TARGETED INVERVENTION: PRACTICE and STRATEGIES
MATHEMATICS TUTORING
TIPS

Grade

2

MATH

K 1 2 3 4 5 6

MATHEMATICS TUTORING TIPS
Targeted **I**ntervention: **P**ractice and **S**trategies

Board Members

District 1
Tami W. Pyfer
52 Ballard Way
Logan, UT 84321
(435) 753-7529

District 2
Keith M. Buswell
1027 W. 3800 North
Pleasant View, UT 84414
(801) 510-1773

District 3
Craig E. Coleman
621 S. Main St.
Genola, UT 84655
(801) 754-3655

District 4
David L. Thomas
7875 South 2250 East
South Weber, UT 84405
(801) 479-7479

District 5
Kim R. Burningham
932 Canyon Crest Dr.
Bountiful, UT 84010
(801) 292-9261

District 6
Michael G. Jensen
4139 S. Aubrey Lane
West Valley City, UT 84128
(801) 955-5550

District 7
Leslie B. Castle
2465 St. Mary's Drive
Salt Lake City, UT 84108
(801) 581-9752

District 8
Janet A. Cannon
5256 Holladay Blvd.
Salt Lake City, UT 84117
(801) 272-3516

District 9
Joel Coleman
3740 Bawden Ave.
West Valley City, UT 84120
(801) 634-6251

District 10
Laurel Brown
5311 S.Lucky Clover Lane
Murray, UT 84123
(801) 261-4221

District 11
David L. Crandall
13464 Saddle Ridge Dr.
Draper, UT 84020
(801) 232-0795

District 12
Carol Murphy
463 West 140 North
Midway, UT 84049
(435) 729-0941

District 13
C. Mark Openshaw
3329 Piute Drive
Provo, UT 84604
(801) 377-0790

District 14
Dixie Allen
218 West 5250 North
Vernal, UT 84078
(435) 789-0534

District 15
Debra G. Roberts
P.O.Box 1780
Beaver, UT 84713
(435) 438-5843

Board of Regents Representative
Teresa L. Theurer
33 Canterbury Lane
Logan, UT 84321-6714
(435) 753-0470

Board of Regents Representative
Wilford Clyde
1324 East 950 South
Springville, UT 84663
(801) 802-6900 work

**Coalition of Minorities
Advisory Committee Representative**
Isaiah "Ike" Spencer
1029 E. 11780 South
Sandy, UT 84094
(385) 646-5360

UCAT Representative
James (Jim) V. Olsen
5656 W. 10770 North
Highland, UT 84003-9088
(801) 599-1095

Charter School Representative
Tim Beagley
3974 South 3550 West
West Valley City, UT 84119
(801) 969-6454

USBA Advisory Appointment
R. Dean Rowley
526 South 170 West
Springville, UT 84663
(801) 489-6935

Second Grade Math Tutoring TIPS
<u>Table of Contents</u>

Domain: Operations and Algebraic Thinking

Standard 1   Lesson 1
Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions (e.g., by using drawings and equations and a symbol for the unknown number to represent the problem).

Standard 2   Lesson 2
Fluently add and subtract within 20 using mental strategies. By the end of Grade 2, know from memory all sums of two one-digit numbers.

Standard 3   Lesson 3
Determine whether a group of objects (up to 20) has an odd or even number of members (e.g., by pairing objects or counting them by twos); write an equation to express an even number as a sum of two equal addends.

Standard 4   Lesson 4
Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

Domain: Number and Operations in Base Ten

Standard 1   Lesson 5
Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones.

Standard 1a   Lesson 6
Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones.
a. 100 can be thought of as a bundle of tens, called a "hundred"

Standard 1b   Lesson 7

Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones.
b. The numbers from 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).

Standard 2   Lesson 8

Count within 1000; skip-count by 5s, 10s, and 100s.

Standard 3   Lesson 9

Read and write numbers to 1000 using base ten numerals, number names, and expanded form.

Standard 4   Lesson 10

Compare two three-digit numbers based on meanings of the hundreds, ten, and ones digits, using >, =, and < symbols to record the results of comparisons.

Standard 5   Lesson 11

Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

Standard 6   Lesson 12

Add up to four two-digit numbers using strategies based on place value and properties of operations.

Standard 7   Lesson 13

Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

Standard 8   Lesson 14

Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.

Standard 9   Lesson 15

Explain why addition and subtraction strategies work, using place value and the properties of operations.

Domain: Measurement and Data

Standard 1   **Lesson 16**
Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

Standard 2   **Lesson 17**
Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

Standard 3   **Lesson 18**
Estimate lengths using units of inches, feet, centimeters, and meters.

Standard 4   **Lesson 19**
Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

Standard 5   **Lesson 20**
Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.

Standard 6   **Lesson 21**
Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.

Standard 7   **Lesson 22**
Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

Standard 8   **Lesson 23**
Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?

Standard 9   **Lesson 24**
Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the

measurements by making a line plot, where the horizontal scale is marked off in whole-number units.

Standard 10   Lesson 25

Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and comparison problems using information presented in a bar graph.

Domain: Geometry

Standard 1   Lesson 26

Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

Standard 2   Lesson 27

Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

Standard 3   Lesson 28

Partition circles and rectangles into two, three, or four equal shares; describe the shares using the words *halves*, *thirds*, *half of*, *third of*, etc.; and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

TIPS Tutoring Session

Common Core Identification	
Domain: Operations and Algebraic Thinking	Cluster: Represent and solve problems involving addition and subtraction.
Standard 1: Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions (e.g., by using drawings and equations and a symbol for the unknown number to represent the problem).	

Before You Begin

Key Academic Vocabulary (3 or fewer)
add to, take apart, put together

Notes and Materials
To master this standard the student must be able to solve problems such as $45 + \square = 88$, $\square + 43 = 88$, $45 + 43 = \square$, $88 - \square = 43$, $\square - 45 = 43$, and $88 - 45 = \square$. This is what is meant by having a symbol for the unknown number in all places. Use word problems, not number problems with this standard. Avoid having the student look for key words. Instead, the student should understand the context of the problem through representation with concrete objects and drawings. The student should also understand when to add to, take from, put together, take apart, and compare numbers to solve the problem through those representations. Only move to equations when the student can fluently add and subtract with representations.
Materials you will need:: • base ten blocks or unifix cubes • paper • pencil • bank of word problems (can be found at http://math.about.com/od/wordproblem1/ss/gr2wp.htm)

2 Minutes

LAUNCH—Assess and Provide Background Knowledge
1. Connect to prior learning. Use a "hook" to gain the student's attention. The school is collecting cans for a food drive. Mrs. Diaz's class collects 32 cans. Mrs. Cahn's class collects 22 cans. How many cans did they collect all together?
2. Introduce and review Key Academic Mathematics Vocabulary.

8 Minutes

INSTRUCT—Provide Explicit Interactive Instruction
3. State the objective. Say, "Today we are going to add and subtract digits within 100 using concrete models or drawings."
4. Provide explicit step-by-step instructions. Use story problems with various two-digit numbers.
5. Model. Use base ten blocks and set up the numbers and work together and put places together. Use a place value mat. Demonstrate and guide the student in practicing adding to, taking from, putting together, taking apart, and comparing.
6. Check for understanding (work problem with student). Check by watching and coaching (when necessary) the student create representations of the word problems. Check for the appropriate arrangements and/or drawings. When the student has mastered representations, have him/her create equations for the problems.

5 Minutes	**GUIDED PRACTICE—Monitor Student Work**
	7. The student works problems independently while tutor watches and coaches. Student can place blocks on the place value mat.
5 Minutes	**ASSESS—Evaluate Student Demonstration**
	8. The student demonstrates an adding to strategy, a taking away strategy, and a putting together strategy with representations.
	9. The student creates an equation for a word problem and solves it while orally justifying every step.

1. On Wednesday you saw 12 robins on one tree and 7 on another tree. How many robins did you see altogether?

2. Your friends just gave you 12 sparkle markers, now you have 19! How many did you have before your friends gave you 12 more?

3. You picked 8 flowers and your friend picked 17 flowers. How many more flowers did your friend pick?

4. You have 17 birthday gifts! 9 came from your family, the rest came from your friends. How many gifts did your friends give you?

5. You saved 17 dimes and your brother saved 8 dimes. How many more dimes did you save?

6. Today is May 4th and your birthday is on May 21st, how many more days until your birthday?

7. In your class today, only 18 of the 26 students were at school. How many were absent?

8. Your 8 friends all have 2 wheeled bicycles. How many wheels is that altogether?

Common Core Identification

Domain: Operations and Algebraic Thinking	Cluster: Add and subtract within 20.

Standard 2: Fluently add and subtract within 20 using mental strategies. By the end of Grade 2, know from memory all sums of two one-digit numbers.

Key Academic Vocabulary (3 or fewer)

sum, strategies, difference

Notes and Materials

Notes and suggestions for an effective lesson: Use of number cards to teach math facts. Tell the sum of two numbers and student will tell which strategy was used to find the sum. Number cards can be found at http://www.senteacher.org/wk/numbercards.php . Mental strategies may include:

- Counting on: $8 + 4 = \square$ (8 …9, 10,11,12)
- Counting back: $12 - 4 = \square$ (12…11, 10, 9, 8)
- Making tens: $5 + 7 = \square$ (5 = 2 + 3 so 3 + 7 = 10 therefore 10 + 2 = 12)
- Doubles: $6 + 6 = \square$
- Doubles plus/minus one: $6 + 7 = \square$ (6 + 6 + 1 or 7 + 7 - 1)
- Decomposing a number leading to a ten: $15 - 7 = \square$, so 15- 5 = 10 (therefore 10 - 2 = 8)
- Working knowledge of fact families/related facts: 3 + 9 = 12 so 12 - 9 = $\square$

Materials you will need:
- number cards

1. Connect to prior learning. Use a "hook" to gain the student's attention. Review addition and subtraction strategies.

2. Introduce and review Key Academic Mathematics Vocabulary (e.g., difference, sum, strategy).

INSTRUCT—Provide Explicit Interactive Instruction

3. State the objective: to fluently add and subtract within 20 using mental strategies.

4. Provide explicit step-by-step instructions. Use a pile of number cards between two people; each person takes two cards and finds sum or difference and tells what strategy the student used to solve it. Turn over cards and repeat the process.

5. Model. Tutor can go through the activity with the student and describe strategy.

6. Check for understanding (work problem with student). The student can add and subtract correctly.

GUIDED PRACTICE—Monitor Student Work

7. Student works problems independently while tutor watches and coaches.

ASSESS—Evaluate Student Demonstration

(margin labels: Before You Begin | 2 Minutes | 8 Minutes | 5 Minutes | Minute)

8. Student orally defines at least one Key Academic Mathematics Vocabulary word. Review #7.

9. Student works a problem while explaining EVERY step orally.

1	2	3	4	5
6	7	8	9	10

TIPS Tutoring Session
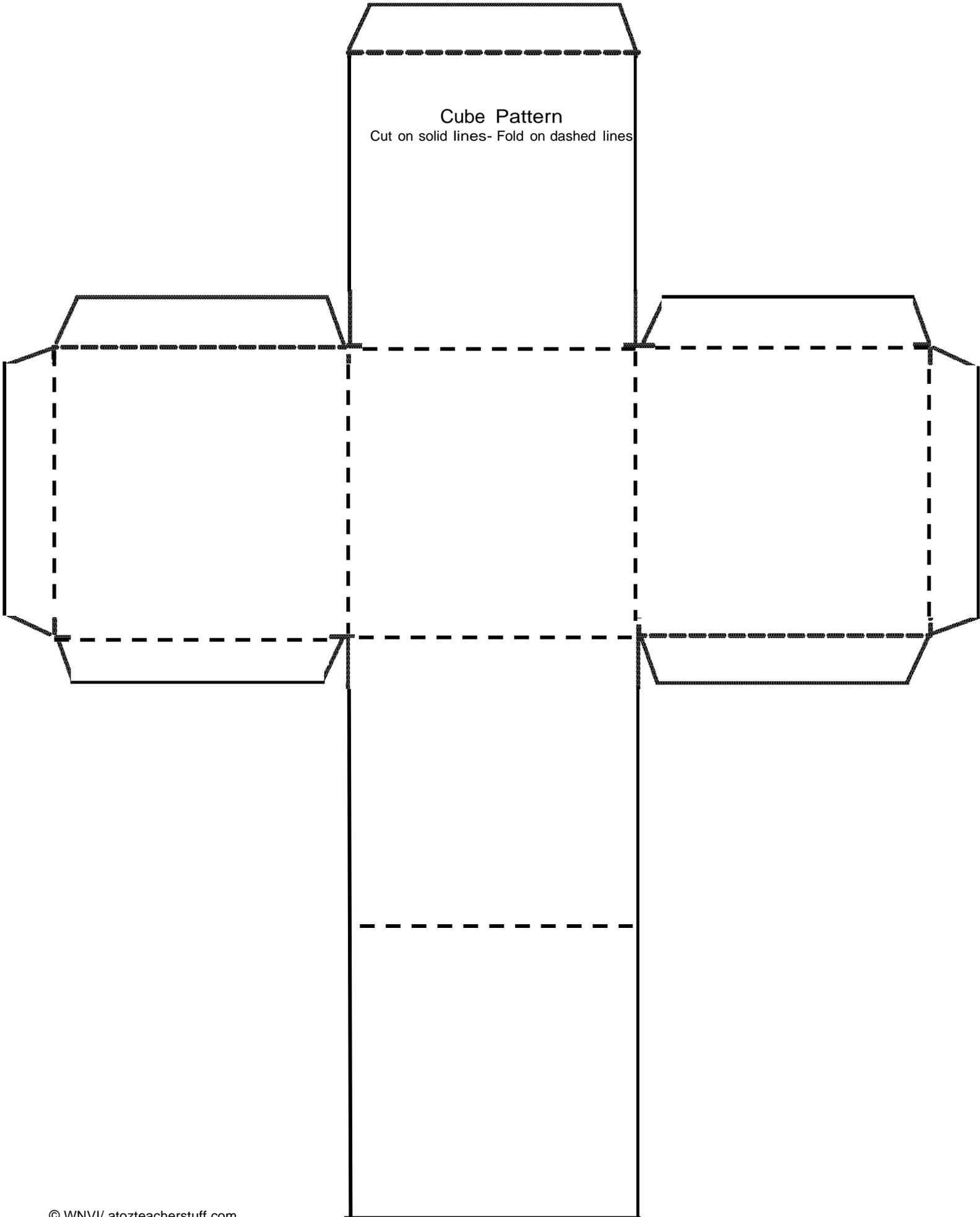
<table>
<tr><td rowspan="6">**Before You Begin**</td><td colspan="2">**Common Core Identification**</td></tr>
<tr><td>Domain: Operations and Algebraic Thinking</td><td>Cluster: Work with equal groups of objects to gain foundations for multiplication.</td></tr>
<tr><td colspan="2">Standard 3: Determine whether a group of objects (up to 20) has an odd or even number of members (e.g., by pairing objects or counting them by twos); write an equation to express an even number as a sum of two equal addends.</td></tr>
<tr><td colspan="2">**Key Academic Vocabulary (3 or fewer)**</td></tr>
<tr><td colspan="2">odd, even</td></tr>
<tr><td colspan="2">**Notes and Materials**</td></tr>
</table>

Notes and suggestions for an effective lesson: Roll number cubes to generate a number. Take the number of counters (manipulative) that match the number on the number cube. Pair them up. See if they make a triangle or rectangle. Sort them by pairing them up. If it makes a perfect rectangle, it is even, and if it doesn't have another partner number then it is odd. Identify whether it is an odd or even number.

Materials you will need:
    • number cubes
    • manipulative counters

2 Minutes

LAUNCH—Assess and Provide Background Knowledge

1. Connect to prior learning. Use a "hook" to gain the student's attention. Practice counting by twos on the number line up to twenty.
2. Introduce and review Key Academic Mathematics Vocabulary (odd and even).

8 Minutes

INSTRUCT—Provide Explicit Interactive Instruction

3. State the objective. Determine whether manipulatives is an odd or even number by pairing objects or counting them by twos. Write and equation.
4. Provide explicit step-by-step instructions. Roll a number cube to generate a number. Count out a matching number of manipulatives. Sort them into pairs. Identify whether the number is odd or even.
5. Model. Tutor will demonstrate using a roll of the number generator and using the manipulatives.
6. Check for understanding (work problem with student). Student can identify even by knowing the manipulatives pair up evenly.

5 Minutes

GUIDED PRACTICE—Monitor Student Work

7. Student works problems independently while tutor watches and coaches. Check #6.

5 Minutes

ASSESS—Evaluate Student Demonstration

8. Student orally defines at least one Key Academic Mathematics Vocabulary word. Student will look at doubles and understand the concept of odd and even numbers.
9. Student works a problem while explaining EVERY step orally. Student can verbally explain that even numbers come in pairs, and odd do not.

Cube Pattern
Cut on solid lines- Fold on dashed lines

Before You Begin	**Common Core Identification**
	Domain: Operations and Algebraic Thinking — Cluster: Work with equal groups of objects to gain foundations for multiplication.
	Standard 4: Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.
	Key Academic Vocabulary (3 or fewer)
	column, row, array
	Notes and Materials
	Notes and suggestions for an effective lesson: Play a game using a number cube 0-5. Give half a piece of graph paper to each partner. Students will mark the units with a marker and understand that repeated addition is taking place. When a student can no longer fill another array on the graph paper the game is complete.
	Materials you will need: • graph paper can be found at http://www.printfreegraphpaper.com/ • markers

Common Core Identification

Domain: Operations and Algebraic Thinking	Cluster: Work with equal groups of objects to gain foundations for multiplication.

Standard 4: Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

Key Academic Vocabulary (3 or fewer)

column, row, array

Notes and Materials

Notes and suggestions for an effective lesson: Play a game using a number cube 0-5. Give half a piece of graph paper to each partner. Students will mark the units with a marker and understand that repeated addition is taking place. When a student can no longer fill another array on the graph paper the game is complete.

Materials you will need:
- graph paper can be found at http://www.printfreegraphpaper.com/
- markers

LAUNCH—Assess and Provide Background Knowledge

1. Connect to prior learning. Use a "hook" to gain the student's attention. Roll the number generator to determine the number of rows, and roll the number generator again to determine the number of columns. Use manipulatives to create arrays from the numbers that were generated. Give students a number cube numbered from 0-5.

2. Introduce and review Key Academic Mathematics Vocabulary (array, repeated addends).

INSTRUCT—Provide Explicit Interactive Instruction

3. State the objective. Use addition to find the total number of objects arranged in an array.

4. Provide explicit step-by-step instructions. Each partner will be given a half sheet of graph paper and two different markers or crayons and a number cube. Student A will roll the cube once to determine the rows and again to determine the number of columns. Using a colored marker, the student will draw the appropriate array anywhere on the grid paper. Student B will repeat the process. The process will continue until there is no longer a place to build an array.

5. Model. Tutor will demonstrate the first round of the game.

6. Check for understanding (work problem with student).The student can make the appropriate array for the numbers generated.

GUIDED PRACTICE—Monitor Student Work

7. Student works problems independently while tutor watches and coaches. Student will play the game.

ASSESS—Evaluate Student Demonstration

8. Student orally defines at least one Key Academic Mathematics Vocabulary word. Arrays, columns, and rows will be understood.

9. Student works a problem while explaining EVERY step orally. Student can verify what a column is, what a row is, and what an array is.

(Left margin time markers: Before You Begin; 2 Minutes; 8 Minutes; 5 Minutes; 5 Minutes)

TIPS Tutoring Session

Before You Begin	**Common Core Identification**
	Domain: Number and Operations in Base ten Cluster: Understand place value.
	Standard 1: Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones.
	Key Academic Mathematic Vocabulary (3 or fewer)
	number, digit, place value
	Notes and Materials
	Notes and suggestions for an effective lesson: Obtain two blocks numbered 0-9 (first block numbered 0-5, second block numbered 6-9).
	Materials you will need: • 3 sets of two blocks for each child • mat denoting three place value columns • white board or paper

2 Minutes	**LAUNCH—Assess and Provide Background Knowledge**
	1. Connect to prior learning. Use a "hook" to gain the student's attention. Students toss three number blocks and place on block in each column, then read the number they have made on the mat.
	2. Introduce and review Key Academic Mathematic Vocabulary (Tips for ESL). Digit: a given symbol that represents an amount within a given number. Number: a combination of digits positioned correctly within a place value system. Place value: denotes the value of a given digit within a whole number according to its position.

8 Minutes	**INSTRUCT—Provide Explicit Interactive Instruction**
	3. State the objective. Understand that the three digits of a three-digit number represent amounts of hundreds, tens and ones.
	4. Provide explicit step-by-step instructions. Each student is given mat and bag of six number cubes. State the objective of making three-digit numbers using these cubes and mat. The number on top of the cube represents the digit.
	5. Model. Choose a digit, pull a block, and place it in an appropriate column on the mat according to value. Example: For 391, place 3 in the hundreds column, 9 in the tens column, and 1 in the ones column. Repeat using other numbers.
	6. Check for understanding (work problem with student). Say the number out loud and record the number. Have students place the blocks in appropriate columns. Repeat using other numbers (i.e., 205).

5 Minutes	**GUIDED PRACTICE—Monitor Student Work**
	7. Student works problems independently while tutor watches and coaches. Students work with each other and pair-share to make numbers, as well as give numbers to each other and practice.

5 Minutes	**ASSESS—Evaluate Student Demonstration**
	8. Student orally defines at least one Key Academic Vocabulary word and skill or concept. Assess by defining digit and number meaning. Make a three-digit number and explain the number.
	9. Student works a problem while explaining EVERY step orally. Using correct vocabulary, place the blocks in the correct column and verbally explain their placement.

Hundreds	Tens	Ones

TIPS Tutoring Session

<table>
<tr><td rowspan="5">**Before You Begin**</td><td colspan="2">**Common Core Identification**</td></tr>
<tr><td>Domain: Number and Operations in Base Ten</td><td>Cluster: Understand place value.</td></tr>
<tr><td colspan="2">Standard 1: Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones.
a. 100 can be thought of as a bundle of tens, called a "hundred."</td></tr>
<tr><td colspan="2">**Key Academic Mathematic Vocabulary (3 or fewer)**
tens, hundreds</td></tr>
<tr><td colspan="2">**Notes and Materials**
Notes and suggestions for an effective lesson: Use base ten blocks. Use rods and flats. Lay rods on top of flats to cover the flat and reach one hundred. Discuss how many rods are needed to cover the flat.

Materials you will need:
• base ten blocks</td></tr>
</table>

2 Minutes

LAUNCH—Assess and Provide Background Knowledge

1. Connect to prior learning. Use a "hook" to gain the student's attention. Use singles on the rods to see that it takes ten to make a rod.

2. Introduce and review Key Academic Mathematic Vocabulary (tens, hundreds).

8 Minutes

INSTRUCT—Provide Explicit Interactive Instruction

3. State the objective. Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones. Create bundles of 100 with popsicle sticks.

4. Provide explicit step-by-step instructions. Count by tens and place rods onto the flat to create a hundred.

5. Model. Use ten singles on the rod to show there are ten units in a rod of base ten blocks.

6. Check for understanding (work problem with student). The student will be able to place ten singles on a rod, and ten rods on a flat. They can orally count by ten to one hundred.

5 Minutes

GUIDED PRACTICE—Monitor Student Work

7. Student works problems independently while tutor watches and coaches. Tutor will watch as student places blocks correctly.

5 Minutes

ASSESS—Evaluate Student Demonstration

8. Student orally defines at least one Key Academic Vocabulary word and skill or concept. Student can count to one hundred by tens.

9. Student works a problem while explaining EVERY step orally.

TIPS Tutoring Session

Before You Begin	**Common Core Identification**
	Domain: Number and Operations in Base Ten · Cluster: Understand place value.
	Standard 1: Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones.
	b. The numbers from 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).
	Key Academic Vocabulary (3 or fewer)
	place holder
	Notes and Materials
	Notes and suggestions for an effective lesson: Have cards that say 100, 200, 300, 400 etc. Pull a card and have the student make the flat. Using flats, students will recognize the three-digit number that matches the number (e.g., the number 500 will equal five flats). This is basically skip-counting by hundreds.
	Materials you will need: • base ten block flats

2 Minutes	**LAUNCH—Assess and Provide Background Knowledge**
	1. Connect to prior learning. Use a "hook" to gain the student's attention. Use rods to show that ten rods are equal to one flat. Show that there are zeros in both ones and tens places.
	2. Introduce and review Key Academic Mathematics Vocabulary (place holder).

8 Minutes	**INSTRUCT—Provide Explicit Interactive Instruction**
	3. State the objective. Student will understand that 1-0-0 is one hundred, and the zeros represent the number of tens and ones in the number and act as place holders.
	4. Provide explicit step-by-step instructions. Make sure student is making a connection with the three-digit number that represents the appropriate number of flats to use.
	5. Model. The tutor will place ten rods on top of a flat. He/she will show that 100 is one flat, 200 is two flats, and so on.
	6. Check for understanding (work problem with student). The student will correctly place flats and rods with no help.

5 Minutes	**GUIDED PRACTICE—Monitor Student Work**
	7. Student works problems independently while tutor watches and coaches. Student explains that one-zero-zero represents 100 and that the zeros are the numbers of tens and ones (place holders); that two-zero-zero represents 200; and so on up to 900.

5 Minutes	**ASSESS—Evaluate Student Demonstration**
	8. Student orally defines at least one Key Academic Mathematics Vocabulary word. Student can orally state that one flat is worth one hundred.
	9. Student works a problem while explaining EVERY step orally.

100	200	300
400	500	600
700	800	900

TIPS Tutoring Session

<table>
<tr><td rowspan="9">Before You Begin</td><td colspan="2">Common Core Identification</td></tr>
<tr><td>Domain: Number and Operations in Base Ten</td><td>Cluster: Understand place value.</td></tr>
<tr><td colspan="2">Standard 2: Count within 1000; skip-count by 5s, 10s, and 100s.</td></tr>
</table>

Before You Begin	**Key Mathematic Academic Vocabulary (3 or fewer)**
	Skip-count, number line

Notes and Materials
Notes and suggestions for an effective lesson: The primary colors create a pattern for learning, while creating a visual representation 5s, 10s, 100s.
Materials you will need: • 200 board (http://elemed.ucps.k12.nc.us/parent_resources/PA%202_2_1%20200Chart.pdf, last page)

2 Minutes

LAUNCH—Assess and Provide Background Knowledge

1. Connect to prior learning. Use a "hook" to gain the student's attention. Have the student color in red all 5s, color in blue all 10s, and color in green all 100s on the 200 board.

2. Introduce and review Key Mathematic Academic Vocabulary (Tips for ESL): number lines.

8 Minutes

INSTRUCT—Provide Explicit Interactive Instruction

3. State the objective. "Today we are going to count up to 1000, and skip-count by 5s , 10s and 100s up to 1000."

4. Provide explicit step-by-step instructions. Assist the student in counting from 1 to 100. When he/she shows proficiency, move on to 200s, 300s or another set. Then use the number line downloaded from the URL below to assist the student in skip-counting by fives: http://www.helpingwithmath.com/printables/others/lin0301number04.htm.

5. Model. Use cards or number cubes with 5, 10, or 100 on them and count sequential numbers.

6. Check for understanding (work problem with student). Ask students to count by 5s, 10s, or 100 starting at another place than zero.

5 Minutes

GUIDED PRACTICE—Monitor Student Work

7. Student works problems independently while tutor watches and coaches. Students can work with a partner using cards or number cubes using 5s, 10s or 100s.

5 Minutes

ASSESS—Evaluate Student Demonstration

8. Student orally defines at least one Key Academic Vocabulary word and skill or concept. Ask: "If you are at *n* (give a number) and you are counting by *x* (5s, 10s, or 100s), what comes next?"

9. Student works a problem while explaining EVERY step orally. Tutor can say: "Start at 5, 10 or 100 and skip-count to 100, 200, 1000 (for 100s). How do you know you are right?"
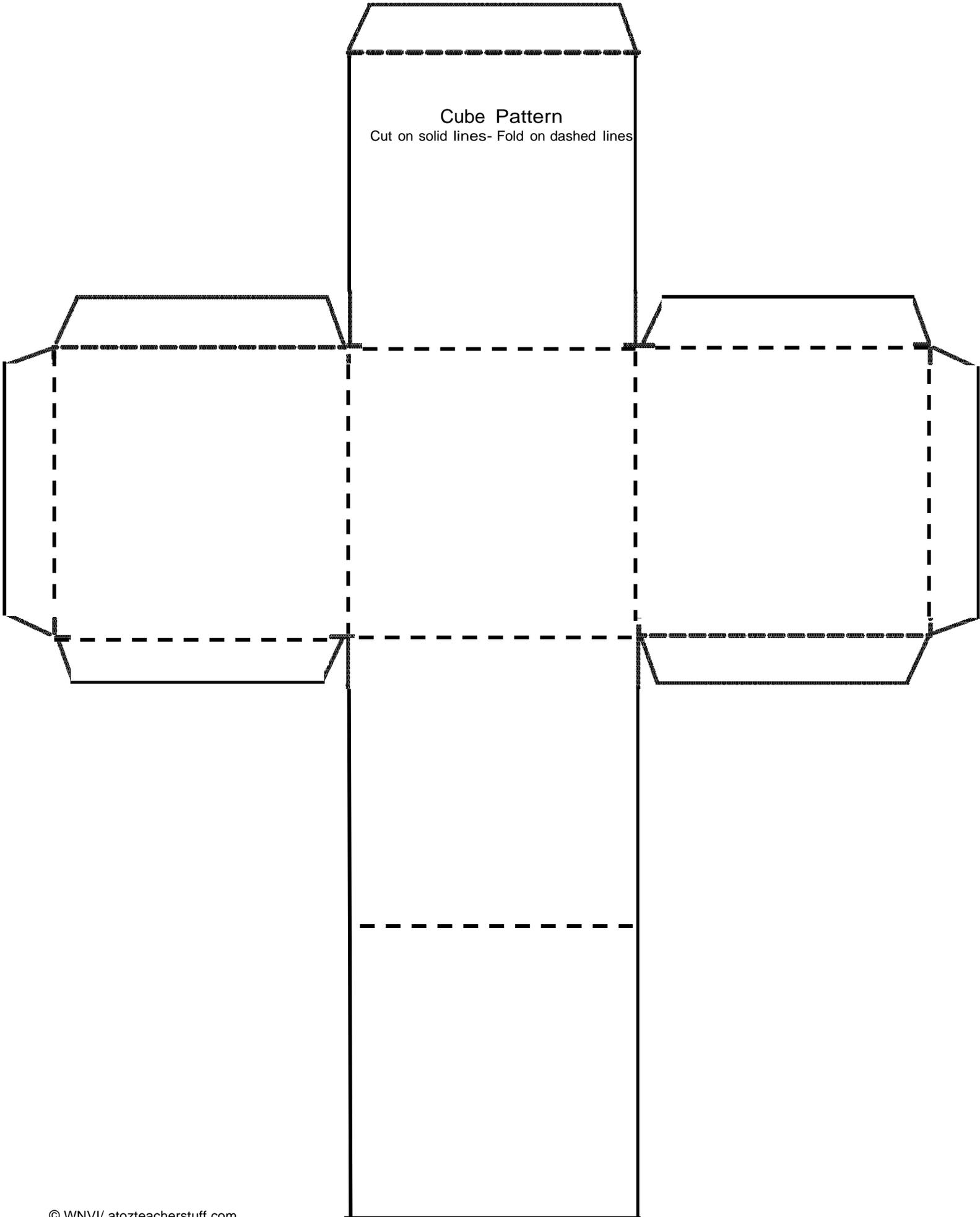
200s Chart

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200

TIPS Tutoring Session

Common Core Identification	
Domain: Number and Operations in Base Ten	Cluster: Understand place value.
Standard 3: Read and write numbers to 1000 using base ten numerals, number names, and expanded form.	

Before You Begin

Key Academic Mathematic Vocabulary (3 or fewer)

expanded form

Notes and Materials

Notes and suggestions for an effective lesson. Use nine-sided number generators, cards, or number blocks to designate 100s, 10s, or 5s. Place value mat to create a number.

Materials you will need:
- number cubes or cards or nine-sided dice
- label the three columns on the place value mat

LAUNCH—Assess and Provide Background Knowledge

2 Minutes

1. Connect to prior learning. Use a "hook" to gain the student's attention. Pick three cards (or roll three cubes) to get a three-digit number and orally expand on it.

2. Introduce and review Key Academic Mathematic Vocabulary (tips for ESL). Review the following: digit numeral concept, expanded form, sequential.

INSTRUCT—Provide Explicit Interactive Instruction

8 Minutes

3. State the objective. Read and write number 1,000 using base ten numerals, number names, and expanded forms.

4. Provide explicit step-by-step instructions. Fold a piece of paper in three sections. Label the columns "numeral," "expanded forms," and "place value." Divide the third column into three columns labeled 100s, 10s, and 1s.

5. Model. Generate a three-digit number using number cubes or cards. Specify what each column is used for. Fill in each column (e.g., if the three digits generated are 3, 8, 6, the first column would read 386, the second column would read 300 + 80 + 6, and the third column would 3 under the hundreds, 8 under the tens, and 6 under the ones).

6. Check for understanding (work problem with student). Watch guided practice and observe student's understanding of each column.

GUIDED PRACTICE—Monitor Student Work

5 Minutes

7. Student works problems independently while tutor watches and coaches. Student will label columns and do placing of number in appropriate column.

ASSESS—Evaluate Student Demonstration

5 Minutes

8. Student orally defines at least one Key Academic Vocabulary word and skill or concept. Students can show the expanded form of a number and orally explain.

9. Student works a problem while explaining EVERY step orally. Student will place digits of a three-digit number in the correct place value, in expanded form, and as a numeral. Work several problems with the student and observe to see if he/she gets the digits in the correct places.

Cube Pattern
Cut on solid lines- Fold on dashed lines

Hundreds	Tens	Ones

TIPS Tutoring Session

Before You Begin

Common Core Identification

Domain: Number and Operations in Base Ten	Cluster: Understand place value.

Standard 4: Compare two three-digit numbers based on meanings of the hundreds, ten, and ones digits, using >, =, and < symbols to record the results of comparisons.

Key Academic Mathematic Vocabulary (3 or fewer)

greater than, less than, equal to

Notes and Materials

Notes and suggestions for an effective lesson: Use deck of cards, stacked in the middle. Play a war card game. Each person chooses card and compares to tutor or friend. The one with the greater card says number sentences.

Materials you will need:
- deck of cards without face cards
- lined paper

2 Minutes

LAUNCH—Assess and Provide Background Knowledge

1. Connect to prior learning. Use a "hook" to gain the student's attention. Draw two cards and compare to see which is more or less. Use with two and three digits.

2. Introduce and review Key Academic Mathematic Vocabulary (tips for ESL): equal to, greater than, less than.

8 Minutes

INSTRUCT—Provide Explicit Interactive Instruction

3. State the objective. Compare two-digit numbers based on meanings of hundreds, tens and one digits using greater than, equal and less than symbols.

4. Provide explicit step-by-step instructions. Pull three cards to make a three-digit number and arrange them into largest number they can make.

5. Model. Draw three cards and play a round with student comparing numbers to each other.

6. Check for understanding (work problem with student). As students compare cards and numbers they will know to create a greater or lesser number (depending on the call).

5 Minutes

GUIDED PRACTICE—Monitor Student Work

7. Student works problems independently while tutor watches and coaches. Observe student as he/she pulls one, two, or three cards to create numbers greater or less than.

5 Minutes

ASSESS—Evaluate Student Demonstration

8. Student orally defines at least one Key Academic Vocabulary word and skill or concept. Student will use greater than >, less than < and equal = to appropriate ability.

9. Student works a problem while explaining EVERY step orally. Student can explain the symbol and number sentences correctly; tutor gives number and observes for corrections.

TIPS Tutoring Session

Before You Begin

Common Core Identification

Domain: Number and Operations in Base Ten	Cluster: Use place value understanding and properties of operations to add and subtract.

Standard 5: Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

Key Academic Vocabulary (3 or fewer)

plus, addition, minus

Notes and Materials

Notes and suggestions for an effective lesson: Use a hundreds chart and show what is next when adding another number.

Materials you will need:
- hundreds board

2 Minutes

LAUNCH—Assess and Provide Background Knowledge

1. Connect to prior learning. Use a "hook" to gain the student's attention. Create a story problem using manipulatives to add or subtract of 10 or more, etc. and follow on 100 board.

2. Introduce and review Key Academic Mathematics Vocabulary (addition means plus; subtraction means minus or takes away).

8 Minutes

INSTRUCT—Provide Explicit Interactive Instruction

3. State the objective. Fluently add and subtract within 100, using strategies to help students understand the place value concept.

4. Provide explicit step-by-step instructions. Using a 100 chart and correct vocabulary, ask students to add and subtract two-digit numbers (e.g., 32 + 47) and come to the answer by using adding strategies (30 + 40 + 9).

5. Model.
Model for the student one of the following strategies, depending on his/her current understanding:
1. Adding by place value: 35 + 47 = 30 + 40 = 70, 5 + 7 = 12, 70 + 12 = 82 (i.e., adding the tens first and then then ones and then combining them).
2. Writing in expanded form and using the commutative property: 30 + 5 + 40 + 7 and then, through the commutative property, we can move the numbers around to 30 + 40 + 5 + 7. The addition then becomes easier: 30 + 40 = 70, 5 + 7 = 12, 70 + 12 = 82.
3. Compensation: 48 + 22 (22 − 2 = 20; 48 + 2 = 50; 50 + 20 = 70).
4. Incremental: 53 − 35 becomes 53 − 10 = 43, 43 − 10 = 33, 33 − 10 = 23, 23 − 5 = 18.
5. Demonstrate the relationship between addition and subtraction. Example: fact family (25 + 12 = 37, 12 + 25 = 37, 37 − 12 = 25, 37 − 25 = 12).

6. Check for understanding (work problem with student). Record the different ways the student has come to see various ways to add and subtract.

5 Minutes

GUIDED PRACTICE—Monitor Student Work

7. Student works problems independently while tutor watches and coaches. Tutor can watch how the student moves along the 100 chart to derive two or more ways to reach answer.

5 Minutes	**ASSESS—Evaluate Student Demonstration**
	8. Student orally defines at least one Key Academic Mathematics Vocabulary word. Student can explain how he/she adds and subtracts numbers to derive ideas of solutions.
	9. Student works a problem while explaining EVERY step orally. Student will say he/she moves in a certain direction to reach a strategy to add or subtract.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
62	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

TIPS Tutoring Session

Before You Begin	**Common Core Identification**
	Domain: Number and Operations in Base Ten | Cluster: Use place value understanding and properties of operations to add and subtract.

	Common Core Identification

Common Core Identification

Domain: Number and Operations in Base Ten	Cluster: Use place value understanding and properties of operations to add and subtract.

Standard 6: Add up to four two-digit numbers using strategies based on place value and properties of operations.

Key Academic Vocabulary (3 or fewer)

Associative Property, Commutative Property

Notes and Materials

Notes and suggestions for an effective lesson: Break numbers into expanded forms creating groups as in associative properties with blocks.

Materials you will need:
- blocks
- paper

LAUNCH—Assess and Provide Background Knowledge

1. Connect to prior learning. Use a "hook" to gain the student's attention. Use two digits to show grouping and look for strategies.

2. Introduce and review Key Academic Mathematics Vocabulary (related facts).

INSTRUCT—Provide Explicit Interactive Instruction

3. State the objective. Add up to 4 two-digit numbers using strategies based on placed value based on appropriate properties of addition.

4. Provide explicit step-by-step instructions. (1) Break number into expanded form. (2) Create groupings with blocks and make bundles.

5. Model. Say, "I can make a 12 by adding 10 and 2 or 6 +6 or 4 + 4 + 4."

6. Check for understanding (work problem with student). Students can work the problems and they explain problem with bundles.

GUIDED PRACTICE—Monitor Student Work

7. Student works problems independently while tutor watches and coaches. Student can create bundles and move them effectively and appropriately.

ASSESS—Evaluate Student Demonstration

8. Student orally defines at least one Key Academic Mathematics Vocabulary word. Student can explain regrouping and movement of bundles.

9. Student works a problem while explaining EVERY step orally. Student can explain how a bundle of ten can create an addition to the ones.

(Left margin time labels: Before You Begin; 2 Minutes; 8 Minutes; 5 Minutes; 5 Minutes)

TIPS Tutoring Session

Before You Begin	**Common Core Identification**

Common Core Identification

Domain: Number and Operations in Base Ten	Cluster: Use place value understanding and properties of operations to add and subtract.

Standard 7: Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

Key Academic Vocabulary (3 or fewer)

No new vocabulary needed.

Notes and Materials

Notes and suggestions for an effective lesson: Concrete models consist of using manipulatives and drawings.

Materials you will need:
- base ten blocks
- manipulatives
- place value mat
- pencils

LAUNCH—Assess and Provide Background Knowledge

1. Connect to prior learning. Use a "hook" to gain the student's attention. "The school is collecting cans for a food drive. Mrs. Diaz's class collects 57 cans. Mrs. Cahn's class collects 68 cans. How many cans did they collect all together?"

2. Introduce and review Key Academic Mathematics Vocabulary (concrete model, vertical equation, resolution) using pictures or using base ten blocks, using strategies in place already.

INSTRUCT—Provide Explicit Interactive Instruction

3. State the objective. Add and subtract three digits within 1000 using concrete models or drawings.

4. Provide explicit step-by-step instructions. Use the story problem and use various three-digit numbers.

5. Model. Use base ten blocks and set up the numbers and work together and put places together. Use a place value mat.

6. Check for understanding (work problem with student). Check by showing how the student would add those numbers together and come up with the correct sum. Check for the appropriate drawings or algorithm.

GUIDED PRACTICE—Monitor Student Work

7. Student works problems independently while tutor watches and coaches.

ASSESS—Evaluate Student Demonstration

8. Student orally defines at least one Key Academic Mathematics Vocabulary word.

(Side labels: Before You Begin | 2 Minutes | 8 Minutes | 5 Minutes | 5 Minutes)

9. Student works a problem while explaining EVERY step orally.

Hundreds	Tens	Ones

TIPS Tutoring Session

Before You Begin

Common Core Identification	
Domain: Number and Operations in Base Ten	Cluster: Use place value understanding and properties of operations to add and subtract.
Standard 8: Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.	

Key Academic Vocabulary (3 or fewer)

mental

Notes and Materials

Notes and suggestions for an effective lesson: Don't use a paper, pencil or other materials. Tell the student, "We think it in our head."

Materials you will need:
- spinner showing "+10," "+100," "-10," and "-100"
- three-digit number cards

LAUNCH—Assess and Provide Background Knowledge

1. Connect to prior learning. Use a "hook" to gain the student's attention. Add and subtract with two-digit numbers.

2. Introduce and review Key Academic Mathematics Vocabulary. "Mental math" means not using anything but our own brain power.

2 Minutes

INSTRUCT—Provide Explicit Interactive Instruction

3. State the objective. Mentally add 10 or 100 to a given number 100-900 and subtract.

4. Provide explicit step-by-step instructions. (1) Make a pile of three digit cards from 100-900. (2) Make a simple paper clip spinner divided into four quadrants: -10, +10, +100, and -100.

5. Model. Draw a card with three digits, then spin the spinner and subtract or add as per quadrants.

6. Check for understanding (work problem with student). Student can mentally derive the correct answer when given a card and spinner.

8 Minutes

GUIDED PRACTICE—Monitor Student Work

7. Student works problems independently while tutor watches and coaches. Student can mentally derive the correct answer when given a card and spinner.

5 Minutes

ASSESS—Evaluate Student Demonstration

8. Student orally defines at least one Key Academic Mathematics Vocabulary word. Students know what it is to mentally derive an answer.

9. Student works a problem while explaining EVERY step orally. Student can explain how he/she mentally reached the solution.

5 Minutes

Spinner Template
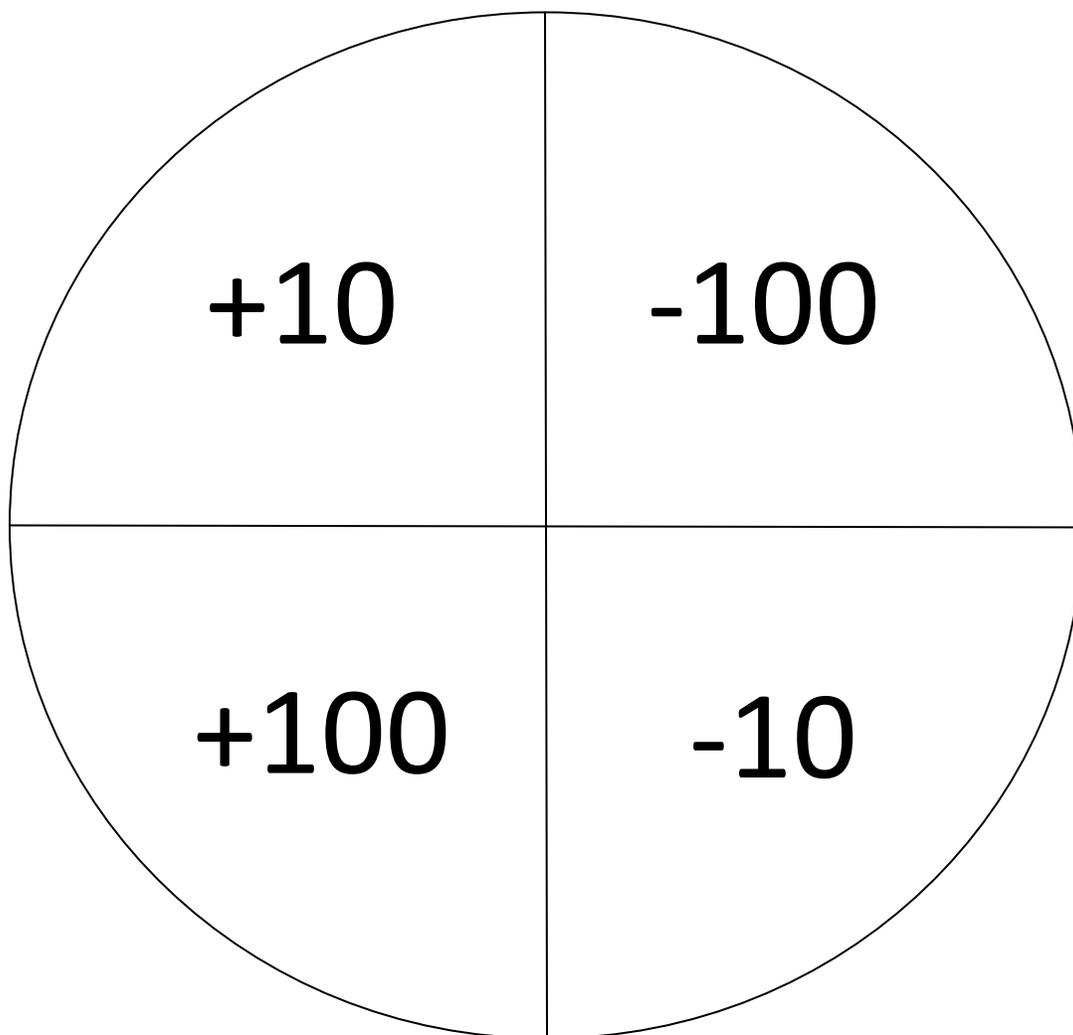
473	748	568	781	795
411	137	546	320	131
275	767	764	392	510
300	467	544	460	543
869	482	685	629	484

Common Core Identification	
Domain: Number and Operations in Base Ten	Cluster: Use place value understanding and properties of operations to add and subtract.
Standard 9: Explain why addition and subtraction strategies work, using place value and the properties of operations.	

Before You Begin

Key Academic Vocabulary (3 or fewer)

Use vocabulary from previous lessons; no new words.

Notes and Materials

Notes and suggestions for an effective lesson: Child needs to explain using mathematical vocabulary.

Materials you will need:
- base ten blocks
- place value mat
- pencil, paper, crayons

LAUNCH—Assess and Provide Background Knowledge

1. Connect to prior learning. Use a "hook" to gain the student's attention. The student will explain to the tutor the ways there are to solve addition and subtraction problems.

2. Introduce and review Key Academic Mathematics Vocabulary (review of past vocabulary used by students).

2 Minutes

INSTRUCT—Provide Explicit Interactive Instruction

3. State the objective. Explain why addition and subtraction strategies work.

4. Provide explicit step-by-step instructions. Have the student write their own story problems using basic facts (one-, two- or three-digit numbers). Solve the problem and explain their strategies in detail.

5. Model. The child will model.

6. Check for understanding (work problem with student). Student can explain correctly and get help where needed. Allow child time to do what is needed and prompt within reason.

8 Minutes

GUIDED PRACTICE—Monitor Student Work

7. Student works problems independently while tutor watches and coaches. Check for understanding using number 6 above.

5 Minutes

ASSESS—Evaluate Student Demonstration

8. Student orally defines at least one Key Academic Mathematics Vocabulary word. Student should explain using mathematical vocabulary.

9. Student works a problem while explaining EVERY step orally. Repeat number 8.

5 Minutes

Hundreds	Tens	Ones

TIPS Tutoring Session

Common Core Identification

Domain: Measurement and Data	Cluster: Measure and estimate lengths in standard units.

Standard 1: Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

Key Academic Vocabulary (3 or fewer)

Names of tools (ruler, meter stick, etc.)

Notes and Materials

Notes and suggestions for an effective lesson: Select and use tools to measure given objects. Teach about the appropriate tools to use to measure various items.

Materials you will need:
- objects needed to measure (rulers, yardsticks, meter sticks, or measuring tape)

LAUNCH—Assess and Provide Background Knowledge

1. Connect to prior learning. Use a "hook" to gain the student's attention. Measure your head, waist, or arm with a tape measure and explain why we use a tape rather than a yard stick in this activity.

2. Introduce and review Key Academic Mathematics Vocabulary (inches, feet, yards, and centimeters need to be understood).

INSTRUCT—Provide Explicit Interactive Instruction

3. State the objective. Measure the length of an object by selecting and using appropriate tools such as rulers, yard sticks, measuring tapes, etc.

4. Provide explicit step-by-step instructions. Measure objects provided using appropriate tools.

5. Model. Instruct where to start and end to measure and move it to the zero point of beginning. The students need to learn that measurements must be next to each other and not start at random points.

6. Check for understanding (work problem with student). The student will be able to measure items correctly, write the appropriate label of measurement, select appropriate tools for use object measurement.

GUIDED PRACTICE—Monitor Student Work

7. Student works problems independently while tutor watches and coaches. The student chooses his/her object to measure and chooses the unit of measurement.

ASSESS—Evaluate Student Demonstration

8. Student orally defines at least one Key Academic Mathematics Vocabulary word. The student can choose any given measurement vocabulary and define it appropriately.

9. Student works a problem while explaining EVERY step orally.

Before You Begin

2 Minutes

8 Minutes

5 Minutes

5 Minutes

Common Core Identification	
Domain: Measurement and Data	Cluster: Measure and estimate lengths in standard units.
Standard 2: Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.	

Key Academic Vocabulary (3 or fewer)

centimeters, inches

Notes and Materials

Notes and suggestions for an effective lesson: Create two columns with inches and centimeters and measure various chosen items using both units of measurement.

Materials you will need:
- ruler, tape measure
- paper
- pencil
- objects to measure

LAUNCH—Assess and Provide Background Knowledge

1. Connect to prior learning. Use a "hook" to gain the student's attention. The student will measure two units on one object. The tutor will ask, "Why are two different numbers found for one object?"

2. Introduce and review Key Academic Mathematics Vocabulary. Centimeters and inches will be discussed. Ask the student to notice that two and one-half centimeters equals one inch.

INSTRUCT—Provide Explicit Interactive Instruction

3. State the objective. Measure the length of an object twice, using different units for the two measurements. Describe how the units relate to the unit chosen.

4. Provide explicit step-by-step instructions. Have the student measure an object first using inches and then using centimeters. Ask the student to explain why the two measurements are different (inches are longer than centimeters). Repeat as necessary.

5. Model. Model measuring using two different length units for the student as necessary.

6. Check for understanding (work problem with student). Watch as the student measures objects twice; ensure that he/she is measuring correctly and that he/she can compare the number of units from the two measurements. DO NOT expect him/her to convert the measurements from standard to metric or vice versa.

GUIDED PRACTICE—Monitor Student Work

7. Student works problems independently while tutor watches and coaches. The student will measure given objects in centimeters and inches and label the number of units correctly.

ASSESS—Evaluate Student Demonstration

8. Student orally defines at least one Key Academic Mathematics Vocabulary word. Student can define centimeters and inches.

9. Student works a problem while explaining EVERY step orally.

Before You Begin

2 Minutes

8 Minutes

5 Minutes

5 Minutes

Common Core Identification	
Domain: Measurement and Data	Cluster: Measure and estimate lengths in standard units.
Standard 3: Estimate lengths using units of inches, feet, centimeters, and meters.	

Before You Begin

Key Academic Vocabulary (3 or fewer)
estimate

Notes and Materials
Notes and suggestions for an effective lesson: Estimate the lengths of selected objects in selected units of measurements.
Materials you will need: • various tools of measurement   • paper   • pencil

2 Minutes

LAUNCH—Assess and Provide Background Knowledge
1. Connect to prior learning. Use a "hook" to gain the student's attention. Estimate how many inches are in a yard (or measurement tool chosen).
2. Introduce and review Key Academic Mathematics Vocabulary (inches, feet, centimeters, and estimates vs. actual length)

8 Minutes

INSTRUCT—Provide Explicit Interactive Instruction
3. State the objective. Estimate various units of measurement.
4. Provide explicit step-by-step instructions. Estimate the length of objects, then measure the actual length. Keep data of estimate vs. actual length.
5. Model. Tutor observes to see the student is measuring correctly.
6. Check for understanding (work problem with student). Observe the student's ability to measure correctly.

5 Minutes

GUIDED PRACTICE—Monitor Student Work
7. Student works problems independently while tutor watches and coaches. Have a list of items to measure, such as a chair, desk, arm, etc. Use a nonstandard units such as unifix cubes if the student has difficulty measuring. Students can add cubes or measure in inches until a larger unit of length measurement has been reached, such as a yard.

5 Minutes

ASSESS—Evaluate Student Demonstration
8. Student orally defines at least one Key Academic Mathematics Vocabulary word (estimate vs. actual measurement).
9. Student works a problem while explaining EVERY step orally.

TIPS Tutoring Session

Before You Begin

Common Core Identification

Domain: Measurement and Data	Cluster: Measure and estimate lengths in standard units.

Standard 4: Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

Key Academic Vocabulary (3 or fewer)

compare, shorter, longer

Notes and Materials

Notes and suggestions for an effective lesson: Give student two objects and have him/her figure out whether one object is longer or shorter than another object.

Materials you will need:
- two objects for measurement
- paper ruler that can be written on
- http://www.teachervision.fen.com/tv/printables/scottforesman/Math_2_TTM_28.pdf (paper ruler)
- objects can be compared with written lines on paper

2 Minutes

LAUNCH—Assess and Provide Background Knowledge

1. Connect to prior learning. Use a "hook" to gain the student's attention. Indentify things in the room or area and show one object is longer than the other object.

2. Introduce and review Key Academic Mathematics Vocabulary; compare, longer, shorter.

8 Minutes

INSTRUCT—Provide Explicit Interactive Instruction

3. State the objective. Measure to determine how much longer one object is than another, expressing a length difference in terms of standard length unit.

4. Provide explicit step-by-step instructions. Lay object A and object B on the paper ruler, mark the ends of the objects, compare the two objects in length and record the difference between the two objects.

5. Model. Mentor makes sure the student is marking the ends of object A and B in the appropriate spot on the measurement line, and asks which object is longer or shorter.

6. Check for understanding (work problem with student). Make sure the student is correctly placing items for measurement and knows the difference in length.

5 Minutes

GUIDED PRACTICE—Monitor Student Work

7. Student works problems independently while tutor watches and coaches. Mentor will observe that student is appropriately measuring and comparing the units of measurement given and difference. Student should record the data correctly.

5 Minutes

ASSESS—Evaluate Student Demonstration

8. Student orally defines at least one Key Academic Mathematics Vocabulary word. What does it mean to compare?

9. Student works a problem while explaining EVERY step orally.

Before You Begin	**Utah Core Identification**
	Domain: Measurement and Data	Cluster: Relate addition and subtraction to length.

Utah Core Identification

Domain: Measurement and Data	Cluster: Relate addition and subtraction to length.

Standard 5: Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.

Key Academic Vocabulary (3 or fewer)

Symbol

Notes and Materials

Notes and suggestions for an effective lesson: Make up addition and subtraction comparison problems. Example: Suzy has a pencil that is three inches; when put together with Tom's pencil they equal 12 inches. How long is Tom's pencil? (3 inches + Δ = 12 inches)

Materials you will need:
- paper
- pencil

LAUNCH—Assess and Provide Background Knowledge

1. Connect to prior learning. Use a "hook" to gain the student's attention. Student will write a story problem and mentor will observe student solving correctly. Example: 3 inches + Δ = 12 inches

2. Introduce and review Key Academic Mathematics Vocabulary. Solve for missing number.

INSTRUCT—Provide Explicit Interactive Instruction

3. State the objective. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

4. Provide explicit step-by-step instructions. The student will invent a new story problem using any numbers between one and one hundred. A number generator rolled twice, or two NG rolled once (for two-digit numbers) could be used to derive numbers for the equation. It would be appropriate to establish both numbers prior to solution. Example: 23 centimeters + Δ = 99 centimeters.

5. Model. Observe students working problems with digits one to one hundred and finding addition and subtraction use during the process of solution.

6. Check for understanding (work problem with student). Student will have use of paper with drawings representing what he/she is equating. The equation will be drawn in picture representations. Allow child to use his/her own strategies as long as he/she can explain to the mentor how he/she has derived at a certain equation orally.

GUIDED PRACTICE—Monitor Student Work

7. Student works problems independently while tutor watches and coaches. Student will have the use of paper, with drawings representing what he/she is equating. The equation will be drawn in picture representations. Allow child to use his/her own strategies as long as he/she can explain to the mentor how he/she has derived at a certain equation orally.

ASSESS—Evaluate Student Demonstration

8. Student orally defines at least one Key Academic Mathematics Vocabulary word. Any given symbol that represents a missing number will be addressed accordingly.

9. Student works a problem while explaining EVERY step orally. Student will explain as in check for

(left margin time labels: Before You Begin, 2 Minutes, 8 Minutes, 5 Minutes, 5 Minutes)

understanding.

TIPS Tutoring Session

<table>
<tr><td rowspan="6">**Before You Begin**</td><td colspan="2">**Utah Core Identification**</td></tr>
<tr><td>Domain: Measurement and Data</td><td>Cluster: Relate addition and subtraction to length.</td></tr>
<tr><td colspan="2">Standard 6: Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.</td></tr>
<tr><td colspan="2">**Key Academic Vocabulary (3 or fewer)**</td></tr>
<tr><td colspan="2">whole numbers, sums and differences</td></tr>
<tr><td colspan="2">**Notes and Materials**</td></tr>
</table>

Notes and suggestions for an effective lesson: Give the students an unmarked number line, found at http://www.helpingwithmath.com/printables/others/lin0301number46.htm, and let them fill in the numbers. When it is complete (by tens) up to 100, the student will add and subtract units to create number sentences. Example: 10 plus 20 = 30.

Materials you will need:
- unmarked number line
- paper
- pencil

2 Minutes

LAUNCH—Assess and Provide Background Knowledge

1. Connect to prior learning. Use a "hook" to gain the student's attention. Child will place numbers in correct places along the number line.

2. Introduce and review Key Academic Mathematics Vocabulary (number line, number, sum, difference).

8 Minutes

INSTRUCT—Provide Explicit Interactive Instruction

3. State the objective. Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.

4. Provide explicit step-by-step instructions. Students will be given a paper with an unmarked number line and write in the numbers appropriately. They will add and subtract to find sums and differences.

5. Model. Check for understanding while writing a number line. Give students a problem with addition or subtraction. Example: Sally and Tom are a team. If Sally ran 2 miles, and Tom ran 10 miles, how many miles were run by the two students together as a team?

6. Check for understanding (work problem with student). The student will write numbers in appropriate places on the lines along the number line.

5 Minutes

GUIDED PRACTICE—Monitor Student Work

7. Student works problems independently while tutor watches and coaches. Student will write numbers on the number line and work adding and subtracting problems.

5 Minutes

ASSESS—Evaluate Student Demonstration

8. Student orally defines at least one Key Academic Mathematics Vocabulary word (sums, differences).

9. Student works a problem while explaining EVERY step orally. An extension of the lesson would be to add decades or tens to see if students understand the concepts.

TIPS Tutoring Session

	Utah Core Identification	
Before You Begin	Domain: Measurement and Data	Cluster: Work with time and money.
	Standard 7: Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.	

Key Academic Vocabulary (3 or fewer)

analog, digital

Notes and Materials

Notes and suggestions for an effective lesson. Play a concentration game using the analog and digital times written on cards to match each other. An analog clock can be found at:
http://commons.wikimedia.org/wiki/File:Analog_clock_base.png.

Materials you will need:
- concentration cards
- clocks (can be found at http://www.time-for-time.com/worksheets/write5minute.pdf)

LAUNCH—Assess and Provide Background Knowledge

1. Connect to prior learning. Use a "hook" to gain the student's attention. Give students an analog clock made with paper plates, or a model clock. Practice making time.

2. Introduce and review Key Academic Mathematics Vocabulary (analog, digital).

INSTRUCT—Provide Explicit Interactive Instruction

3. State the objective. Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

4. Provide explicit step-by-step instructions. Tutor will lay out cards face down in five rows with five cards in each row. Play the concentration, game matching digital to analog clock times. If the times match, keep the cards. If the cards do not match, the next turn is taken.

5. Model. Tutor can turn over two cards to show student whether or not they match.

6. Check for understanding (work problem with student). The student will be observed to see if the cards are matched correctly while tutor watches.

GUIDED PRACTICE—Monitor Student Work

7. Student works problems independently while tutor watches and coaches. Play the game.

ASSESS—Evaluate Student Demonstration

8. Student orally defines at least one Key Academic Mathematics Vocabulary word (analog, digital).

9. Student works a problem while explaining EVERY step orally. Student can correctly identify times on both clocks.

(Left margin labels: Before You Begin / 2 Minutes / 8 Minutes / 5 Minutes / 5 Minutes)

TIPS Tutoring Session

Utah Core Identification	
Domain: Measurement and Data	Cluster: Work with time and money.

Standard 8: Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?

Key Academic Vocabulary (3 or fewer)

names of the coins (penny, nickel, dime, quarter, etc.)

Notes and Materials

Notes and suggestions for an effective lesson. Use play money and names to add the worth of coins. Example: Show 3 dimes and four pennies. This equals what amount? Count it out with the student.

Materials you will need:
- coin manipulatives or cutout paper coins (paper coins sheet can be found at: http://www.istockphoto.com/file_thumbview_approve/2449657/2/istockphoto_2449657-american-coins-in-a-row.jpg)
- common objects with price tags on them, not to exceed twenty-five cents
- paper
- pencil

LAUNCH—Assess and Provide Background Knowledge

1. Connect to prior learning. Use a "hook" to gain the student's attention. Tutor can ask the name of coin and its value. Example: A nickel is worth 5 cents. Use pennies, nickels, dimes, and quarters. Count by fives.

2. Introduce and review Key Academic Mathematics Vocabulary (names of coins).

INSTRUCT—Provide Explicit Interactive Instruction

3. State the objective. Solve word problems involving quarters, nickels, and dimes. Use the $ and cents symbols appropriately.

4. Provide explicit step-by-step instructions. Take items from the classroom and write price amounts on the items. The tutor will place two items in front of the student and have the student count out the cost to buy both items all together.

5. Model. Tutor will count out the money for two items and add the amounts to determine the cost of both items together.

6. Check for understanding (work problem with student). The student will show the correct amount and, as an extension, the student can write out an equation for the problem used.

GUIDED PRACTICE—Monitor Student Work

7. Student works problems independently while tutor watches and coaches. The equation will use the symbols for cents and dollars.

ASSESS—Evaluate Student Demonstration

8. Student orally defines at least one Key Academic Mathematics Vocabulary word. Coin names will be used and their worth will be understood.

9. Student works a problem while explaining EVERY step orally. The student can write an equation and name
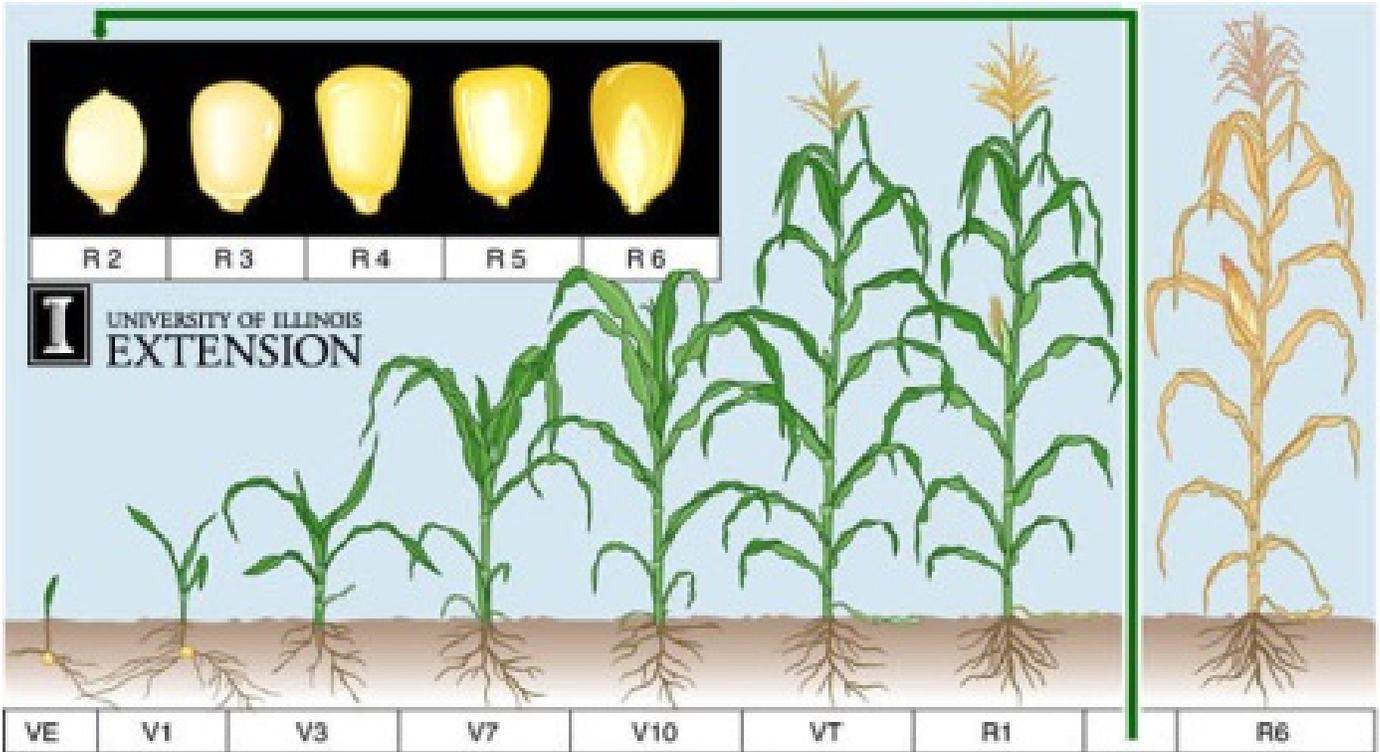
Before You Begin

2 Minutes

8 Minutes

5 Minutes

5 Minutes

the coins, and understands the worth of each coin.

TIPS Tutoring Session

Before You Begin

Utah Core Identification

Domain: Measurement and Data	Cluster: Represent and interpret data.

Standard 9: Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.

Key Academic Vocabulary (3 or fewer)

line plot (a long number line that will encompass all measurements of height in the corn pictures showing a dot or mark over the measurement corresponding to each corn picture)

Notes and Materials

Notes and suggestions for an effective lesson: Have the student measure items around the room. Make sure that they can all be measured in inches, that none is longer than 12 inches, and that some have the same measurements. The student will plot the measurements on a line plot. You can access a blank line plot at: http://www.helpingwithmath.com/printables/others/lin0301number46.htm.

Materials you will need:
- pictures of corn growing for varied amounts of time: see picture below
- ruler
- pencil

2 Minutes

LAUNCH—Assess and Provide Background Knowledge

1. Connect to prior learning. Use a "hook" to gain the student's attention. Allow the student to measure each object you have chosen. Record the data and draw an x on the line plot as per measurement made. The student can continue to find the number of items that are the same length. The "x" will determine how many objects are in an inch-long measurement.

2. Introduce and review Key Academic Mathematics Vocabulary (line plot).

8 Minutes

INSTRUCT—Provide Explicit Interactive Instruction

3. State the objective. Generate measurement data by measuring lengths of several objects to the nearest inch, or by making repeated measurements of the same object. Show the measurements by making a line plot on graph paper where the horizontal scale is marked off in whole-number units.

4. Provide explicit step-by-step instructions. Organize measurements of different objects (some may be the same length). Measure each object and record the data. Create a line plot and keep track of the number of objects in each measurement. Tally the information and record it on the line plot.

5. Model. Place the objects in order, measure the first object, and record the data. Ensure that the student knows what to do.

6. Check for understanding (work problem with student). Student can place an x according the data record acquired through measurement of corn plants. Watch student's guided practice.

5 Minutes

GUIDED PRACTICE—Monitor Student Work

7. Student works problems independently while tutor watches and coaches.

5 Minutes

ASSESS—Evaluate Student Demonstration

8. Student orally defines at least one Key Academic Mathematics Vocabulary word.

9. Student works a problem while explaining EVERY step orally. The student can determine that there are more or fewer of a certain object of a particular length.

R 2 R 3 R 4 R 5 R 6

UNIVERSITY OF ILLINOIS
EXTENSION

VE V1 V3 V7 V10 VT R1 R6

TIPS Tutoring Session

Utah Core Identification	
Domain: Measurement and Data	Cluster: Represent and interpret data.

Standard 10: Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and comparison problems using information presented in a bar graph.

Before You Begin

Key Academic Vocabulary (3 or fewer)
data

Notes and Materials
Notes and suggestions for an effective lesson: Pictographs and bar graphs can be found at this website: http://www.teachervision.fen.com/graphs-andcharts/graphicorganizer/54826.html?detoured=1. Favorite cookies, colors, sports, ice creams, doughnuts, or T.V. shows can be used for the data categories. (Make up the numbers in your data sets.)Example: red 8, yellow 4, green 6, blue 2. Have the student give each graph a title, label each side and bottom of the graph, and place number marks appropriately.
Materials you will need: • graphs, data sets • choice of crayons/markers, etc. • paper for recording

2 Minutes

LAUNCH—Assess and Provide Background Knowledge
1. Connect to prior learning. Use a "hook" to gain the student's attention. Do a survey with small group (if you have more than one person); ask, "What is your favorite thing to do at recess?"
2. Introduce and review Key Academic Mathematics Vocabulary (data).

8 Minutes

INSTRUCT—Provide Explicit Interactive Instruction
3. State the objective. Draw a pictograph and a bar graph to represent a data set with up to four categories. Solve simple put-together, take-apart, and comparison problems using information presented in a bar graph.
4. Provide explicit step-by-step instructions. Using data, students will make a bar graph and a pictograph. They will write equations to derive correct information from the data.
5. Model. Refer to "Check for Understanding."
6. Check for understanding (work problem with student). Tutor will observe the student making the graphs correctly and writing equations to answer the questions regarding the graph.

5 Minutes

GUIDED PRACTICE—Monitor Student Work
7. Student works problems independently while tutor watches and coaches. Refer to "Check for Understanding."

5 Minutes

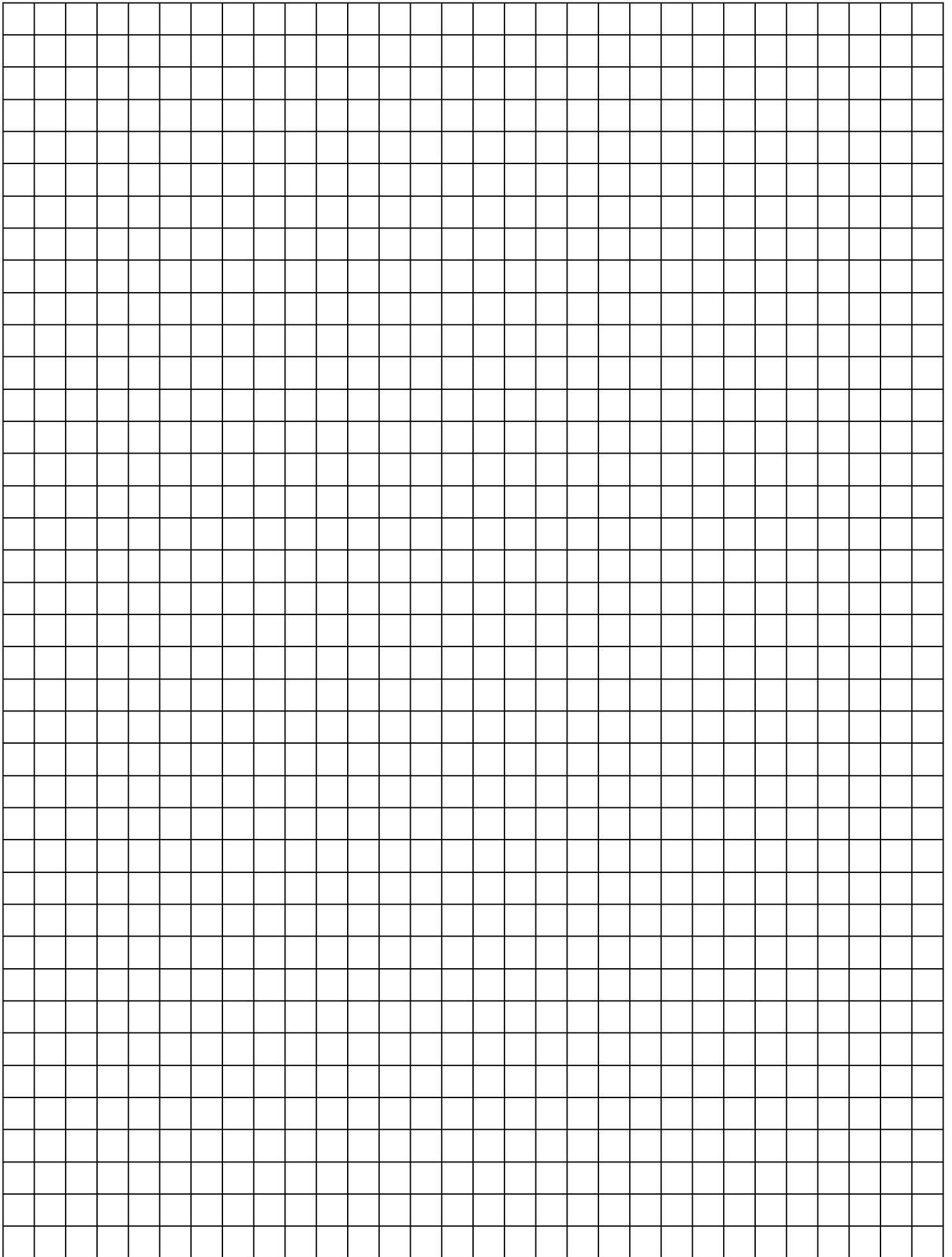| **ASSESS—Evaluate Student Demonstration** |
|---|
| 8. Student orally defines at least one Key Academic Mathematics Vocabulary word. Students tell the tutor what "data" means. |
| 9. Student works a problem while explaining EVERY step orally. Students take the information and can answer questions correctly. |

TIPS Tutoring Session

Utah Core Identification	
Domain: Geometry	Cluster: Reason with shapes and their attributes.

Standard 1: Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

Key Academic Vocabulary (3 or fewer)

parallel, attributes

Notes and Materials

Notes and suggestions for an effective lesson: A quadrilateral is a four-sided, two-dimensional shape. Pattern blocks can be used to show that there are different groups of shapes in the category of quadrilaterals. Show students a kite having four sides, then show them a that rhombus (diamond shape) has four sides; parallelograms can include squares, rhombuses, and rectangles. Trapezoids can be shown with the other shapes. Explain that these shapes are all considered quadrilaterals. Do a comparison; ask students what is alike and different among the shapes. Introduce the idea that a parallelogram has parallel sides that can continue on and on without ever crossing. Sides and angles are attributes of shapes; call them by correct geometric names.

Materials you will need:
- various geometric quadrilaterals with parallelograms in correct proportions (using a flat picture of each; no nettings are used, as we are not making three-dimensional shapes)

LAUNCH—Assess and Provide Background Knowledge

1. Connect to prior learning. Use a "hook" to gain the student's attention. Use pattern blocks and have students name each block. Explain what is different and compare the pattern blocks verbally. Tutors will explain that they are working with quadrilaterals.

2. Introduce and review Key Academic Mathematics Vocabulary (triangles, quadrilaterals, pentagons, hexagons, cubes).

INSTRUCT—Provide Explicit Interactive Instruction

3. State the objective. Recognize and draw quadrilaterals having specified attributes, such as a given number of angles or a given number of sides. Identify what makes a quadrilateral.

4. Provide explicit step-by-step instructions. Students will work with a variety of quadrilateral shapes available and will compare attributes. Compare sides and angles and put them in proper categories of quadrilateral. Students will make a graphic organizer showing different categories of quadrilaterals and which shapes are in those categories. Graphic organizers can be found at:
http://www.edhelper.com/teachers/General_graphic_organizers.htm .

5. Model. Tutor makes sure the student is sorting the quadrilateral attributes and can compare correctly.

6. Check for understanding (work problem with student). Student will show tutor the sorting of quadrilaterals by attributes.

GUIDED PRACTICE—Monitor Student Work

7. Student works problems independently while tutor watches and coaches. Graphic organizers will be used.

ASSESS—Evaluate Student Demonstration

8. Student orally defines at least one Key Academic Mathematics Vocabulary word. Student needs to compare shapes, know what a quadrilateral is, and understand that some shapes are NOT quadrilaterals.

Before You Begin

2 Minutes

8 Minutes

5 Minutes

5 Minutes

9. Student works a problem while explaining EVERY step orally. Refer to # 7 above.

TIPS Tutoring Session

Before You Begin	**Utah Core Identification**
	Domain: Geometry / Cluster: Reason with shapes and their attributes.
	Standard 2: Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

Before You Begin

Utah Core Identification

Domain: Geometry	Cluster: Reason with shapes and their attributes.

Standard 2: Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

Key Academic Vocabulary (3 or fewer)

columns, rows

Notes and Materials

Notes and suggestions for an effective lesson: Each square will be made up of square units. (Example: 2 rows and 3 columns equal six units that are all squares.) Students will cut out different rectangles from large graph paper and identify the rows and the columns, and how many units are in each.

Materials you will need:
- quarter-inch graph grid paper

LAUNCH—Assess and Provide Background Knowledge

2 Minutes

1. Connect to prior learning. Use a "hook" to gain the student's attention. Use the hundreds board. Show that this is made up of columns and rows. Notice and identify units and count them on the board. Ask student how many units are on the one-hundred-square board.

2. Introduce and review Key Academic Mathematics Vocabulary (columns go up and down, and rows go across).

INSTRUCT—Provide Explicit Interactive Instruction

8 Minutes

3. State the objective. Partition a rectangle into rows and columns of same-size units and count to find the total number of units.

4. Provide explicit step-by-step instructions. Students will cut rectangles into various sizes. Identify the columns and the rows in each rectangle. Count total number of units. (Note: When a rectangle is rotated, the number of columns and rows change, while the number of units remains the same. However, when using a square the columns and rows will remain the same as well as the units.)

5. Model. The tutor can rotate the rectangle, identify the columns and rows, and count the units.

6. Check for understanding (work problem with student). The student will rotate the rectangle, identify the columns and rows, and count the units while the tutor makes sure the student is doing this correctly.

GUIDED PRACTICE—Monitor Student Work

5 Minutes

7. Student works problems independently while tutor watches and coaches. Refer to #6.

ASSESS—Evaluate Student Demonstration

5 Minutes

8. Student orally defines at least one Key Academic Mathematics Vocabulary word. Refer to # 6; the student can orally identify a column and a row.

9. Student works a problem while explaining EVERY step orally.