Overview

Intent of the Common Core State Standards for Mathematics

The Common Core State Standards Initiative was a state-led process initiated by The Council of Chief State School Officers (CCSSO) and the National Governors Association (NGA). The goal was to create a set of Career and College Readiness Standards in mathematics (and English/Language Arts) so that all students graduate from high school ready for college and/or work. The K-8 standards outline a grade-by-grade roadmap to prepare students for the Career and College Readiness Standards.

Why Common Core State Standards for Mathematics?

Two primary concerns motivated the Common Core State Standards Initiative. First, inconsistent curricular standards, assessments, and proficiency cut scores across the 50 states raised equity issues (Reed, 2009). These different systems often led to wide disparities between student scores on state assessments in reading and math as compared to student performance on the National Assessment of Educational Progress (Schneider, 2007).

Second, there is concern that U.S. students are not leaving school with the skills necessary for success in college or the workforce. Results of international assessments, including PISA (Baldi, Jin, Skemer, Green, & Herget, 2007) and TIMSS (Gonzales, Williams, Jocelyn, Roey, Kastberg, & Brenwald, 2008) indicate that U.S. students do not achieve at the level of students in other countries in mathematics, raising concern about U.S. economic competitiveness in an environment where U.S. students compete with students all across the globe.

Organization of the Common Core State Standards for Mathematics

The Common Core State Standards for Mathematics are organized into content standards and standards for mathematical practice.

Content Standards

The content standards have three levels of organization. The standards define what students should understand and be able to do. The standards are organized into clusters of related standards to emphasize mathematical connections. Finally, domains represent larger groups of related standards. Research-based learning progressions with respect to how students’ mathematical knowledge develops over time were considered when determining the development and grade placement of standards. At the elementary (K-6) level, there are ten content domains. Each grade level addresses four or five domains.
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In addition, at each grade level, the Common Core specifies critical areas for instructional emphasis. For example, in Grade 1, four critical areas are identified for focus:

- Developing understanding of addition, subtraction, and strategies for addition and subtraction within 20.
- Developing understanding of whole number relationships and place value, including grouping in tens and ones.
- Developing understanding of linear measurement and measuring lengths as iterating length units.
- Reasoning about attributes of, and composing and decomposing geometric shapes.

While the total number of standards in the Common Core is generally less than the number of standards in many current state standard documents (NCTM, 2005; Reys, Chval, Dingman, McNaught, Regis, & Togashi, 2007), the emphasis in the Common Core is not simply on a list with fewer standards, but on a list that is also more specific and clear.

This design permits instruction in each grade to focus on fewer concepts and skills in greater depth, while simultaneously building a foundation for the next grade. This is philosophically similar to NCTM’s *Focal Points* (NCTM, 2006). *Focal Points* also seeks to outline a more focused and coherent curriculum. For example, in both the Common Core and *Focal Points*, fractions are not a significant focus of the curriculum until Grade 3; although in both, students decompose two-dimensional figures in previous grades to develop a foundation for fractions in Grade 3. Similarly, probability and statistics are delayed until the middle grades in both the Common Core and *Focal Points*.

The Common Core states that “mathematical understanding and procedural skill are equally important,” but stresses conceptual understanding of key ideas and organizing principles to structure essential big ideas. Similar to other recent recommendations (NCTM, 2000; NMAP, 2008; NRC, 2001), this emphasis on conceptual understanding and procedural skill, along with the standards for mathematical practice (see below), calls for a balanced approach to mathematics instruction and the curriculum.

### Standards for Mathematical Practice

The Common Core State Standards for Mathematics are philosophically similar to and build on NCTM’s Process Standards (NCTM, 2000) and the strands of mathematical proficiency outlined in the National Research Council’s report *Adding it Up* (NRC, 2001). These eight standards for mathematical practice represent the thinking, habits, and processes through which a student engages with the content standards and develops mathematical expertise:

- 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.
Common Core State Standards for Mathematics and GO Math!

Nearly all content standards today, whether articulated by a state, NCTM, or the Common Core, all share one thing in common: they call for a more focused and coherent curriculum that treats topics in a manner that will enable students to develop deep understanding of the content. GO Math! espouses this emphasis on a focused and coherent curriculum that teaches for depth of understanding to help students learn and use the big ideas of mathematics.

But all standards documents share one additional feature: alone they are not enough to ensure that students achieve at higher levels (Fuhrman, Resnick, & Shepard, 2009). In GO Math!, the Common Core standards and Focal Points are merely the starting point. GO Math! represents a comprehensive system of mathematics instruction that provides teachers with the tools and resources they need to help students succeed. GO Math! is research-based and includes multiple instructional approaches, diagnostic assessments linked to differentiated instructional resources, tiered interventions, and technology solutions to support and motivate, to help ensure all students can successfully meet more focused and rigorous mathematics standards.

References


