing a series of interrelated student interactions directed toward describing, explaining, and predicting scientific phenomena.

4.1 Item Clusters

Item clusters include a stimulus and a series of questions that generally take students approximately 6–12 minutes to complete. They consist of a phenomenon—an observable fact or design problem—that an engaged student explains, models, investigates, or designs using the knowledge and skill described by the standard to complete a series of activities (made up of multiple interactions). For example, in Figure 3, proficiency in this single standard requires activities that demonstrate the ability to make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. The stimulus in an item cluster explicitly states a task or goal (for example, "In the questions that follow, you will design a device to optimize the power output of the windmill") and subsequent interactions build on or relate to the task or response to previous questions. The interactions within an item cluster all address the same phenomenon.

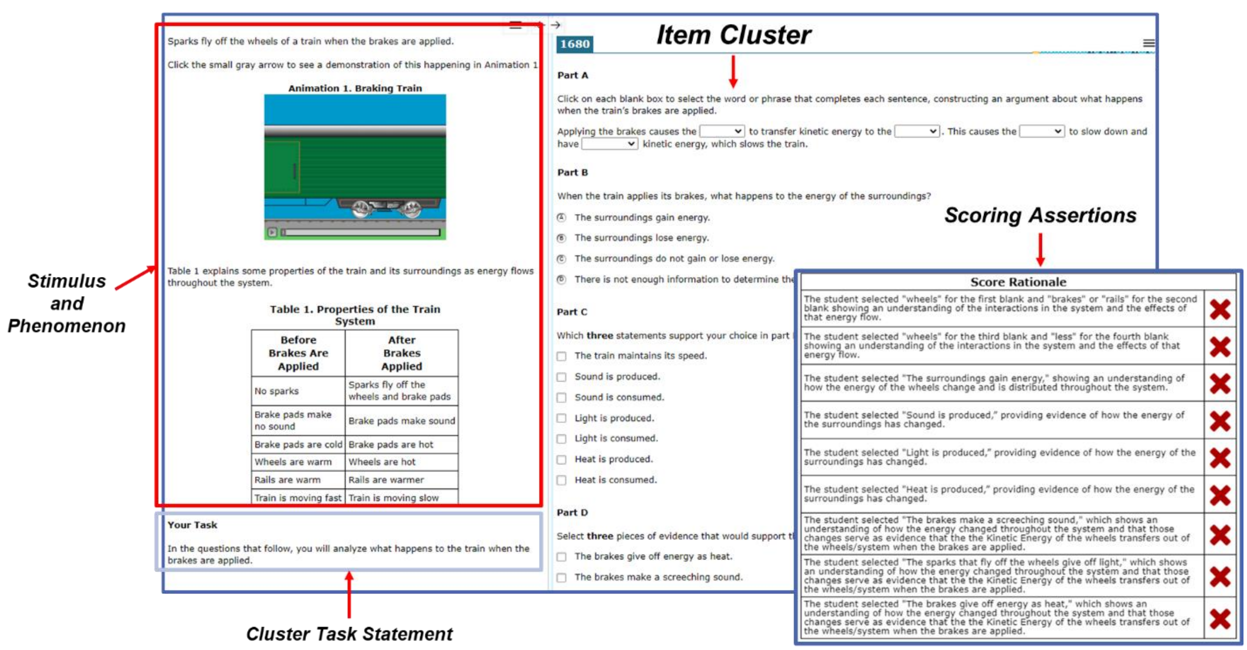
Within each item cluster, there are a variety of interaction types, including selected response, multi-select, table match, edit in-line choice, and simulations of science investigations.

4.2 Scoring Assertions

Each item cluster assumes a series of explicit assertions about the knowledge and skills that a student demonstrates based on specific features of the student's responses across multiple interactions. *Scoring assertions* capture each measurable action and articulate what evidence the student has provided as a means to infer a specific skill or concept. All item clusters have multiple scoring assertions.

Figure 4 illustrates an item cluster and associated scoring assertions.

Figure 4. Example of the Three-Dimensional Science Item Cluster and Scoring Assertions

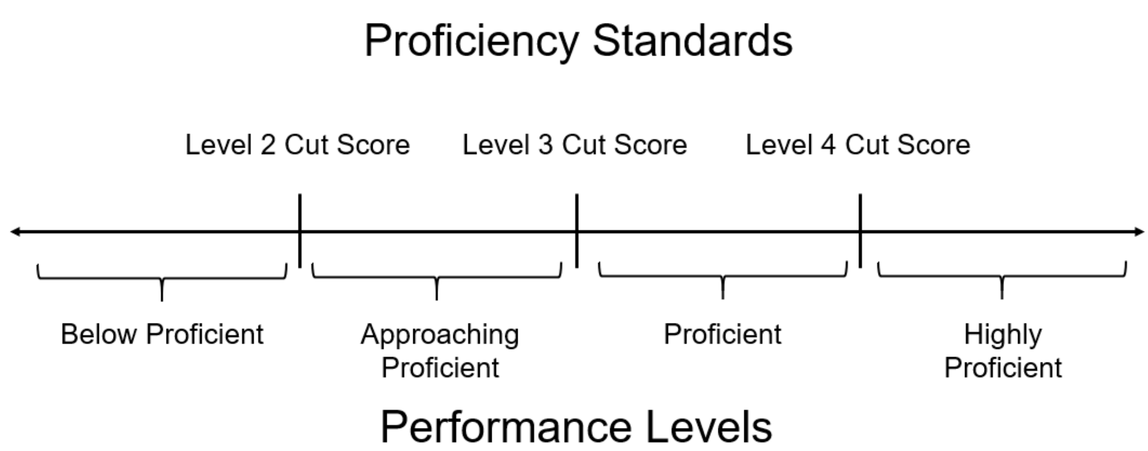


5. STANDARD SETTING

Twenty-two educators from Utah convened remotely July 21–22, 2021, to complete two rounds of standard setting to recommend three proficiency standards for the RISE Science Assessment.

Standard setting is the process used to define achievement on the test. Performance levels are defined by proficiency standards, or *cut scores*, that specify how much of the content standards students must know and be able to do in order to meet the minimum for each performance level. As shown in Figure 5, three proficiency standards are sufficient to define Utah's four performance levels.

Figure 5. Three Proficiency Standards Defining Utah's Four Performance Levels



The cut scores are derived from the knowledge and skills measured by the test items that students at each performance level are expected to be able to receive credit.

5.1 THE ASSERTION-MAPPING PROCEDURE

A new approach to standard setting is necessary for the Utah RISE Science Assessments due to the structure of the content standards and, subsequently, the structure of the test items assessing the standards. The Utah SEEd Standards adopt a three-dimensional conceptualization of science understanding, including science practices, crosscutting concepts, and disciplinary core ideas. Accordingly, the new RISE Science Assessments are comprised of item clusters representing a series of interrelated student interactions directed toward describing, explaining, and predicting scientific phenomena.

Within each item cluster, a series of explicit assertions are made regarding the knowledge and skills that a student has demonstrated based on specific features of the student's responses across multiple interactions. For example, students may correctly graph data points indicating that they can construct a graph showing the relationship between two variables but may make an incorrect inference regarding the relationship between the two variables, thereby not supporting the assertion that they can interpret relationships expressed graphically.

While some other assessments, especially ELA, comprise items probing a common stimulus, the degree of interdependence among such items is limited and student performance on such items can be evaluated independently of student achievement on other items within the stimulus set. This is not the case with the new science items, which may, for example, involve multiple steps in which students interact with products of previous steps. However, unlike traditional stimulus- or passage-based items, the conditional dependencies between the interactions and resulting assertions of an item cluster are too substantial to ignore because those item interactions and assertions are more intrinsically related to each other. The interdependence of student interactions within items has consequences both for scoring and recommending proficiency standards.

To account for the cluster-specific variation of related item clusters, additional dimensions can be added to the Item Response Theory (IRT) model. Typically, these are nuisance dimensions unrelated to student ability. Examples of IRT models that follow this approach are the bi-factor model (Gibbons & Hedeker, 1992) and the testlet model (Bradlow, Wainer, & Wang, 1999). The testlet model is a special case of the bi-factor model (Rijmen, 2010).

Because the item clusters represent performance tasks, the Body of Work (BoW) method (Kingston, Kahl, Sweeny, & Bay, 2001) could also be appropriate for recommending proficiency standards. However, the BoW method is manageable only with small numbers of performance tasks and quickly becomes onerous when the number of item clusters approaches 10 or more.

To address these challenges, Cambium Assessment, Inc. (CAI) psychometricians designed a new method for setting proficiency standards on cluster-based assessments. CAI implemented this method for the New Hampshire, Utah, and West Virginia statewide assessments in 2018, and for the Connecticut, Oregon, and the joint Multi-State Science Assessment (MSSA) for Rhode Island and Vermont in 2019. The method was also implemented for the North Dakota, South Dakota and Hawaii statewide assessments in 2021.

The test-centered Assertion-Mapping Procedure (AMP) is an adaptation of the Item-Descriptor (ID) Matching procedure (Ferrara & Lewis, 2012) that preserves the integrity of the item clusters while also taking advantage of ordered-item procedures such as the Bookmarking procedure used frequently for other accountability tests (Rijmen, Cohen, Butcher, & Farley, 2018).

The main distinction between AMP and existing ordered-item procedures (e.g., Mitzel, Lewis, Patz, & Green, 2001) is that the panelists evaluate scoring assertions rather than individual items. Scoring assertions are not test items, but inferences that are supported (or not supported) by students’ responses in one or more interactions within an item cluster. Because item clusters represent multiple, interdependent interactions through which students engage in scientific phenomena, scoring assertions cannot be meaningfully evaluated independently of the item from which they are derived. Therefore, the scoring assertions from the same item cluster are always presented together. Within each item cluster, scoring assertions are ordered by difficulty (i.e., the IRT difficulty parameter) consistent with ordered-item procedures. One can think of the resulting booklet as consisting of different chapters, where each chapter represents an item cluster. Within each chapter, the (ordered) pages represent scoring assertions. As in ID matching, panelists are asked to map each scoring assertion to the most apt performance-level descriptor during two rounds of standard setting. As with the Bookmark method, assertion mappings are made independently with the goal of convergence over two rounds of rating, rather than consensus.[2]

5.2 Workshop Structure

One large virtual meeting room served as an all-participant training room. This room broke into two separate virtual working rooms, one for each set of grade-level panels, after the all-group orientation. As shown in Figure 6, two separate panels set proficiency standards for each grade.

Figure 6. Workshop Panels, per Room

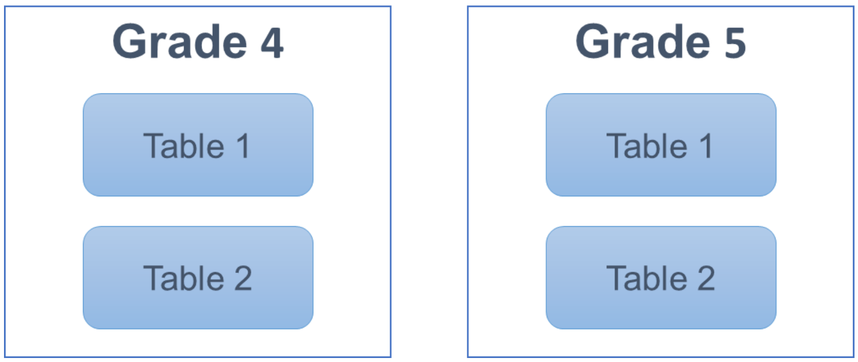


Table 4. Table summarizes the composition of the tables and the number of facilitators and panelists assigned to each. The 22 standard-setting participants included table leaders and panelists from Utah who taught in the content area and grade for which standards were being set.

Table 4. Table Assignments

Room	Grade	Tables and Table Leaders (One per Table)	Panelists (per Table)	Facilitator	Facilitator Assistant
1	4	2	5 / 6	Jim McCann Anneka Wiersma	Nicole Russell Jen Chou Azza Hussein Sydney Brabble
2	5	2	5 / 6	Kevin Dwyer Vanessa Johnson	Erik Embrey Marie Musumeci Ethan Yosebashvili

[2] CAI historically implements two rounds of standard setting as best practice in the Bookmark method and extends this practice to the AMP method. In addition to lessening the panelists' burden of needing to repeat a cognitively demanding task for a third time, using two rounds introduces significant cost efficiency by reducing the number of days needed for standard setting. Panels typically converge in Round 2, and panelists completing two rounds report levels of confidence in the outcomes that are similar to the confidence expressed by panelists participating in three rounds. Psychometric evaluation of the reliability and variability in results from two and three rounds are generally consistent. CAI has used two rounds in standard setting in more than 17 states and 38 assessments, beginning in 2001 with the enactment of the No Child Left Behind (NCLB) Act.

5.3 Participants and Roles

5.3.1 Utah State Board of Education Staff

Staff from the Utah State Board of Education (USBE) were present throughout the process and provided overall policy context and answered any policy questions that arose.

From USBE, attendees included:

- Darin Nielsen, Assistant Superintendent, Student Learning
- Kim Rathke, Test Administration and Data Coordinator
- Cydnee Carter, Assessment Development Coordinator
- Scott Roskelley, Educational Specialist – Secondary Science
- Jared Wright, Educational Specialist - Elementary Mathematics and Science
- Tracy Gooley, Special Education Specialist

5.3.2 Cambium Assessment, Inc. Staff

CAI facilitated the workshop and each of the content-area rooms, provided psychometric and statistical support, and oversaw technical set-up and logistics. CAI team members were highly qualified to lead the workshop and conduct analyses, and included the following:

- Dr. Stephan Ahadi, Managing Director of Psychometrics facilitated and oversaw all AMP processes and tasks and provided training to participants.
- Dr. Frank Rijmen, Senior Director of Psychometrics, supervised all psychometric analyses conducted during and after the workshop.
- Dr. Dandan Liao, Senior Psychometrician, provided psychometric analyses.
- Alesha Ballman, Psychometric Project Coordinator, oversaw analytics technology and psychometrics.
- Azza Hussein, Sydney Brabble, and Ethan Yosebashvili, Psychometric Support Assistants, provided support as needed.
- Nichole Russell, Erik Embrey, Jennifer Chou, Caroline Lempres, Marie Musumeci, and Brody Harkless, Program Management Team, managed process and logistics throughout the meeting.
- Andy Ortiz, Nicholas Brennan, Jesse Justiniano, Luis Jorge, and Mark Palomo, System Support Agents, troubleshot technology during the workshop.

5.3.3 Room Facilitators

A CAI room facilitator and assistant facilitator guided the process in each room. Facilitators were content experts experienced in leading standard-setting processes, had led standard-setting processes before, and could answer any questions about the workshop or about the items or what the items were intended to measure. They also monitored time and motivated panelists to complete tasks within the scheduled time. Facilitators were:

- Jim McCann and Anneka Wiersma facilitated the grade 4 panel
- Kevin Dwyer and Vanessa Johnson facilitated the grade 5 panel

Each facilitator was trained to be extensively knowledgeable of the constructs, processes, and technologies used in standard setting.

5.3.4 Educator Participants

To establish proficiency standards, the USBE recruited a set of participants from across the state. Panelists included science teachers, administrators, and representatives from other stakeholder groups (e.g., parents, college faculty) to ensure that a range of perspectives contributed to the standard-setting process and product. In recruiting panelists, the USBE targeted the recruitment of participants to be representative of the gender and geographic representation of Utah's teacher population. All participants also had to be familiar with the Utah SEEd Standards content and test.

The USBE selected classroom teachers from the resulting potential panelist pool and invited them to participate in the workshop. Overall, the standard-setting workshop panelists were 14% male and 14% non-white. Represented stakeholder groups included General Education Teachers, Specialists, Coaches, ELL Teachers, Parents, with General Education Teachers comprising 86% of the panels overall. The majority of panelists taught in the grades to which they were assigned to set standards. Overall, 59% of panelists taught grade 4 and 50% taught grade 5 (the remainder taught some combination of grades). Most panelists worked in schools (91%) although some worked in both schools and districts (9%). Districts included rural (9%), suburban (50%), and urban (36%), and were small (9%), medium (36%), and large (55%). Table 5 summarizes the characteristics of the panels.

Table 5. Panelist Characteristics

	Percentage of Panelists, by Panel		
	Science Grade 4	*Science Grade 5*	*Overall*
Characteristics			
Male	18%	9%	14%
Non-White	9%	18%	14%
Stakeholder Group			
General Education Teacher	100%	73%	86%
Specialist	0%	9%	5%
Coach	9%	9%	9%
Administrator	0%	0%	0%
Special Education Teacher	0%	0%	0%
ELL Teacher	9%	0%	5%

	Percentage of Panelists, by Panel		
	Science Grade 4	*Science Grade 5*	*Overall*
Higher Education	0%	0%	0%
Parent	9%	9%	9%
Other[a]	0%	18%	9%
Current Position			
School	82%	100%	91%
School, District	18%	0%	9%
District Size			
Large	73%	36%	55%
Medium	27%	45%	36%
Small	0%	18%	9%
Not Applicable	0%	0%	0%
District Urbanicity			
Urban	36%	36%	36%
Suburban	55%	45%	50%
Rural	9%	9%	9%
Not Applicable	0%	9%	5%
Primary Grades Taught			
Kindergarten	0%	9%	5%
1st Grade	0%	18%	9%
2nd Grade	0%	9%	5%
3rd Grade	0%	9%	5%
4th Grade	100%	18%	59%
5th Grade	9%	91%	50%
6th Grade	0%	9%	5%

Note. [a]Other Stakeholder Groups includes Chinese Immersion Teacher and Dual Immersion Teacher

For the results of any judgment-based method to be valid, the judgments must be made by individuals who are qualified to make them. Participants in the RISE Science Assessment standard-setting workshop for grades 4 and 5 were highly qualified. They brought a variety of experience and expertise. Overall, 68% of panelists had earned a master's degree or higher. Many had taught for more than 10 years, and 27% had professional experience outside the classroom. 95% percent of panelists taught science, and many taught other subjects too. The average time teaching Utah SEEd Standards was nearly 3 years. Over 80% of each panel had experience teaching special populations, such as those eligible to receive free or reduced-price lunch (100% overall), English learners (91% overall), and students on Individual Education Plans (100% overall). Table 6 summarizes the qualifications of the panels.

Table 6. Panelist Qualifications

	Percentage of Panelists, by Panel		
	Science Grade 4	*Science Grade 5*	*Overall*
Highest Degree			
Bachelor	9%	55%	32%
Master	91%	36%	64%
Doctoral	0%	9%	5%
Years Teaching Experience			
None	0%	0%	0%
Less than 1 year	0%	0%	0%
1–5 years	0%	27%	14%
6–10 years	27%	36%	32%
11–15 years	36%	9%	23%
16–20 years	27%	27%	27%
More than 20 years	9%	0%	5%
Years Teaching Experience in Assigned Grade			
None	0%	0%	0%
Less than 1 year	0%	9%	5%
1–5 years	36%	73%	55%
6–10 years	27%	9%	18%
11–15 years	27%	9%	18%
16–20 years	9%	0%	5%
More than 20 years	0%	0%	0%
Subject Areas Currently Teaching[a]			
English Language Arts (ELA)	91%	73%	82%
Mathematics	91%	82%	86%
Social Studies	91%	73%	82%
Science	100%	91%	95%
Other[b]	18%	27%	23%
Other Professional Experience in Education	27%	27%	27%
Years Professional Experience in Education			
None	73%	73%	73%
Less than 1 year	0%	9%	5%
1–5 years	18%	9%	14%
6–10 years	9%	9%	9%
11–15 years	0%	0%	0%
16–20 years	0%	0%	0%
More than 20 years	0%	0%	0%
Experience Teaching Special Student Populations			
Students eligible to receive free/reduced price lunch	100%	100%	100%
English Learners (ELs)	100%	82%	91%
Students on an Individual Education Plan (IEP)	100%	100%	100%
Average Years Teaching the Utah SEEd Standards	2.45	2.68	2.57

Note. [a]The total sums to over 100% for "Subject Area Currently Teaching" as many participants taught multiple subjects.
[b]Other Subject Areas Currently Teaching includes Art, Chinese Health, Spanish

Appendix A, Standard-Setting Panelist Characteristics, provides additional information about the individuals participating in the standard-setting workshop.

5.3.5 Table Leaders

Volunteers from the participant pool served as table leaders. In addition to serving as panelists and mapping assertions, table leaders had the additional responsibility of participating in the moderation session.

5.4 MATERIALS

5.4.1 Performance-Level Descriptors

With the adoption of the new standards in science, and the development of new statewide assessments to assess achievement of those standards, the USBE must adopt a similar system of achievement, or proficiency standards, to determine whether students have met the learning goals defined by the new standards in science.

Determining the nature of the categories into which students are classified is a prerequisite to standard setting. These categories, or performance levels, are associated with performance-level descriptors (PLDs) that define the content-area knowledge, skills, and processes that students at each performance level can demonstrate.

PLDs link the content standards to the proficiency standards. There are four types of PLDs:

1. **Policy PLDs.** These are brief descriptions of each performance level that do not vary across grade or content area.

2. **Range PLDs.** Provided to panelists to review and endorse during the workshop, these detailed grade- and content-area-specific descriptions communicate exactly what students performing at each level know and can do.

3. **Threshold PLDs.** Typically created during and used for standard setting only, these describe what a student just barely scoring into each performance level knows and can do. They may also be called Target PLDs or Just Barely PLDs.

4. **Reporting PLDs.** These are much-abbreviated PLDs (typically 350 or fewer characters) created following state approval of the proficiency standards used to describe student performance on score reports.

Utah uses four performance levels to describe student achievement: "Below Proficient," "Approaching Proficient," "Proficient," and "Highly Proficient." At the policy level, these performance levels are defined as follows:

- **Below Proficient.** The Level 1 student is below proficient in applying the English language arts/literacy, mathematics, and science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for the grade-level/course, is likely able to partially access grade level content and engages with higher order thinking skills with extensive support.

- **Approaching Proficient.** The Level 2 student is approaching proficient in applying the English language arts/literacy, mathematics, and science knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for the grade level/course, is able to access grade-level content and engages in higher order thinking skills with some independence and support.
- **Proficient.** The Level 3 student is proficient in applying the English language arts/literacy, mathematics, and science knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for the grade level/course, is able to access grade-level content, and engages in higher order thinking skills with some independence and minimal support.
- **Highly Proficient.** The Level 4 student is highly proficient in applying the English language arts/literacy, mathematics, and science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for the grade level/course, is able to access above grade-level content, and engages in higher order thinking skills independently.

5.4.1.1 Science Range Performance-Level Descriptor Development

CAI and staff from participating states' Departments of Education (DOE) reviewed existing range PLDs from several states' assessments based on three-dimensional science standards. States selected the range PLDs based on the standards drafted by the Washington State Office of Superintendent of Public Instruction (OSPI) as a starting point. Subsequently, CAI, state DOE staff, and educators from multiple states using science assessments based on the Shared Science Assessment Item Bank convened in May 2018 to review and refine the draft range PLDs.[3] The panels created policy PLDs and reviewed and identified refinements to the range PLDs to describe observable evidence for what student achievement looks like in science at each performance level and grade. CAI and one of the authors of the Next Generation Science Standards (NGSS) reviewed and applied recommendations to the PLDs. They ensured consistency, coherence, and articulation across grades and levels. Appendix B, Development of Science Range Performance-Level Descriptors, provides additional information about the development of the range PLDs prior to states' standard-setting workshops.

5.4.1.2 USBE and Panelist Range Performance-Level Descriptor Review

The USBE then reviewed the PLDs to ensure that the language accurately represented the goals and policies of the state. CAI worked with them to make revisions where necessary.

On March 30, 2021, the group of Utah educators selected to be standard-setting panelists, who were intimately familiar with students and the subject matter, convened in a separate workshop to

[3] These states included Hawaii, New Hampshire, Oregon, Rhode Island, Utah, Vermont, West Virginia, and Wyoming.

review, revise, and approve the range PLDs. Appendix C, RISE Science Assessment Range Performance-Level Descriptors, provides the final range PLDs for the RISE Science Assessment.

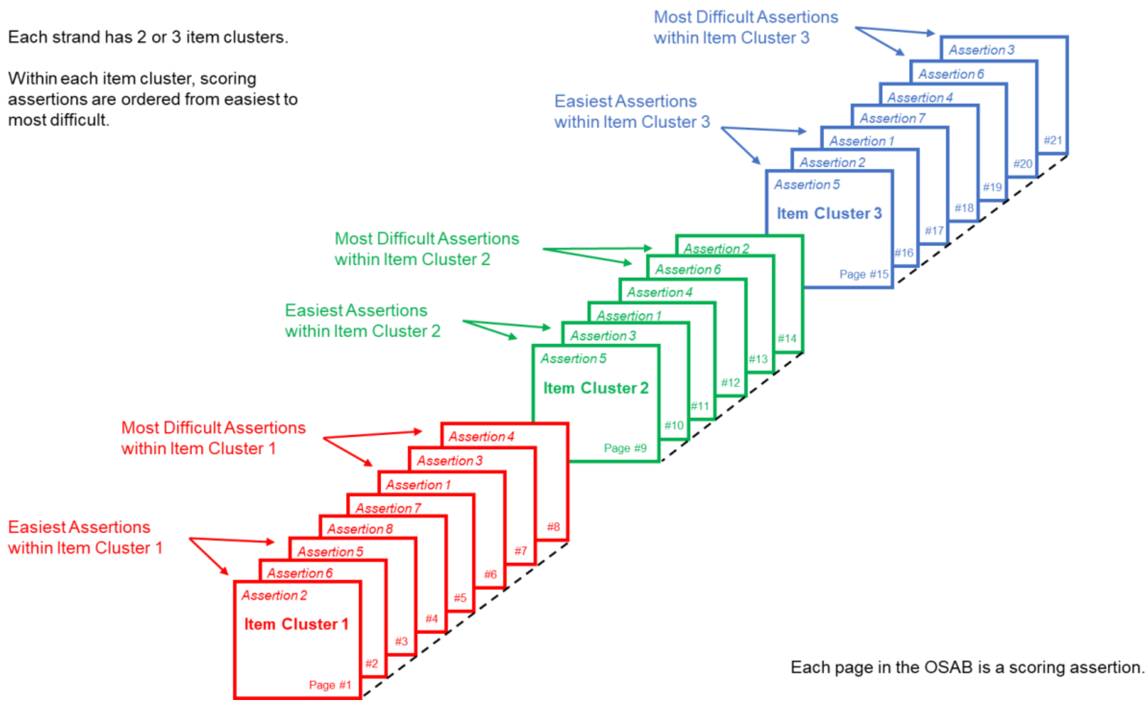
5.4.2 Ordered Scoring Assertion Booklets

Like the Bookmark method used for establishing proficiency standards for traditional science tests, the AMP method uses booklets of ordered test materials for setting standards. Instead of test items, the AMP uses scoring assertions presented in grade-specific booklets called ordered scoring assertion booklets (OSABs). Each OSAB represents one possible testing instance resulting from applying the test blueprints to the state item pool.

The OSABs were assembled using a mixed-integer programming approach. The objective function that was minimized was the number of gaps between the impact values of the assertions across the entire OSAB. A gap was defined as a difference of three percent or more between the impact values of two consecutive assertions ordered by difficulty. The linear constraints of the mixed-integer problem represented the constraints implied by the blueprint. In addition, the total number of assertions was not allowed to exceed 85. A set of feasible solutions was further evaluated based on the distribution of the impact values of assertions across the OSAB. The candidate solution was then reviewed internally by content experts and by the USBE and approved without any changes for both grades.

Figure 7 on the following page describes the structure of the OSAB.

Figure 7. Ordered Scoring Assertion Booklet (OSAB)



For the operational test, the order of the items was randomized over students. For the grades 4 and 5 OSABs, items were presented by the order of the content strands. For grade 4, two item clusters represent each of the four content strands. For grade 5, three item clusters represent strands

5.1 and 5.2, and two item clusters represent strand 5.3. Within a content strand, the item clusters were presented by average difficulty.

Within each item cluster, scoring assertions were ordered by difficulty. Easier assertions are those that most students were able to demonstrate, and difficult assertions are those that the fewest students were able to demonstrate. Note that assertions were ordered by difficulty within item clusters only. Across all items, this was generally not the case; for example, the most difficult assertion of an item presented early in the OSAB was typically more difficult than the easiest assertion of the next item in the OSAB. That is, the order of assertions in Figure 7. Ordered Scoring Assertion Booklet (OSAB) represents the order of presentation to the panelists, but assertions were not ordered by overall difficulty across all item clusters. (see Figure 8 for a depiction of the overlapping difficulty of assertions in the complete OSAB).

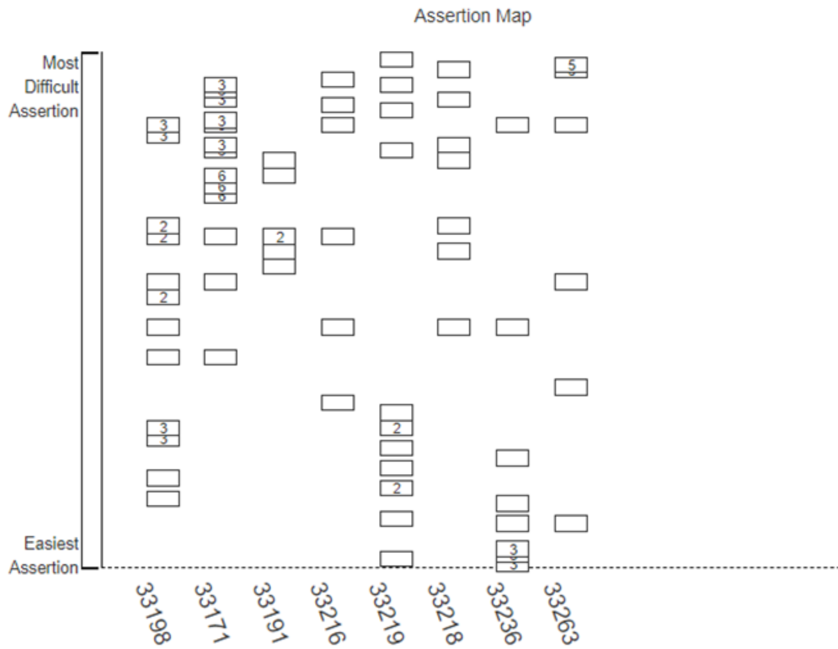
Not all items have assertions that will map onto all performance levels. For example, an item cluster may have assertions that map onto “Below Proficient,” “Approaching Proficient,” and “Proficient,” but not “Highly Proficient.”

Each OSAB contains eight item clusters. The grade 4 OSAB contained 82 assertions and the grade 5 OSAB contained 72 assertions.

5.4.3 Assertion Maps

Assertion maps were provided to panelists to help reduce the cognitive load of the AMP. The assertion maps were displayed in CAI’s online standard-setting tool and listed all scoring assertions in each OSAB by item ID, assertion, and plotted all assertions by difficulty. The assertion maps provided panelists with context about student performance on the assertions in the OSAB, describing the difficulty of each assertion in the underlying OSAB. This was to help panelists easily identify more- or less-difficult assertions and compare the difficulty of assertions across item clusters. The assertion maps were provided during the OSAB review. After Round 1, the assertion maps were updated to also display the tentative standards (more details in Section 5.7.2.2, Feedback Data). Figure 8 presents the assertion map for grade 4. The assertion maps for both grades are presented in Appendix D, Standard-Setting Assertion Maps.

Figure 8. Standard-Setting Assertion Map, Science Grade 4



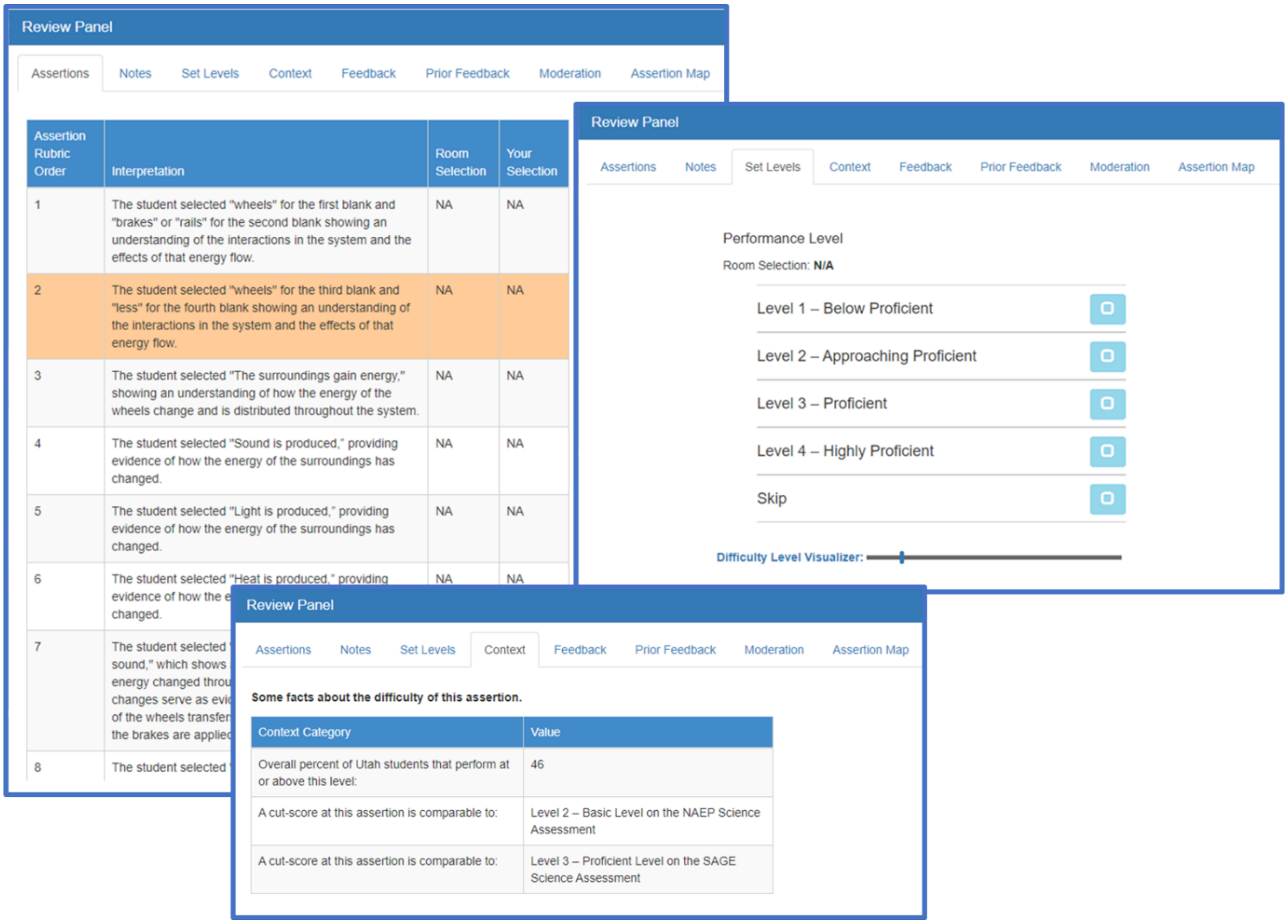
5.5 WORKSHOP TECHNOLOGY

The standard-setting panelists used CAI's online application for standard setting. Each panelist used their own computer on which they took the test, reviewed item clusters and ancillary materials, and mapped assertions to performance levels.

Using tabs in the review panel of the tool (see Figure 9), panelists could review the item clusters and scoring assertions, determine the relative difficulty of assertions to other assertions in the same item cluster, examine the content alignment of each item cluster (via the alignment of the assertions within an item cluster, which all align to the same standard), assign assertions to performance levels, add notes and comments on the assertions as they reviewed them, and review contextual information and feedback data. Additionally, they had access to a difficulty level visualizer, a graphic representation of the difficulty of each assertion relative to all other assertions in the OSAB (not just within the item).[4] Panelists also reviewed their assertion placement, their table's placement, the other tables' placement, and the overall placement for both tables.

[4] The difficulty level visualizer represented the percentage of students whose ability level would fall at or above the difficulty level of that assertion.

Figure 9. Example Features in Standard-Setting Tool



Full-time CAI information technology specialists answered technology questions and ensured that technological processes ran smoothly and without interruption throughout the remote workshop.

5.6 Events

The standard-setting workshop occurred over a period of two days. Table 7 summarizes each day's events, and this section describes each event listed in greater detail. Appendix E, Standard-Setting Workshop Agenda, provides the full workshop agenda.

Table 7. Standard-Setting Agenda Summary

Day 1: Wednesday, July 21, 2021
• Large-Group Orientation • Review and Take the Operational Test • Review Range PLDs • Discuss Threshold PLDs • OSAB Review
Day 2: Thursday, July 22, 2021

- Continue OSAB Review
- Assertion-Mapping Training
- Round 1 Assertion Mapping
- Round 1 Feedback and Impact Data Review and Discussion
- Round 2 Assertion Mapping
- Round 2 Feedback and Impact Data Review
- Standard-Setting Workshop Evaluations
- Across-Grade Moderation and Articulation

5.6.1 Participant Login

Panelists were required to attend a technical check prior to the standard-setting workshop to ensure they had access to the required sites needed to participate in the workshop. They also received and signed affidavits of non-disclosure at this time, affirming that they would not reveal any secure information they would have access to during the workshop. Panelists arrived at the workshop, virtually, on the first day, and followed the instructions given for joining the workshop via Microsoft Teams.

5.6.2 Large-Group Orientation

Darin Nielsen, USBE Assistant Superintendent, Cydnee Carter, USBE, Assessment Development Coordinator, and Scott Roskelley, USBE, Educational Specialist – Secondary Science, welcomed panelists to the workshop and provided context and background for the RISE Science Assessment. The USBE outlined the roles and responsibilities of the participants at the workshop: panelists, CAI staff, and USBE personnel. Dr. Ahadi then oriented participants to the workshop by describing the purpose and objectives of the meeting, explaining the process to be implemented to meet those objectives, and outlining the events that would happen each day. He explained that panelists were selected because they were experts, and how the process to be implemented over the two days was designed to elicit and apply their expertise to recommend new cut scores. Finally, he described how standard setting works and what would happen once the panelists had finalized their recommendations. Appendix F, Standard-Setting Training Slides, provides the slides used during the large-group training.

5.6.3 Confidentiality and Security

Workshop leaders and room facilitators addressed confidentiality and security during orientation and again in each virtual room. Standard setting uses live science test items from the operational RISE Science Assessment, requiring confidentiality to maintain their security. Participants were forbidden to do the following either during, or after, the workshop:

- Discuss the test items outside of the meeting
- Discuss judgments or cut scores (their own or others') with anyone outside of the meeting
- Discuss secure materials with non-participants
- Create any form of electronic copy of test content (screenshots, electronic notes, etc.)
- Create any hand-written notes of test content

- Use your computer during the course of the meeting for any purpose other than participating in the standard-setting workshop and item review (e.g., email, web browsing, social media)
- Save notes about item or passage content to your computer

Participants could have general conversations regarding the process and days' events, but workshop leaders warned them against discussing details, particularly those involving test items, cut scores, and any other confidential information.

5.6.4 Take the Operational Test

Following the large-group orientation, participants broke out into their separate grade-level rooms. As their introduction to the standard-setting process, panelists took a form of the test that students took in 2021, in the grade to which they would be setting proficiency standards. They took the tests online via the same tool used to deliver operational tests to students, and the testing environment closely matched that of students when they took the test.

Taking the same test as students take provides the opportunity to interact with and become familiar with the test items and the look and feel of the student experience while testing. They could score their responses and had 90 minutes to interact with the test.

5.6.5 Range Performance-Level Descriptor Review

After taking the operational test, panelists completed a thorough review of the range PLDs for their assigned grade. Panelists were provided with an overview of the PLDs and their importance to standard setting. The PLDs were used as a reference for evaluating student performance, so it was important for panelists to understand the critical role of PLDs in the standard-setting process.

Panelists began their review of the range PLDs that define what students in each performance level know and are able to do with respect to the Utah SEEd Standards. Workshop facilitators provided panelists with draft range PLDs, test blueprints, and the Utah SEEd Standards. The facilitators lead panelists through a thorough review of the range PLDs for their assigned grade using the materials as references and drawing on the expertise of the panelists.

Panelists identified key words describing the skills necessary for performance at each level and discussed the skills and knowledge that differentiate performance in each of the four levels.

Reviewing the range PLDs ensured that participants understood what students in Utah should know and be able to do and how much knowledge and skill students are expected to demonstrate at each level of performance.

5.6.6 Discuss Threshold Performance-Level Descriptors

After reviewing the range PLDs, panelists worked in their grade-level groups to develop a shared understanding of the threshold PLDs that describe the skills that students just barely able to score in one performance level have but that students scoring just below the performance level do not have. Facilitators encouraged panelists consider the characteristics of students who just barely qualify for entry into the performance level from those just below. Looking at each PLD, panelists identify the skills needed to just barely perform at that level. The following two questions guide the process

1. What skills and knowledge must the student demonstrate to qualify for entrance into this performance level?
2. How does this differ from the upper range of the adjacent (lower) performance level?

These discussions yielded common descriptions of students just barely characterized by each PLD within each room.

The AMP employs the range PLDs since panelists are mapping items across the full range of the PLD. The purpose of the threshold PLD discussion was to enhance the panelists' understanding of the differences between PLD levels by paying special attention to the transition areas between performance levels.

5.6.7 Ordered Scoring Assertion Booklet Review

After reviewing and discussing the PLDs, panelists reviewed the item clusters and assertions in the OSAB. They took notes on each assertion to document the interactions required by each and described why an assertion might be more or less difficult than the previous assertion within the item. They also noted how each assertion related to the PLDs.

After reviewing the item interactions and scoring assertions individually, panelists engaged in discussion with group members about the skills required and relationships among the reviewed test materials and performance levels This process ensured that panelists built a solid understanding of how the scoring assertions relate to the item interactions and how the item clusters relate to the PLDs, and also helped to facilitate a common understanding among workshop panelists.

5.6.8 Assertion-Mapping Training

After reviewing the entire OSAB, facilitators described the processes for mapping assertions and determining cut scores. They explained that the objective of standard setting is aspirational; to identify what all students should know and be able to do, and not to describe what they currently know and can do.

Panelists were to match each assertion to the performance level best supported by the assertion using the PLDs, the difficulty level visualizer (described in Section 5.5, Workshop Technology), the assertion map (described in Section 5.4.3, Assertion Maps), their notes from the OSAB review, and their professional judgments. Figure 10 graphically describes the assertion-mapping process.

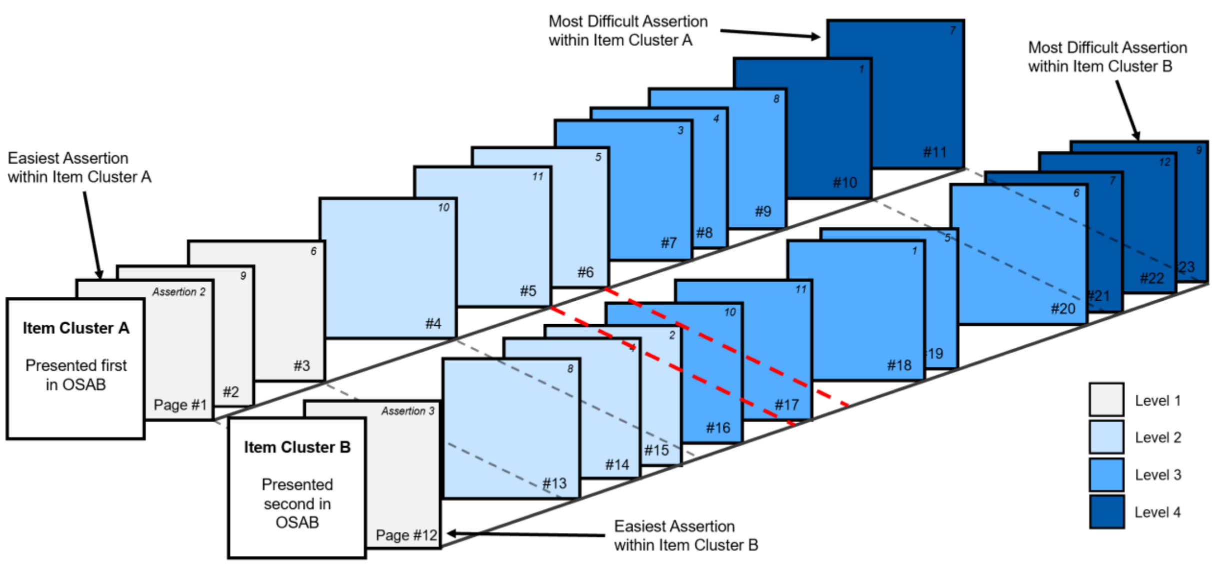
Facilitators provided the following process to guide the mapping of assertions onto PLDs:

1. How does the student interaction give rise to the assertion? Did they plot, select, or write something?
2. Why is this assertion more difficult to achieve than the previous one (within the item cluster)?
3. Which PLD most ably describes this assertion and the underlying interactions?

It was emphasized that assertions within an item cluster were ordered by difficulty, and therefore, the assigned performance levels should be ordered, as well. Within each item cluster, panelists were not allowed to place an assertion into a lower performance level than the level at which the previous assertions had been placed. If panelists felt very strongly that an assertion was out of order in the OSAB, they were asked to skip (not assign any performance level to) the assertion. However, this was to be used as a last resort.

Because the assertion mapping was done separately for each item cluster, there might have been no perfect ordering of the assigned levels of the assertions across all item clusters as a function of assertion difficulty. It was allowed (and it occurred frequently) that an assertion of one item had a higher difficulty but lower assigned performance level than another assertion from a different item (i.e., mapping inversions of assertions could occur across item clusters, but mapping inversions of assertions were not allowed within an item cluster). For example, in Figure 10, the difficulty of the assertion on page 6 of item cluster A ("Level 2") has a higher difficulty than the assertion on page 17 of item cluster B ("Level 3"). However, it was expected for the higher performance levels to be assigned more frequently with increasing assertion difficulty across items. Appendix F, Standard-Setting Training Slides, provides the training slides used during the breakout room training.

Figure 10. Example of Assertion Mapping



Note. Figure 10 describes scoring assertion mapping across two item clusters, where the assertions on pages 1, 2, 3, and 12 are mapped onto level 1; the assertions on pages 4–6, 13–15 are mapped onto level 2; the assertions on pages 7–9 and 16–20 are mapped onto level 3; and the assertions on pages 10, 11, and 21–23 are mapped onto level 4.

5.6.9 Practice Quiz

Panelists completed a practice quiz before beginning a practice round. The quiz assessed panelists' understanding in multiple ways. They must be able to perform the following:

- Describe where “Just Barely” students fall on a performance scale
- Indicate on a diagram how proficiency standards define performance levels
- Identify more- and less-difficult scoring assertions in the OSAB
- Answer questions about the assertion-mapping process and online application

Room facilitators reviewed the quizzes with the panelists and provided additional training for incorrect responses on the quiz. Appendix G, Standard-Setting Practice Quiz, provides the quiz that panelists completed before mapping any assertions.

5.6.10 Practice Round

Following the practice quiz, panelists practiced mapping assertions to PLDs in a short practice OSAB consisting of one item cluster. The purpose of the practice round was to ensure that panelists were comfortable with the technology, item clusters, item interactions, and scoring assertions before mapping any assertions in the OSAB. Panelists discussed their practice mappings and asked questions, and the room facilitators provided clarifications and further instructions until everyone had completed the practice round.

5.6.11 Readiness Form

After completing the practice round, and before mapping assertions to performance levels in Round 1, panelists completed a readiness assertion form. On this form, panelists asserted that their training was sufficient for them to understand the following concepts and tasks:

- The knowledge and skills described by the PLDs, and the skills and interactions that differentiate levels;
- The structure, use, and importance of the OSAB;
- The process to determine and map assertions to PLDs in the standard-setting tool;
- Understanding how to use the assertion map when reviewing the OSAB and mapping assertions in the OSAB to performance levels;
- Understanding the contextual information (student impact data and benchmarking data) when mapping assertions to performance levels;
- Readiness to begin the Round 1 task.

The readiness form for Round 2 focused on affirming an understanding of the feedback data supplied after Round 1. On this form, all panelists affirmed the following:

- Understanding of the feedback data and impact data;
- Understanding of the Round 2 task;
- Readiness to complete the Round 2 task.

Room facilitators reviewed the readiness forms and provided additional training to panelists not asserting understanding or readiness. However, every panelist affirmed readiness before mapping assertions in both rounds of the workshop. Appendix H, Standard-Setting Readiness Forms, provides the forms that panelists completed prior to each round of standard setting.

5.7 ASSERTION MAPPING

Panelists mapped assertions independently, using the PLDs, their notes from reviewing each assertion, the difficulty level visualizer, assertion map, and contextual information to place each of the assertions into one of the four performance levels.

5.7.1 Calculating Cut Scores from the Assertion Mapping

Cut scores were calculated by treating every possible scale value as a hypothetical cut score and evaluating the number of discrepancies between the assertion mappings of the panelists and the performance levels of the assertions implied by hypothetical cut score. The implied performance level of an assertion was determined by comparing the response probability of an assertion to the hypothetical cut.[5] Each cut score was defined as the score point that minimized the weighted number of discrepancies. The weights were defined as the inverse of the observed frequencies of each level. For each cut score, only the assertions that were mapped to the two adjacent levels were considered (e.g., for the second cut, only the assertions that were mapped onto “Approaching Proficient” and “Proficient” were used). Specifically, let n_k be the number of assertions put at performance level k, t_k be the cut to be estimated, d_i be the assigned performance level and θ_i be the RP value of the *i*th assertion. For each assertion placed at levels k and $k+1$, the misclassification indicator is defined as

$$z_{ik}|t_k = \begin{cases} 1 \text{ if } (d_i = k \text{ and } t_k \leq \theta_i) \text{ or } (d_i = k+1 \text{ and } t_k > \theta_i) \\ 0 \text{ otherwise} \end{cases}$$

The cut t_k is then estimated by minimizing a loss function based on the weighted number of misclassifications

$$\underset{t_k}{\arg\min}\left(\frac{1}{n_k}\sum_{i\in\{d_i=k\}} z_{ik}|t_k + \frac{1}{n_{k+1}}\sum_{i\in\{d_i=k+1\}} z_{ik}|t_k\right)$$

Unlike the Bookmark method, the cut scores for a table or room were not the median value of the cut scores of the individual panelists. Instead, cut scores at the table and room (grade) level were computed using the same method but taking into account the assigned levels of all the raters at the table and in the room, respectively. Applying these cut scores to the 2021 operational test data created data describing the percentage of students falling into each performance level. This algorithm calculated cut scores from the assertion mappings by panelist, table, and for the room.

[5] Typically, the response probability used in standard setting is .67 (“RP67” [Huynh, 1994]). RP67 is the assertion difficulty point where 67% of the students would earn the score point. RP67 was used for both grades 4 and 5 during the standard setting.

5.7.2 Contextual Information and Feedback Data

To be adoptable, proficiency standards for a statewide system must be coherent across grades and subjects. They should be orderly across subjects with no dramatic differences in expectation. The following are characteristics of well-articulated standards:

- The cut scores for each performance level increase smoothly with each increasing grade.
- The cut scores should result in a reasonable percentage of students at each performance level; reasonableness can be determined by the percentage of students in the performance levels on historical tests, or contemporaneous tests measuring the same or similar content.
- Barring significant content standard changes (e.g., major changes in rigor), the percentage proficient on new tests should not be radically different from the percentage proficient on historical tests.

The standard-setting tool developed by CAI provides feedback data and allows for displaying contextual information to ensure standard-setting recommendations are well articulated.

5.7.2.1 Contextual Information

During OSAB review, panelists were also provided with additional contextual information to help inform their primary content driven proficiency standard recommendations. The standard-setting tool developed by CAI allows for displaying both impact and benchmark data to ensure standard-setting recommendations are well articulated. The contextual information provided included impact data and benchmark data for each of the assertions of the OSAB, as described in the following sections.

Impact Data

The impact data for an assertion was defined as the percentage of students who performed at or above the specified RP value associated with the assertion. Panelists were asked to consider the impact data when making their content-based assertion mappings.

Benchmark Data

The 2015 National Assessment of Educational Progress (NAEP) science scores and the 2018 Utah Student Assessment of Growth and Excellence (SAGE) science scores provided benchmark data, another source of contextual information that panelists could use to evaluate and adjust their assertion mapping. By comparing the results of each round against the percentage proficient on NAEP and SAGE, panelists could evaluate the reasonableness of the proposed proficiency standards. NAEP provides state-level data in science for grade 4 and grade 8; benchmark data for grade 5 is interpolated using the NAEP data for grade 4 and grade 8. For each ordered scoring assertion, panelists were provided with the associated performance level for the NAEP science and SAGE science. An example of the benchmark information provided for each assertion in the review panel of the standard-setting tool is shown in Figure 9. The 2015 NAEP benchmark data were also graphically shown on the left side of the assertion map (see Appendix D). This provided external evidence of student performance for panelists to consider when mapping assertions to performance levels in Round 1 and Round 2.

5.7.2.2 Feedback Data

The online standard-setting tool created feedback data and cut scores corresponding to the assertion mappings for each panelist, for each table, and for the room overall (across both tables). In addition, panelists were shown impact data based on the cut scores resulting from their assertion mappings. Impact data were defined for panelists as the percentages of students who would reach or exceed each of the proficiency standards given the assertion mappings. Percentages were calculated using the student data from the 2021 administration of the RISE Science Assessment. This information allowed panelists to compare their mappings to other panelist's mappings to evaluate the impact of their current mappings.

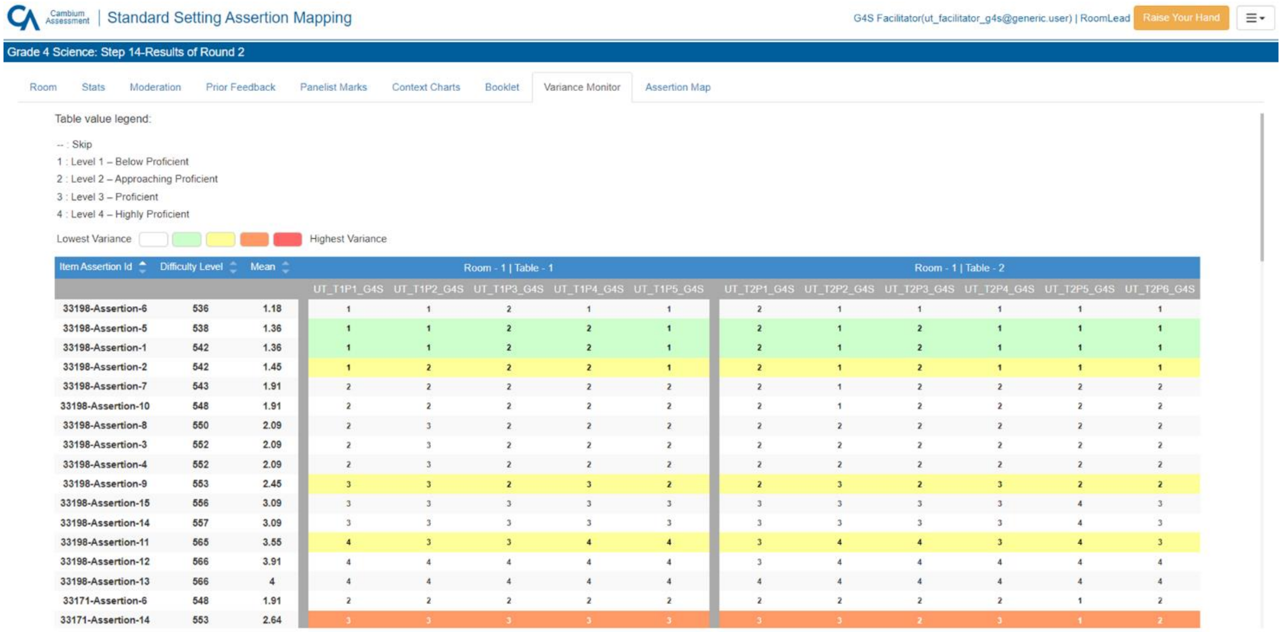
The standard-setting tool also generated variance monitor data and the assertion maps in the tool were updated to display the tentative standards for panelists to evaluate before Round 2 (the variance data and assertion maps are described in more detail below). All feedback and information served to inform, but not determine, their Round 2 decisions. Panelists discussed this information and the impact that the Round 1 cut scores may have on students before mapping assertions in Round 2.

After reviewing the feedback data, the workshop facilitators provided panelists with additional instructions for completing Round 2. First, they described the goal of Round 2 as one of convergence, but not consensus, on a common proficiency standard. The second goal was to encourage articulation across grade levels. Each room spent time reviewing and discussing assertion mappings and articulation. After completing these discussions, panelists again worked through mapping all OSAB assertions to performance levels for Round 2.

Variance Monitor Data

Feedback included a review of a variance monitor, part of CAI's online standard-setting tool that color codes the variance of assertion classifications. For all assertions, the variance monitor shows the performance level to which each panelist assigned the assertion. The tool highlights assertions that panelists have assigned to different performance levels. Figure 11 illustrates the types of information available in the variance monitor. Room facilitators and panelists reviewed and discussed the assertions with the most variable mappings.

Figure 11. Variance Monitor in CAI's Standard-Setting Tool

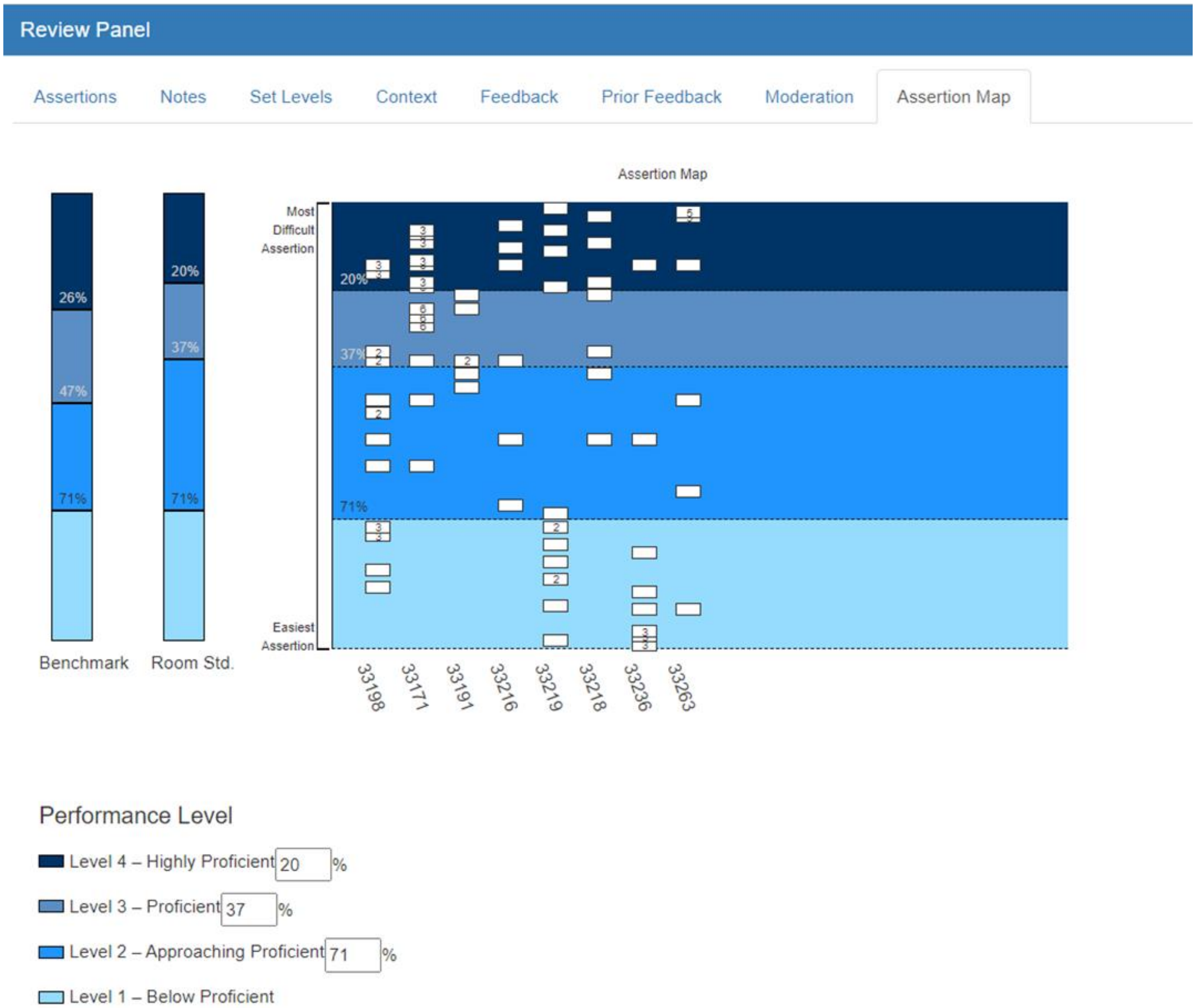


Item Assertion Id	Difficulty Level	Mean	Room - 1 | Table - 1					Room - 1 | Table - 2					
			UT_T1P1_G4S	UT_T1P2_G4S	UT_T1P3_G4S	UT_T1P4_G4S	UT_T1P5_G4S	UT_T2P1_G4S	UT_T2P2_G4S	UT_T2P3_G4S	UT_T2P4_G4S	UT_T2P5_G4S	UT_T2P6_G4S
33198-Assertion-6	536	1.18	1	1	2	1	1	2	1	1	1	1	1
33198-Assertion-5	538	1.36	1	1	2	2	1	2	1	2	1	1	1
33198-Assertion-1	542	1.36	1	1	2	2	1	2	1	2	1	1	1
33198-Assertion-2	542	1.45	1	2	2	2	1	2	1	2	1	1	1
33198-Assertion-7	543	1.91	2	2	2	2	2	2	1	2	2	2	2
33198-Assertion-10	548	1.91	2	2	2	2	2	2	1	2	2	2	2
33198-Assertion-8	550	2.09	2	3	2	2	2	2	2	2	2	2	2
33198-Assertion-3	552	2.09	2	3	2	2	2	2	2	2	2	2	2
33198-Assertion-4	552	2.09	2	3	2	2	2	2	2	2	2	2	2
33198-Assertion-9	553	2.45	3	3	2	3	2	2	3	2	3	2	2
33198-Assertion-15	556	3.09	3	3	3	3	3	3	3	3	3	4	3
33198-Assertion-14	557	3.09	3	3	3	3	3	3	3	3	3	4	3
33198-Assertion-11	565	3.55	4	3	3	4	4	3	4	4	3	4	3
33198-Assertion-12	566	3.91	4	4	4	4	4	3	4	4	4	4	4
33198-Assertion-13	566	4	4	4	4	4	4	4	4	4	4	4	4
33171-Assertion-6	548	1.91	2	2	2	2	2	2	2	2	2	1	2
33171-Assertion-14	553	2.64	3	3	3	3	3	3	3	2	3	1	2

Assertion Maps

In addition to providing the numerical value of the cut scores and impact data, the feedback was also shown on the assertion maps. After each round of assertion mapping, the assertion maps displayed in CAI's online standard-setting tool were updated with the overall room cut scores and the individual panelist cut scores for Round 1 and Round 2. Figure 12 presents the assertion map for grade 4 with the overall room cut scores for Round 1. The Round 1 and Round 2 assertion maps with overall room cut scores for grades 4 and 5 are presented in Appendix I, Round 1 and Round 2 Standard-Setting Assertion Maps.

Figure 12. Round 1 Standard-Setting Assertion Map, Grade 4



Panelists were instructed to consider their assertion mappings to compare the room cut score and assertions to their cut scores and assertion mappings. They were again reminded to evaluate the relative location of the assertions on the assertion maps.

5.8 Assertion Mapping Results

The CAI online standard-setting tool automatically computes the results and impact data for each round and then CAI room facilitators and psychometricians present the Round 1 results and feedback data for each grade.

5.8.1 Round 1 Results

Table 8 presents the proficiency standards and associated impact data (percentage of students falling at or above each of the proficiency standards based on the recommended Round 1 cut scores) from Round 1.

Table 8. Round 1 Results

Grade and Table	Cut Score			Impact Data		
	Level 2 Approaching Proficient	*Level 3 Proficient*	*Level 4 Highly Proficient*	*Level 2 Approaching Proficient*	*Level 3 Proficient*	*Level 4 Highly Proficient*
Grade 4	**543**	**555**	**562**	**71**	**37**	**20**
Table 1	543	553	562	71	43	20
Table 2	543	554	566	71	40	13
Grade 5	**543**	**552**	**563**	**71**	**45**	**18**
Table 1	539	552	563	79	45	18
Table 2	543	552	563	71	45	18

Note. The grade row summarizes the room data (across both tables). Impact data describes the percentage of students falling at or above each of the proficiency standards based on the recommended Round 1 cut scores.

Reviewing the Round 1 results began with a discussion of the feedback data from Round 1, beginning with table-level feedback and discussion, progressing to the room-level discussion. After reviewing the feedback (i.e., individual cuts, cuts by a table, cuts by a room) and impact data, workshop facilitators provided panelists with additional instructions for completing Round 2. They described the goal of Round 2 as one of convergence, but no consensus on a common proficiency standard. The group then spent time reviewing and discussing assertion mappings. After completing these discussions, panelists again worked through the OSAB, mapping assertions for Round 2.

5.8.2 Round 2 Results

Table 9 presents the recommended proficiency standards and associated impact data (percentage of students falling at or above each of the proficiency standards based on the recommended Round 2 cut scores) for Round 2.

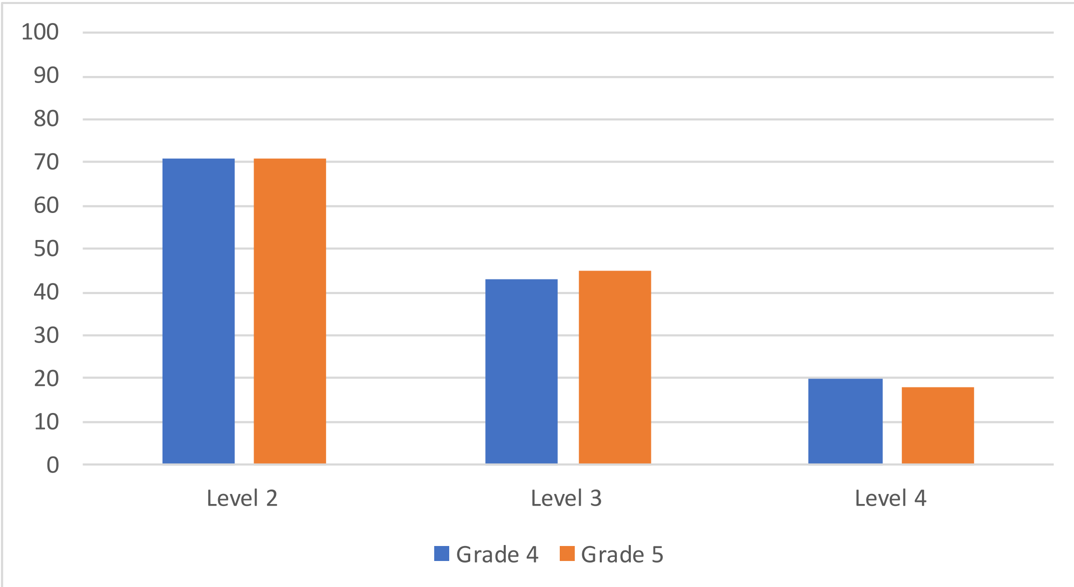
Table 9. Round 2 Results

Grade and Table	Cut Score			Impact Data		
	Level 2 Approaching Proficient	*Level 3 Proficient*	*Level 4 Highly Proficient*	*Level 2 Approaching Proficient*	*Level 3 Proficient*	*Level 4 Highly Proficient*
Grade 4	**543**	**553**	**562**	**71**	**43**	**20**
Table 1	539	553	561	80	43	22
Table 2	543	554	562	71	40	20
Grade 5	**543**	**552**	**563**	**71**	**45**	**18**
Table 1	541	552	563	75	45	18
Table 2	543	552	563	71	45	18

Note. The grade row summarizes the room data (across both tables). Impact data describes the percentage of students falling at or above each of the proficiency standards based on the recommended Round 2 cut scores.

Figure 13 represents those values graphically.

Figure 13. Percentage of Students Reaching or Exceeding Each Recommended Science Proficiency Standard in 2021

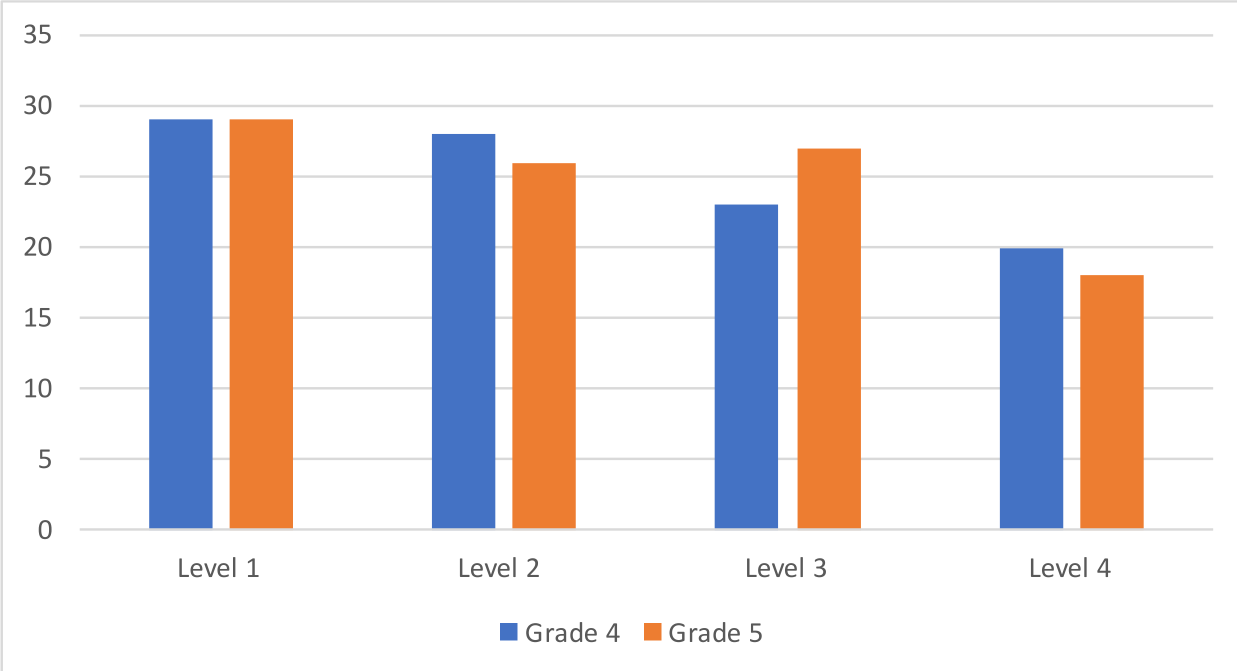


Error! Reference source not found. Table 10. Percentage of Students Classified Within Each Recommended Science Performance Level in 20 indicates the percentage of students classified within each of the performance levels in 2021. The values are displayed graphically in Figure 14.

Table 10. Percentage of Students Classified Within Each Recommended Science Performance Level in 2021

Grade	Level 1 Below Proficient	Level 2 Approaching Proficient	Level 3 Proficient	Level 4 Highly Proficient
4	29	28	23	20
5	29	26	27	18

Figure 14. Percentage of Students Classified Within Each Recommended Science Performance Level in 2021



5.8.3 Convergence Across Rounds

While consensus is not an objective of standard setting, convergence is. Indicators of panelist convergence over rounds are the interquartile range and standard deviations of the standards computed for individual panelists based on their mappings. The interquartile range and standard deviations for each grade and after each round are presented in Table 11. For the Level 3 and Level 4 standards, the indicators show that there is generally a convergence in individual standards. For the Level 2 standards, individual standards show some divergence from Round 1 to Round 2 for both grades.

Table 11. Inter Quartile Range and Standard Deviation of Panelist Recommended Proficiency Standards

Grade	Statistic	Level 2 Approaching Proficient		Level 3 Proficient		Level 4 Highly Proficient	
		Round 1	*Round 2*	*Round 1*	*Round 2*	*Round 1*	*Round 2*
4	**IQR**	3.00	4.75	3.00	1.00	5.50	5.50
	SD	3.53	4.14	3.88	3.91	6.16	6.04
5	**IQR**	3.75	12.00	2.00	2.00	1.50	1.00
	SD	4.62	6.87	1.99	1.81	3.38	1.74

5.8.4 Moderation

Panelists receive the information necessary for articulation prior to Round 2. Often, panelists intuitively create well-articulated sets of proficiency standards, but sometimes minor changes might significantly improve articulation. USBE saw no need for moderation of the Round 2 recommended proficiency standards during the moderation session.

5.8.5 Adoption

A vertical articulation meeting was conducted by Center for Assessment in August 2021 to achieve well-articulated standards across grade levels in Elementary, Middle, and High School. CAI provided necessary support to Center for Assessment, including standard setting outcomes for grades 4-5 from 2021 and for grades 6-8 from 2018, student participation rates, etc. The meeting concluded that no changes would be made to the final panelist-recommended proficiency standards.

5.9 Workshop Evaluations

After finishing all activities, panelists completed online workshop evaluations independently, in which they described and evaluated their experience taking part in the standard setting. Table 12, Table 13, Table 14, Table 15, and Table 16 summarize the results of the evaluations. Evaluation items endorsed by fewer than 90% of panelists are discussed in the text, and the least endorsed items are discussed in terms of the number and type of response.

Panelists reported high levels of understanding of the workshop components and process (see Table 12), though two grade 4 panelists indicated that the Ordered Scoring Assertion Booklets was somewhat unclear to them, and two grade 5 panelists indicated that the Panelist Agreement Data was somewhat unclear to them.

Table 12. Evaluation Results: Clarity of Materials and Process

Please rate the clarity of the following components of the standard-setting workshop.	**Percentage Indicating "Somewhat Clear" or "Very Clear"**		
	Science Grade 4	*Science Grade 5*	*Overall*
Instructions provided by the workshop leader	100%	100%	100%
Performance-Level Descriptors (PLDs)	100%	100%	100%
Ordered Scoring Assertion Booklet (OSAB)	82%	100%	91%
Assertion Map	91%	100%	95%
Impact Data (percentage of students that would achieve at the level indicated by the assertion difficulty)	91%	100%	95%
Panelist Agreement Data	100%	82%	91%

Note. Number of responses = 22 (grade 4 responses = 11, grade 5 responses = 11). Evaluation response options included “Very Unclear,” “Somewhat Unclear,” “Somewhat Clear,” and “Very Clear.”

As shown in Table 13, most panelists felt that the time allocated to various workshop tasks was about right, though a few panelists had suggestions regarding time allocation:

- two panelists indicated that the time given to experience the online assessment was too long;
- four panelists reported having too much or not enough time to discuss the skills demonstrated by students who are "just barely" described by each PLD;
- Six panelists reported having too much or not enough time to review the OSABs; and
- four panelists indicated having too much time to map assertions to performance levels in each round, and three panelists indicated not having enough time to do so.

Table 13. Evaluation Results: Appropriateness of Process

How appropriate was the amount of time you were given to complete the following components of the standard-setting process?	**Percentage Indicating "About Right"**		
	Science Grade 4	*Science Grade 5*	*Overall*
Large-group orientation	91%	91%	91%
Experiencing the online assessment	82%	100%	91%
Reviewing the Performance-Level Descriptors (PLDs)	91%	91%	91%
Discussion of skills demonstrated by students who are "just barely" described by each PLD	91%	73%	82%
Reviewing the Ordered Scoring Assertion Booklet (OSAB)	73%	73%	73%
Mapping assertions to performance levels in each round	73%	64%	68%
Round 1 results discussion	100%	91%	95%

Note. Number of responses = 22 (grade 4 responses = 11, grade 5 responses = 11). Evaluation response options included “Too Little,” “Too Much,” and “About Right.”

Participants appreciated the importance of the multiple factors contributing to assertion mapping, with nearly all participants rating each factor as important or very important (see Table 14). Two grade 5 panelists indicated the external benchmark data were not important.

Table 14. Evaluation Results: Importance of Materials

How important were each of the following factors in your mapping of assertions to performance levels?	**Percentage Indicating "Somewhat Important" or "Very Important"**		
	Science Grade 4	*Science Grade 5*	*Overall*
Performance-Level Descriptors (PLDs)	100%	100%	100%
"Just Barely" PLDs	100%	100%	100%
Your perception of the difficulty of the scoring assertions and item clusters in general	100%	100%	100%
Your experience with students	100%	100%	100%
Discussions with other panelists	100%	100%	100%
Assertion map	100%	100%	100%
External benchmark data	100%	82%	91%
Impact Data (percentage of students that would achieve at the level indicated by the assertion difficulty)	100%	100%	100%

How important were each of the following factors in your mapping of assertions to performance levels?	**Percentage Indicating "Somewhat Important" or "Very Important"**		
	Science Grade 4	*Science Grade 5*	*Overall*
Room agreement data (room, table, and individual standards)	100%	100%	100%

Note. Number of responses = 22 (grade 4 responses = 11, grade 5 responses = 11). Evaluation response options included "Not Important," "Somewhat Important," and "Very Important."

Participant understanding of the workshop processes and tasks was consistently high (see Table 15).

Table 15. Evaluation Results: Understanding Processes and Tasks

At the end of the standard-setting workshop, please rate your agreement with the following statements.	**Percentage Indicating "Agree" or "Strongly Agree"**		
	Science Grade 4	*Science Grade 5*	*Overall*
I understood the purpose of this standard-setting workshop.	100%	91%	95%
The procedures used to recommend proficiency standards were fair and unbiased.	100%	91%	95%
The training provided me with the information I needed to recommend proficiency standards.	100%	100%	100%
Taking the online assessment helped me to better understand what students need to know and be able to do to receive credit for each assertion.	100%	100%	100%
The Performance-Level Descriptors (PLDs; description of what students within each performance level are expected to know and be able to do) provided a clear picture of expectations for student performance at each level.	91%	91%	91%
I was able to develop an understanding of the knowledge and skills demonstrated by students who are "just barely" described by the PLDs.	91%	100%	95%
I understood how to review each assertion in the Ordered Scoring Assertion Booklet (OSAB) to determine what students must know and be able to do to receive credit for each assertion.	100%	100%	100%
I understood how to map assertions to the most apt performance level.	100%	100%	100%
I found the assertion map helpful when mapping assertions to performance levels.	100%	100%	100%
I found the benchmark data and discussions helpful when mapping assertions to performance levels.	100%	91%	95%
I found the impact data (percentage of students that would achieve at the level indicated by the assertion difficulty) helpful when mapping assertions to performance levels.	91%	91%	91%
I found the panelist agreement data (room, table, and individual standards) and discussions helpful when mapping assertions to performance levels.	100%	100%	100%
I felt comfortable expressing my opinions throughout the workshop.	91%	100%	95%

At the end of the standard-setting workshop, please rate your agreement with the following statements.	**Percentage Indicating "Agree" or "Strongly Agree"**		
	Science Grade 4	*Science Grade 5*	*Overall*
Everyone was given the opportunity to express his or her opinions throughout the workshop.	100%	100%	100%

Note. Number of responses = 22 (grade 4 responses = 11, grade 5 responses = 11). Evaluation response options included "Strongly Disagree," "Disagree," "Agree," and "Strongly Agree."

The majority of panelists agreed that the standards set during the workshop reflected grade-level expectations (see Table 16). However, two grade 4 panelists and four grade 5 panelists disagreed that students performing at Approaching Proficient were below expectations for the grade.

Table 16. Evaluation Results: Student Expectations

Please read the following statements carefully and indicate your response.	**Percentage Indicating "Agree" or "Strongly Agree"**		
	Science Grade 4	*Science Grade 5*	*Overall*
A student performing at "Approaching Proficient" is below expectations for the grade.	82%	64%	73%
A student performing at "Proficient" meets expectations for the grade.	100%	91%	95%
A student performing at "Highly Proficient" is above expectations for the grade.	100%	91%	95%

Note. Number of responses = 22 (grade 4 responses = 11, grade 5 responses = 11). Evaluation response options included "Strongly Disagree," "Disagree," "Agree," and "Strongly Agree."

5.9.1 Workshop Participant Feedback

Finally, panelists responded to two open-ended questions: "What suggestions do you have to improve the training or standard-setting process?" and "Do you have any additional comments? Please be specific."

Fifteen panelists responded to the first question, and thirteen responded to the second. Most responses indicated the training was effective and the process was clear. Participants provided minor suggestions, such as shortening or lengthening the time allocated for some tasks, providing more clarity on how the PLDs relate to each assertion, and having more smaller group discussions. Participants expressed gratitude for being involved in setting proficiency standards and appreciated the organization, well-prepared materials, and professionalism and expertise of the facilitators.

Additional participant comments included:

"Loved the opportunity and knowledge gained from this experience. Always looking to grow in my knowledge of how proficiency levels are set."

"Overall, I really enjoyed this process and seeing what goes in to creating and justifying the scores of these tests. I feel like every teacher needs an opportunity to experience this. Thank you so much."

"Thank you for this opportunity. I learned a lot and it was great to refresh my knowledge of the PLD's. Thanks Kevin and Vanessa for leading our group so well!"

6. Validity Evidence

Validity evidence for standard setting is established in multiple ways. First, standard setting should adhere to the standards established by appropriate professional organizations and be consistent with the recommendations for best practices in the literature and established validity criteria. Second, the process should provide the evidence required of states to meet federal peer review requirements. We describe each of these in the following sections.

6.1 Evidence of Adherence to Professional Standards and Best Practices

The RISE Science Assessment standard-setting workshop was designed and executed consistent with established practices and best-practice principles (Hambleton & Pitoniak, 2006; Hambleton, Pitoniak, & Copella, 2012; Kane, 2001; Mehrens, 1995). The process also adhered to the following professional standards recommended in the *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 2014) related to standard setting:

> *Standard 5.21:* When proposed score interpretation involves one or more cut scores, the rationale and procedures used for establishing cut scores should be documented clearly.
>
> *Standard 5.22:* When cut scores defining pass-fail or proficiency levels are based on direct judgments about the adequacy of item or test performances, the judgmental process should be designed so that the participants providing the judgments can bring their knowledge and experience to bear in a reasonable way.
>
> *Standard 5.23:* When feasible and appropriate, cut scores defining categories and distinct substantive interpretations should be informed by sound empirical data concerning the relation of test performance to the relevant criteria.

The sections of this report documenting the rationale and procedures used in the standard-setting workshop address Standard 5.21. The AMP standard setting procedure is appropriate for tests of this type—with interrelated sets of three-dimensional item clusters and scaled using item response theory (IRT). Section 5.1, The Assertion-Mapping Procedure, provides the justification for and the additional benefits of selecting the AMP method to establish the cut scores; Section 5.6, Events, through Section 5.9.1, Round 1, document the process followed to implement the method.

The design and implementation of the AMP procedure address Standard 5.22. The method directly leverages the subject-matter expertise of the panelists placing assertions into performance levels and incorporates multiple, iterative rounds of ratings in which panelists modify their judgments based on feedback and discussion. Panelists apply their expertise in multiple ways throughout the process by

- understanding the test, test items, and scoring assertions (from an educator and student perspective);

- describing the knowledge and skills measured by the test;
- identifying the skills associated with each test item scoring assertion;
- describing the skills associated with student performance at each performance level;
- identifying which test item scoring assertions students at each performance level should be able to receive credit; and
- evaluating and applying feedback and reference data to the Round 2 recommendations and considering the impact of the recommended cut scores on students.

Panelists' understanding of the AMP was assessed with a quiz before the practice round. Additionally, panelists' readiness evaluations provided evidence of a successful orientation to the process and understanding of the process, while their workshop evaluations provide evidence of confidence in the process and resulting recommendations.

The recruitment process resulted in panels that were representative of important regional and demographic groups who were knowledgeable about the subject area and students' developmental level. Section 5.3.4, Educator Participants, summarizes details about the panel demographics and qualifications.

The provision of benchmark, context, and articulation data to panelists after Round 1 addresses Standard 5.23 (see Section 5.7.2, Contextual Information and Feedback Data). This empirical data provides necessary and additional context describing student performance given the recommended standards.

6.2 Evidence in Terms of Peer Review Critical Elements

The United States Department of Education (USDOE) guides the peer review of state assessment systems. This guidance is intended to support states in meeting statutory and regulatory requirements under Title I of the Elementary and Secondary Education Act of 1965 (U.S. Department of Education, 2015). The following critical elements are relevant to standard setting; evidence supporting each element immediately follows.

> **Critical Element 1.2**: Substantive involvement and input of educators and subject-matter experts

Utah educators played a critical role in establishing performance levels for the tests. They created the item clusters, reviewed and revised the PLDs, mapped assertions to performance levels to delineate performance at each performance level, considered benchmark data and the impact of their recommendations, and formally recommended proficiency standards.

Many subject-matter experts contributed to developing Utah's proficiency standards. Contributing educators were subject-matter experts in their content area, in the content standards and curriculum that they teach, and in the developmental and cognitive capabilities of their students. CAI's facilitators were subject-matter experts in the subjects tested and in facilitating effective standard-setting workshops. The psychometricians performing the analyses and calculations throughout the meeting were subject-matter experts in the measurement and statistics principles required of the standard-setting process.

> **Critical Element 6.2**: Achievement standards setting. The state used a technically sound method and process that involved panelists with appropriate experience and expertise for setting its academic proficiency standards and academic proficiency standards to ensure they are valid and reliable.

Evidence to support this critical element includes:

1) The rationale for and technical sufficiency of the AMP method selected to establish proficiency standards (Section 5.1, The Assertion-Mapping Procedure).
2) Documentation that the method used for setting cut scores allowed panelists to apply their knowledge and experience reasonably and supported the establishment of reasonable and defensible cut scores (Section 5.6, Events; Section 5.6.2, Large-Group Orientation; Section 5.9, Assertion Mapping Results; and Section 6.1, Evidence of Adherence to Professional Standards and Best Practices).
3) Panelists self-reported readiness to undertake the task (Section 5.6.9, Practice Quiz; and Section 5.6.11, Readiness Form) and confidence in the workshop process and outcomes (Section 5.9, Workshop Evaluations; and Section 5.9.1, Workshop Participant Feedback) supporting the validity of the process.
4) The standard-setting panels consisted of panelists with appropriate experience and expertise, including content experts with experience teaching Utah's science content standards, and individuals with experience and expertise teaching special population and general education students in Utah (Section 5.3.4, Educator Participants; and Appendix A, Standard-Setting Panelist Characteristics).

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Appendix A

Standard-Setting Panelist Characteristics

Standard-Setting Panelist Characteristics

Table A-17. Standard-Setting Panelists, Science Grade 4

Position	Location of Current Position	Gender	Race/ Ethnicity	Level of Education	Years Teaching Experience	Years Professional Experience	Years Teaching/Implementing the Utah SEEd Standards	School District Size	School District Area	Table Leader
General Education Teacher	School, District	Female	White	Master's degree	11 to 15 years	1 to 5 years	1	Large	Suburban	Yes
General Education Teacher	School	Female	White	Master's degree	16 to 20 years	None	1	Large	Suburban	
General Education Teacher	School	Male	White	Master's degree	11 to 15 years	1 to 5 years	3	Medium	Rural	
General Education Teacher, Parent	School	Female	White	Bachelor's degree	11 to 15 years	None	3	Large	Suburban	
General Education Teacher	School, District	Female	White	Master's degree	6 to 10 years	None	1	Large	Suburban	
General Education Teacher, Coach, ELL Teacher	School	Female	White	Master's degree	16 to 20 years	6 to 10 years	3	Large	Urban	Yes
General Education Teacher	School	Female	White	Master's degree	11 to 15 years	None	2	Large	Suburban	
General Education Teacher	School	Female	White	Master's degree	6 to 10 years	None	1	Large	Urban	
General Education Teacher	School	Female	White	Master's degree	More than 20 years	None	5	Large	Suburban	
General Education Teacher	School	Female	White	Master's degree	16 to 20 years	None	5	Medium	Urban	
General Education Teacher	School	Male	Hispanic	Bachelor's degree, Master's degree	6 to 10 years	None	2	Medium	Urban	

Table A-2. Standard-Setting Panelists, Science Grade 5

Position	Location of Current Position	Gender	Race/ Ethnicity	Level of Education	Years Teaching Experience	Years Professional Experience	Years Teaching/Implementing the Utah SEEd Standards	School District Size	School District Area	Table Leader
Dual Immersion Teacher	School	Female	Asian	Master's degree	6 to 10 years	None	2	Medium	Urban	Yes
General Education Teacher, Parent	School	Female	White	Bachelor's degree	6 to 10 years	None	2	Medium	Suburban	
Coach	School	Female	White	Bachelor's degree, Master's degree	6 to 10 years	Less than 1 year	3	Large	Suburban	
Specialist	School	Male	White	Bachelor's degree	1 to 5 years	1 to 5 years	2	Large	Urban	
General Education Teacher	School	Female	White	Bachelor's degree	16 to 20 years	None	2	Large	Suburban	
General Education Teacher	School	Female	White	Master's degree	6 to 10 years	None	4	Small	Rural	Yes
General Education Teacher	School	Female	White	Bachelor's degree	1 to 5 years	None	1.5	Medium	Suburban	
General Education Teacher	School	Female	White	Bachelor's degree	11 to 15 years	None	7	Large	Suburban	
General Education Teacher	School	Female	White	Ed.S in Instructional technology	1 to 5 years	6 to 10 years	3	Small	Urban	
General Education Teacher	School	Female	White	Bachelor's degree	16 to 20 years	None	1	Medium	Urban	
General Education Teacher, Chinese Immersion Teacher	School	Female	Asian	Bachelor's degree, Master's degree, Math Endorsement	16 to 20 years	None	2	Medium	Not Applicable	

Appendix B

Development of Science Range Performance-Level Descriptors

Development of Science Range Performance-Level Descriptors

1. Development of NGSS Range Performance-Level Descriptors

Cambium Assessment, Inc. (CAI) held a meeting on May 18–19, 2018 for the three-dimensional science standards assessments. Prior to the meeting, AIR and several client states worked together to refine drafts of Policy and Range PLDs created by Washington State's Office of the Superintendent of Public Instruction (OSPI). During the meeting, educators reviewed and provided feedback on these Policy and Range PLDs.

PLDs describe levels or categories of performance on a large-scale assessment. PLDs are used to inform the evidence required for item development, inform items selected during the form construction process, and support standard-setting panelist recommendations during the standard-setting process. PLDs are then ultimately used to inform stakeholder interpretation of student scores once standards are set. Egan, Schneider, and Ferrara (2012) recommended four stages of PLD development for the following types of PLDs: Policy, Range, Threshold, and Reporting. The focus of the NGSS PLD meeting was on Policy and Range PLDs only.

2. Definitions of Performance-Level Descriptors by Purpose and Intended Audience

2.1 Policy Performance-Level Descriptors

Policy PLDs articulate the overall claims about a student's performance in each performance level. They are used by policymakers to broadly articulate the goals and rigor for the state's proficiency standards. *Table 18* shows a sample Policy-based PLD.

Table 18. Draft Science Policy PLD for Proficient

Level 3
The Level 3 student is proficient in applying three-dimensional science knowledge and skills as specified in the science standards. The student generally performs at the standard for the grade level, is able to access grade-level content, and engages in higher-order thinking skills with some independence and minimal support.

2.2 RANGE PERFORMANCE-LEVEL DESCRIPTORS

Range PLDs describe the expectations for students across each Disciplinary Core Idea (DCI) and performance level, demonstrating how the content represents a progression of knowledge, skills, and processes across performance levels and grade bands. Washington State's Office of the Superintendent of Public Instruction (OSPI) created Range PLDs for Levels 2, 3, and 4, with Level 3 describing Proficiency. *Table 19* shows sample Policy PLDs.

Table 19. Draft Science Policy PLDs for Grade 8

Level 2	Level 3	Level 4
Use a model and patterns in data to show that the number of tiny particles does not change during chemical reactions and that particle motion changes when thermal energy is added to or removed from a system.	Develop and use models and interpret patterns in data to show that mass is conserved during chemical reactions and to predict changes in particle motion when thermal energy is added to or removed from a system.	Analyze and interpret patterns in data in order to evaluate and revise a model that describes how mass is conserved during chemical reactions and to explain predicted changes in particle motion when thermal energy is added to or removed from a system.

3. PERFORMANCE-LEVEL DESCRIPTOR WORKSHOP

CAI revised OSPI's PLDs to ensure that text sufficiently differentiates between levels. CAI sent for participating states' review and then convened a committee preparation meeting on May 9, 2018, to prepare participating educators and state staff for the May 18–19th, 2018, meeting.

The meeting was divided into three grade-band rooms: elementary, middle, and high school. One CAI facilitator led each grade-band room, and several CAI staff were available to float between rooms to ensure process consistency and answer questions. Each grade-band room included nine educators, enabling room facilitators to divide the rooms into subgroups to complete the work. *Table 20* summarizes the composition of facilitators and educators assigned to each grade band. Recruitment included educators representing special populations (English learners [ELs], Special Education).

Table 20. Workshop Panel Assignments

	Elementary School	Middle School	High School
CAI Facilitators	1	1	1
Educators	9	9	9

3.1 Performance-Level Descriptor Workshop

The Performance-Level Descriptor (PLD) workshop occurred over a period of two days. Appendix 1. PLD Workshop Agenda provides the full workshop agenda.

3.1.1 Day 1

The workshop began with a welcome from staff from CAI and participating state staff. CAI provided an overview of the policy aspects of the workshop, including how PLD development fits into the overall test development and standard-setting processes. CAI staff provided training on the processes to be used during the workshop. Following the initial overview, CAI provided training on item clusters and scoring assertions. CAI then described the purpose and structure of the three-dimensional science item clusters and scoring assertions, and their importance to the standard-setting process.

A facilitator continued training on Policy PLDs. Facilitators walked panelists through several National Reference Point Policy PLDs, outlining the differences in the key descriptors at each performance level. The panelists reviewed the Policy PLDs individually and in small groups. The panelists used the following questions to frame their review of the National Reference PLDs:

8. What terms are used to define proficiency?
9. Are there certain terms you value over others?
10. Are there words or phrases you note that could inform NGSS policy statements going forward?

After small group discussion, facilitators engaged panelists in a room-level discussion and recorded recommendations for Policy PLDs. Facilitators framed discussions by using the following guiding questions:

11. What claims should the Policy PLDs make about students at each performance level?

    Two to five words that provide context for the expectations of students in each performance level

12. What general descriptors best articulate the intended rigor for the science standards?
13. How should we represent what proficiency means?

    College and career readiness

    On grade-level attainment

    Meeting standards

The goal of the discussion process is to draft Policy PLDs and for the panelists to begin to have a shared sense of the type of student described by each performance level. The Policy PLD discussion lasted through the morning of Day 1, ending with lunch.

After lunch, the meeting shifted to Range PLD training within each breakout room. Facilitators described the process for reviewing Range PLDs. Facilitators modeled how to parse out each PLD, focusing on the key words used in each performance level. In modeling how to parse the standards, the facilitator noted the importance of the Level 3 (proficiency) cut score as an anchor for the other descriptors. The facilitator started by parsing a Level 3, then moving to Levels 2 and 4, modeling the sequence panelists would use throughout the workshop. Next, the facilitator led the room through reviewing one Range PLD. They started by reviewing the Level 3 PLD, then moving to Level 2, then Level 4. Depending on how well the panelists understood the task, the facilitator might have reviewed another PLD with the entire group.

Once the facilitators modeled the process for panelists, they split panelists into groups to create Range PLDs. Each room facilitator divided the PLDs among the groups so they could review them more efficiently in the time allotted for the meeting, resulting in three groups of three panelists in each room. Each group tracked any recommended revisions to each PLD. To facilitate discussion, panelists responded to four questions for each PLD:

14. Does the PLD reflect the expected performance exhibited by students at this performance level?
15. What revisions were made to the PLD?
16. What rationale do you have for any changes?
17. What would distinguish an assertion belonging to this PLD from an assertion belonging to the level below?

One member of each group acted as a scribe, using a computer to track changes to the PLDs, and responded to the questions through an online form. CAI created a template for panelists to use when reviewing the Range PLDs.

For the rest of the afternoon, the panelists reviewed the Range PLDs using the following processes:

18. The panelists worked through each assigned PLD, ensuring that the PLD showed a clear progression of observable evidence that should be expected from students at each performance level.
19. For each PLD, participants began with the Level 3 descriptor, then moved to Level 2, then Level 4.
20. Facilitators monitored progress and work to ensure cross-grade coherence and adherence to the expectations set by the Policy PLDs.

This work continued for the duration of Day 1. At the end of Day 1, CAI and state staff reviewed the panelists' work to check for coherence and consistency across grades.

3.1.2 Day 2

Based on results of the review at the end of Day 1, room facilitators and state staff spent time recalibrating groups if necessary. During the morning of Day 2, the panelists completed their assigned standards. Once each group completed its work, the facilitators conducted discussions with their rooms to ensure coherence across PLDs within each grade band. Each group reviewed their grade-band PLDs to ensure consistency and coherence across performance levels and consistency and coherence within each performance level. This discussion extended until lunch.

After lunch, the grade-band groups met for a cross-grade articulation discussion. They compared the expectations across grade bands to ensure a sensible progression of rigor. The committee focused primarily on examining Level 3 to assess if this level is considered the entry point for college-readiness. After the cross-grade articulation discussion, educators were allowed to adjourn.

For the rest of the afternoon, CAI met with participating state staff. The group discussed the results of the meeting and addressed any issues or inconsistencies in the educators' work. The group also discussed next steps for finalizing the PLDs.

4. References

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APPENDIX 1. PLD WORKSHOP AGENDA

Exhibit 1-A. Day 1 PLD Workshop Agenda

Time	Topic	Lead
7:30–8:30 a.m.	Breakfast	
8:30–9:00 a.m.	Welcome Three-Dimensional Item Clusters and Scoring Assertions • The purpose and structure of the clusters • Scoring Assertions	Jon
9:00–9:30 a.m.	NGSS Performance Level Descriptors (PLDs) • Describe purposes and uses for Policy and Range PLDs • Describe workshop process	Kevin
9:30–9:45 a.m.	Break	
9:45 a.m.–Noon	Policy PLD Discussion • Review Policy PLDs ○ What are the important elements of the descriptor at each performance level? • Small group discussion • Room discussion • Final recommendations	Kevin
Noon–1:00 p.m.	Lunch	

1:00–2:00 p.m.	Range PLD Training
	• Purpose of Range PLDs
	• Tools used in review
	  ○ Science Standards
	  ○ Policy PLDs
	  ○ Draft Range PLDs
	  ○ Template for reviewing standards
	• Parsing standards and draft PLDs to differentiate among performance levels
		Room facilitators

2:00–4:30 p.m.	Review draft Range PLDs • Each group reviews assigned PLDs • For each PLD, start with Level 3 (Proficient), then move to Level 2, then Level 4	Room facilitators

Exhibit 1-B. Day 2 PLD Workshop Agenda

Time	Topic	Lead
7:30–8:30 a.m.	Breakfast	
8:30–10:00 a.m.	Continue Range PLD review • Each group reviews assigned PLDs • For each PLD, start with Level 3 (Proficient), then move to Level 2, then Level 4	Room facilitators

10:00 a.m.–Noon	Room Discussion
	• Room discussion to ensure coherence within the grade band
	  ○ Ensure consistency and coherence across performance levels throughout the grade band
	  ○ Ensure consistency and coherence within each performance level throughout the grade band
		Room facilitators

Noon–1:00 p.m.	Lunch	
1:00–2:30 p.m.	Large group: Cross-grade coherence discussion • Ensure cross-grade consistency and coherence across performance levels • Ensure cross-grade consistency and coherence within each performance level	Kevin
2:30 p.m.	Educators adjourn	
2:30–3:00 p.m.	CAI and Department staff • Resolve inconsistencies within or across grades • Discuss next steps	

Appendix C

RISE Science Assessment Range Performance-Level Descriptors

RISE Science Assessment Range Performance-Level Descriptors

Exhibit C-1. RISE Science Assessment Range Performance-Level Descriptors, Grade 4

	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
	The Level 1 student is below proficient in applying all three dimensions as specified in the Utah SEEd standards. The student generally performs significantly below the standard for the grade-level, is able to partially access grade level content, and engages with the science and engineering practices and crosscutting concepts with extensive support.	The Level 2 student is approaching proficient in applying all three dimensions as specified in the Utah SEEd standards. The student performs slightly below the standard for the grade level, is able to access grade-level content, and engages with most of the science and engineering practices and crosscutting concepts with some independence and support.	The Level 3 student is proficient in applying all three dimensions as specified in the Utah SEEd standards. The student generally performs at the standard for the grade level, is able to access grade-level content, and engages with the science and engineering practices and crosscutting concepts independently.	The Level 4 student is highly proficient in applying all three dimensions as specified in the Utah SEEd standards. The student generally performs significantly above the standard for the grade level, is able to access above grade-level content, and engages with the science and engineering practices and crosscutting concepts independently.
Life Science				
4.1	Identify patterns in past or present organism characteristics that can be used as evidence to support that when there is a change in the environment, certain individual organisms could have internal and/or external structures that lead to advantages in survival and reproduction; and use observations from pictures, drawings, and/or writings to support that current, living organisms can only survive in particular environments or resemble organisms that once lived on Earth. Identify components of a model describing an organism's information receiving and/or processing systems.	Identify and/or record past and present observations, or identify evidence that describes that, when there is a change in the environment, certain individual organisms could have internal and/or external structures that lead to advantages in survival and reproduction, or that living organisms resemble organisms that once lived on Earth. Use a model that describes an organism's information receiving and processing systems.	Analyze and interpret past and present organism characteristics to explain that, when there is a change in the environment, certain individual organisms could have internal and/or external structures that lead to advantages in survival and reproduction, or that living organisms resemble organisms that once lived on Earth. Develop a model that describes an organism's information receiving and processing systems.	Analyze and interpret past and present organism characteristics to evaluate and revise a constructed explanation that states that with a change in the environment, certain individual organisms could have internal and/or external structures that lead to advantages in survival and reproduction, or that living organisms resemble organisms that once lived on Earth. Revise a model that describes an organism's information receiving and processing systems.
Physical Science				

	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
	The Level 1 student is below proficient in applying all three dimensions as specified in the Utah SEEd standards. The student generally performs significantly below the standard for the grade-level, is able to partially access grade level content, and engages with the science and engineering practices and crosscutting concepts with extensive support.	The Level 2 student is approaching proficient in applying all three dimensions as specified in the Utah SEEd standards. The student performs slightly below the standard for the grade level, is able to access grade-level content, and engages with most of the science and engineering practices and crosscutting concepts with some independence and support.	The Level 3 student is proficient in applying all three dimensions as specified in the Utah SEEd standards. The student generally performs at the standard for the grade level, is able to access grade-level content, and engages with the science and engineering practices and crosscutting concepts independently.	The Level 4 student is highly proficient in applying all three dimensions as specified in the Utah SEEd standards. The student generally performs significantly above the standard for the grade level, is able to access above grade-level content, and engages with the science and engineering practices and crosscutting concepts independently.
4.2	Make observations using produced data to ask questions on how energy can be transferred from stored and/or motion energy to different forms like sound, light, and electrical currents. Identify components needed to construct a device that converts energy from one form to another.	Make observations using given data to provide evidence on how energy can be transferred from stored and/or motion energy to different forms like sound, light, and electrical currents. Complete a device that coverts energy from one form to another.	Ask questions and/or conduct an investigation to use produced data to provide evidence on how energy can be transferred from stored and/or motion energy to different forms like sound, light, and electrical currents. Construct a device that converts energy from one form to another.	Ask questions and/or use produced data to make predictions on how energy can be transferred from stored and/or motion energy to different forms like sound, light, and electrical currents. Evaluate and/or revise a device that converts energy from one form to another.
4.3	Make observations about patterns of light or mechanical waves, or how reflected light from objects causes objects to be seen. Identify a solution to transfer information.	Use a model to describe the patterns of light or mechanical waves, or to explain how reflected light from objects causes objects to be seen. Compare multiple given solutions to transfer information.	Create a solution or develop a model to describe the patterns of light or mechanical waves, or to explain how reflected light from objects causes objects to be seen. Construct and compare multiple solutions to transfer information.	Revise a model to make predictions and describe the patterns of light or mechanical waves, or to explain how reflected light from objects causes objects to be seen. Revise a solution to transfer information.
Earth Science				
4.4	Identify data that would help explain the patterns created from the orbit and rotation of the Sun-Earth-Moon system. Make observations about the apparent brightness of the Sun and stars.	Describe the patterns created from the orbit and rotation of the Sun-Earth-Moon system. Identify explanations about the apparent brightness of the Sun and stars.	Analyze and interpret data in order to explain the patterns created from the orbit and rotation of the Sun-Earth-Moon system. Construct explanations about the apparent brightness of the Sun and stars.	Make predictions regarding the appearance of stars in the night sky or the patterns created from the orbit and rotation of the Sun-Earth-Moon system. Make predictions about the apparent brightness of stars.

Exhibit C-2. RISE Science Assessment Range Performance-Level Descriptors, Grade 5

	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
	The Level 1 student is below proficient in applying all three dimensions as specified in the Utah SEEd standards. The student generally performs significantly below the standard for the grade-level, is able to partially access grade level content, and engages with the science and engineering practices and crosscutting concepts with extensive support.	The Level 2 student is approaching proficient in applying all three dimensions as specified in the Utah SEEd standards. The student performs slightly below the standard for the grade level, is able to access grade-level content, and engages with most of the science and engineering practices and crosscutting concepts with some independence and support.	The Level 3 student is proficient in applying all three dimensions as specified in the Utah SEEd standards. The student generally performs at the standard for the grade level, is able to access grade-level content, and engages with the science and engineering practices and crosscutting concepts independently.	The Level 4 student is highly proficient in applying all three dimensions as specified in the Utah SEEd standards. The student generally performs significantly above the standard for the grade level, is able to access above grade-level content, and engages with the science and engineering practices and crosscutting concepts independently.
Earth Science				
5.1	Make observations from data and/or collect information to identify parts of a model and identify patterns that would show how the interactions among Earth's four major systems might cause patterned features of the Earth, distribution of water, and physical and biological constructive and deconstructive forces. Use information and observations from sources to identify natural hazards on humans.	Identify questions, use data sets, create graphs, and/or carry out investigations using models or information that show how the interactions among Earth's four major systems might cause patterned features of the Earth, distribution of water, and physical and biological constructive and deconstructive forces. Compare multiple solutions to help explain the cause and effect relationship of natural hazards on humans.	Ask questions, develop and/or use simple models, carry out investigations, or evaluate evidence using mathematical thinking, reasoning, and information regarding how the interactions among Earth's four major systems might cause patterned features of the Earth, distribution of water, and physical and biological constructive and deconstructive forces. Generate and evaluate the merits or accuracy of a solution that could explain and reduce the cause and effect relationship of natural hazards on humans.	Revise a model, analyze the data sets from an investigation using mathematical thinking, and research how to communicate or predict how the interactions among Earth's four major systems might cause patterned features of the Earth, distribution of water, and physical and biological constructive and deconstructive forces. Evaluate, compare, and revise a solution to a problem to predict changes that can occur in the cause and effect relationships of natural hazards on humans.
Physical Science				

	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
	The Level 1 student is below proficient in applying all three dimensions as specified in the Utah SEEd standards. The student generally performs significantly below the standard for the grade-level, is able to partially access grade level content, and engages with the science and engineering practices and crosscutting concepts with extensive support.	The Level 2 student is approaching proficient in applying all three dimensions as specified in the Utah SEEd standards. The student performs slightly below the standard for the grade level, is able to access grade-level content, and engages with most of the science and engineering practices and crosscutting concepts with some independence and support.	The Level 3 student is proficient in applying all three dimensions as specified in the Utah SEEd standards. The student generally performs at the standard for the grade level, is able to access grade-level content, and engages with the science and engineering practices and crosscutting concepts independently.	The Level 4 student is highly proficient in applying all three dimensions as specified in the Utah SEEd standards. The student generally performs significantly above the standard for the grade level, is able to access above grade-level content, and engages with the science and engineering practices and crosscutting concepts independently.
5.2	Make observations about patterns of properties and identify evidence of changes when two or more substances are combined. Measure and graph quantities to show matter is conserved regardless of the change that occurs and make observations from a model that matter is made of particles too small too be seen.	Use models to test controlled variables and determine whether a change occurs when two or more substances are combined. Measure and graph quantities to show matter is conserved regardless of the change that occurs and use a model to show matter is made of particles too small to be seen.	Conduct an investigation, using controlled variables, to combine two or more substances and identify new substances based on the patterns of their properties. Measure and graph quantities to show matter is conserved regardless of the change that occurs and develop a model to show matter is made of particles too small to be seen.	Evaluate and revise an investigation or model that combines two or more substances and identify new substances based on the patterns of their properties. Measure and graph quantities to show matter is conserved regardless of the change that occurs and evaluate limitations of a model that shows matter is made of particles too small to be seen.
	Life Science			
5.3	Identify the parts of a model that show the cycling of matter through plants, animals, decomposers, and the environment. Make observations that plants use air, water, and energy from the Sun for growth. Make observations that organisms obtain energy and matter from their food for survival, support, and structures. Use information to identify design solutions that aim to conserve the Earth’s environments and resources.	Use a model to show the cycling of matter through plants, animals, decomposers, and the environment. Recognize a change in an ecosystem. Identify data as evidence that plants use air, water, and energy from the Sun for growth. Identify data as evidence that organisms obtain energy and matter from their food for survival, support, and structures. Compare multiple design solutions that aim to conserve the Earth’s environments and resources.	Develop and/or use a model to show the cycling of matter through plants, animals, decomposers, and the environment. Create a simple food chain to show an interaction in an ecosystem. Use evidence to construct an explanation that organisms need food for the energy and matter to grow and repair their internal and external structures. Evaluate design solutions that aim to conserve the Earth’s environments and resources.	Evaluate and revise a model to show the cycling of matter through plants, animals, decomposers, and the environment. Evaluate the effects when a simple food chain changes. Compare and refine arguments that organisms need food for the energy and materials to grow and repair their internal and external structures. Evaluate, compare and revise a design solution that aims to conserve the Earth’s environments and resources.

Appendix D

Standard-Setting Assertion Maps

Standard-Setting Assertion Maps

Exhibit D-1. Standard-Setting Assertion Map, Science Grade 4

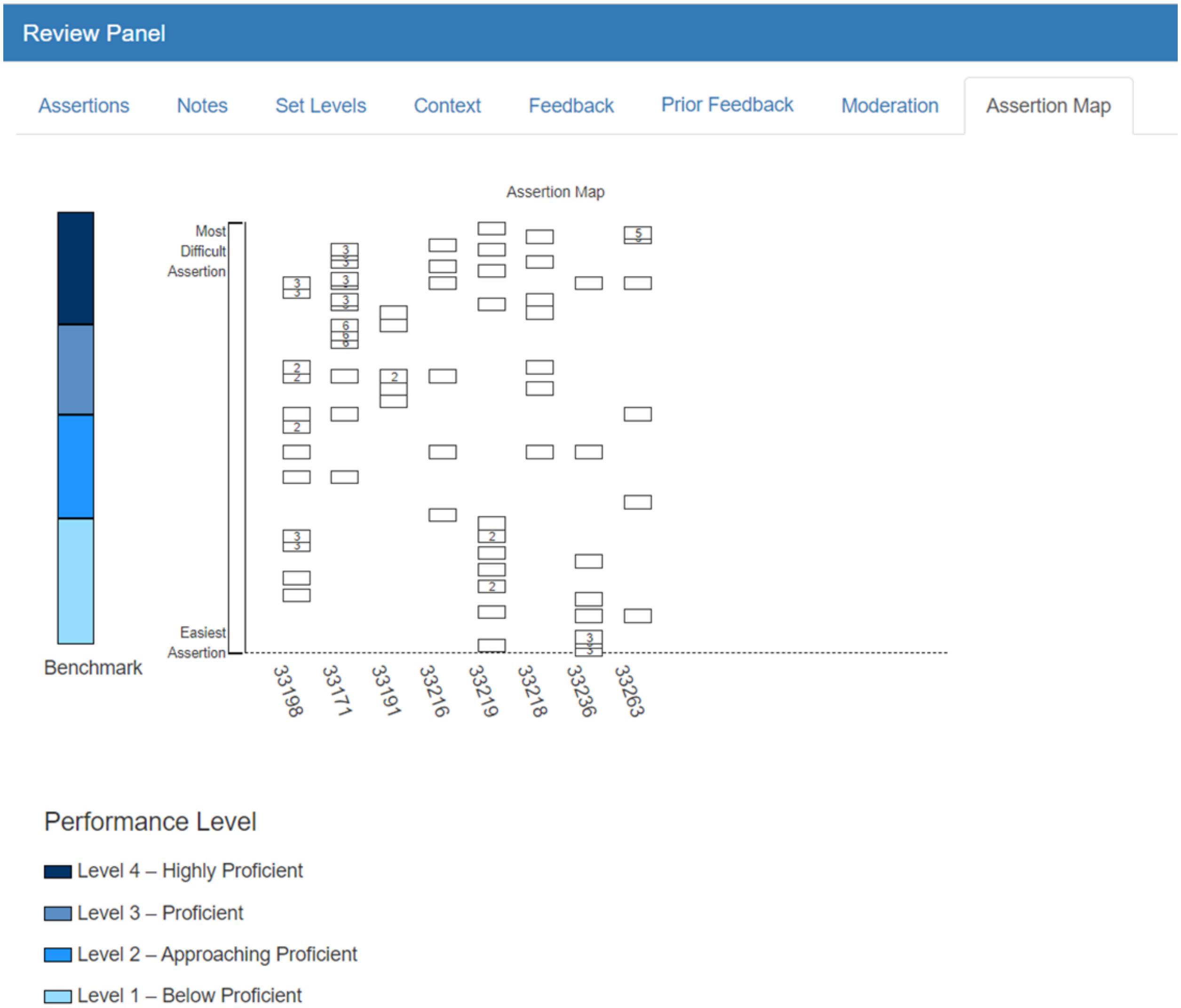
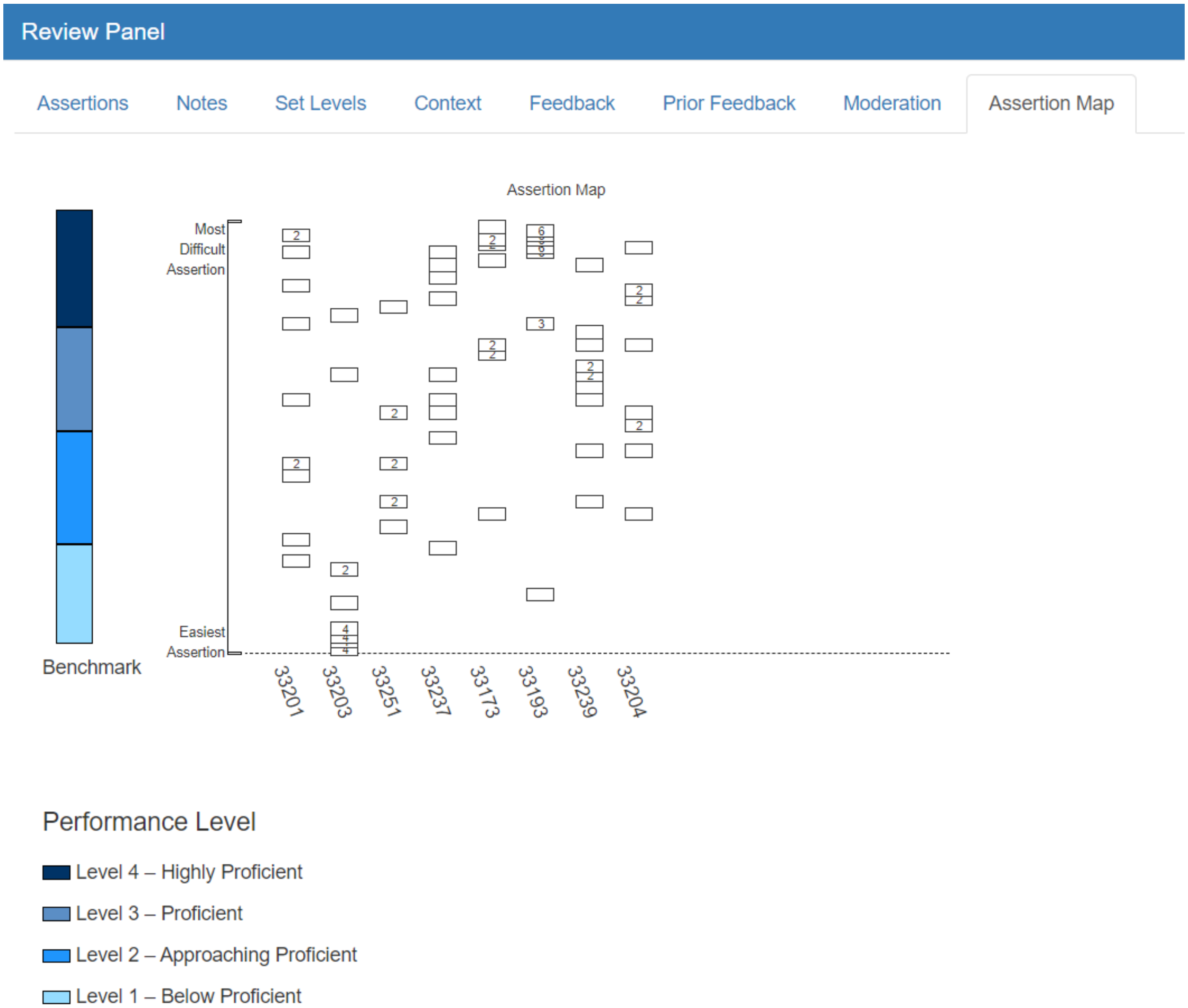


Exhibit D-2. Standard-Setting Assertion Map, Science Grade 5



Appendix E

Standard-Setting Workshop Agenda

Standard-Setting Workshop Agenda

Exhibit E-1. Day 1 Standard-Setting Workshop Agenda

READINESS
IMPROVEMENT
SUCCESS
EMPOWERMENT

2021 Standard Setting for the Utah RISE Science Assessment

SCIENCE PANEL AGENDA

July 21 – 22, 2021

Standard-Setting Workshop Day 1 – Wednesday, July 21, 2021	
8:00 – 8:15 a.m.	**Participant Login**
8:15 – 8:20 a.m.	**Welcome and Introductions from the Utah State Board of Education (USBE)**

8:20 – 9:05 a.m.	**Large-Group Orientation**
	Welcome and introductions
	Purpose of standard-setting workshop
	General overview of standard-setting procedures and key concepts
	• Performance-level descriptors (PLDs)
	• Item clusters
	  Item interactions
	  Scoring assertions
	• Item cluster review
	• Assertion mapping – two rounds
	• Contextual information – benchmark and impact data
	• Panelist feedback and impact data

9:05 – 9:15 a.m.	**Break, and Separate into Small Group Rooms**
9:15 – 10:45 a.m.	**Panelists Experience Online Operational Assessment and Test Environment**
10:45 – 11:45 a.m.	**Review Range PLDs and Discuss Threshold PLDs** Parse range PLDs to identify specific claims within performance levels Identify knowledge and skills differentiating student performance between levels
11:45 – 12:30 p.m.	**Lunch (on your own)**
12:30 – 1:30 p.m.	**Continue Discussions of PLDs**
1:30 – 4:00 p.m.	**Review of Ordered Scoring Assertion Booklet (OSAB) Items** Composition of the item clusters Training on how to review item clusters • How do the item interactions support the scoring assertion? • Why is this assertion more difficult than the previous assertion? • How does the scoring assertion and the underlying interactions relate to the PLDs?

Cambium Assessment, Inc. 1

Standard-Setting Workshop Day 1 – Wednesday, July 21, 2021	
	Training on usage of contextual information – benchmark and impact data Instruction in accessing the item clusters Review of item clusters in the OSAB
4:00 p.m.	**Adjourn**

Exhibit E-2. Day 2 Standard-Setting Workshop Agenda

Standard-Setting Workshop Day 2 – Thursday, July 22, 2021	
8:00 – 10:00 a.m.	**Continue Review of OSAB Items**
10:00 – 10:45 a.m.	**Training on Assertion-Mapping Task**
	Review of assertion-mapping key concepts
	▪ Performance-level descriptors (PLDs)
	▪ Ordered scoring assertions
	▪ Assertion map
	▪ Contextual information – benchmark and impact data
	Training on assertion-mapping tool
	Practice assertion-mapping task and standard-setting quiz
10:45 – 11:00 a.m.	**Break**
11:00 – 12:30 p.m.	**Round 1 Assertion Mapping**
	Review of assertion-mapping procedures and key concepts
	Completion of assertion-mapping readiness form
	Round 1 assertion mapping
12:30 – 1:15 p.m.	**Lunch (on your own)**
1:15 – 2:00 p.m.	**Review Panelist Feedback Data and Discuss Round 1 Results**
	How to use panelist agreement feedback data and impact data
	Presentation and discussion of Round 1 panelist agreement feedback data and impact data
2:00 – 3:00 p.m.	**Round 2 Assertion Mapping**
	Review of assertion-mapping procedures and key concepts
	Completion of assertion-mapping readiness form
	Round 2 assertion mapping
3:00 – 3:30 p.m.	**Workshop Evaluations and Educator Panel Adjourn**
3:30 – 4:00 p.m.	**Across Grade Moderation with All Science Table Leaders**
4:00 p.m.	**Table Leader Adjourn**

Appendix F

Standard-Setting Training Slides

Exhibit F-1. Large-Group Orientation Slides

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RISE

READINESS
IMPROVEMENT
SUCCESS
EMPOWERMENT

Standard Setting: Science

July 21 – 22, 2021
Utah RISE Science Assessment

2

Welcome and Introductions

Utah State Board of Education (USBE)

State Education Representatives

3

- **Utah State Board of Education (USBE)**
  - Jared Wright
  - Scott Roskelley
  - Cydnee Carter

4

Large-Group Orientation

Cambium Assessment, Inc.

Workshop Leaders

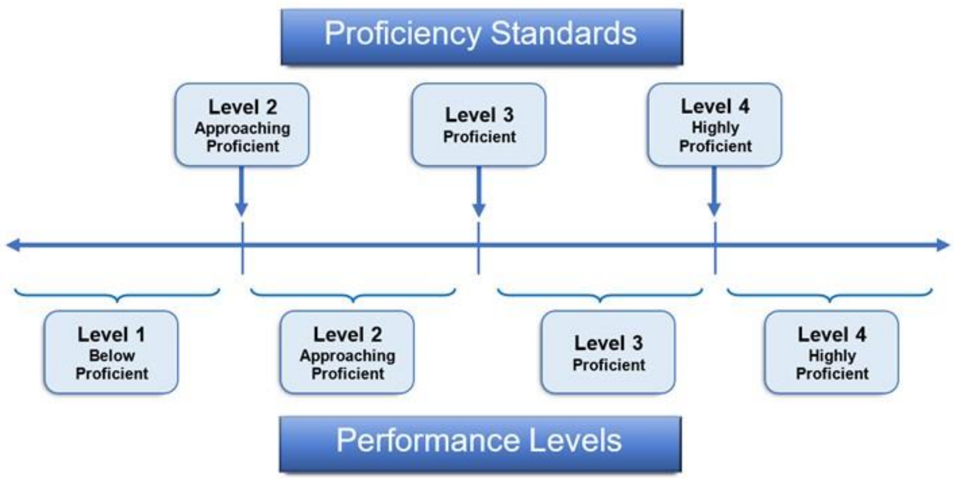
5

- **Cambium Assessment, Inc.**
  - Psychometrics
    - Stephan Ahadi
    - Frank Rijmen
    - Dandan Liao
  - Room Facilitators
    - Grade 4: Jim McCann and Anneka Wiersma
    - Grade 5: Kevin Dwyer and Vanessa Johnson

Purpose of the Standard-Setting Workshop

6

- Recommend to the USBE proficiency standards to differentiate the four performance levels on the RISE Science Assessment in grades 4 and 5



Main Workshop Activities

7

- Large-Group Orientation
- Panel Training
  - Take the Online Operational Assessment
  - Review Range PLDs
  - Discuss Just Barely PLDs
  - Review the Ordered Scoring Assertion Booklet
  - Training on Assertion-Mapping Procedure
- Recommend Proficiency Standards
  - Two rounds
  - Panelist feedback following Round 1
  - Vertical Articulation
- Workshop Evaluation

Importance of Security

8

- Please do not:
  - Create any form of electronic copy of test content (screenshots, electronic notes, etc.)
  - Create any hand-written notes of test content
  - Discuss test content with anyone outside the meeting
  - Use your computer during the course of the meeting for any purpose other than participating in the item review (e.g., email, web browsing, social media)
  - Save notes about item or passage content to your computer

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Reason for New Science Standards

9

- The Utah State Board of Education adopted the Science with Engineering Education (SEEd) Standards for students in grades K–5 in June 2019
- New science assessments, aligned with the SEEd Standards, were developed and administered to grade 4 and 5 students in Utah in spring 2021

Description of the Science Test Design

10

- Grades 4 and 5 tests assess students' understanding of the Utah Science with Engineering Education (SEEd) Standards
- The RISE Science Assessment at grades 4 and 5 includes 8 item clusters
  - **Item clusters** include a stimulus and a series of questions that generally take students about 6–12 minutes to complete
- All items ask students to use science and engineering practices and apply their understanding of disciplinary core ideas and crosscutting concepts to make sense out of real-world phenomena

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Scoring Assertions

11

- Within each item cluster, a series of explicit assertions can be made about the knowledge and skills that a student has demonstrated based on specific features of the student's responses
- Scoring assertions can be supported based on students' responses in one or more interactions within an item cluster.
- For example:
  - A student correctly graphs data points indicating that (s)he can construct a graph showing the relationship between two variables,
  - Makes an incorrect inference about the relationship between the two variables, thereby not supporting the assertion that the student can interpret relationships expressed graphically

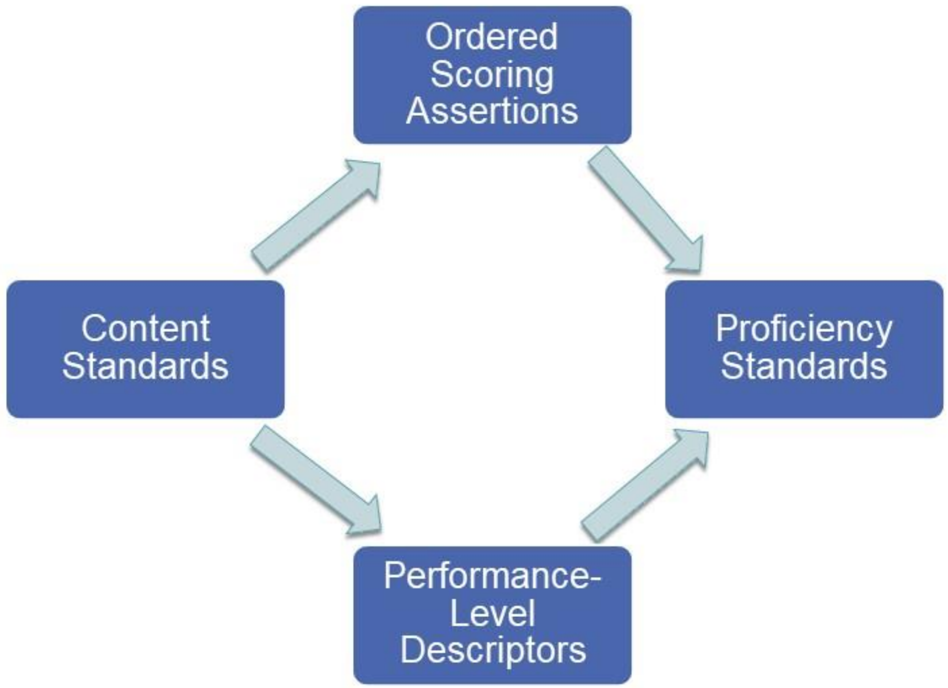
Standard Setting

12

- Systematic process by which trained participants use their knowledge of academic content standards, test items, and student performance to recommend cut-scores associated with each performance level on the test

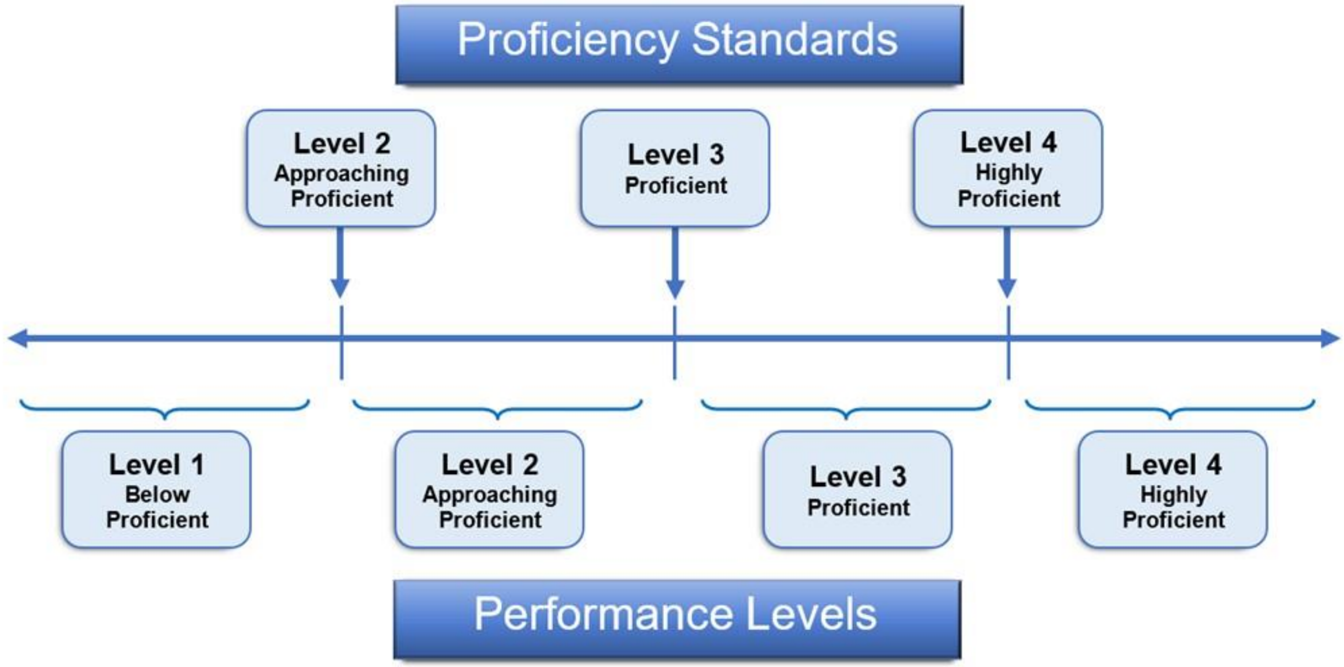
From Content Standards to Proficiency Standards

13



Proficiency Standards and Performance Levels

14



Assertion-Mapping Procedure (AMP)

15

- Test-centered procedure
- Employs an ordered item procedure adapted to accommodate new multiple interaction item types
- Map ordered scoring assertions to performance levels
- Is being employed to recommend proficiency standards in multiple states assessing three-dimensional science standards

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Key Elements of the AMP

16

- Performance-level descriptors (PLDs)
  - Range PLDs
  - Threshold PLDs (just barely meets)
- Ordered scoring assertions
- Assertion map
- Assertion mapping in multiple rounds
  - Contextual information – benchmarking data and student impact data
  - Panelist feedback and group discussion
- Vertical articulation and moderation

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Performance-Level Descriptors (PLDs)

17

- Describe what students within each performance level are expected to know and be able to do
- PLDs are the link between the content and proficiency standards

Grade 4 Range PLDs – Level 3 Proficient

18

- **Strand 4.1:** Analyze and interpret past and present organism characteristics to explain that when there is a change in the environment, certain individual organisms could have internal and/or external structures that lead to advantages in survival and reproduction, or that living organisms resemble organisms that once lived on Earth…
- **Strand 4.2:** Ask questions and/or conduct an investigation to use produced data to provide evidence on how energy can be transferred from stored and/or motion energy to different forms like sound, light, and electrical currents…
- **Strand 4.3:** Create a solution or develop a model to describe the patterns of light or mechanical waves or to explain how reflected light from objects causes objects to be seen…
- **Strand 4.4:** Analyze and interpret data in order to explain the patterns created from the orbit and rotation of the Sun-Earth-Moon system…

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Grade 4 Range PLDs Across Performance Levels

19

Strand 4.3: Wave Patterns

- **Level 1 – Below Proficient:** **Make observations** about patterns of light or mechanical waves or how reflected light from objects causes objects to be seen. **Identify a solution** to transfer information.
- **Level 2 – Approaching Proficient:** Use a model to describe the patterns of light or mechanical waves or to explain how reflected light from objects causes objects to be seen. **Compare multiple given solutions** to transfer information.
- **Level 3 – Proficient:** **Create a solution** or **develop a model** to **describe the patterns** of light or mechanical waves to **explain** how reflected light from objects causes objects to be seen. **Construct and compare multiple solutions** to transfer information.
- **Level 4 – Highly Proficient:** **Revise a model** to **make predictions** and **describe the patterns** of light or mechanical waves to **explain** how reflected light from objects causes objects to be seen. **Revise a solution** to transfer information.

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Important Concepts

20

- "Just barely" meets the performance level
  - Differentiate students who just barely qualify for entry into a performance level from those just below
- Assertion mapping
  - Map each scoring assertion to the performance level that the assertion best supports
- Ordering of assertions
  - Assertions are ordered by difficulty within an item
  - Mapping of assertions to performance levels should reflect the ordering – no inversions within an item

Ordered Scoring Assertions

21

- The ordered scoring assertion booklet (OSAB) constitutes a test administration:
  - A test form that meets test blueprint specifications
- It is important to evaluate scoring assertions as they relate to the item interactions
- Assertions within items are ordered by difficulty
  - Assertions within an item may not represent all PLDs

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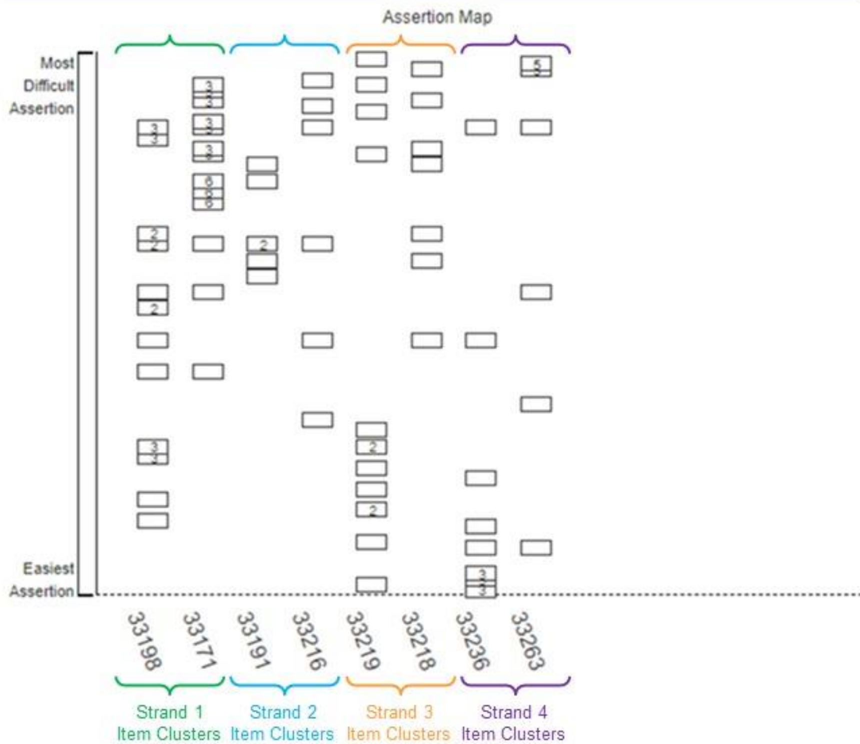
What If an Assertion Seems Out of Order?

22

- Assertion ordering is based on student performance
- Assertions may seem out of order because they are ordered by difficulty, and not by content or cognitive process
- Identify why a scoring assertion is more difficult than the assertions before it, and easier than the assertions following it
  - Pay special attention to the interactions supporting the assertions
  - Assertions may be more or less difficult because of the underlying interactions

Assertion-Mapping Task

23



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Studying the Items and Scoring Assertions

24

- Working individually, for each scoring assertion ask yourself:
  1. *How do the item interactions support the scoring assertion?*
  2. *Why is this assertion more difficult than the previous assertions (within the item)?*
  3. *How does the scoring assertion and the underlying interactions relate to the PLDs?*
- Working as a group
  - Discuss how item interactions support scoring assertions
  - Discuss ordering of scoring assertions
  - Discuss how scoring assertions are related to the PLDs

What If an Item Seems Wrong or Unfair?

25

- Do not let yourself get distracted – this is not an item review meeting
- If you believe something is wrong with an item interaction or scoring assertion, tell the Workshop Leader, then skip over the assertion as you review the rest of the assertions within the item

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"Just Barely" Meets the Proficiency Standard

26

- When considering each performance level, we are especially interested in the transition areas between performance levels
- Pay attention to characteristics of students who ***just barely*** qualify for entry into the performance level from those just below
  - Not a typical example of students in the performance level
  - Although they are not good examples of the performance level, they do still meet the standard, or description in the PLD

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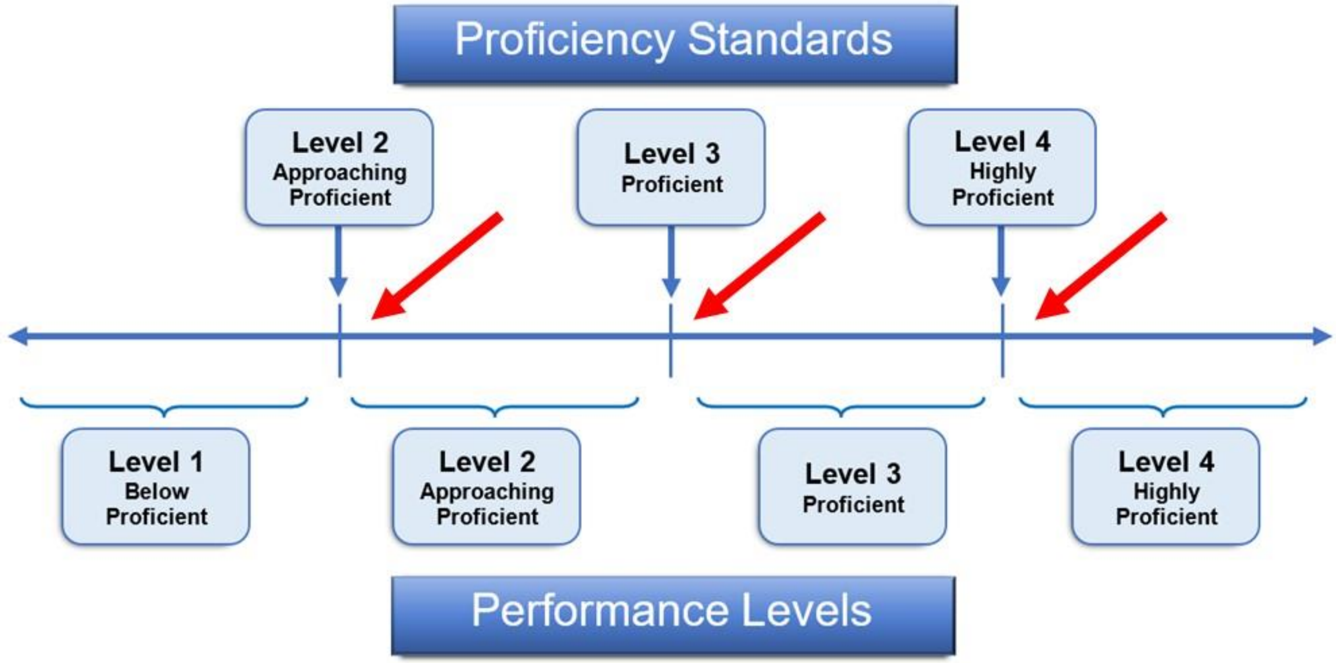
Threshold “Just Barely” PLDs

27



Assertion-Mapping Task

28

- Map assertions to performance levels
  - Consider what differentiates students who just barely qualify for entry into the performance level from those not quite ready for entry into the performance level
  - Evidence that the student has demonstrated knowledge and skills necessary for entry into the performance level
- Map assertions in the online standard-setting tool

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Group Feedback and Discussion

29

- Goals
  - Add important information to your thinking
  - Develop common understandings
  - Inform possible re-evaluation of assertion mappings
- Expectation is converging judgments
  - Consensus is not a requirement or goal

Feedback and Impact Data

30

- Percentage of students reaching or exceeding the standard based on assertion mappings
- Group discussion
  - Does the percentage of students reaching or exceeding the current recommended proficiency standard seem reasonable?
  - What are the implications for the proficiency standards?
  - All proficiency standard recommendations should be based on content rationales

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Creating a System of Proficiency Standards

31

- Proficiency standards for a statewide system must be coherent across grades and subjects
  - Articulation
  - Benchmarking
  - Moderation

Benchmarking

32

- Are proficiency standards nationally competitive and represent on track for college readiness?
  - NAEP Science
  - SAGE Science
- Performance levels for benchmark assessments will provide context about the general neighborhood in which proficiency standards likely reside

2015 Utah NAEP Science Results

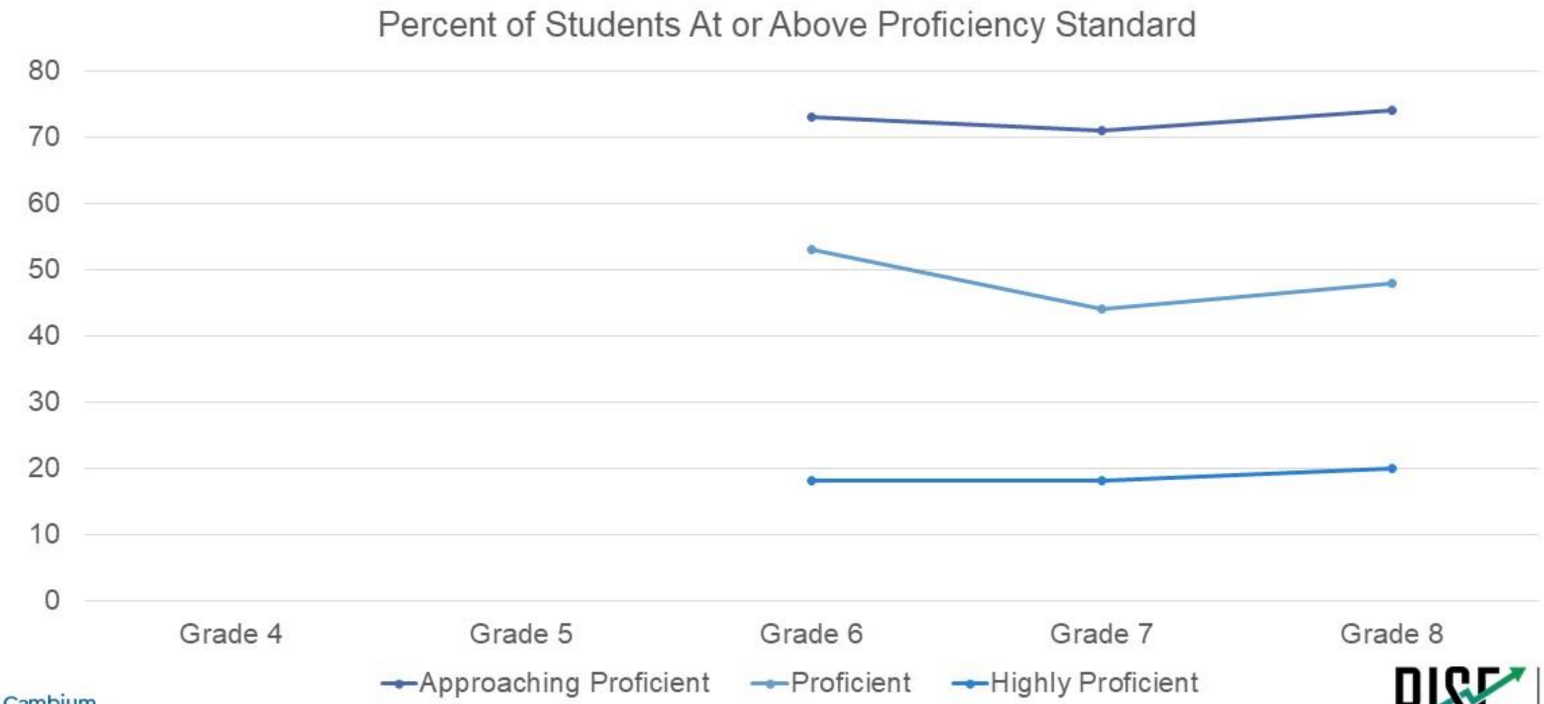
Grade	At or Above		
	Basic	Proficient	Advanced
4	82	45	1
5	82	46	2

2018 Utah SAGE Science Results

Grade	At or Above		
	Approaching Proficient	Proficient	Highly Proficient
4	71	47	26
5	77	51	27

Articulation

33



Moderation

34

- After the standards have been recommended by the panelists, the Table Leaders meet to review the outcomes
  - All members are invited to observe this meeting but only the Table Leaders participate
- If there are anomalies across grades or subjects the Table Leaders are permitted to adjust the proficiency standards (assuming there is a good content reason for doing so)

Break Into Groups

35

Panel	Facilitators
Grade 4 Science	Jim McCann Anneka Wiersma
Grade 5 Science	Kevin Dwyer Vanessa Johnson

Exhibit F-2. Breakout Room Slides

Standard Setting: Science

July 21 – 22, 2021
Utah RISE Science Assessment

2

Standard-Setting Workshop Day 1

Recommending Proficiency Standards for Grade 4 Science

Welcome!

3

- Introductions
- Housekeeping
  - Please stay on camera unless we are at lunch or on a break.
  - Let us know if you need to step away from the meeting.

Standard-Setting Workshop Day 1 Agenda

4

- Experience Online Operational Assessment and Test Environment
- Review Range PLDs and Discuss Threshold PLDs
- Review Ordered Scoring Assertion Booklet (OSAB)

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5

Operational Test Review

Description of the Science Test Design

6

- Grades 4 and 5 tests assess students' understanding of the Utah Science with Engineering Education (SEEd) Standards
- The RISE Science Assessment at grades 4 and 5 includes 8 item clusters
  - **Item clusters** include a stimulus and a series of questions that generally take students about 6–12 minutes to complete
- All items ask students to use science and engineering practices and apply their understanding of disciplinary core ideas and crosscutting concepts to make sense out of real-world phenomena

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Utah RISE Science Grade 4 Blueprint

7

Grade 4 Science with Engineering Education Standards (SEEd) Assessment Blueprint		
Reporting Category	***Clusters***	***% of Test***
Strand 1	2	25%
Strand 2	2	25%
Strand 3	2	25%
Strand 4	2	25%
TOTAL	**8**	**100%**

Review of 3D Science Standards

8

- Each 3D "standard" is a blend of one or two "big ideas" from a science discipline (DCI), one of several scientific activities that are common to the doing of all science (SEP), and one of a number of broad themes that are found across scientific disciplinary boundaries (CCC).

Review of Item Clusters – 3D Composition

9

Three Dimensions of Science[1]

Science education includes three dimensions of science understanding: science and engineering practices, crosscutting concepts, and disciplinary core ideas. Every standard includes each of the three dimensions; **Science and Engineering Practices are bolded**, Crosscutting Concepts are underlined, and Disciplinary Core Ideas are in normal font. Standards with *specific engineering expectations are italicized.*

Strand 4.3: WAVE PATTERNS

Waves are regular patterns of motion that transfer energy and have properties such as amplitude (height of the wave) and wavelength (spacing between wave peaks). Waves in water can be directly observed. Light waves cause objects to be seen when light reflected from objects enters the eye. Humans use waves and other patterns to transfer information.

- **Standard 4.3.1** **Develop and use a model** to describe the regular patterns of waves. Emphasize patterns in terms of amplitude and wavelength. Examples of models could include diagrams, analogies, and physical models such as water or rope. (PS4.A)

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Review of Item Clusters – 3D Composition

10

- Three-Dimensional Science Standards

Scientific and Engineering Practices	Crosscutting Concepts	Disciplinary Core Ideas
▸ Asking questions or defining problems ▸ Developing and using models ▸ Planning and carrying out investigations ▸ Analyzing and interpreting data ▸ Using mathematics and computational thinking ▸ Constructing explanations and designing solutions ▸ Engaging in argument from evidence ▸ Obtaining, evaluating, and communicating information	▸ Patterns ▸ Cause and effect: mechanism and explanation ▸ Scale, proportion, and quantity ▸ Systems and system models ▸ Energy and matter: flows, cycles, and conservation ▸ Structure and function ▸ Stability and change	▸ Earth and Space Science ▸ Life Science ▸ Physical Science ▸ Engineering

Item Clusters

11

- Designed to engage the student in grade-appropriate, meaningful scientific activity aligned to a specific standard
- Item clusters include a stimulus and a series of questions that generally take students about 6–12 minutes to complete

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Structure of Item Clusters

12

- Each item cluster begins with a ***phenomenon***, which is the observation about the natural world which anchors the entire item cluster. The interactions within the item cluster all address the phenomenon.
- Each item cluster engages the student in a grade-appropriate, meaningful ***scientific activity*** aligned to a specific standard.
- A ***cluster task statement*** comes at the end of the stimulus and an overview of the point of the item cluster.
- Each measurable moment is captured with a ***scoring assertion***. These assertions clearly articulate what evidence the student has provided as a means to infer a specific skill or concept.

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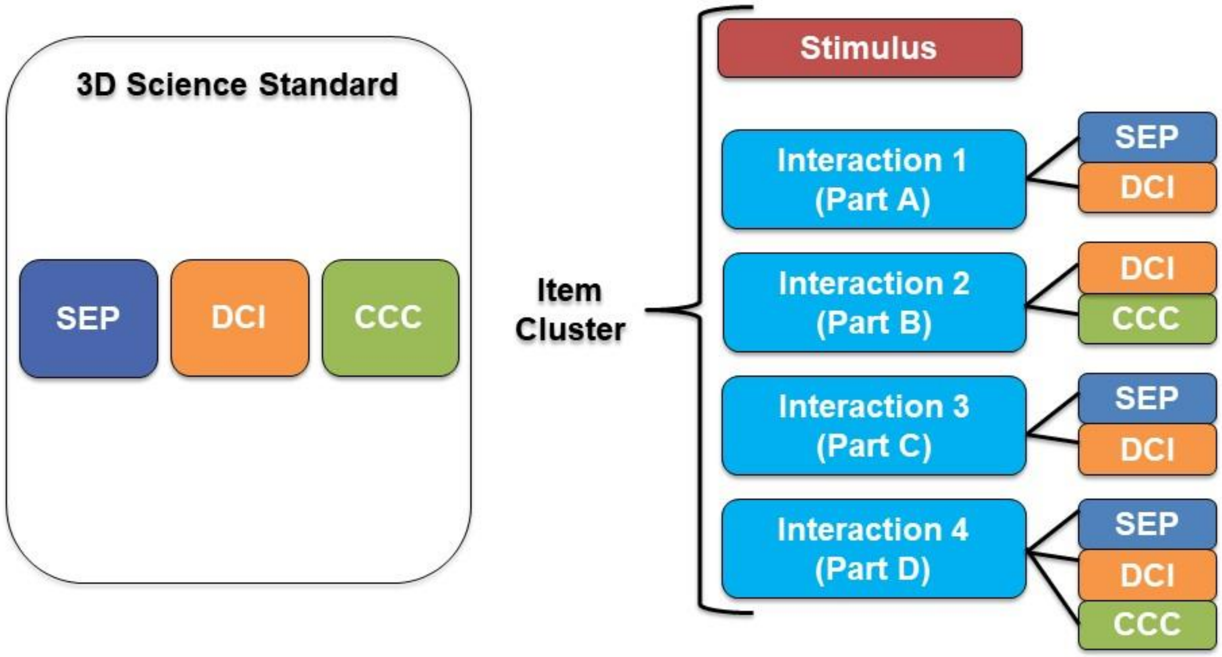
Review of Science Item Clusters – Composition

- Evidence-centered design
- Multiple interactions in which students engage a phenomenon
  - Identify
  - Describe
  - Model
  - Predict
  - Explain
- Interactions support a set of assertions about what the student has demonstrated they know and are able to do

Review of Item Clusters – Composition

14



Review of Item Clusters – Composition Example

15

Sparks fly off the wheels of a train when the brakes are applied.

Click the small gray arrow to see a demonstration of this happening in Animation 1.

Animation 1. Braking Train

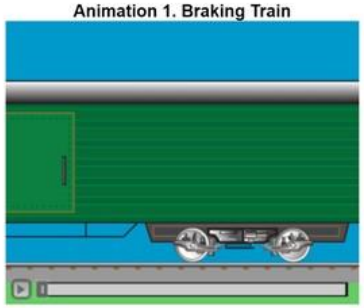


Table 1 explains some properties of the train and its surroundings as energy flows throughout the system.

Table 1. Properties of the Train System

Before Brakes Are Applied	After Brakes Applied
No sparks	Sparks fly off the wheels and brake pads
Brake pads make no sound	Brake pads make sound

1680

Part A

Click on each blank box to select the word or phrase that completes each sentence, constructing an argument about what happens when the train's brakes are applied.

Applying the brakes causes the [▾] to transfer kinetic energy to the [▾]. This causes the [▾] to slow down and have [▾] kinetic energy, which slows the train.

Part B

When the train applies its brakes, what happens to the energy of the surroundings?

- Ⓐ The surroundings gain energy.
- Ⓑ The surroundings lose energy.
- Ⓒ The surroundings do not gain or lose energy.
- Ⓓ There is not enough information to determine the energy of the surroundings.

Part C

Which **three** statements support your choice in part B?

- ☐ The train maintains its speed.
- ☐ Sound is produced.
- ☐ Sound is consumed.
- ☐ Light is produced.
- ☐ Light is consumed.
- ☐ Heat is produced.
- ☐ Heat is consumed.

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Review of Item Clusters – Scoring Assertions

16

Score Rationale	
The student selected "wheels" for the first blank and "brakes" or "rails" for the second blank showing an understanding of the interactions in the system and the effects of that energy flow.	✖
The student selected "wheels" for the third blank and "less" for the fourth blank showing an understanding of the interactions in the system and the effects of that energy flow.	✖
The student selected "The surroundings gain energy," showing an understanding of how the energy of the wheels change and is distributed throughout the system.	✖
The student selected "Sound is produced," providing evidence of how the energy of the surroundings has changed.	✖
The student selected "Light is produced," providing evidence of how the energy of the surroundings has changed.	✖
The student selected "Heat is produced," providing evidence of how the energy of the surroundings has changed.	✖
The student selected "The brakes make a screeching sound," which shows an understanding of how the energy changed throughout the system and that those changes serve as evidence that the the Kinetic Energy of the wheels transfers out of the wheels/system when the brakes are applied.	✖
The student selected "The sparks that fly off the wheels give off light," which shows an understanding of how the energy changed throughout the system and that those changes serve as evidence that the the Kinetic Energy of the wheels transfers out of the wheels/system when the brakes are applied.	✖
The student selected "The brakes give off energy as heat," which shows an understanding of how the energy changed throughout the system and that those changes serve as evidence that the the Kinetic Energy of the wheels transfers out of the wheels/system when the brakes are applied.	✖

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Experience the Online Assessment

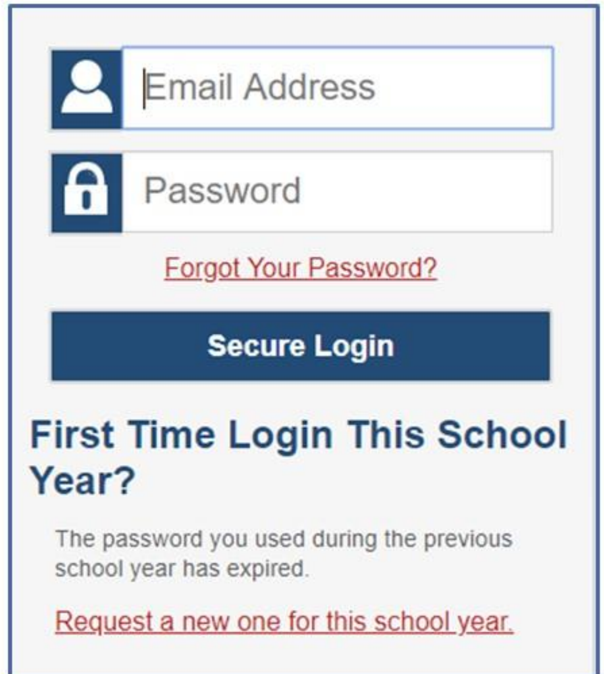
17

- Time to "Take the Test"
- Item clusters administered in spring 2021
- Interface is similar to the online test environment that students experienced
- This is an opportunity to interact with the item clusters
  - No need to "complete" the test, you will have more time later to become very familiar with the items
  - You can score your responses
- You have ~90 minutes (stop at 10:45 a.m.)
- Please complete the ***Panelist Demographic Survey*** if you finish early!

Accessing the Online Assessment

18

- Open the Chrome browser
- Sign in with your Username and Password



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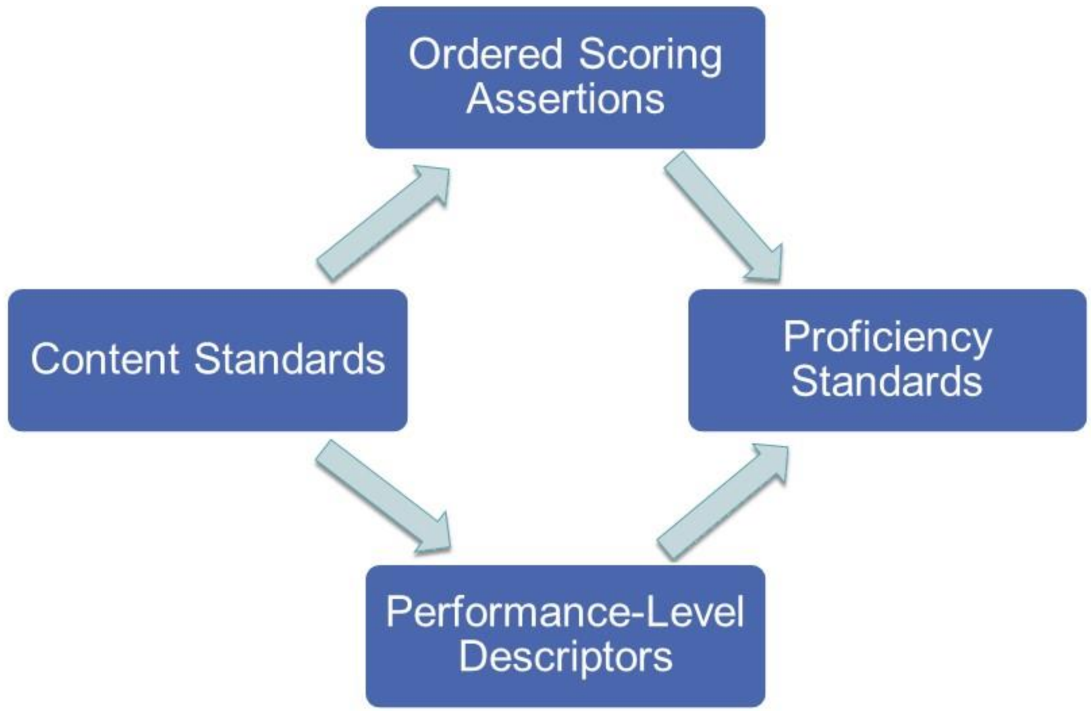
19

Experience Online Operational Assessment

Step 2: Take the Operational Test

From Content Standards to Proficiency Standards

20



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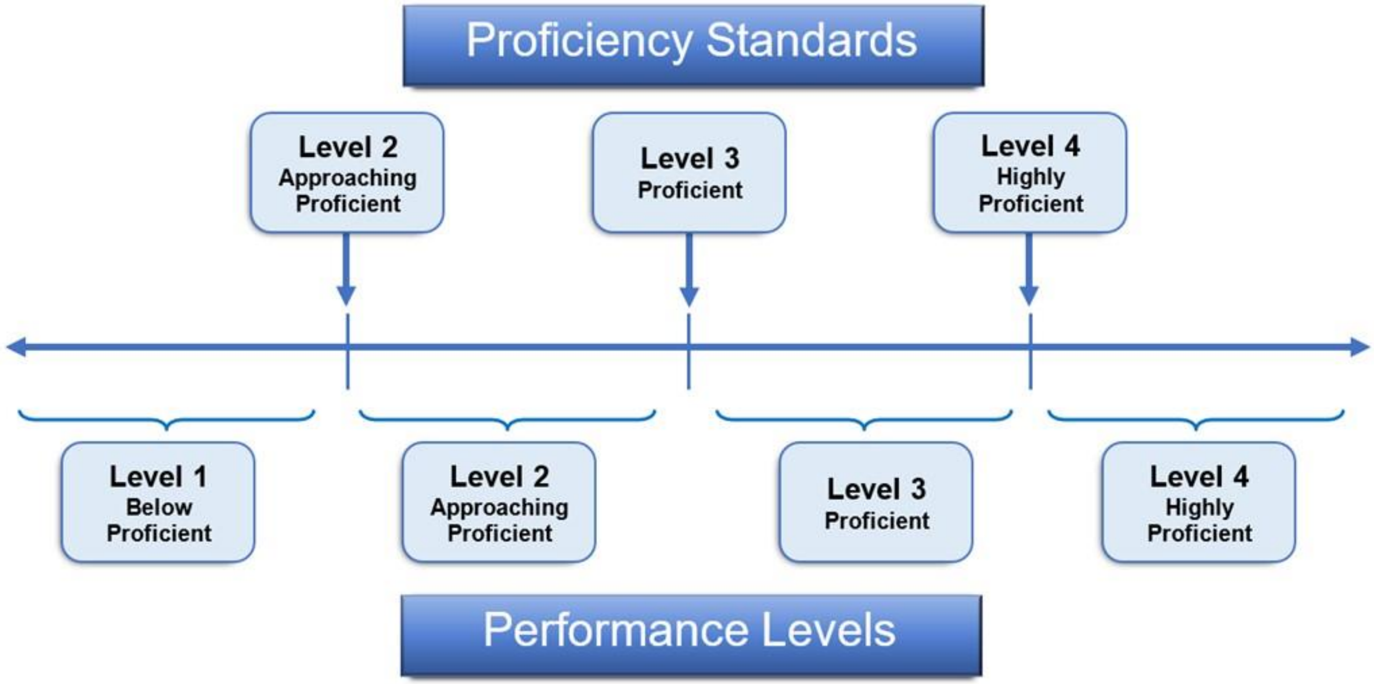
Proficiency Standards and Performance Levels

21



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22

Review of Performance-Level Descriptors

Performance-Level Descriptors (PLDs)

23

- Describe what students within each performance level are expected to know and be able to do
- PLDs are the link between content and proficiency standards

Grade 4 PLDs – Level 3 Proficient

24

- **Strand 4.1:** Analyze and interpret past and present organism characteristics to explain that when there is a change in the environment, certain individual organisms could have internal and/or external structures that lead to advantages in survival and reproduction, or that living organisms resemble organisms that once lived on Earth…
- **Strand 4.2:** Ask questions and/or conduct an investigation to use produced data to provide evidence on how energy can be transferred from stored and/or motion energy to different forms like sound, light, and electrical currents…
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Grade 4 Range PLDs Across Performance Levels

25

Strand 4.3: Wave Patterns

- **Level 1 – Below Proficient:** **Make observations** about patterns of light or mechanical waves or how reflected light from objects causes objects to be seen. **Identify a solution** to transfer information.
- **Level 2 – Approaching Proficient:** Use a model to describe the patterns of light or mechanical waves or to explain how reflected light from objects causes objects to be seen. **Compare multiple given solutions** to transfer information.
- **Level 3 – Proficient:** **Create a solution** or **develop a model** to **describe the patterns** of light or mechanical waves to **explain** how reflected light from objects causes objects to be seen. **Construct and compare multiple solutions** to transfer information.
- **Level 4 – Highly Proficient:** **Revise a model** to **make predictions** and **describe the patterns** of light or mechanical waves to **explain** how reflected light from objects causes objects to be seen. **Revise a solution** to transfer information.

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Parse and Review the PLDs

26

- Take a few minutes to review the PLDs taking notice of the verbs and skills that differentiate the performance levels
  - Think about how the skills change from Below Proficient to Highly Proficient
  - Think about the skills and knowledge these students can demonstrate
  - Idea is to get a common mental representation of these students
  - Remember: Not every piece of content will be represented in the PLDs
- PLD Discussion

Threshold "Just Barely" PLDs

27

- When considering each performance level, we are especially interested in the transition areas between performance levels
- Pay attention to characteristics of students who ***just barely*** qualify for entry into the performance level from those just below
  - Not a typical example of students in the performance level
  - Although they are poor examples of the performance level, they do meet the standard, or description in the PLD
    - Just barely Level 2 – Approaching Proficient
    - Just barely Level 3 – Proficient
    - Just barely Level 4 – Highly Proficient

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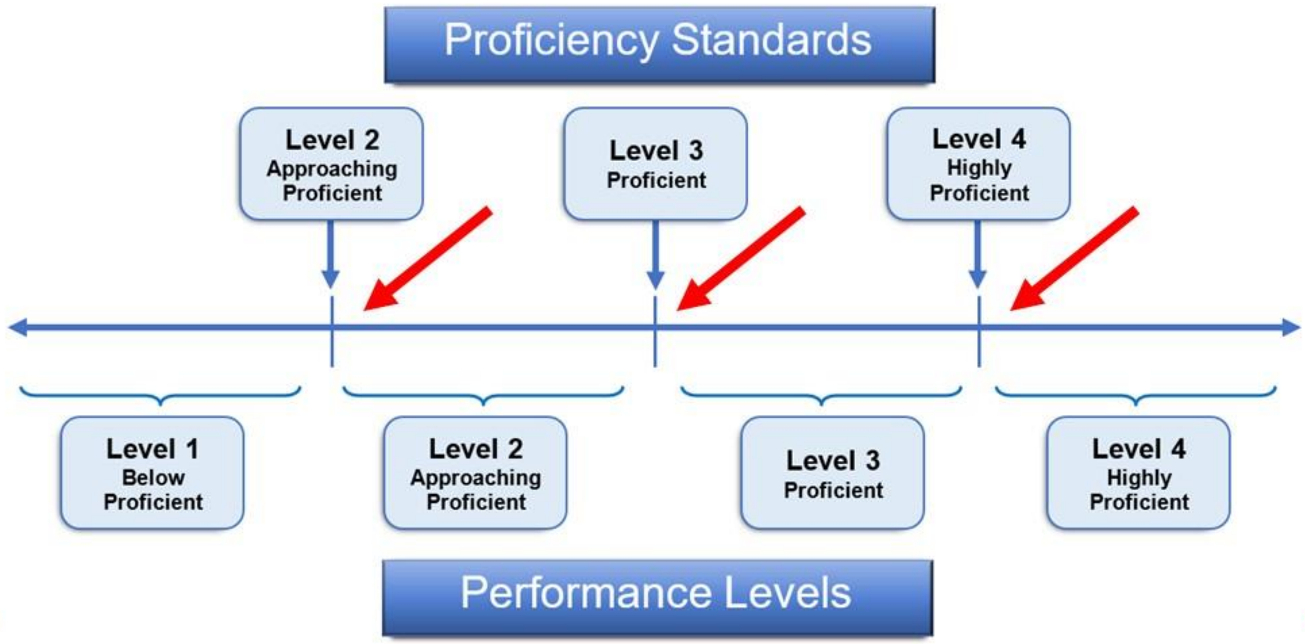
Threshold "Just Barely" PLDs

28

- Although "just barely," they do meet the standard



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Purpose of Just Barely Discussion

29

- Identify the types of skills these students can demonstrate
- Come to a common understanding of these skills and big ideas

Just Barely Discussion

30

- Think about what skills, concepts, or knowledge a just barely student would need to have to enter each level
- As a group we will discuss the skills that a just barely student needs to have to gain entry into each of the four levels
- For each performance level think about:
  - What skills and knowledge must the student demonstrate to qualify for entrance into this performance level?
  - How does this differ from the upper range of the adjacent performance level?

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31

Review of Ordered Scoring Assertion Booklet

Step 4: Review of Ordered Scoring Assertion Booklet

Ordered Scoring Assertions

32

- The Ordered Scoring Assertion Booklet (OSAB) represents the full range of standards assessed by the blueprint
- It is important to evaluate scoring assertions as they relate to the item interactions
- Within the OSAB, the scoring assertions are ordered from easiest to most difficult, within an item cluster
  - Assertions within an item may not represent all PLDs

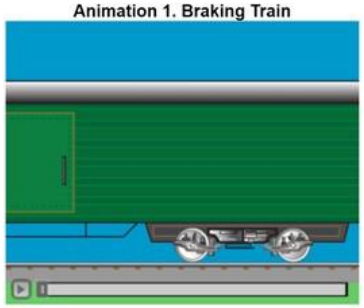
Review of Item Clusters – Composition Example

33

Sparks fly off the wheels of a train when the brakes are applied.

Click the small gray arrow to see a demonstration of this happening in Animation 1.

Animation 1. Braking Train



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1680

Part A

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Applying the brakes causes the [▾] to transfer kinetic energy to the [▾]. This causes the [▾] to slow down and have [▾] kinetic energy, which slows the train.

Part B

When the train applies its brakes, what happens to the energy of the surroundings?

- (A) The surroundings gain energy.
- (B) The surroundings lose energy.
- (C) The surroundings do not gain or lose energy.
- (D) There is not enough information to determine the energy of the surroundings.

Part C

Which **three** statements support your choice in part B?

- ☐ The train maintains its speed.
- ☐ Sound is produced.
- ☐ Sound is consumed.
- ☐ Light is produced.
- ☐ Light is consumed.
- ☐ Heat is produced.
- ☐ Heat is consumed.

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Review of Item Clusters – Scoring Assertions

34

Score Rationale	
The student selected "wheels" for the first blank and "brakes" or "rails" for the second blank showing an understanding of the interactions in the system and the effects of that energy flow.	✖
The student selected "wheels" for the third blank and "less" for the fourth blank showing an understanding of the interactions in the system and the effects of that energy flow.	✖
The student selected "The surroundings gain energy," showing an understanding of how the energy of the wheels change and is distributed throughout the system.	✖
The student selected "Sound is produced," providing evidence of how the energy of the surroundings has changed.	✖
The student selected "Light is produced," providing evidence of how the energy of the surroundings has changed.	✖
The student selected "Heat is produced," providing evidence of how the energy of the surroundings has changed.	✖
The student selected "The brakes make a screeching sound," which shows an understanding of how the energy changed throughout the system and that those changes serve as evidence that the the Kinetic Energy of the wheels transfers out of the wheels/system when the brakes are applied.	✖
The student selected "The sparks that fly off the wheels give off light," which shows an understanding of how the energy changed throughout the system and that those changes serve as evidence that the the Kinetic Energy of the wheels transfers out of the wheels/system when the brakes are applied.	✖
The student selected "The brakes give off energy as heat," which shows an understanding of how the energy changed throughout the system and that those changes serve as evidence that the the Kinetic Energy of the wheels transfers out of the wheels/system when the brakes are applied.	✖

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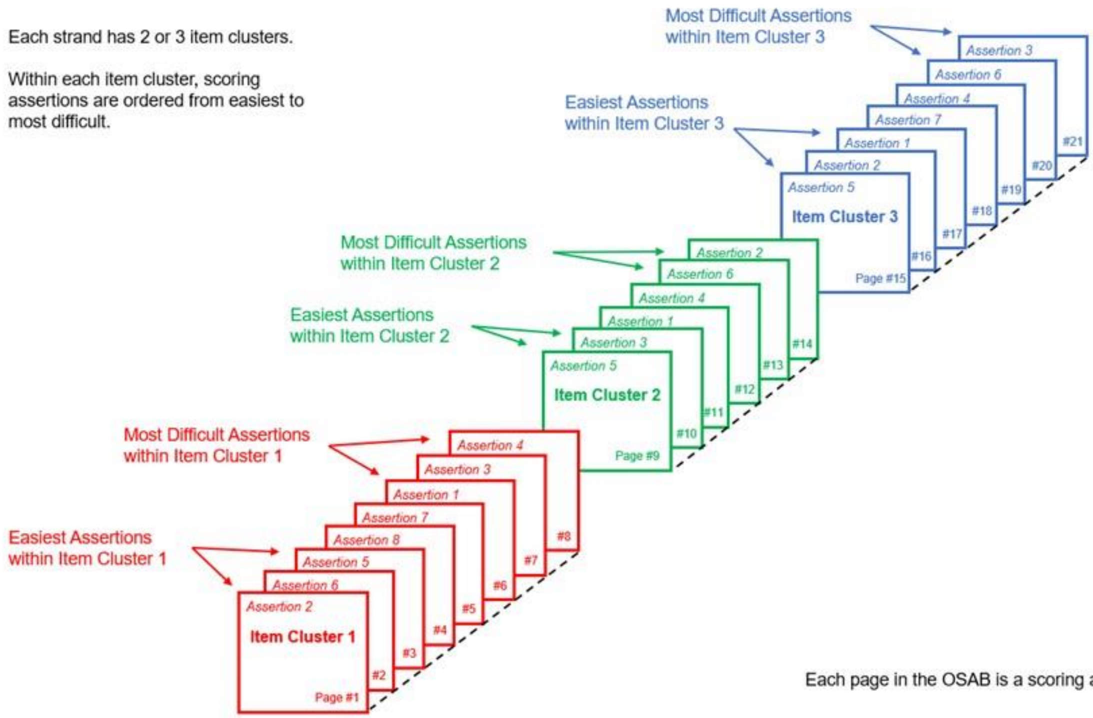
Ordered Scoring Assertion Booklet

35

Each strand has 2 or 3 item clusters.

Within each item cluster, scoring assertions are ordered from easiest to most difficult.



Each page in the OSAB is a scoring assertion.

What If an Assertion Seems Out of Order?

36

- Assertion ordering is based on student performance
- Assertions may seem out of order because they are ordered by difficulty, not by content or cognitive process
- Identify why a scoring assertion is more difficult than the assertions before it, and easier than the assertions following it (within an item cluster)
  - Pay special attention to the interactions supporting the assertions
  - Assertions may be more or less difficult because of the underlying interactions
  - Think about how the phenomenon may affect the difficulty of the task (difficulty of similar tasks between items may vary)

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Ordered Scoring Assertion Booklet: Difficulty Level Visualizer

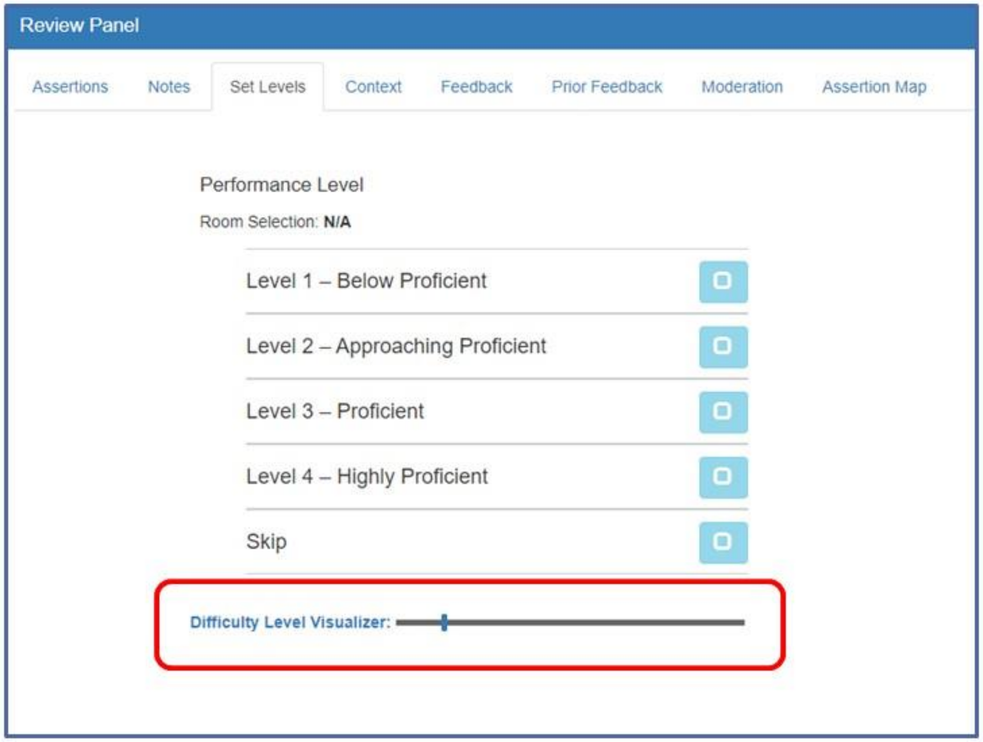
37

- See the **Difficulty Level Visualizer** – graphic representation of the difficulty of each assertion relative to the student population

- Example of how to use this:
  - After reviewing the item and scoring assertion you believe this is a relatively difficult concept. However, you see it is on the far left of the scale, ask yourself:
    - What made this so easy for the student?
    - Is the student really "analyzing" or perhaps it is a concept that is very familiar to students, and it is more of a rote concept?

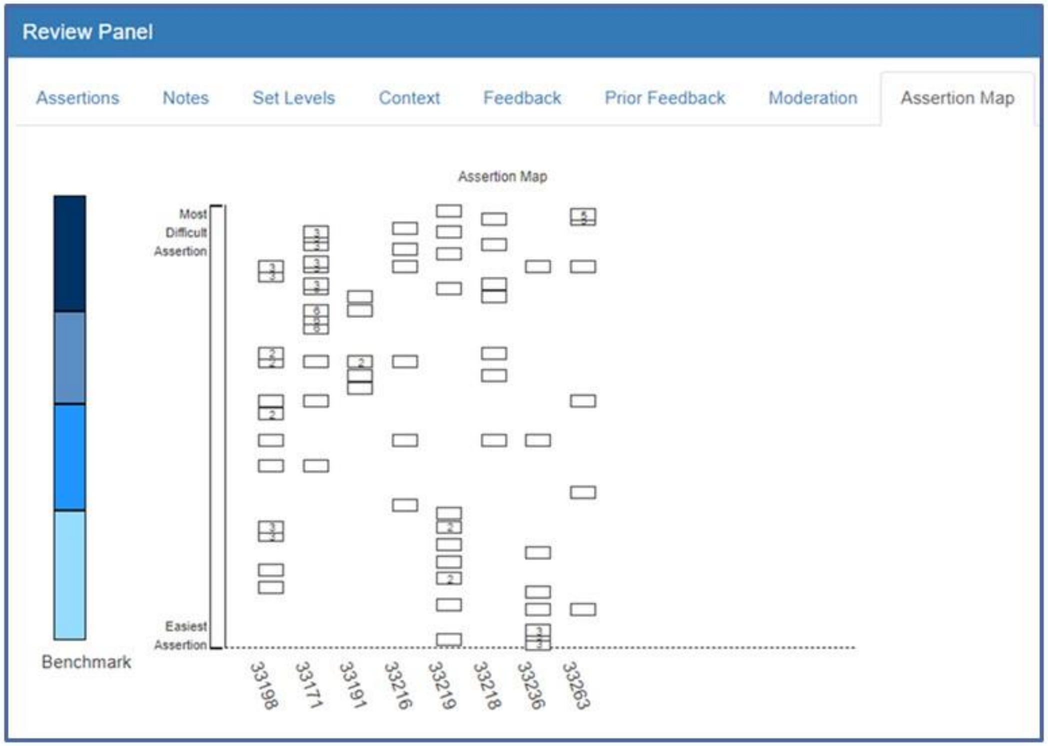
Ordered Scoring Assertion Booklet: Difficulty Level Visualizer

38



Ordered Scoring Assertion Booklet: Grade 4 OSAB Assertion Map

39



What If an Item Seems Wrong or Unfair?

40

- Do not let yourself get distracted – this is not an item review meeting
- If you believe something is wrong with an item interaction or scoring assertion, tell the Workshop Leader, then skip over the assertion as you review the rest of the assertions within the item

Studying the Items and Scoring Assertions

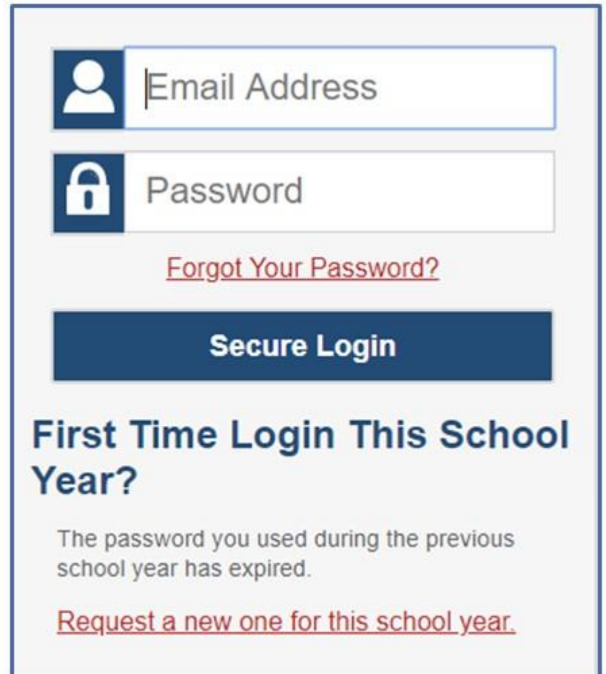
41

- For each scoring assertion ask yourself:
  1. *How do the item interactions support the scoring assertion?*
  2. *Why is this assertion more difficult than the previous assertion?*
  3. *How does the scoring assertion and the underlying interactions relate to the PLDs?*
- Working as a group
  - Discuss how item interactions support scoring assertions
  - Discuss ordering of scoring assertions
  - Discuss how scoring assertions are related to the PLDs

Accessing the OSAB

42

- Open the Chrome browser
- Sign in with your Username and Password



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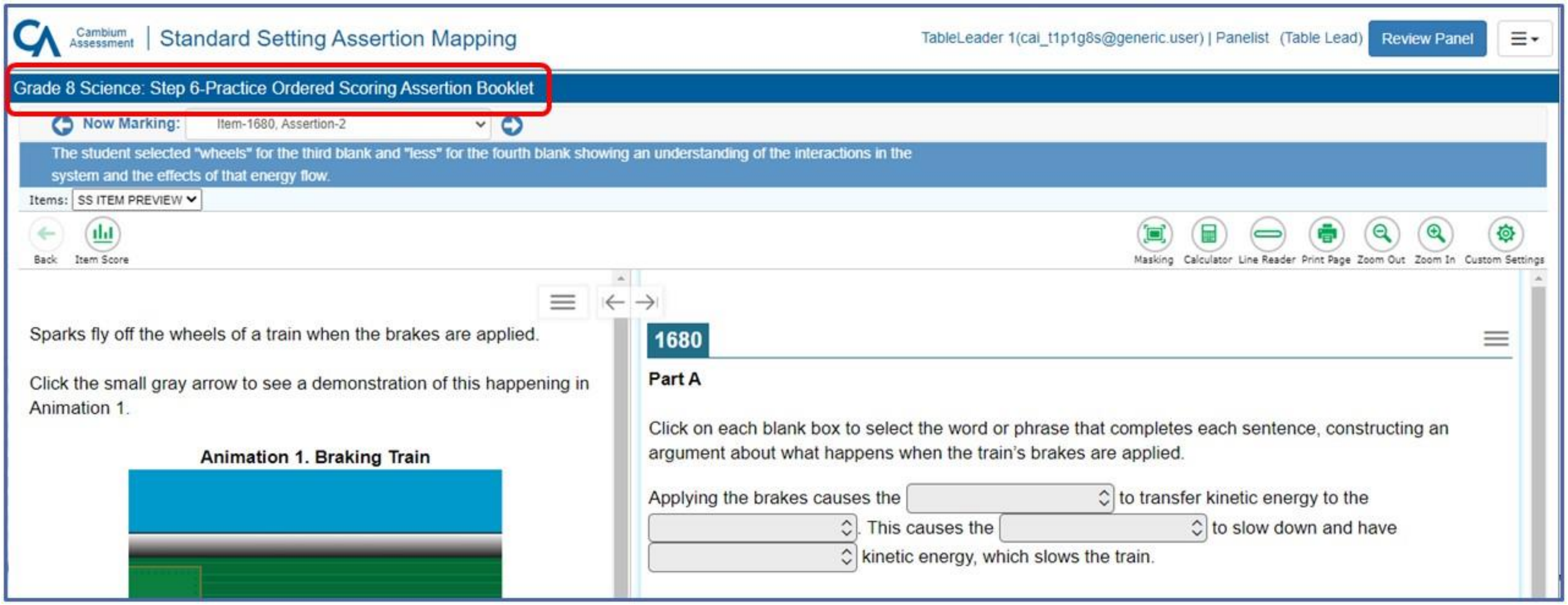
Navigating the OSAB

43

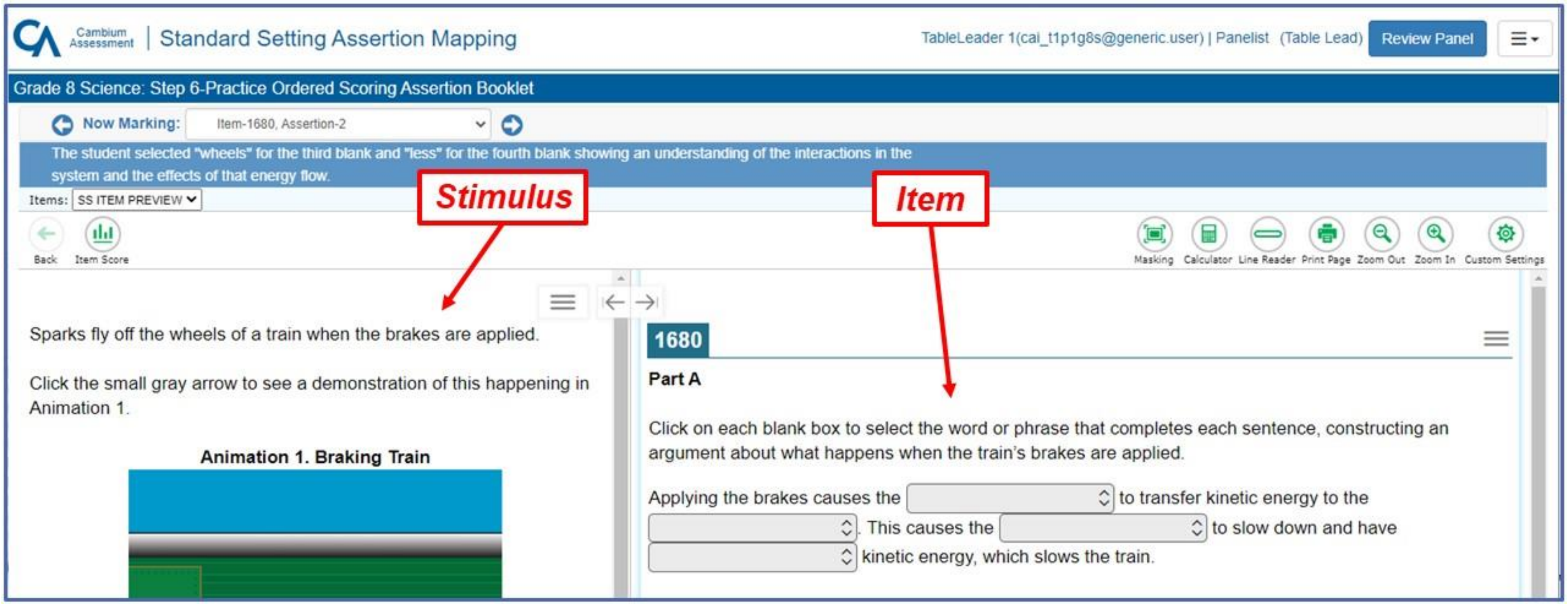
- Test and step we are working on shown at the top of the screen



Navigating the OSAB

44

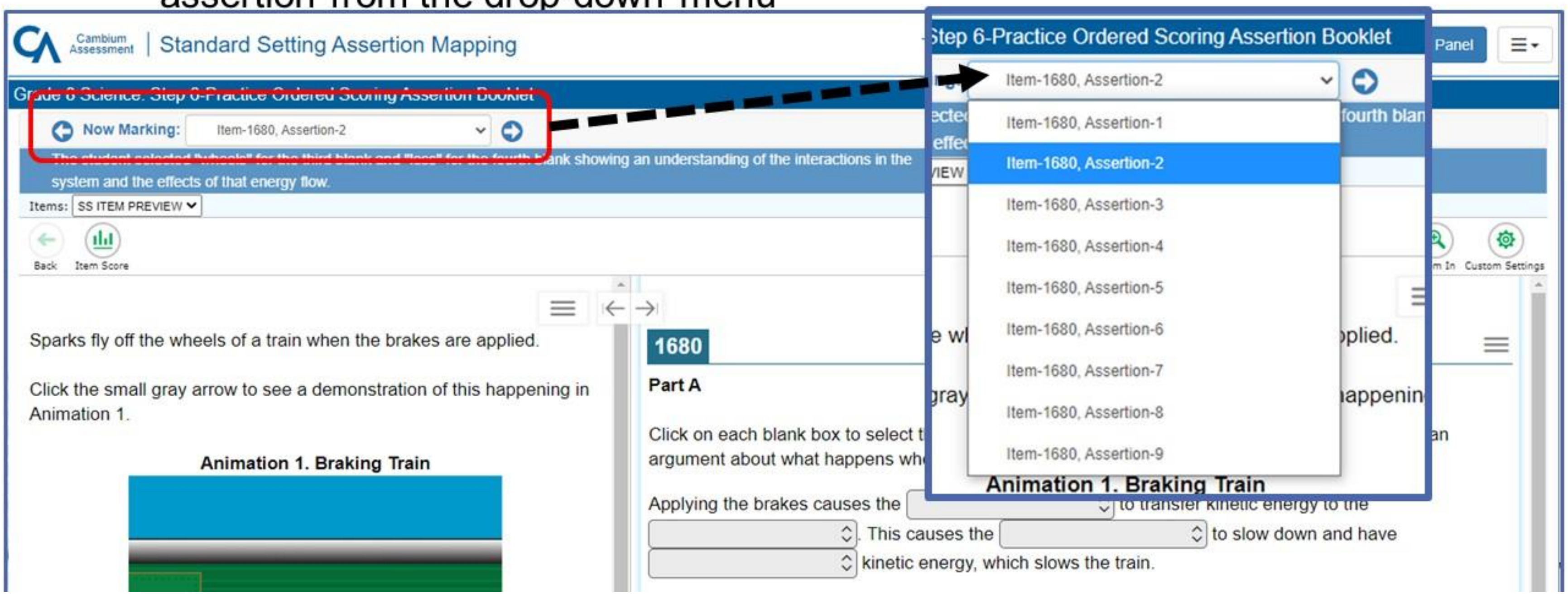
- View the stimulus on the left side of the screen and the item on the right



Navigating the OSAB

45

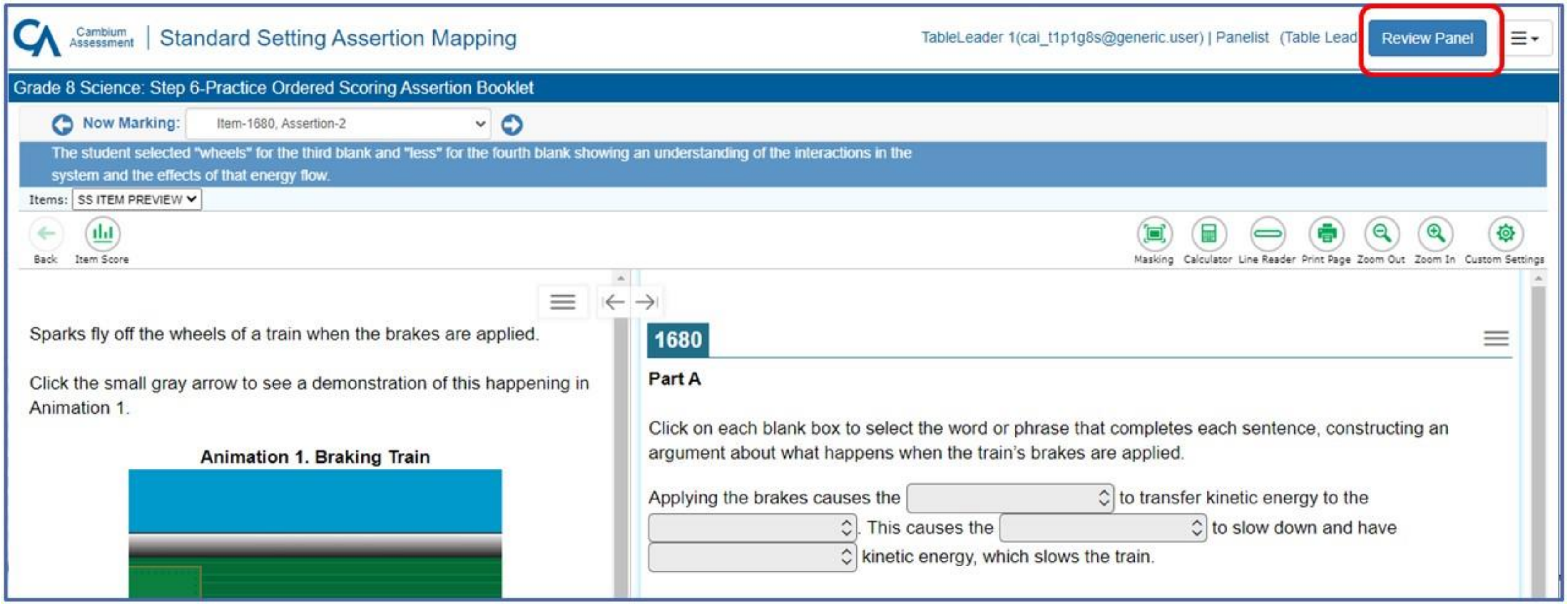
- Move forward in the OSAB using the navigation arrows or select an assertion from the drop-down menu



Navigating the OSAB

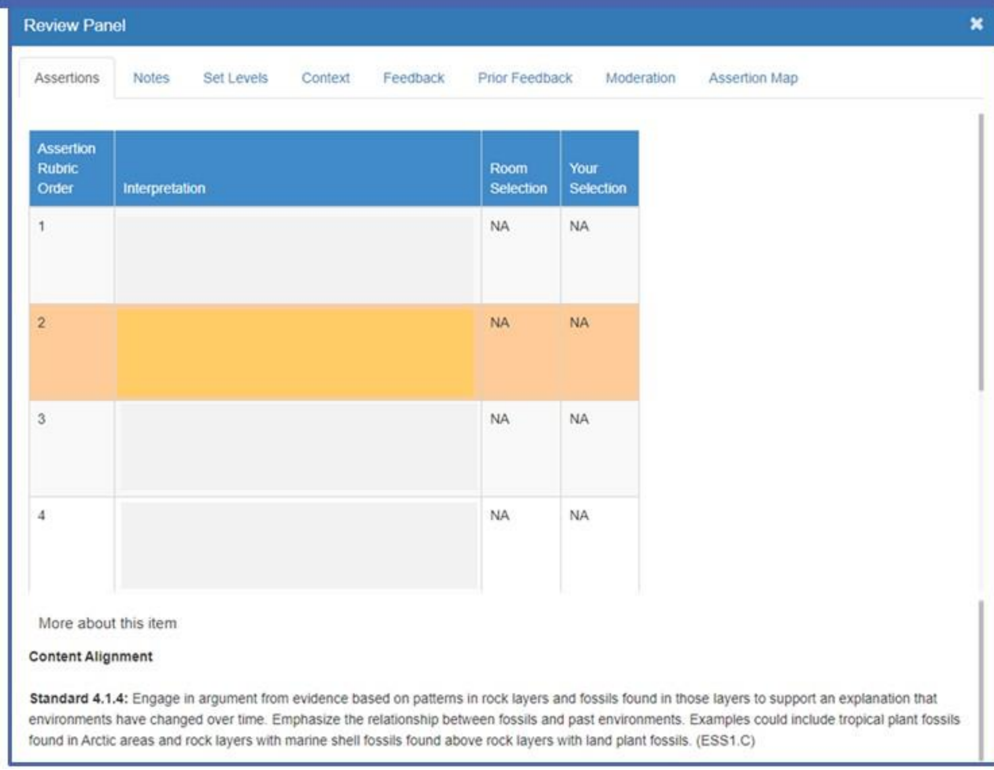
46

- Access the Review Panel on the top right of the screen



Review Panel – Assertions

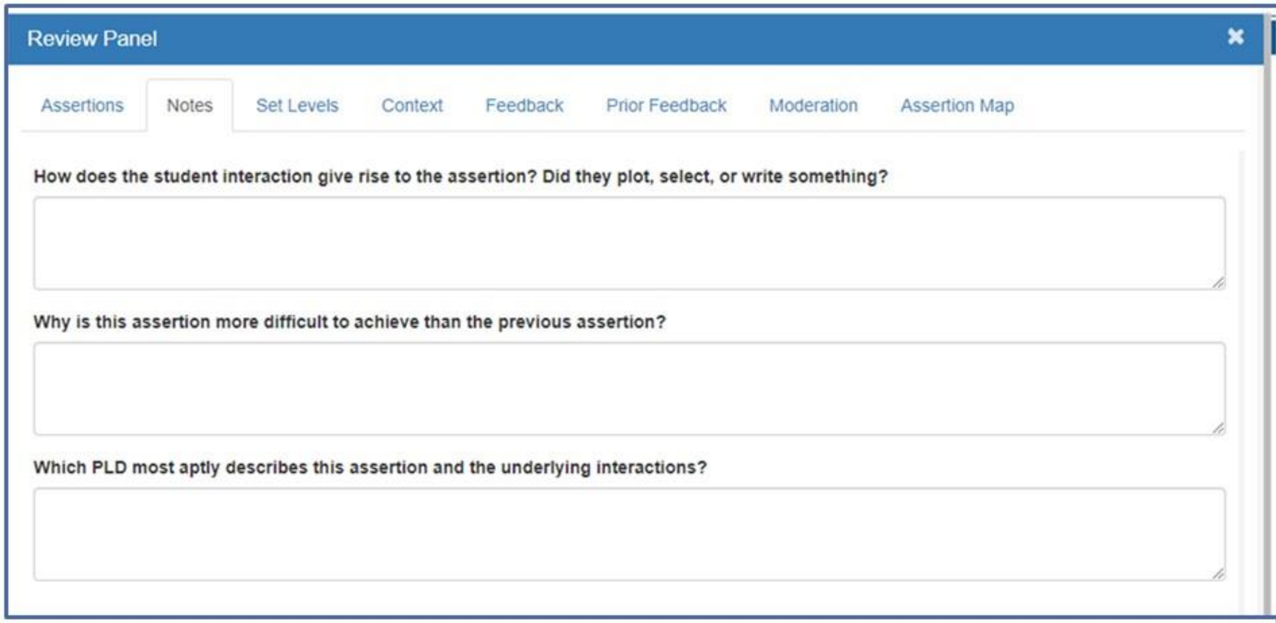
47



Review Panel – Notes

48

- "Notes" tab is for your reference



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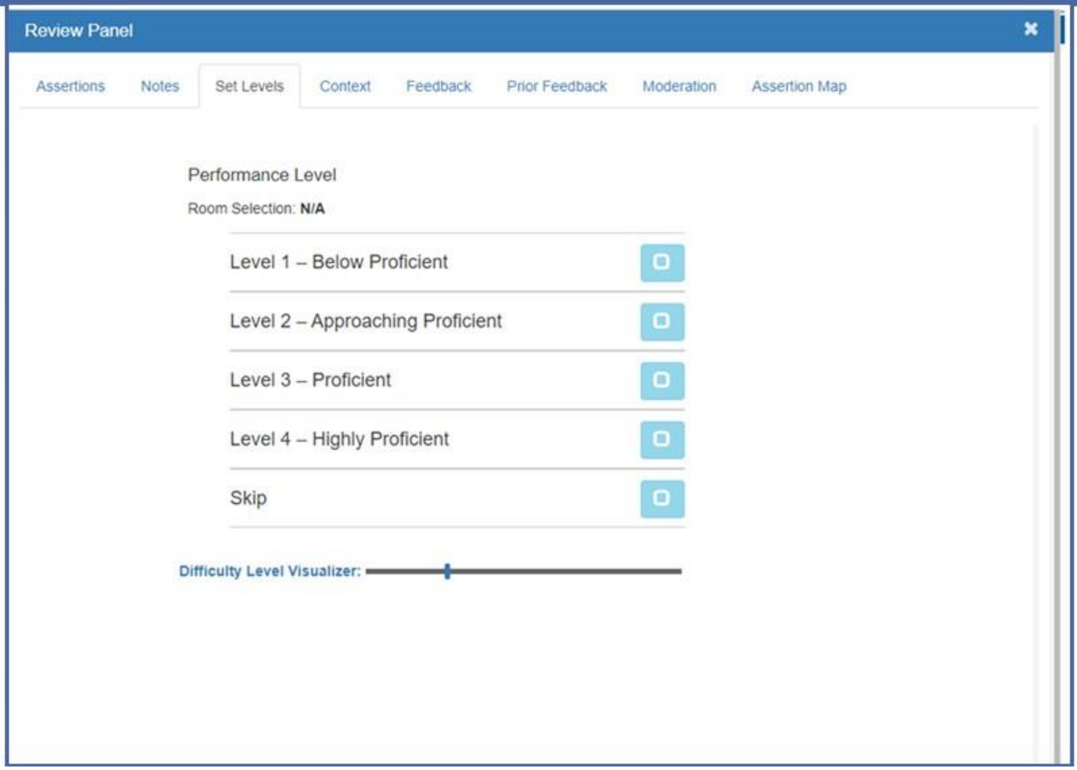
Review Panel – Set Levels

49



Review Panel – Context

50

- "Context" tab presents student impact data and benchmarking data

Review Panel

Assertions | Notes | Set Levels | Context | Feedback | Prior Feedback | Moderation | Assertion Map

Some facts about the difficulty of this assertion.

Context Category	Value
Overall percent of Utah students that perform at or above this level:	74
A cut-score at this assertion is comparable to:	Level 2 – Basic Level on the NAEP Science Assessment
A cut-score at this assertion is comparable to:	Level 1 – Below Proficient Level on the SAGE Science Assessment

Contextual Information

51

- Does the percentage of students who performed at or above the performance level associated with each assertion seem reasonable?
- What are the implications for the proficiency standards?
- All proficiency standard recommendations should be based on content rationales

Contextual Information – Student Impact Data

52

- Percentage of students who performed at or above the performance level associated with each individual assertion

Review Panel

Assertions | Notes | Set Levels | Context | Feedback | Prior Feedback | Moderation | Assertion Map

Some facts about the difficulty of this assertion.

Context Category	Value
Overall percent of Utah students that perform at or above this level:	74
A cut-score at this assertion is comparable to:	Level 2 – Basic Level on the NAEP Science Assessment
A cut-score at this assertion is comparable to:	Level 1 – Below Proficient Level on the SAGE Science Assessment

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Contextual Information – Benchmarking Data

53

- Are proficiency standards nationally competitive and represent on track for college readiness?
  - NAEP Science
  - SAGE Science
- Performance levels for benchmark assessments will provide context about the general neighborhood in which proficiency standards likely reside

2015 Utah NAEP Science Results

Grade	At or Above		
	Basic	Proficient	Advanced
4	82	45	1
5	82	46	2

2018 Utah SAGE Science Results

Grade	At or Above		
	Approaching Proficient	Proficient	Highly Proficient
4	71	47	26
5	77	51	27

Contextual Information – Benchmarking Data

54

Review Panel

Assertions | Notes | Set Levels | Context | Feedback | Prior Feedback | Moderation | Assertion Map

Some facts about the difficulty of this assertion.

Context Category	Value
Overall percent of Utah students that perform at or above this level:	74
A cut-score at this assertion is comparable to:	Level 2 – Basic Level on the NAEP Science Assessment
A cut-score at this assertion is comparable to:	Level 1 – Below Proficient Level on the SAGE Science Assessment

Review of the OSAB

55

- Let's review the items together

Studying the Items and Scoring Assertions

56

- We will work together on a set of items, asking and answering the following for each scoring assertion:
  1. *How do the item interactions support the scoring assertion?*
  2. *Why is this assertion more difficult than the previous assertions?*
  3. *How does the scoring assertion and the underlying interactions relate to the PLDs?*

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Standard-Setting Workshop Day 2

Recommending Proficiency Standards for Grade 4 Science

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Standard-Setting Workshop Day 2 Agenda

58

- Training on Assertion-Mapping Task
- Round 1 Assertion Mapping
- Review Feedback Data and Discuss Round 1 Results
- Round 2 Assertion Mapping
- Across Grade Moderation

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Training on Assertion-Mapping Task

Assertion-Mapping Key Concepts

60

- Performance level descriptors (PLDs)
  - Range PLDs
  - Threshold PLDs (just barely meets)
- Ordered scoring assertions
- Assertion map and difficulty visualizer
- Assertion mapping in multiple rounds
  - Contextual information – student impact data and benchmark data
  - Panelist feedback and group discussion
- Vertical articulation and moderation

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Assertion-Mapping Procedure (AMP)

61

- Test-centered procedure
- Employs an ordered item procedure adapted to accommodate new multiple interaction item types
- Map ordered scoring assertions to performance levels
- Is being employed to recommend proficiency standards in multiple states assessing three-dimensional science standards

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Important Concepts

62

- "Just barely" meets the performance level
  - Differentiate students who just barely qualify for entry into a performance level from those just below
- Assertion mapping
  - Map each scoring assertion to the performance level that the assertion best supports
- Ordering of assertions
  - For assertion mapping, assertions are ordered by difficulty within an item cluster
  - *Assertions within an item may not represent all PLDs*
  - Mapping of assertions to performance levels should reflect the ordering – *no inversions within an item**
  - Pay attention to the Difficulty Level Visualizer and Assertion Map across item clusters

Mapping Ordered Assertions to Performance Levels

63

- You will map each scoring assertion to a performance level using the following tools:
  - PLDs
  - Difficulty Level Visualizer
  - Assertion Map
  - Contextual Information – student impact data and benchmarking data
  - Your professional judgement (and notes)
- Remember, scoring assertions are ordered from easiest to most difficult within each item cluster
- *<u>If you think that a subsequent assertion is at a lower level than a previous assertion, you might have been premature at mapping the level for the earlier assertion</u>*
- You may "Skip" if an assertion seems to be out of place
  - Only use as a last resort

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Practice Online Assertion-Mapping Task

64

- Purpose of this activity is to practice mapping assertions in the online environment. This is meant to help you become familiar with the tool and process.
  - Shortened version of the OSAB
  - One item cluster
- Log into the system and review the item cluster and ordered scoring assertions answering the three questions as you go
- Then, map each scoring assertion to a performance level and click "*confirm*"
- This is meant to help you become familiar with the tool and process

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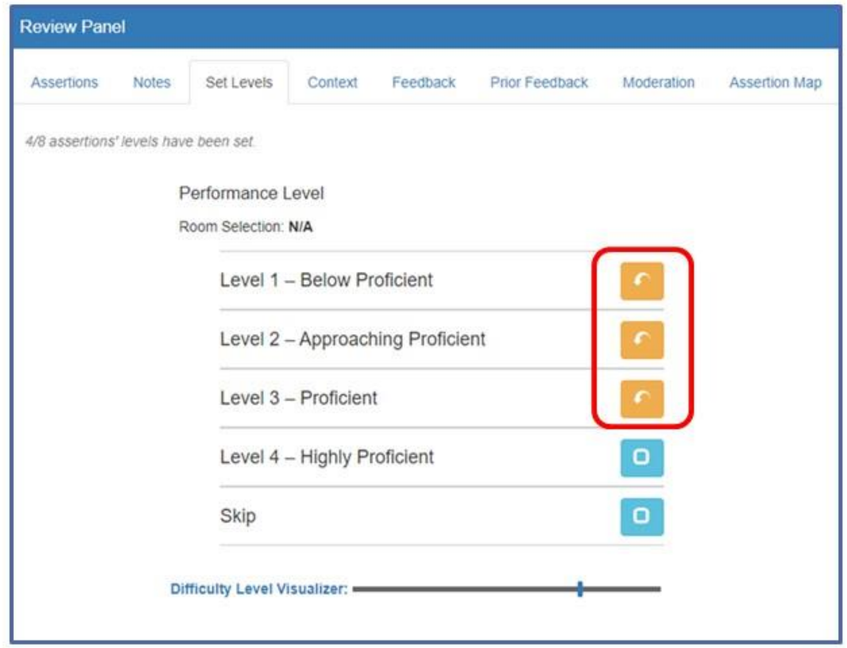
Assertion Mapping – Mapping Inversion within Item

65

- The standard-setting tool will not let you map an assertion to a lower performance level than the previous assertions within the item cluster that you have already mapped



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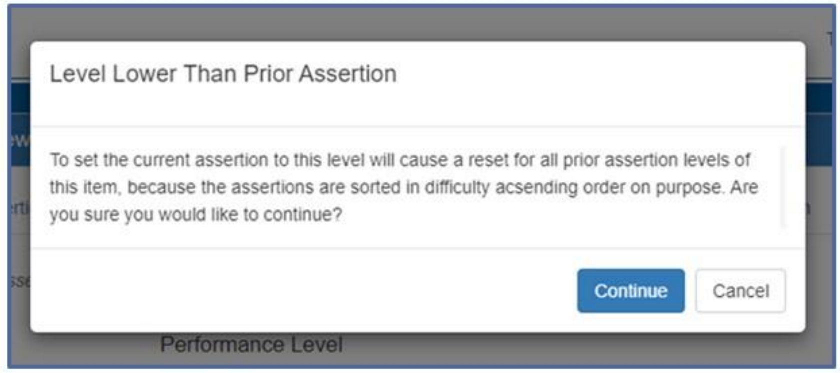
Assertion Mapping – Mapping Inversion within Item

66

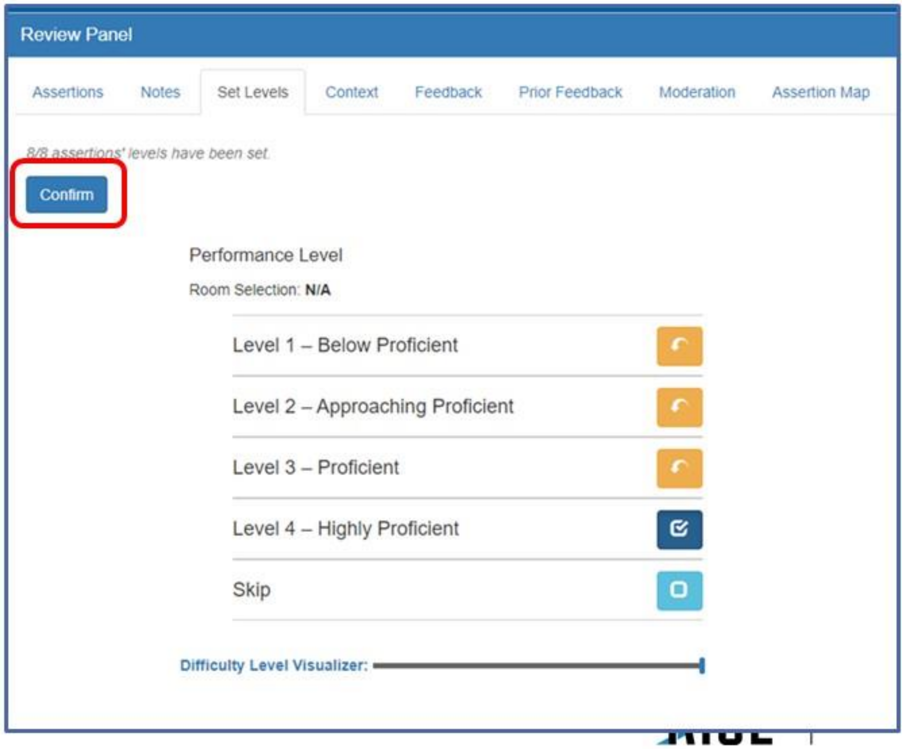
- If you want to map the assertion to a lower performance level:
  - All previous mappings within the item that are lower will be un-mapped
  - You will need to go back and re-map those assertions



Assertion Mapping – Confirm

67

- Once all assertions are mapped, a "Confirm" button will appear in the "Set Levels" tab



68

Practice Assertion-Mapping Task and Standard-Setting Quiz

Step 6: Practice Ordered Scoring Assertion Booklet

69

Round 1 Assertion Mapping

Step 8: Round 1 Assertion Mapping

Round 1 Readiness Form

70

- Any questions?
- Is everyone ready for Round 1?
- If so, please fill out the readiness form

Round 1 Assertion Mapping

71

- You will use the next 90 minutes to map each assertion to a performance level
- Use the tools and documents along with your professional judgment, and **contextual information – student impact data and benchmarking data**
- Scoring assertions are ordered from easiest to most difficult within each item cluster
- If you feel that a subsequent assertion is at a lower level than a previous assertion, then you might have been premature at mapping the level for the earlier assertion
- Should be a logical progress of performance levels (within an item cluster) – *no inversions*
- You may "Skip" if, after consideration, the assertion seems to be out of place
  - Use as last resort
- When you have assigned all assertions click on the "Confirm" button
- This is an individual task
- Lunch is at 12:30 pm

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72

Review Panelist Feedback Data and Discuss Round 1 Results

Step 10: Results of Round 1

Group Feedback and Discussion

73

- Goals
  - Add important information to your thinking
  - Develop common understandings
  - Inform possible re-evaluation of assertion mappings
- Expectation is converging judgments
  - Consensus is not a requirement or goal

Feedback and Impact Data

74

- Percentage of students reaching or exceeding the standard based on assertion mappings
- Group discussion
  - Does the percentage of students reaching or exceeding the current recommended proficiency standard seem reasonable?
  - What are the implications for the proficiency standards?
  - All proficiency standard recommendations should be based on content rationales

Feedback Table

75

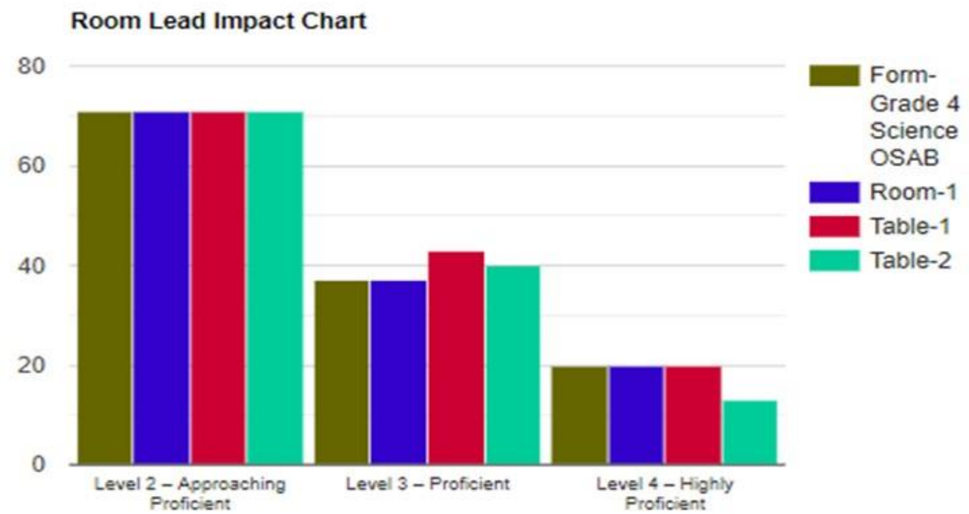
Sequence Type: Percent At or Above

Step 8 - Round 1 Assertion Mapping, Percent At or Above Data

	Level 2 – Approaching Proficient	Level 3 – Proficient	Level 4 – Highly Proficient
Form-Grade 4 Science OSAB	71	37	20
Room-1	71	37	20
Table-1	71	43	20
Table-2	71	40	13

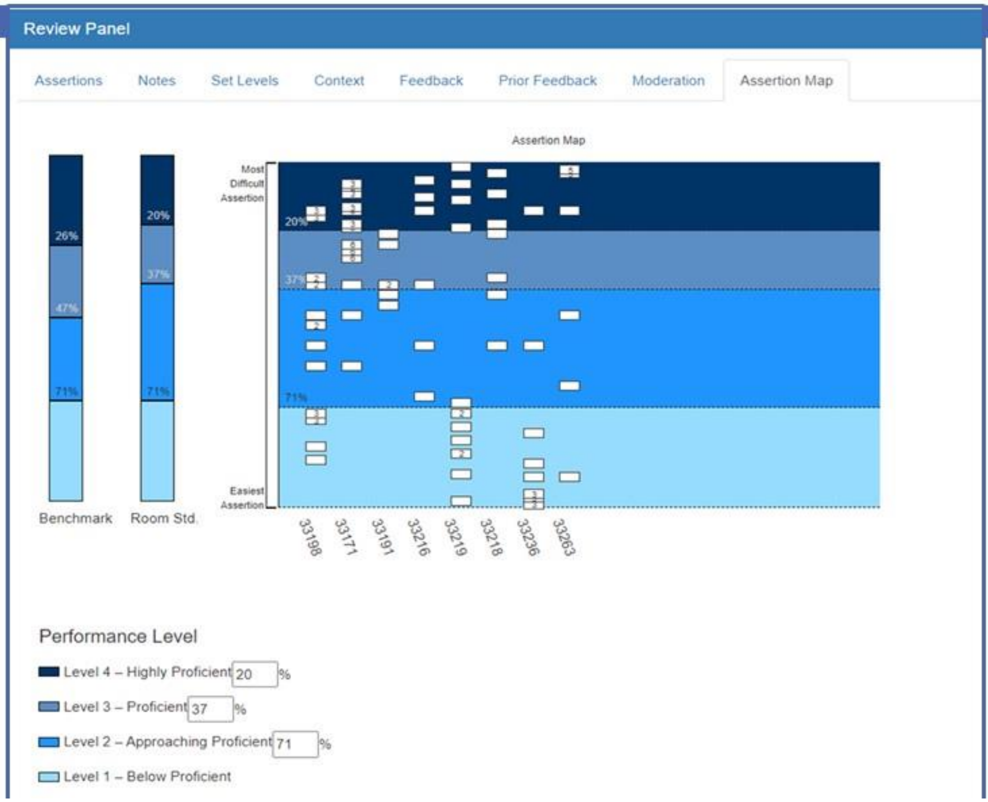
Feedback Chart

76



Assertion Map

77



Variance Monitor

78

- Consensus is NOT required, convergence is a goal
- Let's see where we have the most variance
- Discuss within each table for 15 minutes
- Then, we will come together for group conversation for 15 minutes

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79

Round 2 Assertion Mapping

Step 12: Round 2 Assertion Mapping

Round 2 Readiness Form

80

- Any questions?
- Is everyone ready for Round 2?
- If so, please fill out the readiness form

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READINESS
IMPROVEMENT
SUCCESS
EMPOWERMENT

Round 2 Assertion Mapping

81

- You will use the next 60 minutes to map each scoring assertion to a performance level
- Use the tools and documents along with your professional judgment, **contextual information – student impact data and benchmarking data**, and **feedback data**
- Scoring assertions are ordered from easiest to most difficult within each item cluster
- If you feel that a subsequent assertion is at a lower level than a previous assertion, then you might have been premature at setting the level for the earlier assertion
- Should be a logical progress of performance levels (within an item cluster) – *no inversions*
- You may "Skip" if, after consideration, the assertion seems to be out of place
  - Use as a last resort
- When you have assigned all assertions click on the "Confirm" button
- This is an individual task
- You have until 3:00 pm

82

Round 2 Results

Step 14: Results of Round 2

Feedback Table

83

Sequence Type: Percent At or Above

Step 12 - Round 2 Assertion Mapping, Percent At or Above Data

	Level 2 – Approaching Proficient	Level 3 – Proficient	Level 4 – Highly Proficient
Form-Grade 4 Science OSAB	71	43	20
Room-1	71	43	20
Table-1	80	43	22
Table-2	71	40	20

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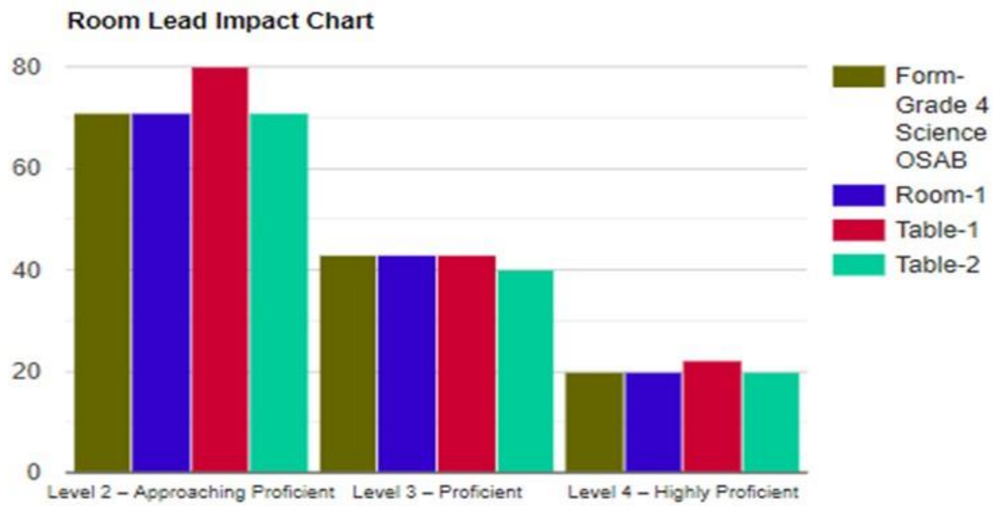
Feedback Chart

84



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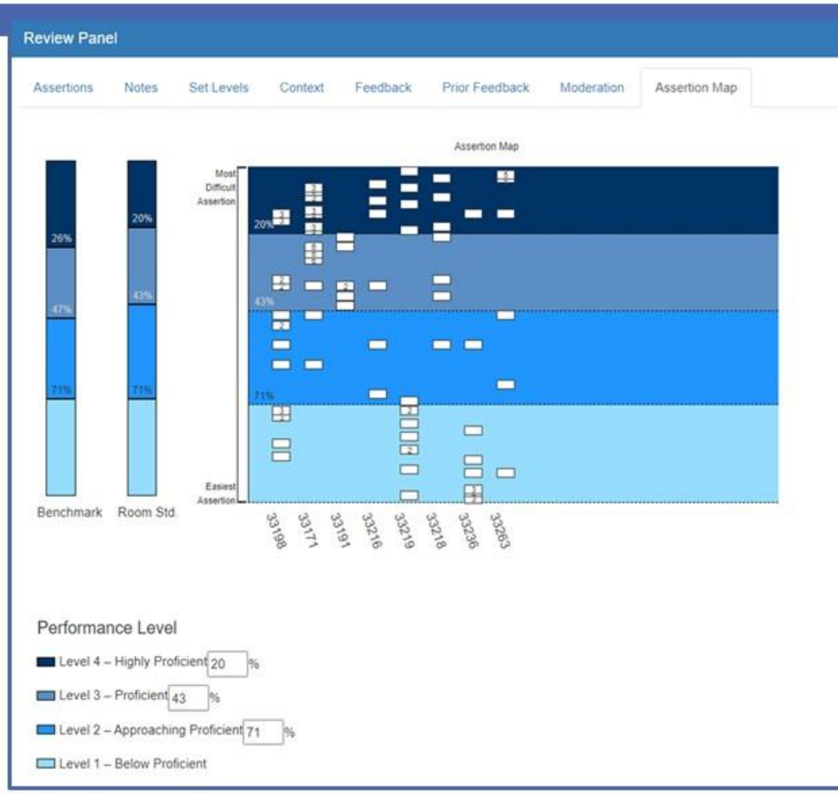
Assertion Map

85



86

Workshop Evaluations

87

Moderation

Step 16: Moderation

Creating a System of Proficiency Standards

88

- Proficiency standards for a statewide system must be coherent across grades and subjects
  - Articulation
  - Benchmarking
  - Moderation

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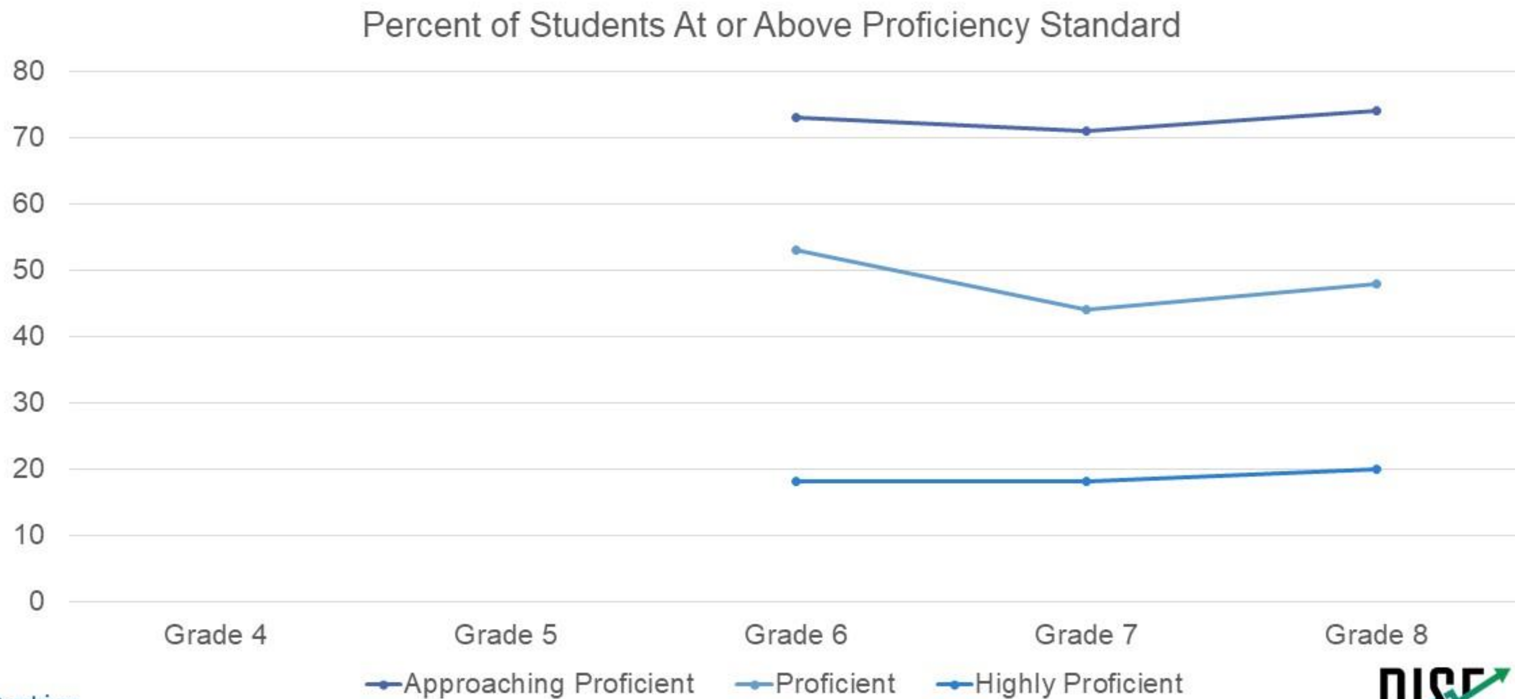
Articulation

89



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Moderation

90

- After the standards have been recommended by the panelists, the Table Leaders meet to review the outcomes
  - All members are invited to observe this meeting but only the Table Leaders participate
- If there are anomalies across grades or subjects the Table Leaders are permitted to adjust the proficiency standards (assuming there is a good content reason for doing so)

Appendix G

Standard-Setting Practice Quiz

Standard-Setting Practice Quiz

Exhibit G-1. Standard-Setting Practice Quiz

2021 RISE Science Assessment Standard Setting - Assertion Mapping Practice Quiz

* Required

1. Name: *

____

2. Panelist ID (e.g., UT_T1P1G5S): *

____

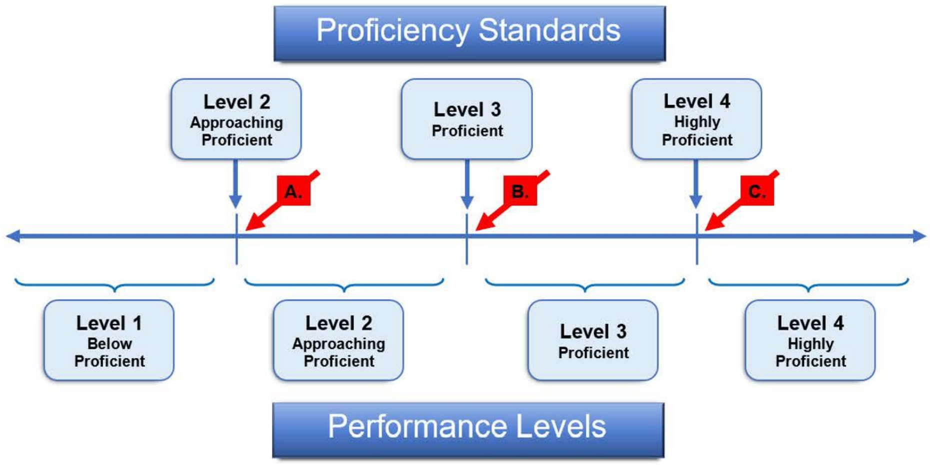
3. Assigned Committee: *

Mark only one oval.

- ( ) Science Grade 4
- ( ) Science Grade 5

Proficiency Standards and Performance Levels

The graphic below illustrates the relationship between the proficiency standards that you will recommend and the performance levels that they demarcate:



4. Which red box on the performance continuum graphic above illustrates students who are just barely described by the Proficient PLD? *

   Mark only one oval.

   - Box A
   - Box B
   - Box C

5. Which red box on the performance continuum graphic above illustrates students who are just barely described by the Approaching Proficient PLD? *

   Mark only one oval.

   - Box A
   - Box B
   - Box C

6. Which red box on the performance continuum graphic above illustrates students who are just barely described by the Highly Proficient PLD? *

   Mark only one oval.

   - Box A
   - Box B
   - Box C

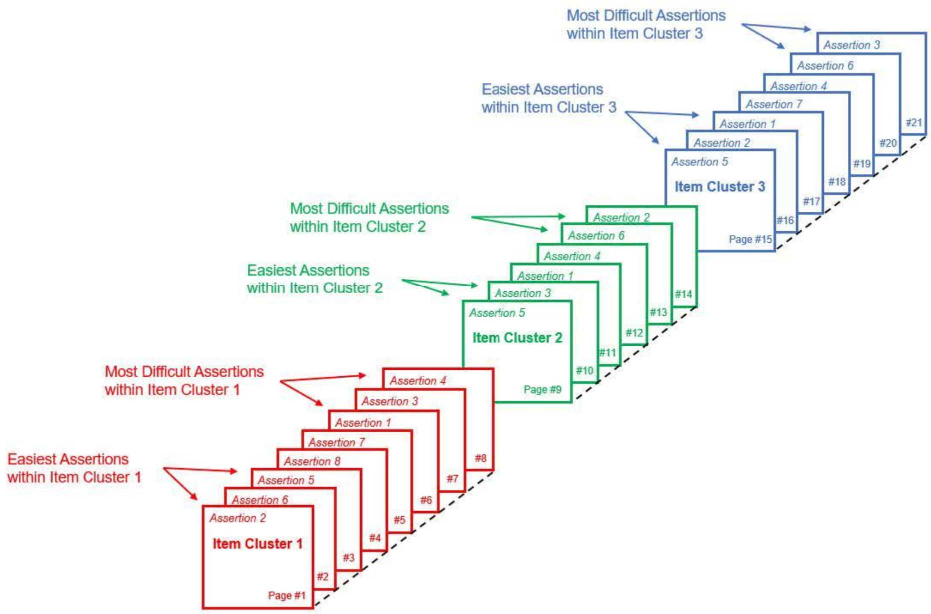
7. Which performance standard differentiates between the Approaching Proficient performance level and the Proficient performance level? *

   Mark only one oval.

   - Approaching Proficient
   - Proficient
   - Highly Proficient

Ordered Scoring Assertion Booklet (OSAB)

Here is a hypothetical Ordered Scoring Assertion Booklet (OSAB) that consists of pages 1 through 21:



8. Within each item cluster within the OSAB, scoring assertions are ordered by difficulty. In the OSAB presented above, is the assertion on page 7 of the OSAB easier, more difficult, or about the same as the assertion on page 3? *

Mark only one oval.

- The assertion on page 7 is easier than the assertion on page 3
- The assertion on page 7 is more difficult than the assertion on page 3
- The assertion on page 7 is about the same as the assertion on page 3
- The difficulty of the assertions on pages 7 and 3 cannot be compared in this graphic because they are not within the same item

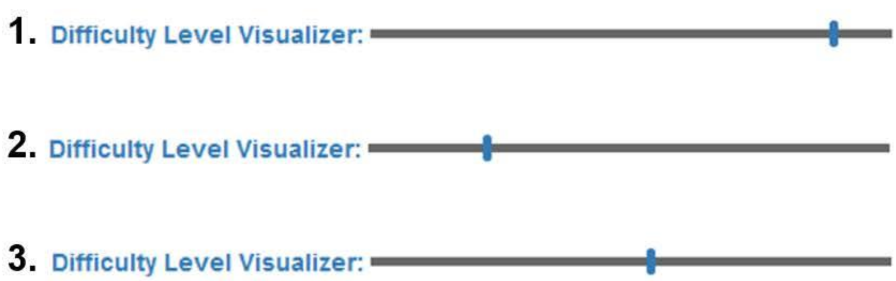
Standard-Setting Assertion Mapping Tool

9. Do you have to assign each scoring assertion to a performance level (or use the skip button)? *

Mark only one oval.

- Yes
- No

Below are three different scoring assertions' Difficulty Level Visualizers.



10. Which Difficulty Level Visualizer in the image above represents the most difficult scoring assertion? *

Mark only one oval.

- Difficulty Level Visualizer 1
- Difficulty Level Visualizer 2
- Difficulty Level Visualizer 3

11. Which Difficulty Level Visualizer in the image above represents the least difficult scoring assertion? *

Mark only one oval.

- Difficulty Visualizer 1
- Difficulty Visualizer 2
- Difficulty Visualizer 3

Appendix H

Standard-Setting Readiness Forms

Standard-Setting Readiness Forms

Exhibit H-1. Standard-Setting Round 1 Readiness Form

2021 RISE Science Assessment Standard Setting Educator Panel - Readiness Form

Preparation for Round 1 Assertion Mapping

* Required

1. Name: *

2. Panelist ID (e.g., UT_T1P1G5S): *

3. Assigned Committee: *

   Mark only one oval.

   - Science Grade 4
   - Science Grade 5

Preparation for Round 1 Assertion Mapping

4. The workshop training has prepared me to review the Performance-Level Descriptors (PLDs) and fully explained the concept of threshold PLDs. *

   Mark only one oval.

   - Yes
   - No

5. The workshop training has prepared me to review the Ordered Scoring Assertion Booklet (OSAB). *

   Mark only one oval.

   ◯ Yes
   ◯ No

6. The workshop training has clearly explained how to use the assertion map when reviewing the OSAB. *

   Mark only one oval.

   ◯ Yes
   ◯ No

7. The workshop training has clearly explained the task of mapping assertions in the OSAB to the performance levels in the standard-setting tool. *

   Mark only one oval.

   ◯ Yes
   ◯ No

8. The workshop training has fully explained how to use the contextual information (student impact data and benchmarking data) when mapping assertions to performance levels. *

   Mark only one oval.

   ◯ Yes
   ◯ No

9. I have answered "Yes" to the above questions and I understand what I need to do to map assertions to performance levels. (Please initial below.) *

Mark only one oval.

- ◯ Yes
- ◯ No

10. Initial: *

____

11. If I answered "No" to any of the above questions, I received additional training. (Please initial below.) *

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Not applicable

12. Initial: *

____

13. Following the additional training, I feel sufficiently trained on what I need to do to map assertions to performance levels. (Please initial below.) *

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Not applicable

14. Initial: *

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Exhibit H-2. Standard-Setting Round 2 Readiness Form

2021 RISE Science Assessment Standard Setting Educator Panel - Readiness Form

Preparation for Round 2 Assertion Mapping

* Required

1. Name: *

____

2. Panelist ID (e.g., UT_T1P1G5S): *

____

3. Assigned Committee: *

   Mark only one oval.

   ◯ Science Grade 4
   ◯ Science Grade 5

Preparation for Round 2 Assertion Mapping

4. The workshop training has clearly explained how to use the assertion map when reviewing the Ordered Scoring Assertion Booklet (OSAB). *

   Mark only one oval.

   ◯ Yes
   ◯ No

5. The workshop training has clearly explained the task of mapping assertions in the OSAB to the performance levels in the standard-setting tool. *

   Mark only one oval.

   ⬭ Yes
   ⬭ No

6. The workshop training has fully explained how to use the contextual information (student impact data and benchmarking data) when mapping assertions to performance levels. *

   Mark only one oval.

   ⬭ Yes
   ⬭ No

7. The training fully explained the panel feedback data and impact data that was presented. *

   Mark only one oval.

   ⬭ Yes
   ⬭ No

8. I understand my task for Round 2. *

   Mark only one oval.

   ⬭ Yes
   ⬭ No

9. I have answered "Yes" to the above questions and I understand what I need to do to map assertions to performance levels. (Please initial below.) *

Mark only one oval.

- Yes
- No

10. Initial: *

11. If I answered "No" to any of the above questions, I received additional training. (Please initial below.) *

Mark only one oval.

- Yes
- No
- Not applicable

12. Initial: *

13. Following the additional training, I feel sufficiently trained on what I need to do to map assertions to performance levels. (Please initial below.) *

Mark only one oval.

- Yes
- No
- Not applicable

14. Initial: *

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Google Forms

Appendix I

Round 1 and Round 2 Standard-Setting Assertion Maps

Round 1 Standard-Setting Assertion Maps

Exhibit I-1. Round 1 Standard-Setting Assertion Map, Science Grade 4

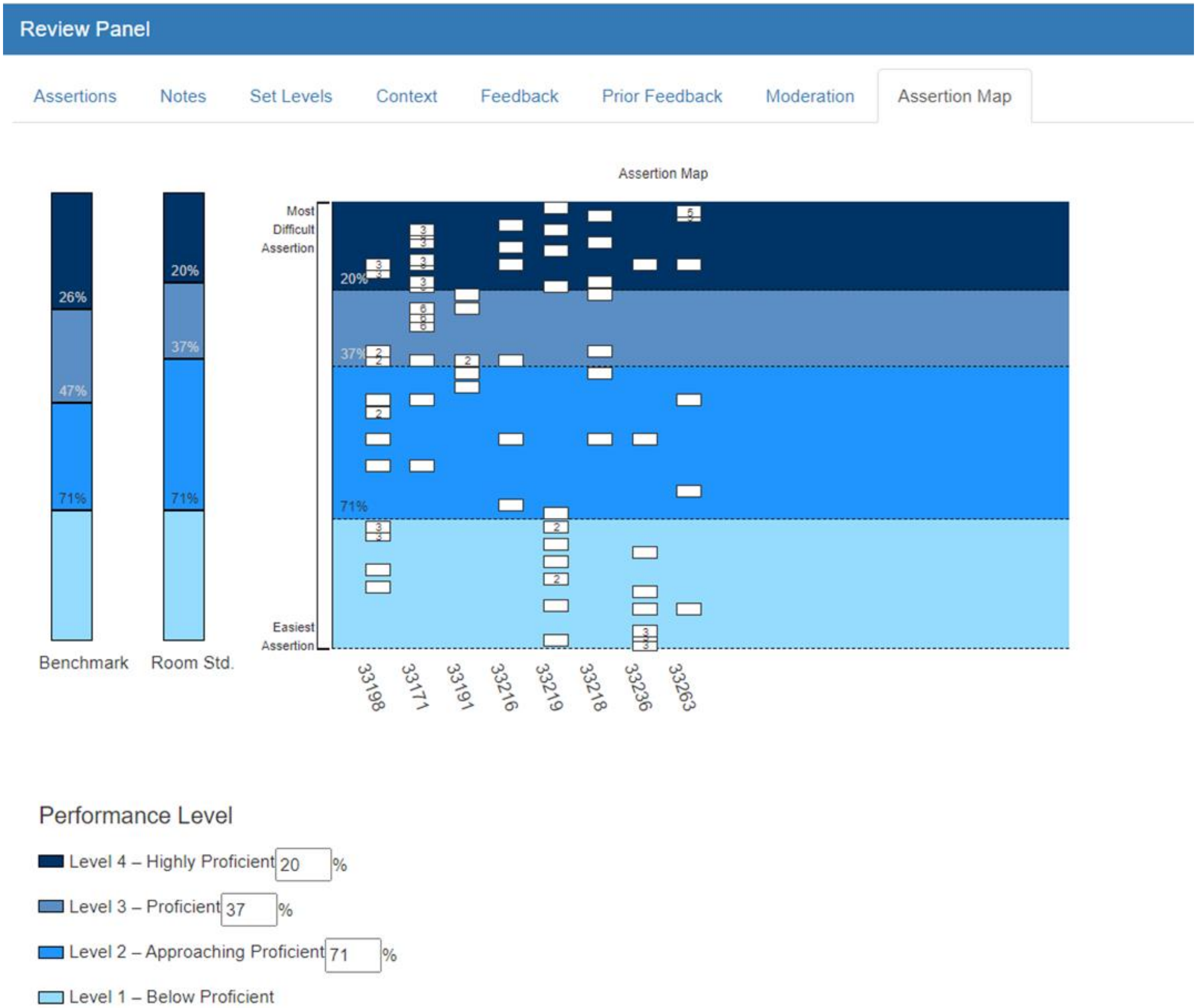
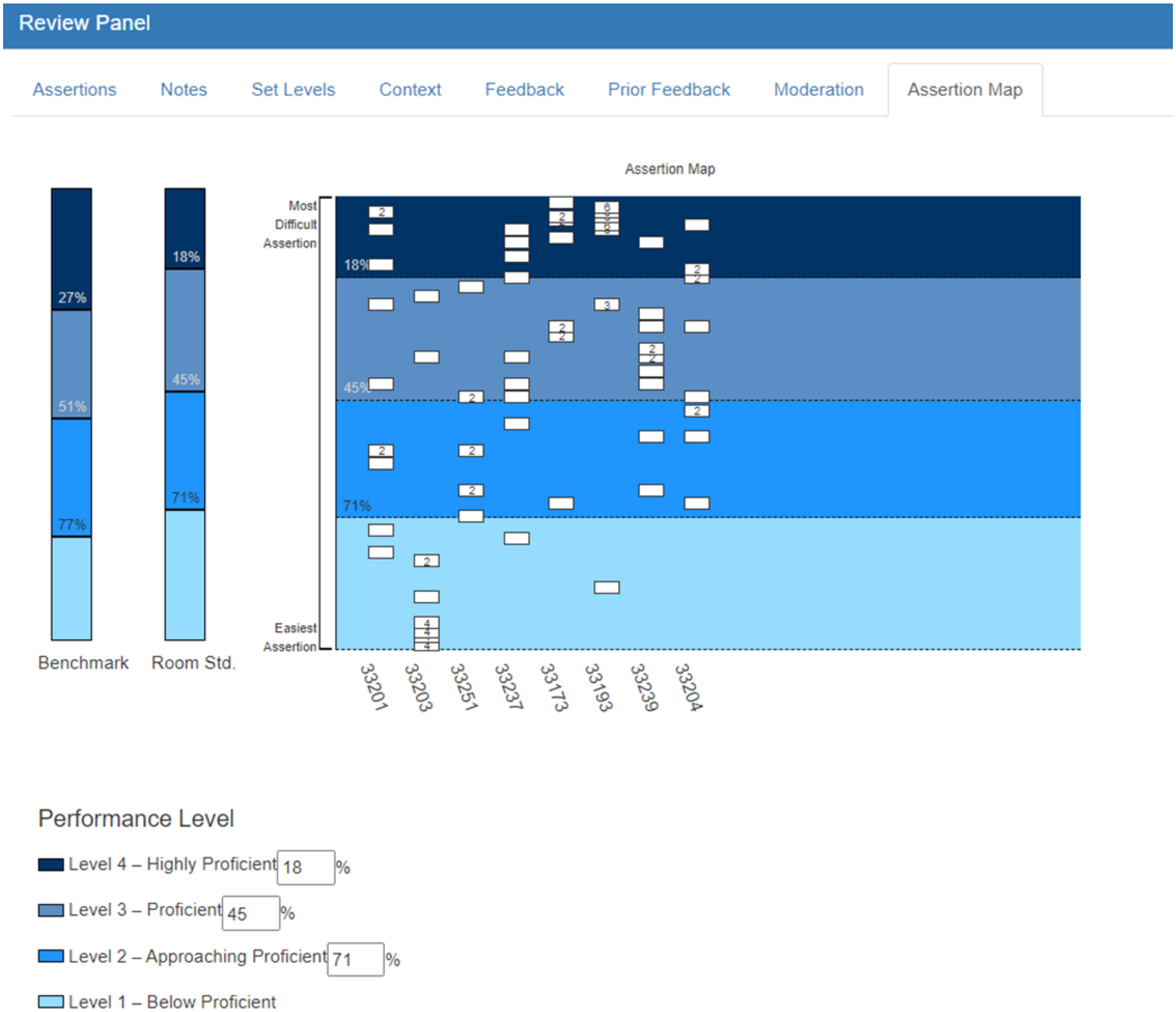


Exhibit I-2. Round 1 Standard-Setting Assertion Map, Science Grade 5



Round 2 Standard-Setting Assertion Maps

Exhibit I-3. Round 2 Standard-Setting Assertion Map, Science Grade 4

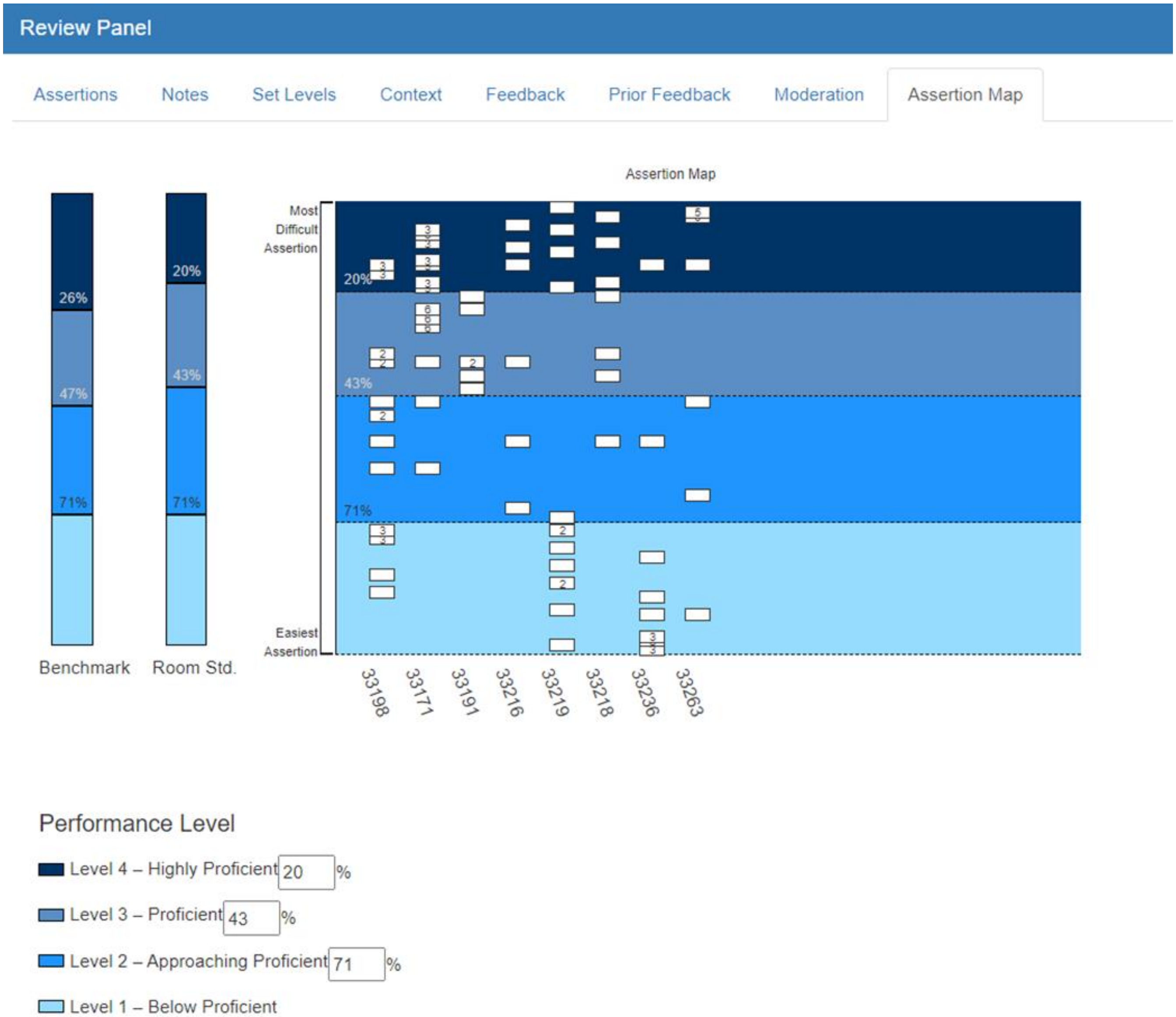
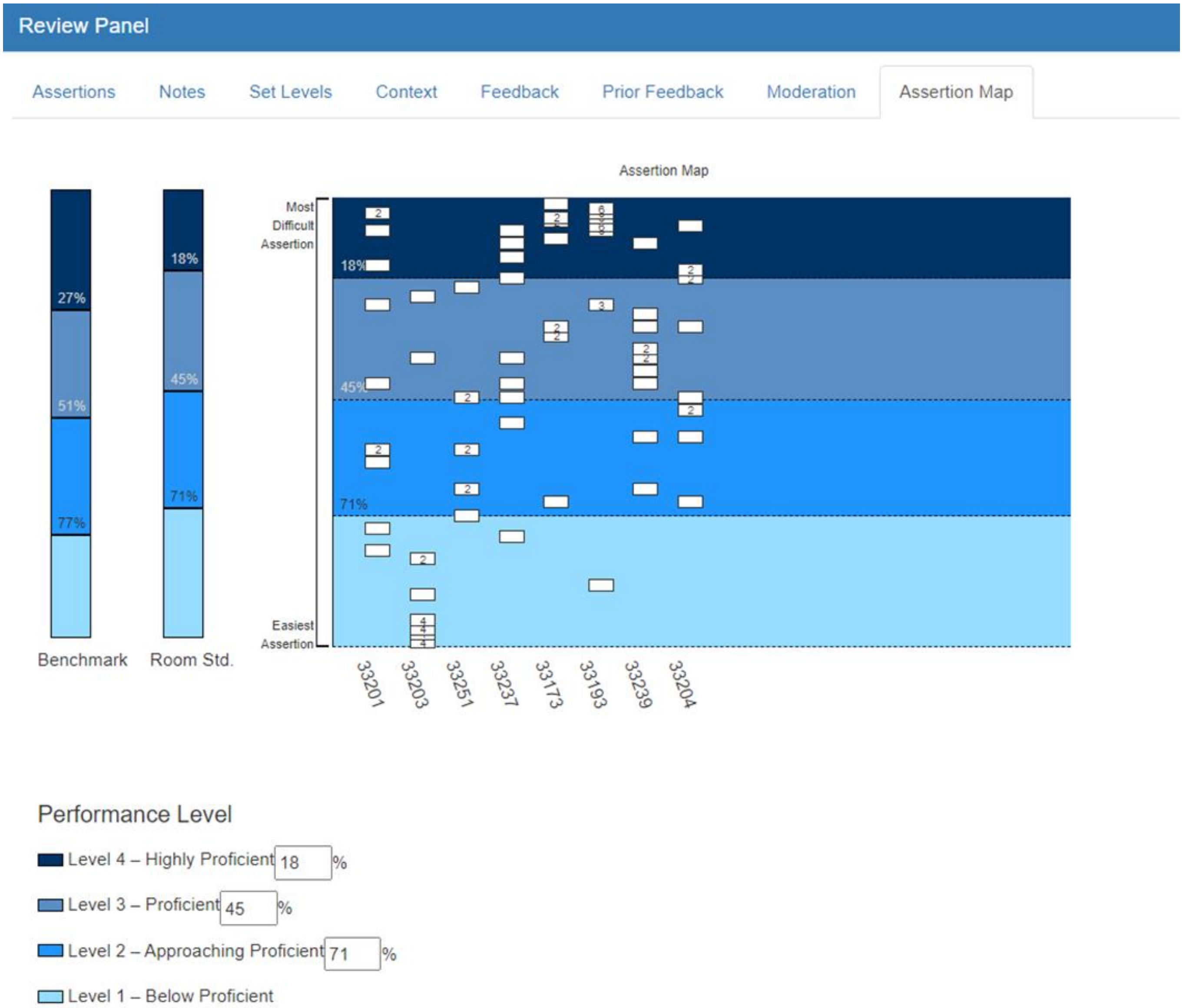


Exhibit I-4. Round 2 Standard-Setting Assertion Map, Science Grade 5



APPENDIX 9-A

DATA RECOGNITION CORPORATION (DRC) WRITING HANDSCORING GUIDELINES

Appendix 9-A
DRC Writing Handscoring Guidelines

Table 9-A–1. Short Essay (Informative-Explanatory) Writing Rubric Guidelines for Grades 3–5

Score	Statement of Purpose / Focus and Organization (4-point rubric)	Evidence / Elaboration (4-point rubric)	Conventions (2-point rubric, begins at scorepoint 2)
4	The response is fully sustained and consistently and purposefully focused: • controlling idea or main idea of a topic is focused, clearly stated, and strongly maintained • controlling idea or main idea of a topic is introduced and communicated clearly within the purpose, audience, and task • The response has a clear and effective organizational structure creating unity and completeness: • use of a variety of transitional strategies to clarify the relationships between and among ideas • logical progression of ideas from beginning to end • effective introduction and conclusion for audience and purpose	The response provides thorough and convincing support/evidence for the controlling idea or main idea that includes the effective use of sources, facts, and details: • use of evidence from sources is smoothly integrated, comprehensive, and relevant • effective use of a variety of elaborative techniques • The response clearly and effectively expresses ideas, using precise language: • use of academic and domain-specific vocabulary is clearly appropriate for the audience and purpose	
3	The response is adequately sustained and generally focused: • focus is clear and for the most part maintained, though some loosely related material may be present	The response provides adequate support/evidence for controlling idea or main idea that includes the use of sources, facts, and details: • some evidence from sources is integrated, though citations may be general or imprecise	

Score	Statement of Purpose / Focus and Organization (4-point rubric)	Evidence / Elaboration (4-point rubric)	Conventions (2-point rubric, begins at scorepoint 2)
	• some context for the controlling idea or main idea of the topic is adequate within the purpose, audience, and task • The response has an evident organizational structure and a sense of completeness, though there may be minor flaws and some ideas may be loosely connected: • adequate use of transitional strategies with some variety to clarify the relationships between and among ideas • adequate progression of ideas from beginning to end • adequate introduction and conclusion	• adequate use of some elaborative techniques • The response adequately expresses ideas, employing a mix of precise with more general language • use of domain-specific vocabulary is generally appropriate for the audience and purpose	
2	The response is somewhat sustained and may have a minor drift in focus: • may be clearly focused on the controlling or main idea, but is insufficiently sustained • controlling idea or main idea may be unclear and somewhat unfocused • The response has an inconsistent organizational structure, and flaws are evident: • inconsistent use of transitional strategies with little variety • uneven progression of ideas from beginning to end	The response provides uneven, cursory support/evidence for the controlling idea or main idea that includes partial or uneven use of sources, facts, and details: • evidence from sources is weakly integrated, and citations, if present, are uneven • weak or uneven use of elaborative techniques • The response expresses ideas unevenly, using simplistic language: • use of domain-specific vocabulary that may at times be inappropriate for the audience and purpose	The response demonstrates an adequate command of conventions: • some errors in usage and sentence formation may be present, but no systematic pattern of errors is displayed • adequate use of punctuation, capitalization, and spelling

Score	Statement of Purpose / Focus and Organization (4-point rubric)	Evidence / Elaboration (4-point rubric)	Conventions (2-point rubric, begins at scorepoint 2)
	• conclusion and introduction, if present, are weak		
1	The response may be related to the topic but may provide little or no focus: • may be very brief • may have a major drift • focus may be confusing or ambiguous • The response has little or no discernible organizational structure: • few or no transitional strategies are evident • frequent extraneous ideas may intrude	The response provides minimal support/evidence for the controlling idea or main idea that includes little or no use of sources, facts, and details: • use of evidence from the source material is minimal, absent, in error, or irrelevant • The response expression of ideas is vague, lacks clarity, or is confusing: • uses limited language or domain-specific vocabulary • may have little sense of audience and purpose	The response demonstrates a partial command of conventions: • errors in usage may obscure meaning • inconsistent use of punctuation, capitalization, and spelling
0			The response demonstrates a lack of command of conventions.
NS	Insufficient, illegible, foreign language, incoherent, off-topic, or off-purpose writing		

Table 9-A–2. Long Essay (Opinion) Writing Rubric Guidelines for Grades 3–5

<table>
<tr><th>Score</th><th>Statement of Purpose / Focus and Organization (4-point rubric)</th><th>Evidence / Elaboration (4-point rubric)</th><th>Conventions (2-point rubric, begins at scorepoint 2)</th></tr>
<tr><td>4</td><td>The response is fully sustained and consistently and purposefully focused:
opinion is clearly stated, focused, and strongly maintained
opinion is communicated clearly within the purpose, audience, and task
The response has a clear and effective organizational structure creating unity and completeness :
effective, consistent use of a variety of transitional strategies to clarify the relationships between and among ideas
logical progression of ideas from beginning to end
effective introduction and conclusion for audience and purpose</td><td>The response provides thorough and convincing support/evidence for the writer’s opinion that includes the effective use of sources, facts, and details:
use of evidence from sources is smoothly integrated, comprehensive, and relevant
effective use of a variety of elaborative techniques
The response clearly and effectively expresses ideas, using precise language:
use of academic and domain-specific vocabulary is clearly appropriate for the audience and purpose</td><td></td></tr>
<tr><td>3</td><td>The response is adequately sustained and generally focused:
opinion is clear and for the most part maintained, though some loosely related material may be present
context provided for the claim is adequate within the purpose, audience, and task
The response has an recognizable organizational structure , though there may</td><td>The response provides adequate support/evidence for the writer’s opinion that includes the use of sources, facts, and details:
some evidence from sources is integrated, though citations may be general or imprecise
adequate use of some elaborative techniques</td><td></td></tr>
</table>

Score	Statement of Purpose / Focus and Organization (4-point rubric)	Evidence / Elaboration (4-point rubric)	Conventions (2-point rubric, begins at scorepoint 2)
	be minor flaws and some ideas may be loosely connected: • adequate use of transitional strategies with some variety to clarify the relationships between and among ideas • adequate progression of ideas from beginning to end • adequate introduction and conclusion	The response adequately expresses ideas, employing a mix of precise with more general language: • use of domain-specific vocabulary is generally appropriate for the audience and purpose	
2	The response is somewhat sustained with some extraneous material or a minor drift in focus: • may be clearly focused on the opinion but is insufficiently sustained within the purpose, audience, and task • Opinion on the issue may be somewhat unclear and unfocused The response has an inconsistent organizational structure, and flaws are evident: • inconsistent use of transitional strategies with little variety • uneven progression of ideas from beginning to end • conclusion and introduction, if present, are weak	The response provides uneven, cursory support/ evidence for the writer's opinion that includes partial or uneven use of sources, facts, and details: • evidence from sources is weakly integrated, and citations, if present, are uneven • weak or uneven use of elaborative techniques The response expresses Ideas unevenly, using simplistic language: • use of domain-specific vocabulary may at times be inappropriate for the audience and purpose	The response demonstrates an adequate command of conventions: • some errors in usage and sentence formation are present, but no systematic pattern of errors is displayed • adequate use of punctuation, capitalization, and spelling
1	The response may be related to the purpose but may offer little or no focus: • may be very brief	The response provides minimal support/evidence for the writer's opinion that includes little or no use of sources, facts, and details:	The response demonstrates a partial command of conventions: • errors in usage may obscure meaning

Score	Statement of Purpose / Focus and Organization (4-point rubric)	Evidence / Elaboration (4-point rubric)	Conventions (2-point rubric, begins at scorepoint 2)
	• may have a major drift • opinion may be confusing or ambiguous The response has little or no discernible organizational structure: • few or no transitional strategies are evident • frequent extraneous ideas may intrude	• use of evidence from sources is minimal, absent, in error, or irrelevant The response expression of ideas is vague, lacks clarity, or is confusing: • uses limited language or domain-specific vocabulary • may have little sense of audience and purpose	• inconsistent use of punctuation, capitalization, and spelling
0			The response demonstrates a lack of command of conventions.
NS	Insufficient, illegible, foreign language, incoherent, off-topic, or off-purpose writing		

Table 9-A–3. Short Essay (Informative-Explanatory) Writing Rubric Guidelines for Grades 6–11

Score	Statement of Purpose / Focus and Organization (4-point rubric)	Evidence / Elaboration (4-point rubric)	Conventions (2-point rubric, begins at scorepoint 2)
4	The response is fully sustained and consistently and purposefully focused: • controlling idea or main idea of a topic is focused, clearly stated, and strongly maintained • controlling idea or main idea of a topic is introduced and communicated clearly within the purpose, audience, and task The response has a clear and effective organizational structure creating unity and completeness: • effective, consistent use of a variety of transitional strategies between and among ideas • logical progression of ideas from beginning to end • effective introduction and conclusion for audience and purpose • strong connections among ideas, with some syntactic variety	The response provides thorough and convincing support/evidence for the controlling idea or main idea that includes the effective use of sources, facts, and details. The response achieves substantial depth that is specific and relevant: • use of evidence from sources is smoothly integrated, comprehensive, relevant, and concrete • effective use of a variety of elaborative techniques The response clearly and effectively expresses ideas, using precise, language: • use of academic and domain-specific vocabulary is clearly appropriate for the audience and purpose	
3	The response is adequately sustained and generally focused: • focus is clear and for the most part maintained, though some loosely related material may be present • some context for the controlling idea or main idea of the topic is adequate within the purpose, audience, and task	The response provides adequate support/evidence for the controlling idea or main idea that includes the use of sources, facts, and details: • some evidence from sources is integrated, though citations may be general or imprecise	

<table>
<tr><th>Score</th><th>Statement of Purpose / Focus and Organization (4-point rubric)</th><th>Evidence / Elaboration (4-point rubric)</th><th>Conventions (2-point rubric, begins at scorepoint 2)</th></tr>
<tr><td></td><td>The response has an evident organizational structure and a sense of completeness, though there may be minor flaws and some ideas may be loosely connected:
adequate use of transitional strategies with some variety between and among ideas
adequate progression of ideas from beginning to end
adequate introduction and conclusion
adequate, if slightly inconsistent, connection among ideas</td><td>adequate use of some elaborative techniques
The response adequately expresses ideas, employing a mix of precise with more general language :
use of domain-specific vocabulary is generally appropriate for the audience and purpose</td><td></td></tr>
<tr><td>2</td><td>The response is somewhat sustained and may have a minor drift in focus:
may be clearly focused on the controlling or main idea, but is insufficiently sustained
controlling idea or main idea may be unclear and somewhat unfocused
The response has an inconsistent organizational structure, and flaws are evident:
inconsistent use of transitional strategies with little variety
uneven progression of ideas from beginning to end
conclusion and introduction, if present, are weak</td><td>The response provides uneven, cursory support/ evidence for the controlling idea or main idea that includes partial or uneven use of sources, facts, and details:
evidence from sources is weakly integrated, and citations, if present, are uneven
weak or uneven use of elaborative techniques
The response expresses Ideas unevenly, using simplistic language:
use of domain-specific vocabulary may at times be inappropriate for the audience and purpose</td><td>The response demonstrates an adequate command of conventions:
some errors in usage and sentence formation are present, but no systematic pattern of errors is displayed
adequate use of punctuation, capitalization, and spelling</td></tr>
</table>

Score	Statement of Purpose / Focus and Organization (4-point rubric)	Evidence / Elaboration (4-point rubric)	Conventions (2-point rubric, begins at scorepoint 2)
	• weak connection among ideas		
1	The response may be related to the topic but may provide little or no focus: • may be very brief • may have a major drift • focus may be confusing or ambiguous The response has little or no discernible organizational structure: • few or no transitional strategies are evident • frequent extraneous ideas may intrude	The response provides minimal support/evidence for the controlling idea or main idea that includes little or no use of sources, facts, and details: • use of evidence from sources is minimal, absent, in error, or irrelevant The response expression of ideas is vague, lacks clarity, or is confusing: • uses limited language or domain-specific vocabulary • may have little sense of audience and purpose	The response demonstrates partial command of conventions: • errors are frequent and severe and meaning is often obscure
0			The response demonstrates a lack of command of conventions.
NS	Insufficient, illegible, foreign language, incoherent, off-topic, or off-purpose writing		

Table 9-A–4. Long Essay (Argumentative) Writing Rubric Guidelines for Grades 6–11

<table>
<tr><th>Score</th><th>Statement of Purpose / Focus and Organization (4-point rubric)</th><th>Evidence / Elaboration (4-point rubric)</th><th>Conventions (2-point rubric, begins at scorepoint 2)</th></tr>
<tr><td>4</td><td>The response is fully sustained and consistently and purposefully focused:

• claim is clearly stated, focused and strongly maintained
• alternate or opposing claims are clearly addressed
• claim is introduced and communicated clearly within the purpose, audience, and task

The response has a clear and effective organizational structure creating unity and completeness :

• effective, consistent use of a variety of transitional strategies to clarify the relationships between and among ideas
• logical progression of ideas from beginning to end
• effective introduction and conclusion for audience and purpose
• strong connections among ideas, with some syntactic variety</td><td>The response provides thorough and convincing support/evidence for the writer's claim that includes the effective use of sources, facts, and details. The response achieves substantial depth that is specific and relevant:

• use of evidence from sources is smoothly integrated, comprehensive, relevant, and concrete
• effective use of a variety of elaborative techniques

The response clearly and effectively expresses ideas, using precise, language:

• use of academic and domain-specific vocabulary is clearly appropriate for the audience and purpose</td><td></td></tr>
<tr><td>3</td><td>The response is adequately sustained and generally focused:

• claim is clear and for the most part maintained, though some loosely related material may be present</td><td>The response provides adequate support/evidence for the writer's claim that includes the use of sources, facts, and details. The response achieves some depth and specificity but is predominantly general:</td><td></td></tr>
</table>

Score	Statement of Purpose / Focus and Organization (4-point rubric)	Evidence / Elaboration (4-point rubric)	Conventions (2-point rubric, begins at scorepoint 2)
	• alternate or opposing claims are included but may not be completely addressed • context provided for the claim is adequate within the purpose, audience, and task The response has an evident organizational structure and a sense of completeness, though there may be minor flaws and some ideas may be loosely connected: • adequate use of transitional strategies with some variety to clarify the relationships between and among ideas • adequate progression of Ideas from beginning to end • adequate introduction and conclusion • adequate, if slightly inconsistent, connection among ideas	• some evidence from sources is integrated, though citations may be general or imprecise • adequate use of some elaborative techniques The response adequately expresses ideas, employing a mix of precise with more general language: • use of domain-specific vocabulary is generally appropriate for the audience and purpose	
2	The response is somewhat sustained and may have a minor drift in focus: • may be clearly focused on the claim but is insufficiently sustained claim on the issue may be somewhat unclear and unfocused The response has an inconsistent organizational structure, and flaws are evident:	The response provides uneven, cursory support/evidence for the writer's claim that includes partial or uneven use of sources, facts, and details, and achieves little depth: • evidence from sources is weakly integrated, and citations, if present, are uneven • weak or uneven use of elaborative techniques The response expresses Ideas unevenly, using simplistic language:	The response demonstrates an adequate command of conventions: • some errors in usage and sentence formation may be present, but no systematic pattern of errors is displayed • adequate use of punctuation, capitalization, and spelling

Score	Statement of Purpose / Focus and Organization (4-point rubric)	Evidence / Elaboration (4-point rubric)	Conventions (2-point rubric, begins at scorepoint 2)
	• inconsistent use of basic transitional strategies with little variety • uneven progression of ideas from beginning to end • conclusion and introduction, if present, are weak • Weak connection among ideas	• use of domain-specific vocabulary may at times be inappropriate for the audience and purpose	
1	The response may be related to the topic but may offer little relevant detail: • may be very brief • may have a major drift • claim may be confusing or ambiguous The response has little or no discernible organizational structure: • few or no transitional strategies are evident • frequent extraneous ideas may intrude	The response provides minimal support/evidence for the writer's claim that includes little or no use of sources, facts, and details: • Use of evidence from sources is minimal, absent, in error, or irrelevant The response expression of ideas is vague, lacks clarity, or is confusing: • uses limited language or domain-specific vocabulary • may have little sense of audience and purpose	The response demonstrates a partial command of conventions: • errors in usage may obscure meaning • inconsistent use of punctuation, capitalization, and spelling
0			The response demonstrates a lack of command of conventions.
NS	Insufficient, illegible, foreign language, incoherent, off-topic, or off-purpose writing		

Appendix 9-B

Data Recognition Corporation (DRC) Writing Handscoring Results

Appendix 9-B
DRC Writing Handscoring Results

Table 9-B-1. Handscoring Results for Grade 3 Writing

ITS ID	Dimension	Score Point	N	Mean Human1	Mean Human2	SD Human1	SD Human2	Min Human1	Min Human2	Max Human1	Max Human2	Rater Agreement[*] % Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
13945	Conventions	2	1664	1.46	1.46	0.71	0.69	0	0	2	2	67.43	98.32	0.62	0.62	0.01
	Evidence	4	1640	2.00	2.00	0.80	0.79	1	1	4	4	58.72	96.95	0.59	0.59	0.01
	Purpose	4	1640	1.92	1.96	0.75	0.77	1	1	4	4	60.73	97.93	0.60	0.60	0.05
16963	Conventions	2	1777	1.29	1.20	0.70	0.69	0	0	2	2	63.48	98.82	0.59	0.59	0.13
	Evidence	4	1775	1.95	1.94	0.80	0.77	1	1	4	4	61.86	98.20	0.65	0.65	0.01
	Purpose	4	1775	1.96	1.96	0.74	0.74	1	1	4	4	62.20	98.14	0.61	0.61	0.01

[*] For Standardized Mean Difference (SMD),

$$\bar{z} = \frac{|\overline{X_{R1}} - \overline{X_{R2}}|}{\sqrt{\frac{SD_{R1}^2 + SD_{R2}^2}{2}}}$$

where $\overline{X_{R1}}$ is the mean of Rater 1 human score,
$\overline{X_{R2}}$ is the mean of Rater 2 human score,
SD_{R1}^2 is the variance of Rater 1 human score,
SD_{R2}^2 is the variance of Rater 2 human score

ITS ID	Dimension	Score Point	N	Mean Human1	Mean Human2	SD Human1	SD Human2	Min Human1	Min Human2	Max Human1	Max Human2	Rater Agreement* % Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
17168	Conventions	2	1726	1.48	1.36	0.70	0.72	0	0	2	2	64.31	97.51	0.58	0.57	0.17
	Evidence	4	1725	1.87	1.80	0.78	0.77	1	1	4	4	58.03	96.75	0.57	0.57	0.09
	Purpose	4	1725	1.88	1.86	0.76	0.77	1	1	4	4	58.61	98.20	0.60	0.60	0.03
17197	Conventions	2	1746	1.47	1.43	0.65	0.68	0	0	2	2	67.75	98.51	0.59	0.59	0.06
	Evidence	4	1746	1.82	1.70	0.76	0.72	1	1	4	4	62.71	97.88	0.61	0.60	0.16
	Purpose	4	1746	1.86	1.73	0.71	0.69	1	1	4	4	60.19	97.77	0.54	0.53	0.19
17202	Conventions	2	1655	1.47	1.47	0.63	0.62	0	0	2	2	72.02	99.82	0.64	0.64	0.01
	Evidence	4	1653	1.94	1.92	0.70	0.69	1	1	4	4	62.13	98.19	0.55	0.55	0.03
	Purpose	4	1653	2.12	2.10	0.68	0.68	1	1	4	4	65.21	98.43	0.57	0.57	0.04
17204	Conventions	2	1739	1.52	1.64	0.63	0.57	0	0	2	2	72.69	99.48	0.63	0.61	0.21
	Evidence	4	1739	1.98	2.12	0.74	0.62	1	1	4	4	61.01	98.68	0.57	0.55	0.21
	Purpose	4	1739	1.98	2.05	0.66	0.56	1	1	4	4	67.86	99.31	0.56	0.54	0.11
17236	Conventions	2	1566	1.51	1.52	0.63	0.62	0	0	2	2	75.29	99.87	0.68	0.68	0.01
	Evidence	4	1550	1.99	1.98	0.79	0.80	1	1	4	4	57.48	95.87	0.56	0.56	0.02
	Purpose	4	1550	2.06	2.07	0.82	0.83	1	1	4	4	60.45	97.23	0.64	0.64	0.01
17296	Conventions	2	1653	1.56	1.59	0.62	0.60	0	0	2	2	76.10	99.58	0.67	0.66	0.05
	Evidence	4	1648	2.21	2.23	0.83	0.80	1	1	4	4	56.55	95.87	0.58	0.58	0.02
	Purpose	4	1648	2.26	2.31	0.83	0.83	1	1	4	4	56.55	96.12	0.60	0.60	0.06
17408	Conventions	2	1641	1.52	1.52	0.64	0.64	0	0	2	2	70.14	98.90	0.59	0.59	0.00
	Evidence	4	1633	2.14	2.13	0.79	0.84	1	1	4	4	60.75	97.24	0.64	0.64	0.01
	Purpose	4	1633	2.15	2.13	0.78	0.82	1	1	4	4	65.58	97.67	0.67	0.67	0.03

ITS ID	Dimension	Score Point	N	Mean		SD		Min		Max		Rater Agreement*				
				Human1	Human2	Human1	Human2	Human1	Human2	Human1	Human2	% Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
17410	Conventions	2	1672	1.46	1.48	0.69	0.68	0	0	2	2	61.78	97.43	0.51	0.51	0.03
	Evidence	4	1670	1.95	2.00	0.78	0.78	1	1	4	4	57.43	95.81	0.55	0.55	0.07
	Purpose	4	1670	2.11	2.13	0.77	0.74	1	1	4	4	63.11	97.25	0.61	0.60	0.03
17412	Conventions	2	1657	1.46	1.48	0.63	0.62	0	0	2	2	68.26	99.52	0.58	0.58	0.04
	Evidence	4	1655	2.16	2.17	0.79	0.77	1	1	4	4	56.50	97.10	0.57	0.57	0.01
	Purpose	4	1655	2.22	2.23	0.79	0.77	1	1	4	4	61.75	97.52	0.62	0.62	0.01
17414	Conventions	2	1632	1.42	1.41	0.67	0.66	0	0	2	2	74.14	99.63	0.70	0.70	0.01
	Evidence	4	1617	2.02	2.02	0.89	0.88	1	1	4	4	60.05	97.03	0.68	0.68	0.00
	Purpose	4	1617	2.15	2.17	0.89	0.88	1	1	4	4	61.41	97.53	0.70	0.70	0.03
17429	Conventions	2	1707	1.46	1.38	0.68	0.72	0	0	2	2	63.27	97.01	0.54	0.54	0.12
	Evidence	4	1704	1.87	1.79	0.76	0.77	1	1	4	4	60.21	97.83	0.61	0.60	0.10
	Purpose	4	1704	1.87	1.77	0.75	0.78	1	1	4	4	61.27	97.24	0.61	0.60	0.12
17432	Conventions	2	1721	1.41	1.37	0.67	0.67	0	0	2	2	70.13	99.48	0.65	0.65	0.05
	Evidence	4	1718	2.10	1.97	0.78	0.74	1	1	4	4	66.36	97.73	0.67	0.65	0.18
	Purpose	4	1718	2.08	1.94	0.79	0.72	1	1	4	4	66.18	98.20	0.68	0.66	0.19
17434	Conventions	2	1726	1.36	1.32	0.68	0.69	0	0	2	2	66.74	99.19	0.62	0.62	0.06
	Evidence	4	1726	2.10	2.21	0.79	0.79	1	1	4	4	63.73	98.49	0.68	0.67	0.14
	Purpose	4	1726	2.06	2.06	0.75	0.74	1	1	4	4	65.82	98.38	0.65	0.65	0.00
17435	Conventions	2	1747	1.41	1.49	0.71	0.65	0	0	2	2	71.89	98.74	0.66	0.66	0.12
	Evidence	4	1746	2.09	1.98	0.77	0.76	1	1	4	4	65.35	98.00	0.66	0.66	0.14

ITS ID	Dimension	Score Point	N	Mean Human1	Mean Human2	SD Human1	SD Human2	Min Human1	Min Human2	Max Human1	Max Human2	Rater Agreement* % Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
	Purpose	4	1746	2.00	1.95	0.74	0.73	1	1	4	4	67.58	98.17	0.65	0.65	0.07
17436	Conventions	2	1394	1.51	1.56	0.63	0.66	0	0	2	2	74.68	99.50	0.68	0.67	0.08
	Evidence	4	1390	2.08	2.00	0.76	0.66	1	1	4	4	67.19	99.06	0.66	0.65	0.11
	Purpose	4	1390	2.01	1.89	0.71	0.61	1	1	4	4	66.04	99.21	0.61	0.59	0.18

Table 9-B-2. Handscoring Results for Grade 4 Writing

ITS ID	Dimension	Score Point	N	Mean Human1	Mean Human2	SD Human1	SD Human2	Min Human1	Min Human2	Max Human1	Max Human2	Rater Agreement % Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
16994	Conventions	2	1754	1.36	1.34	0.61	0.62	0	0	2	2	58.38	98.97	0.41	0.41	0.03
	Evidence	4	1754	1.75	1.60	0.71	0.66	1	1	4	4	58.89	96.92	0.49	0.48	0.22
	Purpose	4	1754	1.79	1.68	0.73	0.68	1	1	4	4	59.41	97.95	0.55	0.54	0.16
16995	Conventions	2	1776	1.23	1.28	0.68	0.64	0	0	2	2	58.61	98.42	0.48	0.48	0.08
	Evidence	4	1776	1.80	1.61	0.84	0.77	1	1	4	4	59.18	95.27	0.59	0.58	0.23
	Purpose	4	1776	1.85	1.76	0.82	0.72	1	1	4	4	56.53	97.30	0.58	0.57	0.11

ITS ID	Dimension	Score Point	N	Mean Human1	Mean Human2	SD Human1	SD Human2	Min Human1	Min Human2	Max Human1	Max Human2	% Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
17052	Conventions	2	1750	1.26	1.30	0.68	0.67	0	0	2	2	63.37	99.54	0.59	0.59	0.05
	Evidence	4	1749	1.50	1.47	0.64	0.59	1	1	4	4	69.01	99.09	0.56	0.56	0.06
	Purpose	4	1749	1.75	1.71	0.62	0.58	1	1	4	4	67.58	98.80	0.50	0.50	0.06
17128	Conventions	2	1724	1.54	1.60	0.56	0.53	0	0	2	2	74.01	99.25	0.53	0.53	0.10
	Evidence	4	1723	1.72	1.72	0.73	0.73	1	1	4	4	52.87	95.07	0.42	0.42	0.01
	Purpose	4	1723	2.00	1.99	0.74	0.74	1	1	4	4	52.76	96.75	0.48	0.48	0.00
17176	Conventions	2	1747	1.26	1.23	0.68	0.74	0	0	2	2	54.95	95.99	0.44	0.44	0.05
	Evidence	4	1747	1.74	1.74	0.77	0.69	1	1	4	4	58.79	97.14	0.54	0.54	0.00
	Purpose	4	1747	1.77	1.70	0.76	0.71	1	1	4	4	59.87	97.94	0.58	0.58	0.10
17178	Conventions	2	1723	1.62	1.65	0.60	0.57	0	0	2	2	73.07	98.96	0.57	0.57	0.05
	Evidence	4	1722	1.90	1.89	0.71	0.67	1	1	4	4	60.92	98.61	0.54	0.54	0.02
	Purpose	4	1722	2.08	2.08	0.72	0.71	1	1	4	4	60.63	98.03	0.55	0.55	0.00
17214	Conventions	2	1773	1.41	1.47	0.67	0.58	0	0	2	2	66.16	99.04	0.54	0.53	0.10
	Evidence	4	1773	1.72	1.80	0.71	0.68	1	1	4	4	63.79	98.20	0.58	0.57	0.12
	Purpose	4	1773	1.86	1.94	0.71	0.69	1	1	4	4	62.10	98.93	0.59	0.58	0.12
17270	Conventions	2	1788	1.62	1.62	0.55	0.54	0	0	2	2	75.84	99.78	0.58	0.58	0.00
	Evidence	4	1788	2.08	2.06	0.82	0.82	1	1	4	4	51.51	94.85	0.52	0.52	0.03
	Purpose	4	1788	2.35	2.33	0.80	0.81	1	1	4	4	53.80	94.46	0.50	0.50	0.03
17295	Conventions	2	1739	1.61	1.60	0.54	0.54	0	0	2	2	72.80	99.77	0.52	0.52	0.02
	Evidence	4	1735	2.10	2.10	0.83	0.81	1	1	4	4	52.51	95.50	0.54	0.54	0.01
	Purpose	4	1735	2.20	2.19	0.81	0.80	1	1	4	4	52.28	96.48	0.54	0.54	0.01

ITS ID	Dimension	Score Point	N	Mean		SD		Min		Max		Rater Agreement				
				Human1	Human2	Human1	Human2	Human1	Human2	Human1	Human2	% Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
17416	Conventions	2	1759	1.67	1.68	0.52	0.51	0	0	2	2	76.29	99.60	0.53	0.53	0.02
	Evidence	4	1755	1.80	1.84	0.74	0.76	1	1	4	4	53.50	94.42	0.42	0.42	0.05
	Purpose	4	1755	2.01	2.06	0.73	0.75	1	1	4	4	57.26	96.52	0.51	0.51	0.06
17417	Conventions	2	1687	1.68	1.68	0.54	0.53	0	0	2	2	77.42	99.82	0.59	0.59	0.00
	Evidence	4	1678	2.05	2.05	0.77	0.78	1	1	4	4	53.93	96.25	0.51	0.51	0.00
	Purpose	4	1678	2.14	2.15	0.78	0.78	1	1	4	4	57.45	97.68	0.59	0.59	0.01
17424	Conventions	2	1692	1.76	1.75	0.52	0.52	0	0	2	2	81.15	98.29	0.55	0.55	0.03
	Evidence	4	1681	2.06	2.04	0.73	0.76	1	1	4	4	53.60	95.90	0.46	0.46	0.03
	Purpose	4	1681	2.06	2.05	0.74	0.74	1	1	4	4	53.24	96.73	0.47	0.47	0.02
17426	Conventions	2	1702	1.56	1.57	0.55	0.54	0	0	2	2	62.98	99.65	0.35	0.35	0.01
	Evidence	4	1701	2.03	2.05	0.70	0.71	1	1	4	4	59.73	96.41	0.48	0.48	0.03
	Purpose	4	1701	2.13	2.16	0.75	0.75	1	1	4	4	53.73	94.71	0.45	0.44	0.04
17431	Conventions	2	1745	1.08	1.21	0.74	0.69	0	0	2	2	55.76	97.88	0.52	0.51	0.19
	Evidence	4	1745	1.57	1.53	0.67	0.66	1	1	4	4	64.70	97.25	0.50	0.50	0.06
	Purpose	4	1745	1.68	1.61	0.71	0.69	1	1	4	4	63.09	97.13	0.54	0.54	0.09
17437	Conventions	2	1731	1.35	1.26	0.68	0.73	0	0	2	2	57.42	97.23	0.50	0.49	0.12
	Evidence	4	1729	1.74	1.57	0.79	0.64	1	1	4	4	59.69	94.97	0.50	0.47	0.23
	Purpose	4	1729	1.73	1.57	0.77	0.63	1	1	4	4	62.23	95.43	0.50	0.48	0.22
17438	Conventions	2	1719	1.31	1.31	0.65	0.66	0	0	2	2	59.63	98.84	0.48	0.48	0.01
	Evidence	4	1719	1.73	1.71	0.69	0.69	1	1	4	4	60.27	98.89	0.55	0.55	0.02
	Purpose	4	1719	1.71	1.69	0.70	0.71	1	1	4	4	64.28	98.37	0.59	0.59	0.03

ITS ID	Dimension	Score Point	N	Mean		SD		Min		Max		Rater Agreement				
				Human1	Human2	Human1	Human2	Human1	Human2	Human1	Human2	% Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
17439	Conventions	2	1723	1.29	1.07	0.70	0.74	0	0	2	2	53.63	95.88	0.49	0.46	0.31
	Evidence	4	1722	1.85	1.74	0.71	0.68	1	1	4	4	60.86	97.91	0.54	0.53	0.15
	Purpose	4	1722	1.80	1.63	0.70	0.70	1	1	4	4	60.34	98.84	0.59	0.58	0.23
17440	Conventions	2	1733	1.11	1.10	0.72	0.69	0	0	2	2	63.01	99.25	0.60	0.60	0.01
	Evidence	4	1733	1.85	1.91	0.75	0.75	1	1	4	4	56.90	96.94	0.53	0.52	0.07
	Purpose	4	1733	1.78	1.83	0.77	0.76	1	1	4	4	59.03	97.29	0.58	0.57	0.06
17441	Conventions	2	1678	1.46	1.49	0.68	0.66	0	0	2	2	71.99	98.63	0.64	0.64	0.04
	Evidence	4	1673	1.61	1.63	0.70	0.72	1	1	4	4	67.30	97.55	0.59	0.59	0.03
	Purpose	4	1673	1.59	1.63	0.68	0.71	1	1	4	4	66.17	97.79	0.58	0.58	0.05
17487	Conventions	2	1814	1.44	1.45	0.68	0.64	0	0	2	2	63.62	98.13	0.52	0.52	0.01
	Evidence	4	1813	1.61	1.57	0.70	0.67	1	1	4	4	62.88	98.07	0.54	0.53	0.06
	Purpose	4	1813	1.66	1.68	0.63	0.65	1	1	4	4	64.75	98.95	0.53	0.53	0.02

Table 9-B-3. Handscoring Results for Grade 5 Writing

ITS ID	Dimension	Score Point	N	Mean Human1	Mean Human2	SD Human1	SD Human2	Min Human1	Min Human2	Max Human1	Max Human2	% Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
17160	Conventions	2	1455	1.62	1.70	0.58	0.53	0	0	2	2	76.70	99.52	0.61	0.60	0.14
	Evidence	4	1455	2.09	2.15	0.84	0.81	1	1	4	4	57.25	96.49	0.61	0.61	0.07
	Purpose	4	1455	2.06	2.12	0.76	0.70	1	1	4	4	60.27	97.46	0.56	0.56	0.09
17161	Conventions	2	1777	1.55	1.65	0.59	0.55	0	0	2	2	73.49	99.89	0.61	0.60	0.17
	Evidence	4	1777	1.79	1.88	0.75	0.74	1	1	4	4	59.26	97.30	0.56	0.56	0.12
	Purpose	4	1777	1.78	1.79	0.72	0.72	1	1	4	4	59.09	97.97	0.55	0.55	0.01
17162	Conventions	2	1802	1.68	1.73	0.59	0.53	0	0	2	2	76.80	98.61	0.57	0.56	0.08
	Evidence	4	1801	1.84	1.78	0.81	0.74	1	1	4	4	61.85	97.06	0.62	0.61	0.08
	Purpose	4	1801	1.77	1.69	0.75	0.69	1	1	4	4	52.53	95.89	0.43	0.42	0.10
17165	Conventions	2	1810	1.67	1.81	0.58	0.46	0	0	2	2	76.41	98.40	0.53	0.49	0.28
	Evidence	4	1809	1.78	1.85	0.77	0.64	1	1	4	4	58.60	97.51	0.52	0.51	0.11
	Purpose	4	1809	1.74	1.82	0.75	0.61	1	1	4	4	55.33	97.68	0.45	0.44	0.12
17166	Conventions	2	1769	1.43	1.60	0.58	0.56	0	0	2	2	60.83	99.43	0.41	0.40	0.30
	Evidence	4	1768	1.89	1.84	0.80	0.78	1	1	4	4	54.64	94.91	0.51	0.51	0.06
	Purpose	4	1768	1.82	1.82	0.79	0.79	1	1	4	4	54.98	96.10	0.53	0.53	0.00
17180	Conventions	2	1777	1.74	1.74	0.48	0.48	0	0	2	2	77.88	99.72	0.51	0.51	0.00
	Evidence	4	1773	1.83	1.86	0.71	0.72	1	1	4	4	59.84	96.79	0.51	0.51	0.04
	Purpose	4	1773	2.03	2.06	0.59	0.62	1	1	4	4	66.78	98.76	0.50	0.50	0.06
17205	Conventions	2	1751	1.67	1.68	0.55	0.54	0	0	2	2	78.18	99.66	0.62	0.62	0.02

ITS ID	Dimension	Score Point	N	Mean Human1	Mean Human2	SD Human1	SD Human2	Min Human1	Min Human2	Max Human1	Max Human2	% Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
	Evidence	4	1743	1.88	1.87	0.75	0.77	1	1	4	4	52.90	95.81	0.48	0.48	0.01
	Purpose	4	1743	2.04	2.06	0.74	0.75	1	1	4	4	59.32	97.82	0.58	0.57	0.03
17212	Conventions	2	1779	1.68	1.68	0.51	0.52	0	0	2	2	73.41	99.38	0.46	0.46	0.01
	Evidence	4	1779	2.04	2.03	0.79	0.80	1	1	4	4	53.63	96.23	0.53	0.53	0.01
	Purpose	4	1779	2.18	2.18	0.76	0.78	1	1	4	4	56.10	96.63	0.54	0.54	0.00
17419	Conventions	2	1769	1.68	1.70	0.53	0.52	0	0	2	2	73.77	99.49	0.50	0.50	0.04
	Evidence	4	1767	2.08	2.08	0.75	0.76	1	1	4	4	53.82	95.98	0.48	0.48	0.01
	Purpose	4	1767	2.17	2.16	0.75	0.74	1	1	4	4	58.86	97.57	0.56	0.56	0.02
17420	Conventions	2	1763	1.72	1.73	0.51	0.48	0	0	2	2	77.60	99.72	0.53	0.53	0.04
	Evidence	4	1762	2.09	2.12	0.86	0.85	1	1	4	4	52.78	93.30	0.53	0.53	0.04
	Purpose	4	1762	2.21	2.25	0.81	0.83	1	1	4	4	56.19	96.59	0.58	0.58	0.05
17421	Conventions	2	1765	1.76	1.75	0.48	0.48	0	0	2	2	82.32	99.55	0.59	0.59	0.01
	Evidence	4	1765	1.87	1.86	0.71	0.69	1	1	4	4	61.98	98.24	0.55	0.55	0.02
	Purpose	4	1765	2.07	2.04	0.63	0.63	1	1	4	4	68.95	98.81	0.56	0.56	0.05
17422	Conventions	2	1712	1.72	1.73	0.49	0.49	0	0	2	2	80.90	99.82	0.59	0.59	0.02
	Evidence	4	1707	2.27	2.26	0.89	0.90	1	1	4	4	53.66	94.55	0.60	0.60	0.01
	Purpose	4	1707	2.33	2.30	0.84	0.86	1	1	4	4	58.58	97.66	0.66	0.66	0.03
17423	Conventions	2	1754	1.71	1.75	0.52	0.50	0	0	2	2	75.77	98.97	0.48	0.48	0.07
	Evidence	4	1751	1.85	1.88	0.83	0.85	1	1	4	4	51.00	93.66	0.51	0.51	0.03
	Purpose	4	1751	2.17	2.20	0.78	0.79	1	1	4	4	54.54	96.57	0.55	0.55	0.03
17443	Conventions	2	1768	1.73	1.72	0.51	0.49	0	0	2	2	81.05	99.72	0.61	0.61	0.03

ITS ID	Dimension	Score Point	N	Mean Human1	Mean Human2	SD Human1	SD Human2	Min Human1	Min Human2	Max Human1	Max Human2	Rater Agreement % Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
	Evidence	4	1768	2.11	2.13	0.82	0.80	1	1	4	4	62.50	97.34	0.65	0.65	0.03
	Purpose	4	1768	2.07	2.03	0.80	0.76	1	1	4	4	60.97	98.42	0.64	0.64	0.04
17444	Conventions	2	1849	1.63	1.78	0.55	0.45	0	0	2	2	74.36	99.62	0.52	0.49	0.29
	Evidence	4	1849	1.75	1.69	0.74	0.62	1	1	4	4	61.60	97.67	0.52	0.51	0.08
	Purpose	4	1849	1.83	1.64	0.73	0.59	1	1	4	4	56.08	97.13	0.45	0.42	0.29
17445	Conventions	2	1883	1.67	1.79	0.54	0.45	0	0	2	2	78.70	99.42	0.58	0.55	0.25
	Evidence	4	1883	1.92	1.96	0.75	0.69	1	1	4	4	56.13	96.87	0.48	0.48	0.06
	Purpose	4	1883	1.85	1.77	0.70	0.64	1	1	4	4	60.06	98.04	0.50	0.49	0.12
17446	Conventions	2	1781	1.54	1.78	0.62	0.47	0	0	2	2	67.49	98.43	0.50	0.44	0.44
	Evidence	4	1781	1.61	1.81	0.69	0.67	1	1	4	4	58.00	96.91	0.48	0.46	0.30
	Purpose	4	1781	1.56	1.70	0.65	0.64	1	1	4	4	60.81	97.87	0.47	0.46	0.22
17447	Conventions	2	1828	1.51	1.66	0.65	0.52	0	0	2	2	70.19	99.12	0.58	0.55	0.26
	Evidence	4	1827	1.52	1.78	0.69	0.82	1	1	4	4	61.03	97.26	0.65	0.61	0.34
	Purpose	4	1827	1.61	1.77	0.67	0.72	1	1	4	4	59.33	98.41	0.56	0.54	0.22
17448	Conventions	2	1734	1.56	1.69	0.66	0.54	0	0	2	2	69.90	98.27	0.55	0.52	0.21
	Evidence	4	1733	1.85	1.88	0.64	0.63	1	1	4	4	62.61	98.50	0.48	0.48	0.04
	Purpose	4	1733	1.90	1.95	0.63	0.59	1	1	4	4	65.67	98.67	0.48	0.48	0.07
17486	Conventions	2	1657	1.76	1.75	0.50	0.52	0	0	2	2	86.18	98.91	0.68	0.67	0.01
	Evidence	4	1655	1.67	1.72	0.66	0.67	1	1	4	4	61.21	97.10	0.45	0.45	0.08
	Purpose	4	1655	1.59	1.62	0.60	0.63	1	1	4	4	61.63	97.58	0.40	0.39	0.06

Table 9-B-4. Handscoring Results for Grade 6 Writing

ITS ID	Dimension	Score Point	N	Mean		SD		Min		Max		Rater Agreement				
				Human1	Human2	Human1	Human2	Human1	Human2	Human1	Human2	% Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
17164	Conventions	2	1757	1.50	1.50	0.66	0.66	0	0	2	2	67.39	98.69	0.58	0.58	0.00
	Evidence	4	1754	2.18	2.16	0.82	0.80	1	1	4	4	60.83	97.49	0.65	0.64	0.02
	Purpose	4	1754	2.29	2.27	0.83	0.80	1	1	4	4	58.84	97.61	0.64	0.63	0.03
17174	Conventions	2	1780	1.49	1.48	0.62	0.63	0	0	2	2	66.12	100.00	0.57	0.57	0.02
	Evidence	4	1779	2.27	2.24	0.85	0.84	1	1	4	4	62.68	100.00	0.74	0.74	0.03
	Purpose	4	1779	2.29	2.26	0.84	0.85	1	1	4	4	60.20	100.00	0.72	0.72	0.03
17181	Conventions	2	1777	1.36	1.55	0.69	0.60	0	0	2	2	62.41	100.00	0.60	0.57	0.29
	Evidence	4	1777	2.34	2.26	0.89	0.81	1	1	4	4	54.87	100.00	0.69	0.69	0.09
	Purpose	4	1777	2.39	2.32	0.89	0.83	1	1	4	4	55.15	100.00	0.70	0.70	0.08
17184	Conventions	2	1751	1.38	1.40	0.72	0.72	0	0	2	2	64.36	97.66	0.59	0.59	0.03
	Evidence	4	1746	2.19	2.18	0.87	0.87	1	1	4	4	59.51	97.08	0.67	0.67	0.01
	Purpose	4	1746	2.12	2.13	0.88	0.86	1	1	4	4	59.51	97.02	0.67	0.67	0.01
17231	Conventions	2	1747	1.53	1.52	0.63	0.63	0	0	2	2	66.23	99.20	0.54	0.54	0.03
	Evidence	4	1746	2.36	2.36	0.80	0.79	1	1	4	4	57.04	96.79	0.59	0.59	0.01
	Purpose	4	1746	2.43	2.44	0.79	0.78	1	1	4	4	58.42	97.54	0.61	0.61	0.02
17238	Conventions	2	1759	1.47	1.50	0.64	0.63	0	0	2	2	70.32	98.35	0.57	0.57	0.04
	Evidence	4	1759	2.19	2.16	0.81	0.80	1	1	4	4	60.09	97.50	0.63	0.63	0.03
	Purpose	4	1759	2.28	2.28	0.82	0.82	1	1	4	4	61.40	97.73	0.66	0.66	0.01
17263	Conventions	2	1771	1.38	1.40	0.71	0.72	0	0	2	2	64.82	98.98	0.62	0.62	0.02

ITS ID	Dimension	Score Point	N	Mean Human1	Mean Human2	SD Human1	SD Human2	Min Human1	Min Human2	Max Human1	Max Human2	Rater Agreement % Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
	Evidence	4	1765	2.03	2.06	0.81	0.82	1	1	4	4	63.34	98.98	0.70	0.70	0.03
	Purpose	4	1765	2.02	2.06	0.79	0.81	1	1	4	4	62.44	98.41	0.67	0.67	0.04
17273	Conventions	2	1772	1.51	1.50	0.62	0.64	0	0	2	2	60.78	100.00	0.51	0.51	0.02
	Evidence	4	1772	1.90	1.87	0.83	0.82	1	1	4	4	57.79	100.00	0.69	0.69	0.03
	Purpose	4	1772	2.13	2.10	0.82	0.81	1	1	4	4	55.36	100.00	0.66	0.66	0.03
17283	Conventions	2	1781	1.64	1.66	0.56	0.54	0	0	2	2	74.73	99.44	0.55	0.55	0.05
	Evidence	4	1780	2.46	2.44	0.81	0.84	1	1	4	4	59.83	95.11	0.60	0.60	0.02
	Purpose	4	1780	2.63	2.60	0.73	0.75	1	1	4	4	61.57	97.75	0.59	0.59	0.03
17285	Conventions	2	1774	1.57	1.56	0.61	0.62	0	0	2	2	70.97	99.55	0.60	0.60	0.02
	Evidence	4	1774	2.38	2.46	0.83	0.83	1	1	4	4	52.03	94.64	0.54	0.54	0.09
	Purpose	4	1774	2.51	2.56	0.82	0.84	1	1	4	4	54.51	96.67	0.59	0.59	0.06
17377	Conventions	2	1753	1.47	1.45	0.63	0.64	0	0	2	2	69.48	99.43	0.60	0.60	0.03
	Evidence	4	1753	2.33	2.31	0.81	0.80	1	1	4	4	58.13	97.43	0.61	0.61	0.02
	Purpose	4	1753	2.45	2.44	0.80	0.78	1	1	4	4	59.95	98.06	0.63	0.63	0.01
17398	Conventions	2	1753	1.33	1.35	0.66	0.68	0	0	2	2	65.43	99.26	0.59	0.59	0.04
	Evidence	4	1751	2.14	2.12	0.78	0.82	1	1	4	4	60.82	97.26	0.63	0.63	0.02
	Purpose	4	1751	2.21	2.19	0.79	0.82	1	1	4	4	61.34	96.69	0.62	0.62	0.02
17400	Conventions	2	1777	1.64	1.63	0.56	0.54	0	0	2	2	68.60	98.87	0.43	0.43	0.01
	Evidence	4	1774	2.46	2.45	0.82	0.80	1	1	4	4	58.34	97.07	0.61	0.61	0.00
	Purpose	4	1774	2.46	2.47	0.84	0.83	1	1	4	4	59.30	97.46	0.65	0.65	0.01
17404	Conventions	2	1759	1.50	1.50	0.65	0.65	0	0	2	2	70.04	98.81	0.60	0.60	0.01

ITS ID	Dimension	Score Point	N	Mean Human1	Mean Human2	SD Human1	SD Human2	Min Human1	Min Human2	Max Human1	Max Human2	Rater Agreement % Exact	Rater Agreement % Exact and Adjacent	Rater Agreement Correlation	Rater Agreement Weighted Kappa	Rater Agreement SMD
	Evidence	4	1759	2.15	2.15	0.84	0.83	1	1	4	4	64.30	98.29	0.70	0.70	0.00
	Purpose	4	1759	2.26	2.26	0.86	0.85	1	1	4	4	62.99	98.58	0.72	0.72	0.01
17449	Conventions	2	1778	1.46	1.48	0.66	0.64	0	0	2	2	65.69	100.00	0.60	0.60	0.03
	Evidence	4	1778	2.42	2.35	0.86	0.87	1	1	4	4	56.02	100.00	0.71	0.71	0.07
	Purpose	4	1778	2.43	2.35	0.85	0.85	1	1	4	4	58.32	100.00	0.72	0.71	0.09
17450	Conventions	2	1746	1.45	1.45	0.64	0.64	0	0	2	2	66.21	100.00	0.59	0.59	0.01
	Evidence	4	1739	2.19	2.19	0.80	0.82	1	1	4	4	65.67	100.00	0.74	0.74	0.01
	Purpose	4	1739	2.18	2.16	0.80	0.81	1	1	4	4	64.63	100.00	0.72	0.72	0.02
17452	Conventions	2	1741	1.50	1.50	0.58	0.59	0	0	2	2	62.55	100.00	0.45	0.45	0.01
	Evidence	4	1741	2.27	2.25	0.79	0.82	1	1	4	4	50.60	100.00	0.62	0.62	0.02
	Purpose	4	1741	2.28	2.28	0.81	0.84	1	1	4	4	49.51	100.00	0.63	0.63	0.00
17453	Conventions	2	1729	1.39	1.52	0.66	0.60	0	0	2	2	62.70	100.00	0.55	0.54	0.21
	Evidence	4	1729	2.34	2.34	0.84	0.86	1	1	4	4	59.28	100.00	0.72	0.72	0.00
	Purpose	4	1729	2.33	2.40	0.84	0.86	1	1	4	4	59.17	100.00	0.72	0.72	0.08
17483	Conventions	2	1737	1.39	1.51	0.68	0.61	0	0	2	2	61.08	99.08	0.52	0.51	0.18
	Evidence	4	1737	2.13	2.04	0.82	0.81	1	1	4	4	56.82	98.27	0.63	0.63	0.11
	Purpose	4	1737	2.19	2.16	0.83	0.84	1	1	4	4	55.15	98.27	0.64	0.64	0.03

Table 9-B-5. Handscoring Results for Grade 7 Writing

ITS ID	Dimension	Score Point	N	Mean		SD		Min		Max		Rater Agreement				
				Human1	Human2	Human1	Human2	Human1	Human2	Human1	Human2	% Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
16968	Conventions	2	1825	1.67	1.66	0.58	0.60	0	0	2	2	81.42	99.23	0.70	0.70	0.03
	Evidence	4	1824	1.94	1.93	0.69	0.70	1	1	4	4	76.86	99.01	0.73	0.73	0.01
	Purpose	4	1824	2.14	2.16	0.80	0.81	1	1	4	4	66.28	97.81	0.68	0.68	0.02
16971	Conventions	2	1830	1.68	1.69	0.59	0.59	0	0	2	2	78.36	99.02	0.65	0.65	0.01
	Evidence	4	1829	1.99	1.99	0.73	0.72	1	1	4	4	71.68	98.14	0.67	0.67	0.00
	Purpose	4	1829	2.17	2.14	0.86	0.85	1	1	4	4	56.59	95.35	0.60	0.60	0.04
17172	Conventions	2	1825	1.65	1.65	0.60	0.59	0	0	2	2	70.96	98.41	0.52	0.52	0.00
	Evidence	4	1824	2.12	2.08	0.72	0.73	1	1	4	4	71.98	98.41	0.68	0.68	0.05
	Purpose	4	1824	2.39	2.35	0.81	0.83	1	1	4	4	59.70	97.15	0.62	0.62	0.04
17179	Conventions	2	1845	1.66	1.67	0.59	0.57	0	0	2	2	75.01	98.59	0.57	0.57	0.01
	Evidence	4	1841	2.04	2.04	0.70	0.71	1	1	4	4	70.07	98.64	0.65	0.65	0.00
	Purpose	4	1841	2.35	2.35	0.85	0.85	1	1	4	4	56.33	96.41	0.62	0.62	0.00
17186	Conventions	2	1798	1.55	1.58	0.67	0.66	0	0	2	2	72.86	98.89	0.66	0.66	0.04
	Evidence	4	1798	2.21	2.22	0.80	0.79	1	1	4	4	59.07	97.44	0.62	0.62	0.02
	Purpose	4	1798	2.36	2.37	0.79	0.79	1	1	4	4	60.96	98.00	0.64	0.64	0.02
17188	Conventions	2	1800	1.51	1.51	0.63	0.63	0	0	2	2	70.50	99.33	0.61	0.61	0.01
	Evidence	4	1800	2.21	2.21	0.80	0.79	1	1	4	4	61.22	98.11	0.64	0.64	0.00
	Purpose	4	1800	2.32	2.32	0.86	0.85	1	1	4	4	57.06	97.56	0.65	0.65	0.00
17195	Conventions	2	1807	1.48	1.52	0.62	0.63	0	0	2	2	63.97	98.84	0.49	0.49	0.07

ITS ID	Dimension	Score Point	N	Mean Human1	Mean Human2	SD Human1	SD Human2	Min Human1	Min Human2	Max Human1	Max Human2	Rater Agreement % Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
	Evidence	4	1806	2.24	2.20	0.84	0.82	1	1	4	4	55.04	97.01	0.61	0.61	0.05
	Purpose	4	1806	2.39	2.36	0.80	0.79	1	1	4	4	57.14	96.73	0.58	0.58	0.05
17280	Conventions	2	1818	1.51	1.52	0.66	0.67	0	0	2	2	63.42	97.36	0.50	0.50	0.01
	Evidence	4	1815	2.34	2.34	0.89	0.90	1	1	4	4	60.11	97.80	0.71	0.70	0.00
	Purpose	4	1815	2.47	2.47	0.82	0.81	1	1	4	4	62.75	97.91	0.67	0.67	0.00
17396	Conventions	2	1818	1.42	1.45	0.66	0.66	0	0	2	2	64.52	98.68	0.55	0.55	0.04
	Evidence	4	1817	2.36	2.36	0.81	0.81	1	1	4	4	59.71	98.79	0.66	0.66	0.00
	Purpose	4	1817	2.51	2.53	0.82	0.81	1	1	4	4	57.35	97.96	0.63	0.63	0.02
17397	Conventions	2	1809	1.66	1.66	0.59	0.59	0	0	2	2	74.18	99.12	0.59	0.59	0.00
	Evidence	4	1806	2.29	2.28	0.85	0.86	1	1	4	4	57.59	96.62	0.64	0.64	0.01
	Purpose	4	1806	2.44	2.45	0.85	0.88	1	1	4	4	57.48	98.12	0.68	0.68	0.01
17454	Conventions	2	1865	1.60	1.67	0.63	0.59	0	0	2	2	73.57	98.98	0.62	0.61	0.12
	Evidence	4	1865	2.07	2.06	0.85	0.85	1	1	4	4	63.06	98.12	0.70	0.70	0.01
	Purpose	4	1865	2.30	2.35	0.89	0.90	1	1	4	4	55.44	97.37	0.68	0.68	0.06
17455	Conventions	2	1805	1.67	1.67	0.59	0.59	0	0	2	2	78.67	99.17	0.66	0.66	0.00
	Evidence	4	1786	2.03	2.04	0.70	0.70	1	1	4	4	71.16	98.82	0.67	0.67	0.01
	Purpose	4	1786	2.27	2.27	0.81	0.81	1	1	4	4	64.28	99.05	0.71	0.71	0.00
17456	Conventions	2	1860	1.53	1.58	0.64	0.62	0	0	2	2	73.06	99.14	0.63	0.63	0.08
	Evidence	4	1860	1.95	2.00	0.70	0.71	1	1	4	4	74.52	99.41	0.73	0.72	0.07
	Purpose	4	1860	2.18	2.19	0.82	0.81	1	1	4	4	69.57	98.76	0.74	0.74	0.02
17458	Conventions	2	1340	1.65	1.65	0.59	0.61	0	0	2	2	77.31	99.25	0.65	0.65	0.01

ITS ID	Dimension	Score Point	N	Mean Human1	Mean Human2	SD Human1	SD Human2	Min Human1	Min Human2	Max Human1	Max Human2	Rater Agreement % Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
	Evidence	4	1339	2.05	2.07	0.73	0.74	1	1	4	4	70.80	99.40	0.71	0.71	0.02
	Purpose	4	1339	2.31	2.29	0.85	0.83	1	1	4	4	65.87	98.51	0.73	0.73	0.03
17459	Conventions	2	1829	1.57	1.65	0.65	0.62	0	0	2	2	72.28	98.36	0.61	0.60	0.12
	Evidence	4	1829	1.99	1.91	0.74	0.74	1	1	4	4	65.94	98.58	0.65	0.65	0.11
	Purpose	4	1829	2.31	2.19	0.85	0.83	1	1	4	4	57.08	97.54	0.65	0.64	0.14

Table 9-B-6. Handscoring Results for Grade 8 Writing

ITS ID	Dimension	Score Point	N	Mean Human1	Mean Human2	SD Human1	SD Human2	Min Human1	Min Human2	Max Human1	Max Human2	% Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
16981	Conventions	2	1453	1.74	1.78	0.52	0.50	0	0	2	2	79.83	99.04	0.56	0.56	0.07
	Evidence	4	1453	1.94	1.82	0.70	0.71	1	1	4	4	62.42	97.87	0.57	0.56	0.17
	Purpose	4	1453	2.13	2.02	0.84	0.79	1	1	4	4	57.26	96.35	0.60	0.60	0.13
16990	Conventions	2	1846	1.57	1.81	0.61	0.46	0	0	2	2	71.45	98.05	0.52	0.46	0.43
	Evidence	4	1846	1.79	1.98	0.73	0.66	1	1	4	4	61.65	97.83	0.57	0.55	0.27
	Purpose	4	1846	2.01	2.13	0.81	0.78	1	1	4	4	60.89	96.53	0.62	0.61	0.15
17175	Conventions	2	1817	1.63	1.63	0.63	0.64	0	0	2	2	76.33	97.74	0.62	0.62	0.00
	Evidence	4	1816	2.49	2.51	0.86	0.88	1	1	4	4	61.56	98.18	0.71	0.71	0.02
	Purpose	4	1816	2.58	2.58	0.85	0.88	1	1	4	4	57.38	95.76	0.63	0.63	0.01
17177	Conventions	2	1827	1.68	1.66	0.57	0.57	0	0	2	2	80.68	99.23	0.67	0.67	0.05
	Evidence	4	1826	1.95	1.93	0.77	0.76	1	1	4	4	68.51	97.65	0.67	0.67	0.03
	Purpose	4	1826	2.05	2.04	0.81	0.81	1	1	4	4	65.28	97.10	0.66	0.66	0.01
17191	Conventions	2	1837	1.71	1.89	0.54	0.36	0	0	2	2	79.75	98.53	0.53	0.46	0.39
	Evidence	4	1837	2.08	2.04	0.76	0.66	1	1	4	4	67.17	98.53	0.64	0.63	0.06
	Purpose	4	1837	2.30	2.20	0.87	0.78	1	1	4	4	59.93	96.57	0.64	0.63	0.12
17192	Conventions	2	1839	1.72	1.72	0.53	0.52	0	0	2	2	81.57	99.29	0.62	0.62	0.01
	Evidence	4	1837	2.64	2.66	0.81	0.81	1	1	4	4	63.47	98.64	0.69	0.69	0.03
	Purpose	4	1837	2.65	2.69	0.83	0.81	1	1	4	4	61.51	97.60	0.66	0.66	0.05
17193	Conventions	2	1846	1.78	1.78	0.48	0.49	0	0	2	2	82.07	99.08	0.56	0.56	0.01

ITS ID	Dimension	Score Point	N	Mean Human1	Mean Human2	SD Human1	SD Human2	Min Human1	Min Human2	Max Human1	Max Human2	Rater Agreement % Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
	Evidence	4	1845	2.34	2.33	0.77	0.76	1	1	4	4	61.25	98.27	0.62	0.62	0.01
	Purpose	4	1845	2.39	2.37	0.72	0.72	1	1	4	4	62.49	97.89	0.58	0.58	0.03
17198	Conventions	2	1801	1.75	1.75	0.51	0.51	0	0	2	2	81.01	98.50	0.55	0.55	0.01
	Evidence	4	1799	2.50	2.52	0.88	0.88	1	1	4	4	53.81	95.50	0.61	0.61	0.01
	Purpose	4	1799	2.54	2.54	0.81	0.81	1	1	4	4	61.20	98.05	0.66	0.66	0.00
17366	Conventions	2	1821	1.76	1.76	0.49	0.49	0	0	2	2	83.91	99.62	0.64	0.64	0.00
	Evidence	4	1820	2.67	2.68	0.78	0.77	1	1	4	4	64.84	98.68	0.67	0.67	0.02
	Purpose	4	1820	2.67	2.68	0.81	0.80	1	1	4	4	61.65	97.53	0.64	0.64	0.01
17376	Conventions	2	1850	1.73	1.74	0.50	0.50	0	0	2	2	80.86	98.92	0.55	0.55	0.00
	Evidence	4	1849	2.55	2.59	0.85	0.85	1	1	4	4	56.68	97.03	0.64	0.64	0.04
	Purpose	4	1849	2.65	2.66	0.78	0.79	1	1	4	4	62.57	97.94	0.64	0.64	0.01
17401	Conventions	2	1841	1.66	1.68	0.62	0.59	0	0	2	2	79.96	98.64	0.67	0.67	0.04
	Evidence	4	1841	2.53	2.52	0.82	0.81	1	1	4	4	61.60	98.10	0.67	0.67	0.01
	Purpose	4	1841	2.60	2.59	0.80	0.82	1	1	4	4	61.27	98.70	0.68	0.68	0.01
17402	Conventions	2	1832	1.77	1.79	0.51	0.49	0	0	2	2	84.22	98.74	0.61	0.61	0.03
	Evidence	4	1828	2.54	2.53	0.84	0.84	1	1	4	4	58.75	97.48	0.65	0.65	0.01
	Purpose	4	1828	2.53	2.52	0.84	0.85	1	1	4	4	57.49	96.72	0.63	0.63	0.01
17403	Conventions	2	1800	1.84	1.85	0.43	0.42	0	0	2	2	86.50	99.11	0.56	0.56	0.01
	Evidence	4	1800	2.48	2.49	0.77	0.76	1	1	4	4	60.00	99.17	0.64	0.64	0.01
	Purpose	4	1800	2.51	2.50	0.74	0.75	1	1	4	4	61.22	98.33	0.61	0.61	0.01
17460	Conventions	2	1806	1.79	1.81	0.49	0.47	0	0	2	2	83.55	98.95	0.57	0.57	0.04

ITS ID	Dimension	Score Point	N	Mean Human1	Mean Human2	SD Human1	SD Human2	Min Human1	Min Human2	Max Human1	Max Human2	% Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
	Evidence	4	1803	1.88	1.90	0.66	0.67	1	1	4	4	69.27	98.72	0.61	0.61	0.03
	Purpose	4	1803	2.02	2.05	0.79	0.79	1	1	4	4	62.34	97.84	0.65	0.65	0.03
17461	Conventions	2	1854	1.67	1.77	0.60	0.50	0	0	2	2	78.91	98.11	0.58	0.57	0.17
	Evidence	4	1852	1.79	1.86	0.87	0.77	1	1	4	4	61.72	96.33	0.63	0.62	0.09
	Purpose	4	1852	2.01	2.07	0.88	0.83	1	1	4	4	56.43	94.76	0.58	0.58	0.07
17462	Conventions	2	1775	1.64	1.65	0.59	0.58	0	0	2	2	79.04	99.21	0.66	0.66	0.01
	Evidence	4	1774	1.96	1.98	0.78	0.81	1	1	4	4	65.67	97.24	0.66	0.66	0.02
	Purpose	4	1774	2.23	2.21	0.92	0.91	1	1	4	4	62.51	96.51	0.71	0.71	0.02
17464	Conventions	2	1850	1.56	1.73	0.65	0.53	0	0	2	2	73.57	98.27	0.60	0.56	0.30
	Evidence	4	1850	1.99	1.84	0.81	0.70	1	1	4	4	65.51	96.70	0.64	0.62	0.21
	Purpose	4	1850	2.27	2.01	0.95	0.81	1	1	4	4	56.22	93.30	0.64	0.60	0.30
17480	Conventions	2	1852	1.69	1.75	0.54	0.50	0	0	2	2	78.46	99.46	0.58	0.58	0.11
	Evidence	4	1852	1.99	1.90	0.79	0.73	1	1	4	4	61.39	97.08	0.59	0.59	0.12
	Purpose	4	1852	2.15	1.94	0.87	0.79	1	1	4	4	57.40	95.79	0.62	0.60	0.25

Table 9-B-7. Handscoring Results for Grade 9 Writing

ITS ID	Dimension	Score Point	N	Mean Human1	Mean Human2	SD Human1	SD Human2	Min Human1	Min Human2	Max Human1	Max Human2	% Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
17182	Conventions	2	1827	1.58	1.59	0.63	0.65	0	0	2	2	71.32	98.69	0.60	0.60	0.01
	Evidence	4	1824	1.88	1.88	0.77	0.78	1	1	4	4	64.20	98.90	0.67	0.67	0.00
	Purpose	4	1824	2.08	2.08	0.72	0.72	1	1	4	4	65.19	99.34	0.65	0.65	0.00
17201	Conventions	2	1826	1.64	1.63	0.60	0.61	0	0	2	2	68.67	97.43	0.47	0.47	0.01
	Evidence	4	1823	1.84	1.85	0.65	0.67	1	1	4	4	64.67	98.79	0.55	0.55	0.02
	Purpose	4	1823	1.89	1.90	0.67	0.69	1	1	4	4	62.31	97.81	0.52	0.52	0.02
17234	Conventions	2	1838	1.60	1.60	0.62	0.62	0	0	2	2	68.66	98.53	0.53	0.53	0.00
	Evidence	4	1834	2.00	1.99	0.74	0.71	1	1	4	4	63.25	98.15	0.60	0.60	0.01
	Purpose	4	1834	2.03	2.02	0.76	0.73	1	1	4	4	61.89	97.76	0.60	0.60	0.02
17239	Conventions	2	1835	1.68	1.67	0.58	0.60	0	0	2	2	76.78	98.64	0.61	0.61	0.01
	Evidence	4	1834	2.04	2.01	0.71	0.71	1	1	4	4	65.70	99.13	0.63	0.63	0.05
	Purpose	4	1834	2.16	2.15	0.68	0.69	1	1	4	4	66.58	99.07	0.62	0.62	0.01
17246	Conventions	2	1823	1.68	1.69	0.58	0.58	0	0	2	2	76.80	98.68	0.59	0.59	0.01
	Evidence	4	1822	1.79	1.81	0.77	0.78	1	1	4	4	59.82	97.48	0.60	0.60	0.03
	Purpose	4	1822	2.02	2.05	0.72	0.74	1	1	4	4	61.53	98.08	0.59	0.59	0.04
17249	Conventions	2	1772	1.57	1.57	0.67	0.66	0	0	2	2	68.68	97.23	0.55	0.55	0.00
	Evidence	4	1761	1.83	1.85	0.75	0.74	1	1	4	4	63.83	97.67	0.60	0.60	0.03
	Purpose	4	1761	1.88	1.90	0.77	0.76	1	1	4	4	62.18	97.73	0.61	0.61	0.03
17293	Conventions	2	1832	1.54	1.63	0.65	0.62	0	0	2	2	66.81	97.76	0.52	0.51	0.14

ITS ID	Dimension	Score Point	N	Mean Human1	Mean Human2	SD Human1	SD Human2	Min Human1	Min Human2	Max Human1	Max Human2	Rater Agreement % Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
	Evidence	4	1832	2.07	1.97	0.78	0.72	1	1	4	4	57.70	97.65	0.58	0.57	0.13
	Purpose	4	1832	2.08	1.97	0.80	0.72	1	1	4	4	58.24	97.98	0.59	0.59	0.14
17297	Conventions	2	1809	1.64	1.67	0.61	0.59	0	0	2	2	75.62	98.78	0.61	0.61	0.05
	Evidence	4	1801	2.03	2.01	0.71	0.67	1	1	4	4	64.58	99.22	0.61	0.61	0.02
	Purpose	4	1801	2.17	2.16	0.71	0.69	1	1	4	4	63.52	99.00	0.59	0.59	0.02
17362	Conventions	2	1811	1.59	1.61	0.64	0.62	0	0	2	2	73.16	98.84	0.62	0.62	0.04
	Evidence	4	1810	1.74	1.73	0.76	0.76	1	1	4	4	62.87	98.07	0.63	0.63	0.00
	Purpose	4	1810	1.99	2.00	0.72	0.72	1	1	4	4	62.27	98.29	0.58	0.58	0.01
17365	Conventions	2	1798	1.62	1.64	0.61	0.61	0	0	2	2	73.92	98.67	0.60	0.59	0.02
	Evidence	4	1795	2.01	1.99	0.66	0.67	1	1	4	4	69.92	99.44	0.64	0.64	0.02
	Purpose	4	1795	2.20	2.21	0.67	0.69	1	1	4	4	67.58	99.44	0.63	0.63	0.02
17369	Conventions	2	1828	1.77	1.74	0.48	0.52	0	0	2	2	78.39	99.23	0.53	0.53	0.06
	Evidence	4	1827	1.87	1.82	0.73	0.73	1	1	4	4	61.25	97.97	0.59	0.58	0.07
	Purpose	4	1827	2.15	2.12	0.65	0.64	1	1	4	4	68.25	99.07	0.58	0.58	0.04
17380	Conventions	2	1800	1.56	1.55	0.64	0.64	0	0	2	2	68.61	98.44	0.56	0.56	0.01
	Evidence	4	1800	1.91	1.94	0.77	0.77	1	1	4	4	59.89	98.00	0.61	0.61	0.03
	Purpose	4	1800	2.09	2.09	0.76	0.76	1	1	4	4	60.72	97.67	0.60	0.60	0.01
17465	Conventions	2	1828	1.67	1.70	0.59	0.56	0	0	2	2	76.37	98.69	0.59	0.59	0.05
	Evidence	4	1826	1.89	1.91	0.68	0.68	1	1	4	4	61.83	98.30	0.53	0.53	0.03
	Purpose	4	1826	1.95	1.99	0.70	0.69	1	1	4	4	63.80	99.01	0.60	0.60	0.05
17468	Conventions	2	1860	1.52	1.57	0.68	0.66	0	0	2	2	66.45	96.72	0.52	0.52	0.08

ITS ID	Dimension	Score Point	N	Mean Human1	Mean Human2	SD Human1	SD Human2	Min Human1	Min Human2	Max Human1	Max Human2	Rater Agreement % Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
	Evidence	4	1860	1.95	1.95	0.78	0.74	1	1	4	4	59.03	96.94	0.57	0.56	0.00
	Purpose	4	1860	1.97	1.99	0.78	0.74	1	1	4	4	59.84	96.77	0.57	0.57	0.03
17469	Conventions	2	1855	1.78	1.77	0.48	0.49	0	0	2	2	81.24	99.68	0.58	0.58	0.03
	Evidence	4	1849	1.93	1.97	0.67	0.71	1	1	4	4	65.71	97.73	0.57	0.57	0.06
	Purpose	4	1849	2.02	2.05	0.67	0.69	1	1	4	4	66.36	97.73	0.56	0.56	0.04
17470	Conventions	2	1813	1.70	1.71	0.56	0.54	0	0	2	2	70.93	98.01	0.42	0.42	0.03
	Evidence	4	1809	1.96	1.95	0.66	0.67	1	1	4	4	68.82	98.73	0.60	0.60	0.01
	Purpose	4	1809	2.05	2.04	0.65	0.66	1	1	4	4	64.79	98.40	0.53	0.53	0.01
17481	Conventions	2	1830	1.71	1.73	0.57	0.55	0	0	2	2	71.48	97.10	0.41	0.41	0.03
	Evidence	4	1822	1.92	1.92	0.70	0.70	1	1	4	4	63.72	98.52	0.59	0.59	0.00
	Purpose	4	1822	1.97	1.95	0.69	0.70	1	1	4	4	65.48	98.35	0.59	0.59	0.02
17493	Conventions	2	1824	1.57	1.56	0.64	0.65	0	0	2	2	69.30	97.97	0.56	0.56	0.02
	Evidence	4	1819	1.81	1.78	0.74	0.74	1	1	4	4	61.19	97.58	0.58	0.58	0.04
	Purpose	4	1819	1.98	1.97	0.75	0.75	1	1	4	4	58.22	97.09	0.55	0.55	0.01

Table 9-B-8. Handscoring Results for Grade 10 Writing

ITS ID	Dimension	Score Point	N	Mean		SD		Min		Max		Rater Agreement				
				Human1	Human2	Human1	Human2	Human1	Human2	Human1	Human2	% Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
17127	Conventions	2	1792	1.60	1.60	0.60	0.59	0	0	2	2	71.71	98.77	0.55	0.55	0.00
	Evidence	4	1785	2.08	2.07	0.93	0.93	1	1	4	4	59.10	94.90	0.67	0.67	0.00
	Purpose	4	1785	2.26	2.28	0.82	0.82	1	1	4	4	62.52	97.03	0.65	0.65	0.02
17170	Conventions	2	1836	1.76	1.76	0.50	0.49	0	0	2	2	83.33	99.40	0.62	0.62	0.00
	Evidence	4	1832	2.33	2.33	0.84	0.86	1	1	4	4	62.66	97.05	0.68	0.68	0.00
	Purpose	4	1832	2.57	2.56	0.82	0.83	1	1	4	4	58.35	97.43	0.64	0.64	0.00
17199	Conventions	2	1828	1.71	1.71	0.55	0.54	0	0	2	2	80.09	99.45	0.64	0.64	0.00
	Evidence	4	1828	2.19	2.16	0.79	0.79	1	1	4	4	64.44	97.54	0.65	0.65	0.03
	Purpose	4	1828	2.36	2.36	0.79	0.78	1	1	4	4	64.00	97.59	0.65	0.65	0.00
17244	Conventions	2	1459	1.56	1.59	0.66	0.64	0	0	2	2	69.64	98.56	0.59	0.59	0.04
	Evidence	4	1459	2.01	2.04	0.70	0.71	1	1	4	4	66.00	99.25	0.63	0.63	0.05
	Purpose	4	1459	2.08	2.14	0.68	0.69	1	1	4	4	62.30	99.04	0.57	0.57	0.08
17250	Conventions	2	1832	1.69	1.69	0.54	0.55	0	0	2	2	76.53	99.24	0.57	0.57	0.00
	Evidence	4	1830	2.34	2.31	0.89	0.89	1	1	4	4	54.15	96.56	0.64	0.64	0.03
	Purpose	4	1830	2.54	2.52	0.79	0.77	1	1	4	4	58.36	97.38	0.60	0.60	0.03
17258	Conventions	2	1798	1.63	1.59	0.57	0.66	0	0	2	2	70.52	98.50	0.57	0.56	0.06
	Evidence	4	1797	1.77	1.80	0.66	0.57	1	1	4	4	63.33	99.11	0.48	0.48	0.05
	Purpose	4	1797	1.87	1.89	0.67	0.61	1	1	4	4	62.66	98.61	0.49	0.49	0.04
17259	Conventions	2	1822	1.63	1.63	0.58	0.57	0	0	2	2	70.42	99.23	0.52	0.52	0.01

ITS ID	Dimension	Score Point	N	Mean Human1	Mean Human2	SD Human1	SD Human2	Min Human1	Min Human2	Max Human1	Max Human2	% Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
	Evidence	4	1817	1.95	1.93	0.61	0.59	1	1	4	4	69.35	99.12	0.53	0.53	0.03
	Purpose	4	1817	2.06	2.06	0.60	0.60	1	1	4	4	71.27	99.39	0.58	0.58	0.01
17264	Conventions	2	1788	1.71	1.72	0.50	0.51	0	0	2	2	72.54	99.50	0.43	0.43	0.02
	Evidence	4	1786	1.97	1.98	0.65	0.63	1	1	4	4	66.07	99.78	0.58	0.58	0.00
	Purpose	4	1786	2.14	2.14	0.65	0.63	1	1	4	4	66.69	99.38	0.57	0.57	0.00
17278	Conventions	2	1837	1.71	1.59	0.54	0.58	0	0	2	2	68.86	98.97	0.47	0.46	0.22
	Evidence	4	1836	1.88	1.93	0.69	0.62	1	1	4	4	66.39	99.51	0.60	0.60	0.08
	Purpose	4	1836	2.01	2.09	0.69	0.60	1	1	4	4	65.47	98.86	0.56	0.55	0.12
17364	Conventions	2	1804	1.62	1.65	0.62	0.60	0	0	2	2	73.89	98.67	0.60	0.60	0.04
	Evidence	4	1799	1.98	1.98	0.90	0.86	1	1	4	4	57.87	96.11	0.65	0.65	0.00
	Purpose	4	1799	2.21	2.22	0.86	0.84	1	1	4	4	61.42	96.89	0.67	0.67	0.00
17368	Conventions	2	1827	1.66	1.67	0.56	0.55	0	0	2	2	74.11	99.73	0.57	0.57	0.03
	Evidence	4	1825	2.40	2.40	0.89	0.83	1	1	4	4	53.59	99.07	0.67	0.67	0.01
	Purpose	4	1825	2.45	2.48	0.81	0.79	1	1	4	4	54.74	99.01	0.63	0.63	0.03
17386	Conventions	2	1800	1.60	1.63	0.62	0.60	0	0	2	2	74.94	99.39	0.64	0.64	0.05
	Evidence	4	1798	2.11	2.13	0.87	0.87	1	1	4	4	57.62	96.16	0.64	0.64	0.02
	Purpose	4	1798	2.30	2.31	0.86	0.85	1	1	4	4	54.78	96.00	0.61	0.61	0.01
17387	Conventions	2	1826	1.71	1.70	0.52	0.54	0	0	2	2	77.77	99.67	0.59	0.59	0.02
	Evidence	4	1821	2.29	2.30	0.86	0.84	1	1	4	4	63.04	97.75	0.70	0.70	0.02
	Purpose	4	1821	2.48	2.51	0.85	0.85	1	1	4	4	59.75	97.91	0.68	0.68	0.03
17407	Conventions	2	1430	1.66	1.68	0.56	0.55	0	0	2	2	69.79	99.02	0.46	0.46	0.04

ITS ID	Dimension	Score Point	N	Mean		SD		Min		Max		Rater Agreement				
				Human1	Human2	Human1	Human2	Human1	Human2	Human1	Human2	% Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
	Evidence	4	1429	2.38	2.41	0.90	0.88	1	1	4	4	55.70	95.31	0.63	0.63	0.03
	Purpose	4	1429	2.49	2.49	0.82	0.78	1	1	4	4	58.08	96.71	0.59	0.59	0.00
17471	Conventions	2	1796	1.63	1.64	0.57	0.59	0	0	2	2	69.49	99.33	0.51	0.51	0.01
	Evidence	4	1792	1.96	1.97	0.66	0.65	1	1	4	4	69.87	99.00	0.61	0.61	0.02
	Purpose	4	1792	2.13	2.10	0.66	0.66	1	1	4	4	68.47	99.39	0.62	0.62	0.03
17472	Conventions	2	1842	1.69	1.70	0.55	0.53	0	0	2	2	74.05	99.62	0.53	0.53	0.03
	Evidence	4	1838	1.82	1.84	0.65	0.65	1	1	4	4	67.03	99.62	0.59	0.59	0.04
	Purpose	4	1838	2.03	2.05	0.71	0.67	1	1	4	4	65.29	99.46	0.62	0.62	0.04
17473	Conventions	2	1828	1.73	1.72	0.52	0.52	0	0	2	2	76.81	99.12	0.52	0.52	0.02
	Evidence	4	1822	1.92	1.90	0.56	0.54	1	1	4	4	72.50	99.23	0.51	0.51	0.05
	Purpose	4	1822	2.03	2.02	0.60	0.59	1	1	4	4	68.33	99.12	0.51	0.51	0.03
17485	Conventions	2	1799	1.53	1.54	0.65	0.64	0	0	2	2	68.65	98.50	0.57	0.57	0.02
	Evidence	4	1796	1.83	1.82	0.71	0.72	1	1	4	4	62.97	98.05	0.57	0.57	0.00
	Purpose	4	1796	1.78	1.77	0.75	0.75	1	1	4	4	59.13	97.55	0.57	0.57	0.01

Table 9-B-9. Handscoring Results for Grade 11 Writing

ITS ID	Dimension	Score Point	N	Mean Human1	Mean Human2	SD Human1	SD Human2	Min Human1	Min Human2	Max Human1	Max Human2	Rater Agreement % Exact	Rater Agreement % Exact and Adjacent	Rater Agreement Correlation	Rater Agreement Weighted Kappa	Rater Agreement SMD
17194	Conventions	2	1819	1.77	1.76	0.51	0.50	0	0	2	2	83.01	99.18	0.62	0.62	0.02
	Evidence	4	1812	1.90	1.89	0.71	0.72	1	1	4	4	72.35	98.90	0.70	0.70	0.02
	Purpose	4	1812	1.96	1.96	0.76	0.77	1	1	4	4	67.38	98.79	0.69	0.69	0.00
17196	Conventions	2	1825	1.78	1.75	0.49	0.52	0	0	2	2	80.88	99.51	0.59	0.59	0.06
	Evidence	4	1822	2.38	2.42	0.85	0.88	1	1	4	4	62.07	98.90	0.72	0.72	0.05
	Purpose	4	1822	2.58	2.60	0.83	0.86	1	1	4	4	63.23	99.34	0.73	0.73	0.03
17257	Conventions	2	1811	1.72	1.73	0.54	0.55	0	0	2	2	80.18	99.12	0.62	0.62	0.00
	Evidence	4	1811	2.24	2.23	0.92	0.92	1	1	4	4	61.95	97.07	0.72	0.72	0.01
	Purpose	4	1811	2.47	2.46	0.89	0.90	1	1	4	4	56.49	96.74	0.67	0.67	0.00
17265	Conventions	2	1813	1.47	1.69	0.70	0.56	0	0	2	2	69.99	97.02	0.59	0.54	0.35
	Evidence	4	1812	1.95	1.94	0.76	0.73	1	1	4	4	73.18	99.17	0.73	0.73	0.01
	Purpose	4	1812	2.13	2.08	0.86	0.81	1	1	4	4	65.62	98.45	0.72	0.72	0.06
17266	Conventions	2	1760	1.81	1.81	0.47	0.47	0	0	2	2	83.81	98.58	0.53	0.53	0.00
	Evidence	4	1755	2.19	2.19	0.82	0.83	1	1	4	4	63.02	98.52	0.69	0.69	0.01
	Purpose	4	1755	2.44	2.44	0.82	0.82	1	1	4	4	63.42	98.97	0.71	0.71	0.00
17281	Conventions	2	1819	1.79	1.78	0.49	0.48	0	0	2	2	83.12	98.68	0.56	0.56	0.01
	Evidence	4	1813	1.98	1.97	0.65	0.65	1	1	4	4	71.65	99.12	0.63	0.63	0.01
	Purpose	4	1813	2.14	2.11	0.76	0.74	1	1	4	4	64.26	98.29	0.64	0.64	0.04
17292	Conventions	2	1795	1.84	1.84	0.44	0.43	0	0	2	2	86.41	99.22	0.58	0.58	0.01

ITS ID	Dimension	Score Point	N	Mean Human1	Mean Human2	SD Human1	SD Human2	Min Human1	Min Human2	Max Human1	Max Human2	Rater Agreement % Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
	Evidence	4	1789	1.90	1.91	0.68	0.65	1	1	4	4	72.78	99.61	0.68	0.68	0.02
	Purpose	4	1789	2.11	2.12	0.78	0.77	1	1	4	4	67.80	98.77	0.70	0.70	0.01
17301	Conventions	2	1798	1.72	1.74	0.55	0.52	0	0	2	2	76.53	98.61	0.52	0.52	0.03
	Evidence	4	1795	2.38	2.35	0.91	0.90	1	1	4	4	55.65	96.49	0.66	0.66	0.03
	Purpose	4	1795	2.55	2.54	0.92	0.90	1	1	4	4	53.59	95.88	0.64	0.64	0.01
17363	Conventions	2	1792	1.76	1.78	0.52	0.50	0	0	2	2	81.14	98.72	0.56	0.56	0.05
	Evidence	4	1788	2.23	2.23	0.83	0.84	1	1	4	4	63.59	98.99	0.72	0.72	0.00
	Purpose	4	1788	2.49	2.51	0.82	0.81	1	1	4	4	66.05	99.50	0.73	0.73	0.02
17371	Conventions	2	1802	1.79	1.77	0.48	0.50	0	0	2	2	80.24	99.00	0.52	0.52	0.03
	Evidence	4	1801	2.20	2.18	0.80	0.81	1	1	4	4	66.19	99.22	0.72	0.72	0.02
	Purpose	4	1801	2.41	2.37	0.80	0.79	1	1	4	4	64.85	99.39	0.71	0.71	0.05
17372	Conventions	2	1784	1.75	1.75	0.52	0.52	0	0	2	2	80.44	99.38	0.60	0.60	0.01
	Evidence	4	1776	2.25	2.26	0.80	0.81	1	1	4	4	66.27	98.87	0.72	0.72	0.01
	Purpose	4	1776	2.40	2.40	0.82	0.83	1	1	4	4	63.63	98.48	0.70	0.70	0.00
17406	Conventions	2	1794	1.78	1.80	0.49	0.47	0	0	2	2	83.11	99.11	0.58	0.58	0.04
	Evidence	4	1789	2.20	2.21	0.80	0.81	1	1	4	4	67.08	98.83	0.72	0.72	0.02
	Purpose	4	1789	2.41	2.44	0.81	0.83	1	1	4	4	64.23	98.77	0.71	0.71	0.03
17476	Conventions	2	1827	1.82	1.82	0.45	0.44	0	0	2	2	84.07	98.96	0.52	0.52	0.01
	Evidence	4	1825	1.83	1.89	0.67	0.68	1	1	4	4	71.78	98.96	0.66	0.66	0.09
	Purpose	4	1825	1.92	1.98	0.74	0.76	1	1	4	4	65.81	98.25	0.65	0.65	0.09
17478	Conventions	2	1802	1.74	1.76	0.55	0.52	0	0	2	2	83.19	98.50	0.63	0.63	0.04

ITS ID	Dimension	Score Point	N	Mean		SD		Min		Max		Rater Agreement				
				Human1	Human2	Human1	Human2	Human1	Human2	Human1	Human2	% Exact	% Exact and Adjacent	Correlation	Weighted Kappa	SMD
	Evidence	4	1793	1.99	1.97	0.72	0.71	1	1	4	4	72.84	99.00	0.70	0.70	0.02
	Purpose	4	1793	2.12	2.10	0.81	0.79	1	1	4	4	66.09	97.71	0.68	0.68	0.03
17479	Conventions	2	1807	1.78	1.81	0.50	0.46	0	0	2	2	84.23	98.67	0.58	0.58	0.05
	Evidence	4	1805	1.84	1.86	0.70	0.69	1	1	4	4	70.86	98.50	0.65	0.65	0.03
	Purpose	4	1805	2.00	2.02	0.78	0.78	1	1	4	4	65.82	97.84	0.67	0.67	0.02
17482	Conventions	2	1404	1.47	1.50	0.70	0.69	0	0	2	2	66.31	97.58	0.58	0.58	0.05
	Evidence	4	1400	1.83	1.84	0.73	0.73	1	1	4	4	67.71	99.29	0.68	0.68	0.01
	Purpose	4	1400	1.97	1.99	0.81	0.79	1	1	4	4	61.57	98.36	0.66	0.66	0.03