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Common Core State Standards for Mathematics:

An Informational Program for Parents and Caregivers

February 25, 2015

Tompkins County Public Library
Ithaca, NY

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Goals

1. To become familiar with the Common Core State Standards for Mathematics (CCSS-M).

2. To learn ways that families and caregivers can support their children's mathematics learning.

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Definition

The CCSS-M (2010) is a set of voluntary, national guidelines for what each student should know and be able to do in mathematics at the end of each grade, K-12, with the goal being to ensure that students are ready for college and careers.

Developing the Standards

Began with research-based learning progressions detailing what is known today about how students' mathematical knowledge, skill, and understanding develop over time.

Two Types of Mathematics Standards

- Content Standards
- Standards for Mathematical Practice

Structure of the Content Standards

- Grades K-8
- High-School Domains

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Content Standards

- Counting and Cardinality (K)
- Operations and Algebraic Thinking (K-5)
- Number and Operations in Base Ten (K-5)
- Measurement and Data (K-5)
- Geometry (K-HS)
- Number and Operations — Fractions (3-5)
- Ratios and Proportional Relationships (6-7)
- The Number System (6-8)
- Expressions and Equations (6-8)
- Statistics and Probability (6-HS)
- Functions (8-HS)
- Number and Quantity (HS)
- Algebra (HS)
- Modeling (HS)

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COMMON CORE STATE STANDARDS FOR

Mathematics

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Standards for Mathematical Practice

Describe the thinking processes, habits of mind, and dispositions that students need to develop a deep, flexible, usable, and enduring understanding of mathematics.

Standards for 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.

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Connecting the Practices to the Content

The content needs to provide students the opportunity to exhibit the practices and the practices should develop the content.

Major Features of CCSS-M

- College and career readiness expectations
- Rigorous content and applications
- Stress conceptual understanding as well as procedural skills
- Organized around mathematical principles
- Focus and coherence (learn more about fewer topics, based on learning progressions)
- Use of real-world examples to both better understand concepts and to develop modeling skills that can extend to career readiness

CCSS-M is a Set of National Voluntary Standards

NYS adopted these standards (with some minor revisions) in 2010. In fact, the notion of standards for mathematics education is not new. There have been national standards since 1989, and the NYS mathematics standards followed shortly thereafter.

CCSS-M is Not a Curriculum

The standards themselves do not dictate curriculum, pedagogy, or delivery of content. This is the teachers' responsibility.

Algebra & CCSS-M

- The standards accommodate and prepare students for Algebra 1 in 8th grade by including the prerequisites for Algebra 1 in grades K-7. Students who master the K-7 material will be able to take Algebra 1 in 8th grade.
- At the same time, grade 8 standards also include rigorous algebra and will transition students effectively into a full Algebra 1 course.

Having Common Standards Does Not Mean That Students Will Learn Less

CCSS-M was developed using some of the best standards gathered from states across the U.S., as well as from other nations and extensive research on what is needed to succeed in jobs and higher education.

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"The Common Core State Standards represent an opportunity – once in a lifetime – to form effective coalitions for change."

Jere Confrey (August 2010)

(math education researcher)

No Data Collection Requirements are Associated with CCSS-M

Standards define expectations for what **students** should know and be able to do by the end of each grade. The means of assessing students and the data that result from those assessments are up to the discretion of each state and are separate and unique from CCSS-M.

Rationale for the Standards

To address the incoherence and inefficiency of each state having their own standards, in 2009 the National Governors Association (NGA) and Council of Chief State School Officers (CCSSO) commissioned Achieve, The College Board, and ACT to write standards for mathematics (and ELA).

"An important word in 'The Common Core Standards' is the word *common.*"

- Bill McCallum

(lead writer of the CCSS-M)

CCSS-M represents an unprecedented opportunity for collaboration within and across groups of teachers, parents, researchers, mathematicians, curriculum developers, assessment developers, and states to help all children reach their mathematical potential.

"Common Core mathematics is more challenging than the mathematics it will replace. It is also more interesting for students and many times closer to the mathematics that is needed in 21st-century life and work."

– Jo Boaler, "The Stereotypes About Math that Hold Americans Back"

Why do we need the CCSSM?

– Almost 2/3 of students are failing math.

– About 60% of students in community colleges are in remedial math classes, and fewer than 25% earn a degree or credential within 8 years (Silva & White, 2013)

Summary

- Collectively, the CCSS-M define the mathematical knowledge and skills that all students need to succeed in college, career, and life, regardless of where they live.
- CCSS-M poses both major challenges, but also a unique opportunity, to focus energy on improving mathematics education. It's not "business as usual!"

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Premises

- All students should have the opportunity to learn important mathematical concepts and processes with understanding.
- There is no such thing as a “math gene.”
- New learning is built on what students already know.

Ways to Help Students Learn Mathematics

If your child says s/he does not know how to begin a problem, encourage the child to persevere! Ask some specific questions. For example:

- "Tell me something that you have learned. Explain it so that I can understand it."
- "Does this problem remind you (mathematically) of anything else you have done?"
- "Give me an example. Here is a pencil and piece of paper. Show me."

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Ways to Help Students Learn Mathematics

Don't just show your child how to do a problem (in a set of steps) or give them answers. Students are expected to be able to explain what they did and why they did it. If they approach something differently, try to understand what they are doing. (It may connect to something else.) They may be learning content in ways that are different from how you learned.

Ways to Help Students Learn Mathematics

Don’t do your children’s homework for them.

This can deprive them from understanding

or the ability to use the mathematics later.

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Ways to Help Students Learn Mathematics

If you don't know the answer to your child's mathematics question, ask: "Tell me about some of the things you and your teacher have done in class recently."

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Ways to Help Students Learn Mathematics

- Do not tell your child how difficult math was for you!
- Do what you can to create a positive math learning environment. Your child can learn math!
- Celebrate the successes your child is experiencing.

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Ways to Help Students Learn Mathematics

When helping your child with mathematics, situate yourself in a physically non-threatening position. For instance, try sitting next to your child, rather than hovering over the child.

Ways to Help Students Learn Mathematics

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- Encourage your child to ask the teacher questions either during or after class.

- Encourage your child to be persistent; make sure that s/he knows that mathematics requires patience, practice, and time to think and reflect.

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Ways to Help Students Learn Mathematics

Partner with your child's teacher; ask questions such as:

- Where is my child excelling? How can I support these successes?
- What concepts do you think are causing my child the most trouble? How can I help my child improve in this area?
- Are there options provided by the school to help my child?
- Is there a homework hotline or some other resource outside of the classroom for students to ask questions about their homework or what they are learning?

(Source: http://www.cgcs.org/cms/lib/DC00001581/Centricity/Domain/36/ParentGuide_Math_HS_Final.pdf)

Summary

- Let your child have the opportunity to do the thinking involved in solving a problem!
- Keep your involvement with your children positive.
- It is okay to not know the answer to a problem your child brings to you.

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Useful Websites for Parents

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http://www.corestandards.org/what-parents-should-know/

https://www.engageny.org/parent-family-library

http://www.cgcs.org/Page244

http://www.pta.org/parents/content.cfm?ItemNumber=2583

http://youcubed.stanford.edu/why-we-need-common-core-math/