



DESE MATHEMATICS AND CURRICULUM UPDATES

**Missouri Council of Teachers of
Mathematics Fall Conference**

December 4, 2010

Missouri Department of Elementary
and Secondary Education

Agenda

- Common Core and Pathways
- Crosswalk and Rollout Plan
- Assessment Updates
- Model Curriculum
- PAEMST
- Questions

Common Core State Standards

- The Missouri State Board of Education adopted the Standards during their June 15, 2010 meeting.
 - The Standards must make up at least 85% of the state's standards in English language arts and mathematics.
- Missouri has no plans to add additional Standards.**

Standards of Mathematical Practice

- NCTM**
- Rest on important processes including:
 - Problem solving, reasoning and proof, communication, representation, and connections.
 - Rest on important mathematical proficiencies including:
 - Adaptive reasoning
 - Strategic competence
 - Conceptual understanding
 - Procedural fluency
 - Productive disposition

Standards of Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Common Core State Standards

The Standards do not:

- dictate curriculum or teaching methods.
- mandate a sequence for instruction.

Organization of the Standards

- **Standards**-define what students should know
- **Clusters** -groups of related standards.
- **Domains**-larger groups of related standards.

Number and Operations in Base Ten 3.NBT

← Domain

Use place value understanding and properties of operations to perform multi-digit arithmetic.

1. Use place value understanding to round whole numbers to the nearest 10 or 100.
2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

Standard →

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CCSS High School Conceptual Categories

- High school Standards specify the mathematics in **conceptual categories** that all students should study to be college and career ready.
 - ① Number and quantity ② Algebra
 - ③ Functions ④ Modeling ⑤ Geometry
 - ⑥ Statistics and Probability
- A (+) symbol indicates additional mathematics that students should learn in order to take advanced/STEM related courses.

Pathways for Designing High School Mathematics Courses

- Models for possible approaches to organizing mathematics content of the mathematics CCSS into coherent and rigorous courses that lead to college and career readiness.
- All CCSS standards (those without +) are found in each pathway. A few (+) advanced STEM standards, are included to increase coherence but not necessarily expected to be addressed on high stakes assessments.

Pathways for Designing High School Mathematics Courses

College and career ready mathematics standards are minimum requirements for all students, but not all students progress uniformly to that goal. Additional support such as the following may be helpful:

- Creating a school-wide community of support for students;
- Providing students a “math support” class during the school day;
- After-school tutoring;
- Extended class time (or blocking of classes) in mathematics; and
- Additional instruction during the summer

Suggestions for Organizing the High School Mathematics Content of the CCSS

Pathways



Traditional

- Algebra I
- Geometry
- Algebra II
- Fourth mathematics course



Integrated

- Mathematics I
- Mathematics II
- Mathematics III
- Fourth mathematics course



Compacted Traditional

- Accelerated 7th Grade
- 8th Grade Algebra I
- Geometry
- Algebra II
- Fourth course Calculus/other collegiate level course



Compacted Integrated

- Accelerated 7th Grade
- 8th Grade Mathematics I
- Mathematics II
- Mathematics III
- Fourth course Calculus/other collegiate level

Pathways Units

- Introduction to the course and list of units in the course
- Unit titles and unit overviews
- Units that show the cluster titles, associated standards, and instructional notes (a critical attribute of the courses and should not be overlooked). **Note:** States and districts should consider the content and units identified for each course and rename if appropriate.

Pathways Units

| Units | Includes Standard Clusters* | Mathematical Practice Standards |
|---|---|--|
| Unit 1 Relationships Between Quantities and Reasoning with Equations | <ul style="list-style-type: none">• Reason quantitatively and use units to solve problems.• Interpret the structure of expressions.• Create equations that describe numbers or relationships.• Understand solving equations as a process of reasoning and explain the reasoning.• Solve equations and inequalities in one variable. | <p>Make sense of problems and persevere in solving them.</p> |

CCSS Assessments-Smarter Balanced Assessment Consortium (SBAC)

- Missouri one of 17 governing states
- SBAC assessments will measure the full range of the CCSS in grades 3 – 8 and 11, including problem-solving and complex thinking
- Assessments will include state-of-the-art, online exams providing more immediate and useful info
- Teachers in participating states will be involved in all stages of item-writing and test development
- Assessment framework study to be conducted to analyze CCSS to determine which skills are to be tested

CCSS Assessments-Smarter Balanced Assessment Consortium (SBAC)

- Required “summative exams”, to be offered twice each school year
- Optional “formative” or “benchmark” exams to provide periodic assessment of progress
- A variety of tools to help teachers use informal, regular assessments of student progress
- http://www.dese.mo.gov/news/2010/sbac_assessment_grant.htm
- Webinars regarding current assessment changes – suspension of PEs

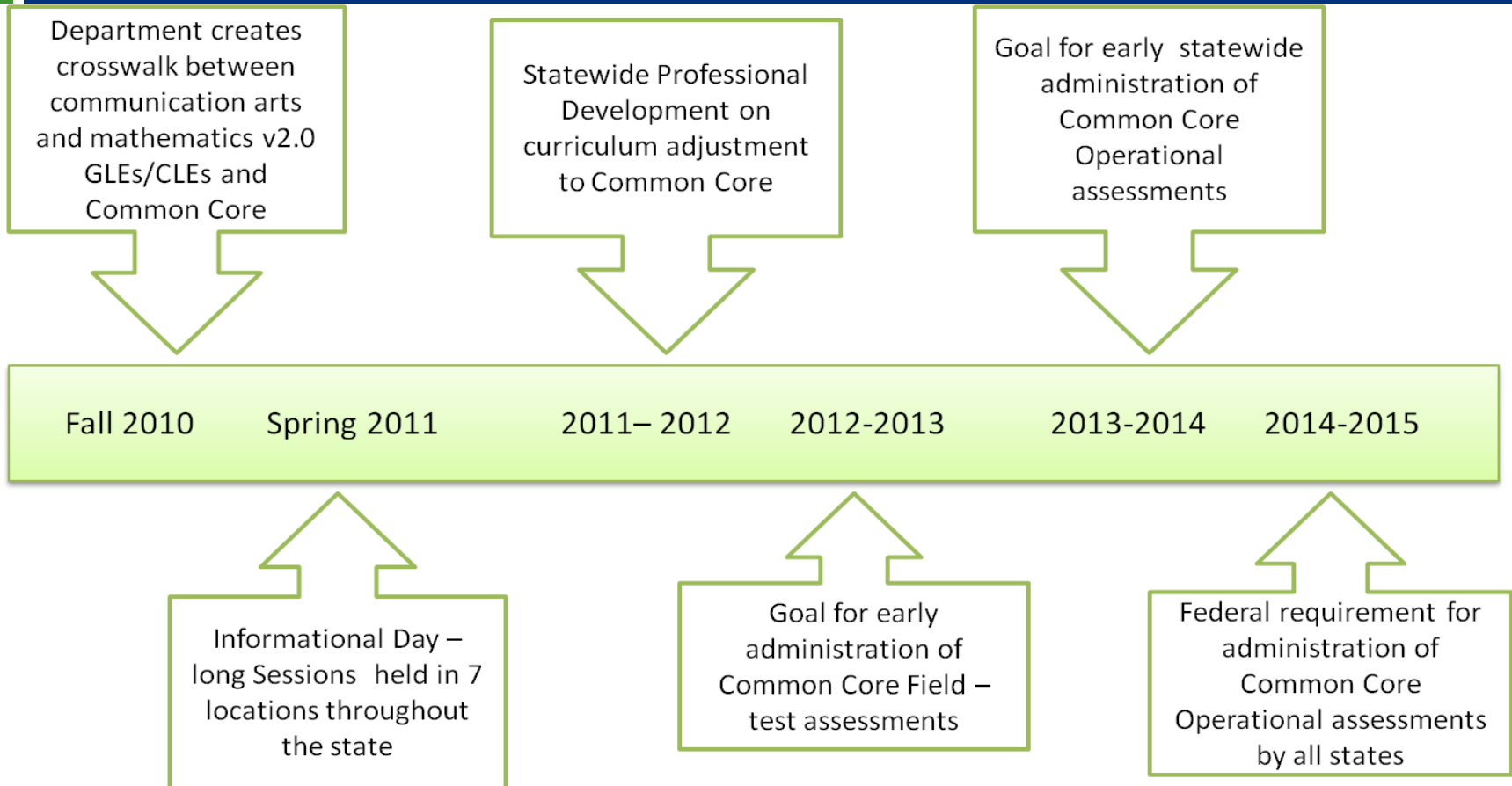
CCSS Crosswalk/Transition Documents

- Analysis/Mapping of Mathematics v2.0GLE/CLEs to the Mathematics CCSS
- Seven regional workshops offered throughout the state beginning in January with focus on commonalities of the two documents--**Liberty, Raytown, Kirksville, Jefferson City, Springfield, Miner, and St. Louis** To register: <http://www.smcaa.org/>
- Transition document to be released following regional workshops
- Professional development

Model Curriculum

- http://www.dese.mo.gov/divimprove/curriculum/curriclistserv_subscribe.htm
- Science, Social Studies, Health/PE, and Fine Arts to begin development in the spring

Missouri Common Core Rollout Schedule



Grade-Level and EOC assessments will continue to be aligned to the v2.0 GLEs/CLEs through the 2012- 2013 school year.

2011 Presidential Award for Excellence in Mathematics and Science Teaching

The 2011 Awards will honor math and science teachers working in **grades 7-12**. (Save your enthusiasm for teachers of grades K-6 for the 2012 Awards).

Awardees receive:

- A citation signed by the President of the United States.
- A paid trip for two to Washington, D.C., to attend a series of recognition events and professional development opportunities.
- A \$10,000 award from the National Science Foundation
- Nominate someone or yourself at www.paemst.org

Questions?

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- Presentation will be posted at
<http://www.dese.mo.gov/divimprove/curriculum/math/presentations.html>