

Common Core Update: Mathematics November 17, 2010

Implementation Schedule

	USOE	LEA	K	1	2	3	4	5	6	7	8	9	10	11	TEST
2010-2011	<ol style="list-style-type: none"> 1. Decisions on additions to standards. 2. Mapping: Develop curriculum framework 3. Ancillary materials & information. 4. Course Development 5. Performance Expectations 6. Credit and Graduation Pathways 7. Interventions, Advancement, ELL Learners 8. Articulation with IHE. 9. Spring: Public comment and adopt new core curriculum 	<ol style="list-style-type: none"> 1. Design assistance and input. 													CRT
2011-2012	<ol style="list-style-type: none"> 1. Invited Core Academy Focused on Mathematics in grades 6 and 9. 2. Begin PD 6 & 9 3. Continue design activities. 4. Spring: Public comment and adoption of new core curriculum 	<ol style="list-style-type: none"> 1. Attend Core Academy Focused on Math 6 and 9. 2. Begin PD 6 & 9 3. Begin new 6 & 9 courses 							PD & I			PD & I			CRT
2012-2013	<ol style="list-style-type: none"> 1. Invited Core Academy Focused on Mathematics in grades K-7 and 9-10. 2. Continue PD 3. Continue design activities. 	<ol style="list-style-type: none"> 1. Attend Core Academy Focused on Mathematics in grades K-8 and 10-11. 2. Continue PD 3. Begin new K-7 and 9-10 courses 	Professional Development Implementation									PD & I		CRT	
2013-2014	<ol style="list-style-type: none"> 1. Invited Core Academy Focused on Mathematics in grade 11 2. Continue PD 	<ol style="list-style-type: none"> 1. Attend Core Academy Focused on Mathematics in grade 11 2. Continue PD 3. Begin new grade11 course 	Professional Development and Implementation											PD & I	CRT Pilot
2014-2015	Assist with PD	PD as Needed	Professional Development and Implementation												New Test

Mathematics Graduation Requirements

- The current graduation rule requiring three mathematics courses for high school graduation is consistent with the Common Core Standards, although specific language will need revision.

- During the implementation phase, students may meet graduation requirements using the current Utah Secondary Mathematics Core (Algebra, Geometry, Algebra 2) or the Common Core (Secondary Mathematics I, II, and III), or a combination of courses.

Mathematics Courses/Endorsements

- Course descriptions are based on those in the Common Core documentation.
- Secondary courses will follow the Integrated Pathway as outlined in the Common Core Appendix for Mathematics.
- Specific content for honors courses will be developed under the leadership of USOE. The focus of the middle school honors courses will be to increase depth of knowledge and introduce compelling mathematics material for gifted students. The focus of the high school honors courses will be Calculus-readiness, eliminating the Pre-calculus prerequisite for Calculus for students completing the honors track.
- **The endorsement committee is currently deliberating on the required endorsement levels, so this column is tentative.** It is anticipated that the Board will use a reasonable combination of grandfathering and credit for core professional development for current teachers to be able to qualify to teach the CCSS courses. The five year roll out of CCSS will facilitate this process.

Course Name	Description	Tentative Endorsement Requirement
7 th Grade Mathematics	In 7 th Grade Mathematics students will focus on developing understanding of and applying proportional relationships; developing understanding of operations with rational numbers and working with expressions and linear equations; solving problems involving scale drawings and informal geometric constructions, and working with two- and three- dimensional shapes to solve problems involving area, surface area, and volume; and drawing inferences about populations based on samples.	Level 2
7 th Grade Mathematics-Honors	In 7 th Grade Mathematics Honors students will focus on developing understanding of and applying proportional relationships; developing understanding of operations with rational numbers and working with expressions and linear equations; solving problems involving scale drawings and informal geometric constructions, and working with two- and three- dimensional shapes to solve problems involving area, surface area, and volume; and drawing inferences about populations based on samples. The Honors course includes extra depth and additional topics.	Level 2
8 th Grade Mathematics	In 8 th Grade Mathematics students will focus on formulating and reasoning about expressions and equations, including modeling an association in bivariate data with a linear equation, and solving linear equations and systems of linear equations; grasping the concept of a function and using functions to describe quantitative relationships; and analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence, and understanding and applying the Pythagorean Theorem.	Level 2
8 th Grade Mathematics-Honors	In 8 th Grade Mathematics Honors students will focus on formulating and reasoning about expressions and equations, including modeling an association in bivariate data with a linear equation, and solving linear equations and systems of linear equations; grasping the concept of a function and using functions to describe quantitative relationships; and analyzing two- and three-dimensional space and figures using distance,	Level 2

	angle, similarity, and congruence, and understanding and applying the Pythagorean Theorem. The honors course includes extra depth and additional topics.	
Secondary Mathematics I Algebra/Geometry	Students in Secondary Mathematics I will deepen and extend understanding of linear relationships, in part by contrasting them with exponential phenomenon, and in part by applying linear models to data that exhibit a linear trend. Students will use properties and theorems involving congruent figures to deepen and extend understanding of geometric knowledge. Algebraic and geometric ideas are tied together. Students will experience mathematics as a coherent, useful, and logical subject that makes use of their ability to make sense of problem situations.	Level 3
Secondary Mathematics I-Honors-Algebra/Geometry	Students in Secondary Mathematics I Honors will deepen and extend understanding of linear relationships, in part by contrasting them with exponential phenomenon, and in part by applying linear models to data that exhibit a linear trend. Students will use properties and theorems involving congruent figures to deepen and extend understanding of geometric knowledge. Algebraic and geometric ideas are tied together. Students will experience mathematics as a coherent, useful, and logical subject that makes use of their ability to make sense of problem situations. Honors students will represent quantities, model, and perform operations using vectors and use matrices to perform operations and solve problems.	Level 3
Secondary Mathematics II-Algebra/Geometry	Students in Secondary Mathematics II will focus on quadratic expressions, equations, and functions, extend the set of rational numbers to the set of complex numbers, link probability and data through conditional probability and counting methods, study similarity and right triangle trigonometry, and study circles with their quadratic algebraic representations.	Level 3
Secondary Mathematics II-Honors-Algebra/Geometry	Students in Secondary Mathematics II Honors will focus on quadratic expressions, equations, and functions, extend the set of rational numbers to the set of complex numbers, link probability and data through conditional probability and counting methods, study similarity and right triangle trigonometry, and study circles with their quadratic algebraic representations. Honors students will also represent complex numbers and their operations on the complex plane, solve systems of equations, prove and apply trigonometric identities, express conic sections algebraically, and solve problems using volume measurements.	Level 4
Secondary Mathematics III-Algebra 2	Students in Secondary Mathematics III will pull together and apply the accumulation of learning they have from previous courses. They will apply methods from probability and statistics to draw inferences and conclusions from data, expand their repertoire of functions to include polynomial, rational, and radical functions, expand their study of trigonometry to include general triangles, and use functions and geometry to create models and solve contextual problems.	Level 3
Secondary Mathematics III-Honors-Algebra 2	Students in Secondary Mathematics III will pull together and apply the accumulation of learning they have from previous courses. They will apply methods from probability and statistics to draw inferences and conclusions from data, expand their repertoire of functions to include polynomial, rational, and radical functions, expand their study of trigonometry to include general triangles, and use functions and geometry to create models and solve contextual problems. Honors students will also use logarithmic and trigonometric functions, build functions from existing functions, extend the domain of trigonometric functions using the unit circle, and prove trigonometric identities. Students completing Secondary Mathematics I, II, and III are prepared for Calculus.	Level 4

Mathematics Instructional Materials

- All materials evaluated in the spring instructional materials review will be evaluated based on the Common Core Standards.
- Publishers are currently working on textbooks that will align with the Common Core.
- Teaching and Learning staff are exploring the possibility of designing an electronic textbook for Secondary Mathematics I, which will be available to all Utah schools.

Assessment

- Operational assessments will be implemented in 2014-2015.
- Staff is continuing to work on a transition plan for 2011-2014.

Supports for Teachers of Mathematics

- Comparative documents for 6th and 9th grade will be available in early spring.
- Professional development for leaders is ongoing.
- Professional development for 6th and 9th grade teachers will be available prior to the beginning of school in fall of 2011.
- In 2011, the Core Academy will be dedicated to Common Core implementation of language arts K-12 and mathematics 6 and 9.
- In 2012, the Core Academy will be dedicated to Common Core implementation of mathematics.
- USOE staff is exploring the possibility of a gradual, state-wide initiative to raise the endorsement level of middle school teachers to address the increased rigor required in the Common Core.

Supports for Gifted Students

- The honors courses for CCSS will be developed over the next two years. Middle grades honors courses will concentrate on depth and the addition of engaging topics. High school honors courses will prepare students for Calculus as seniors without taking a Precalculus class.
- The Common Core will support equitable access to Advanced Placement courses for all students.
- The Common Core will align nicely with International Baccalaureate programs, but alignments have not been completed to date.
- The Common Core impact on Concurrent Enrollment is under discussion.

Supports for Students at Risk

- The Common Core Standards describe the knowledge and skill *all* students need for college and career readiness. Utah is committed to closing achievement gaps through maintenance of high expectations and quality supports that will ensure success for all students.
- Utah's 3 Tier Model of Mathematics Instruction provides a tool for schools and teachers to design and implement supports that will ensure access to the core curriculum for all students.
- Professional development opportunities will include building teacher competence in providing differentiated instruction in mathematics.
- USOE staff is currently working on a model for co-teaching that can be used to support students with disabilities.