



SPEAK MATH! For Parents

Learn The Lingo and
Join the National Math Conversation

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SHIFTING TO THE MATHEMATICS OF COLLEGE AND CAREER

WHAT IS SHIFTING	WHAT THIS MEANS	HOW THIS IMPACTS STUDENTS
Focus	Classroom time is aimed at a targeted set of essential skills and concepts	Students will learn fewer topics at much greater depth
Coherence	Concepts and skills build within and across grade levels	Students will relate and connect mathematical ideas
Fluency	Speed and accuracy with computation is emphasized	Students will gain facility with basic arithmetic and essential procedures
Deep Understanding	Knowing <i>why</i> is as important as knowing how	Students will read, write, talk, and do mathematics
Application	Relevant connections to mathematics in the real world are prioritized	Students will select and use appropriate methods for a given situation
Dual Intensity	Classroom time balances practicing with understanding	Students will be able to explain the math they use



The Standards for Mathematical Practice

Grades K-12

Mathematically proficient students...	<i>Which means that your child will...</i>
1 Make sense of problems and persevere in solving them.	<ul style="list-style-type: none">• Take time to read and think carefully about a problem• Work hard even when challenged• Work on complex tasks with peers• Build stamina for mathematics• Try different strategies• Be motivated to tackle challenges
2 Reason abstractly and quantitatively.	<ul style="list-style-type: none">• Understand and use the contextual situation of a problem• Identify needed quantities in a problem and use them to compute• Explain what a solution means in the context of the problem• Label quantities appropriately
3 Construct viable arguments and critique the reasoning of others.	<ul style="list-style-type: none">• Justify methods and solutions with clarity• Speak and write about mathematics• Form a logical argument as proof• Discuss mathematical ideas with others• Listen actively to classmates' thinking and analyze the validity of their claims
4 Model with mathematics.	<ul style="list-style-type: none">• Use models such as graphs, drawings, tables, symbols, and diagrams to solve problems• Solve real-world problems using mathematics
5 Use appropriate tools strategically.	<ul style="list-style-type: none">• Estimate an answer before using a tool• Select the right tool for the job• Tools include paper-and-pencil algorithms and formulas
6 Attend to precision.	<ul style="list-style-type: none">• Use correct mathematical vocabulary and symbols• Assess the reasonableness of answers• Decide whether an estimate or an exact answer is needed
7 Look for and make use of structure.	<ul style="list-style-type: none">• Notice, continue, and create patterns• Use patterns to solve problems
8 Look for and express regularity in repeated reasoning.	<ul style="list-style-type: none">• Notice patterns in calculations to create and explain rules and shortcuts• Generalize rules and properties of number to more easily solve problems

HELPING YOUR CHILD SUCCEED IN MATH



- **Regard numeracy as equally important as literacy**
- **Encourage a "growth mindset"**
- **Ask your child probing questions**
- **Value effort and perseverance**
- **Have high expectations**
- **View challenges as an opportunity to learn**
- **Take interest in your child's math learning**
- **Model a confident, proactive approach to problem solving**
- **Work collaboratively with your child**
- **Encourage independence**
- **Speak in a positive manner about math**
- **Promote math as "thinking"**
- **Help your child feel safe in taking chances**
- **Communicate any homework difficulties to the teacher**

- *Don't...allow a "fixed mindset" to take root*
- *Don't...explain exactly what to do, step-by-step*
- *Don't...overemphasize answer-getting*
- *Don't...imply that some people just aren't good at math*
- *Don't...expect that math should "come easy"*
- *Don't...suggest that you aren't capable of offering support*
- *Don't...worry if you are unfamiliar with the math*
- *Don't...complete work for your child*
- *Don't...allow dependence on you as the first resource*
- *Don't...say "I was terrible in math", "This new math makes no sense", or "I haven't done math in twenty years."*
- *Don't...portray math as memorization*
- *Don't...exceed reasonable time limits on homework*
- *Don't...define mathematics solely as arithmetic*

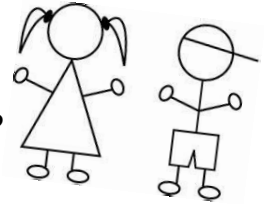


GOOD MATH QUESTIONS TO ASK YOUR CHILD

When your child needs help getting started, you can ask:



- Are there any words in the directions that you don't understand?
- Where do you think you could begin?
- Have you tried reading the problem aloud?
- What do you know so far?
- Can you predict what the solution might look like? What makes you think that?



While your child is working, you can ask:



- How are you organizing your work?
- Why did you decide to...?
- What are you wondering?
- What are you planning to do next?
- Have you noticed any patterns?

When your child has difficulty with math homework, you can ask:



- How is this like what you did in class today?
- Does this remind you of a similar problem that you have solved in the past?
- Is there anything you know that could be used to solve the problem?
- Can you find help in your textbook or notes?
- Can you explain everything you have done so far?
- Can you complete part of the problem?
- Have you tried breaking down the problem?

When your child asks "Is this right?" you can ask:



- Does your answer seem reasonable? How do you know?
- What does your answer mean?
- How can you convince me that your solution makes sense?
- Can you use another approach and compare the solutions?
- Is there more than one possible solution?
- What is being counted? Does your solution need units?

When your child is finished with homework, you can ask:



- What did you learn from this assignment?
- What new questions do you have?
- How do these problems fit with what you have been learning recently?
- Will your strategy always work?
- What would happen if...?

SPEAK MATH GLOSSARY



Common Core State Standards (CCSS)

The Common Core State Standards Initiative is a state-led effort coordinated by the National Governors Association Center for Best Practices (NGA Center) and the Council of Chief State School Officers (CCSSO). After input from educators and leading experts, as well as public feedback on the drafts, the CCSS were released in 2010. Currently 45 states have chosen to adopt the Standards for Mathematics and English Language Arts. Ohio has adopted the CCSS as part of Ohio's New Learning Standards.

With students, parents and teachers all on the same page and working together for shared goals, we can ensure that students make progress each year and graduate from school prepared to succeed in college and in a modern workforce. (Source: www.corestandards.org)

cooperative learning

A teaching strategy that capitalizes on diverse learners of varying backgrounds by using teamwork to boost student achievement. Cooperative learning is most successful when tasks are designed so that students need each other in order to be successful. Each group member serves a specific role which is essential to task completion. There are measures in place for both individual and group accountability.

critical thinking

A key function of education is to produce citizens who are skilled critical thinkers. The ability to analyze information and make informed decisions without being controlled by one's own opinions and biases is a highly regarded skill set in the 21st century workplace.

Critical thinking is that mode of thinking — about any subject, content, or problem — in which the thinker improves the quality of his or her thinking by skillfully analyzing, assessing, and reconstructing it. Critical thinking is self-directed, self-disciplined, self-monitored, and self-corrective thinking. It presupposes assent to rigorous standards of excellence and mindful command of their use. It entails effective communication and problem-solving abilities. (Source: www.criticalthinking.org)

curriculum

A school district's written plan that outlines what students will be taught; it may also include detailed suggestions to teachers for teaching the content. District selected curricular programs and instructional methods are the means to help students achieve standards. Curriculum is locally determined.

formative assessment (assessment for learning)

Formative assessment is used to *monitor student learning* so that teachers can provide ongoing and timely feedback to students. Information gathered helps teachers adjust their instruction to increase their effectiveness. It also helps students become aware of their strengths and weaknesses and set goals. Formative assessments often have little or no point value in terms of grading.

Ohio's New Learning Standards (NLS)

In 2010, Ohio adopted new, higher learning standards for students in Math, English Language Arts, Science and Social Studies. These standards set goals for what students should know and be able to do at each grade. They prepare all kinds of learners for college and skilled jobs. The math and English language arts learning standards are called Common Core State Standards because Ohio and other states— not the federal government—chose to develop them. Ohio education leaders and teachers developed the science and social studies standards. Together the four sets of standards are called Ohio's New Learning Standards. (Source: education.ohio.gov)

Next Generation Assessments (NGA)

Beginning in the 2014-2015 school year, Ohio students will be taking computer-based assessments that measure college and career readiness. They will *require students to demonstrate knowledge through the skills of critical thinking, creativity, communication and collaboration.* (Source: education.ohio.gov)

- Students in grades 3-8 Mathematics will take a Performance Based Assessment after 75% of instruction has been completed, and a summative End of Year exam when 90% of instruction has taken place.
- Students in grades 9-12 Mathematics will be required to take End of Course Exams.
- In tenth grade, students will take a nationally-standardized test of college and career readiness.

Partnership For the Assessment of Readiness of College and Career (PARCC)

A multi-state consortium working together to develop a common set of K-12 assessments in English and Math anchored in what it takes to be ready for college and careers. Ohio is a governing member of PARCC. Another consortium, Smarter Balance Assessment Consortium (SBAC), is also working on developing CCSS assessments for other states who have adopted Common Core.

rigor

The quality of being academically challenging. In mathematics, rigor is comprised of three equally important components: procedural fluency, conceptual understanding, and problem solving applications.

rubric

A document that articulates the expectations for a task and includes specific descriptions (criteria) of different degrees of quality of performance. Rubrics are used to evaluate student work, but also serve to inform students of what is needed to advance to the next level.

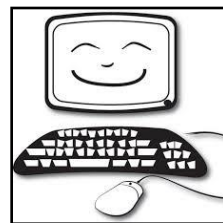
standards

Statements that describe what students are expected to know and be able to do in a particular content area at a given grade level. They are the outcomes of teaching and learning.

summative assessment (assessment of learning)

Summative assessment is used to *evaluate student learning* at the end of an instructional unit by comparing it against some standard or benchmark. It often carries high value in terms of grading.

QUALITY MATH WEBSITES FOR FAMILIES

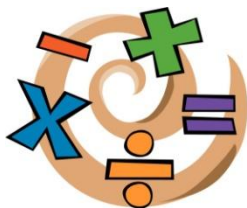


To learn more about the Common Core State Standards for Mathematics:



<http://www.corestandards.org>
<http://www.cgcs.org/Page/244>
<http://pta.org/parents/content.cfm?ItemNumber=2583>
<http://www.ptacommoncore.org>

For Fluency and Practice:



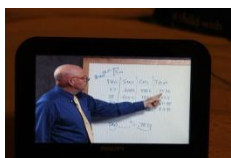
<http://xtramath.org>
<http://www.aplusmath.com/Flashcards/index.html>
http://www.harcourtschool.com/activity/thats_a_fact/english_4_6.html
<http://www.ixl.com/math/>

For Math Games:



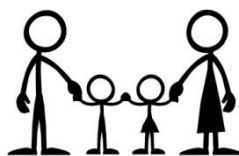
<http://www.mathplayground.com>
<http://www.coolmath.com>
<http://www.funbrain.com/brain/MathBrain/MathBrain.html>
<http://pbskids.org/games/math/>
<http://www.math-play.com>
<http://calculationnation.nctm.org/>

For Lessons and Videos:



<http://www.khanacademy.org>
<http://www.mathtv.com>
<http://mathvids.com>
<http://learnzillion.com/>
<http://studyjams.scholastic.com/studyjams/jams/math/index.htm>

Math for Families:



http://www.figurethis.org/fc/family_corner.htm
<http://pbskids.org/cyberchase/>
<http://mathforum.org/>
<http://www.mathcats.com/>
<http://www.nctm.org/resources/families.aspx>
<http://nlvm.usu.edu/>