



Utah State Office of Education

Department of Teaching and Learning

What Are the Utah Core Standards for Mathematics?

The Utah Core Standards for Mathematics are statements about what students should know and be able to do in mathematics. The Utah Standards align with, but are not identical to, the Common Core State Standards that were developed in a multi-state effort led by the National Governors Association and the Council of Chief State School Officers.

The Utah Core Standards for Mathematics define what

a student must know and be able to do to be college and career ready in mathematics. The Standards do not dictate curriculum or instructional methods, but they do require students to understand mathematics at a deeper level than has been previously required, suggesting that changes are needed in both practice and resources.

The Standards provide a focused and coherent picture of what students are expected to learn that is relevant to the real world and prepares students for success.

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What Do the Utah Core Standards Say About What Is Important in Mathematics?

Standards for Mathematical Practice

Make sense of problems and persevere in solving them.

Reason abstractly and quantitatively.

Construct viable arguments and critique the reasoning of others.

Model with mathematics.

Use appropriate tools strategically.

Attend to precision.

Look for and make use of structure.

Look for and express regularity in repeated reasoning.

Some people have heard that the new core does not require memorization of arithmetic facts or algorithmic processes. This is not the case. Developing fluency with operations and procedures is a clear goal of the Utah Core, as is demonstrated both in the standards themselves and in the curriculum guides on the USOE website. Memorization and procedural fluency are supported by student understanding of and communication about mathematics. The goals of the Utah Core are the same as those first described by the National Research Council in *Adding It Up*. These goals are conceptual understanding, procedural fluency, strategic competence, adaptive reasoning, and productive disposition. Instruction in the Utah Core will integrate and balance all five strands of proficiency, resulting in students who can understand mathematics, do mathematics, and apply mathematics.

What Do Utah Experts Say About the New Core Standards?

“The implementation of College and Career Readiness Standards based on the Common Core will support student readiness for participation in higher education mathematics.”
—Dr. Hugo Rossi, University of Utah

“With appropriate support, students in all demographic subgroups can reach ambitious content expectations identified in the CCSSM and the Utah Core, achieving at levels comparable to their international counterparts.”

—Dr. Eula Monroe, Brigham Young University

“Utah’s Mathematics Core...has provided a major step forward to encouraging the following in Utah’s school curricula: The development of students’ (1) abilities to interrelate various mathematical sub-disciplines...; (2) practical problem-solving skills; (3) deep understanding of fundamental mathematical concepts and relationships; and (4) computational fluency.”

—Dr. James Cangelosi, Utah State University

Why Did Utah Choose an Integrated Model for Secondary Mathematics?

The major benefit of the international pathway is a more seamless trajectory of mathematics learning, eliminating learning gaps by making connections within mathematics topics over the course of three years of high school. Some advisory bodies have referred to the international pathway as a “world-class” curriculum, pointing to its use in high-performing countries. The Utah State Board of Education adopted the integrated pathway for Secondary Mathematics after careful deliberation regarding the potential benefits and possible challenges inherent in the adoption of any pathway, and is committed to supporting teachers with professional development and resources.

Committees and Organizations Supporting the Integrated Model for Secondary Mathematics

Utah Core Advisory Committee

Utah Council of Teachers of Mathematics

Utah Curriculum Directors

Utah State Mathematics Education Coordinating Committee

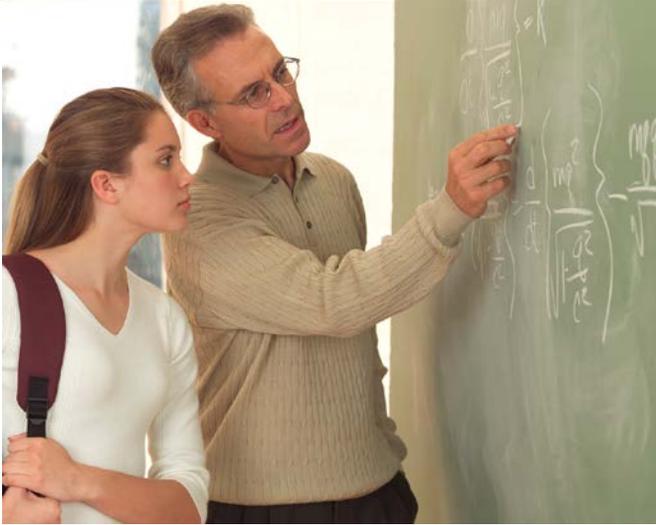
Utah State Higher Education Mathematics Majors Committee

Where Is Algebra in the Utah Core?

Algebra is integrated over several years in the new core. Following are just a few examples of where concepts from a traditional eighth or ninth grade algebra class can be found in the Utah Core.

5 th grade	Order of Operations
6 th grade	Generate equivalent expressions and identify when expressions are equivalent.
7 th grade	Solve single-variable linear equations.
8 th grade	Identify the slope of a line and represent linear equations in slope-intercept form.
9 th grade	Write the equation of a line.
10 th grade	Factor trinomials and solve quadratic equations.

A more detailed concept table can be found at <http://schools.utah.gov/CURR/mathsec/News-and-Information.aspx>.



What Is Utah Doing for High-Ability Students?

The Utah Core Standards are much more rigorous and, beginning in kindergarten, become more complex than previous standards, with many topics introduced earlier and with the expectation of greater comprehension. Thus, they are challenging for all students.

There are some students who will be ready to move through the mathematics more quickly or who will require additional rigor to challenge their abilities. Placing students into tracks prior to seventh grade is discouraged; however the Utah Core provides honors opportunities for students beginning in seventh grade. The honors trajectory will lead high-ability students to calculus during their senior year and is designed to flexibly allow entry as late as ninth grade or exit at any time to meet student needs. Some districts have also designed compacted trajectories that may lead to calculus during the junior year for students who clearly demonstrate understanding, skill, and positive dispositions towards mathematics. These tracks, where available, begin in ninth or tenth grade, when students are developmentally ready for the rigors associated with compacted, rigorous coursework.

Honors trajectories and compacted courses may not be offered in all schools or districts due to faculty availability or student need. The consequences of compacted or telescoped mathematics must be carefully considered, including the availability of continued support in subsequent grades.

How Is the USOE Supporting the Implementation of the New Utah Core Standards?

Professional learning is an ongoing and continuous process in any profession, and the USOE has supported new learning every year to ensure that teachers have access to the best knowledge and research available to inform their teaching.

Utah teachers have been engaged in professional learning focused on helping students develop mathematical reasoning skills for several years. The new core brings additional focus to that learning as teachers seek to help students build understanding of and skill in mathematics. The summer Core Academy and USOE grants to districts support professional learning communities focused on mathematical content and implementation of high-quality instruction for all students. The USOE also supports learning communities in developing resources for classroom use in mathematics, including Open Education Resources that are shared throughout the state.

Professional learning from the USOE will continue with more differentiated—but still big-picture—offerings in the future to help new and expert teachers continue to become master teachers. Districts and schools will continue to develop opportunities for professional learning to meet the needs of their specific settings.

“The new common core math makes children think and explain how they get to their answers, more so than any other math standards we have had in the Utah Core for my 25+ years of teaching.”

—Utah Elementary School Teacher

Additional information on mathematics for high ability students can be found at <http://schools.utah.gov/CURR/mathsec/Core/High-Ability-Students-and-the-Mathematics-Common-C.aspx>.



How Can We Help Students Become Career and College Ready?

Developing key cognitive knowledge and strategies is an important component in developing career and college readiness. The strategies that are developed in mathematics classes, both in mathematical processes and in dispositions, are important elements in preparing for post-secondary careers and study. The Standards for Mathematical Practice support students in becoming persevering problem solvers who can reason and communicate effectively. The content standards give students mathematical tools with which to solve those problems and understand the world around them. Parents, schools, and districts are all key partners with teachers in helping students prepare for life.

The fastest growing career fields are based in STEM (Science, Technology, Engineering, and Math), and they all require mathematics.

Students can become college and career ready by:

- Practicing mathematics skills until they can fluently compute and solve basic problems.
- Asking questions when mathematics doesn't make sense, and sticking with it until it does.
- Trying, even when it seems difficult.
- Looking for ways to apply mathematics in everyday life.
- Taking mathematics classes every year, even if it isn't required.
- Learning to use tools, such as calculators and computers, at appropriate times and in appropriate ways.

Parents can help by:

- Helping students see the value of mathematics in their world.
- Providing time for practicing mathematics skills and positive dispositions that support inquiry and perseverance.

Schools can help by:

- Structuring the school day to provide sufficient time for the study of mathematics.
- Providing strategies and supports for interventions for struggling students.

Districts can help by:

- Ensuring teachers have access to and are involved in professional development.
- Creating policies that support students in mathematics every year throughout their school experience.

Department of Teaching and Learning

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