

## New Features of the CCSS across Grade Levels in Mathematics

**Domains** - Strands that were common in the GLE/GSEs from grades K – 12 (Number and Operations, Geometry and Measurement, Function and Algebraic Thinking, and Data, Statistics and Probability) have been replaced by **domains**, large groups of related standards, that are associated with specific grade spans. The only domain that appears consistently from Kindergarten to grade 8 is Geometry. (It appears as a conceptual category in high school.) Some domains, such as Counting and Cardinality in kindergarten, are addressed by only one grade level.

**Mathematical Practices** – The Common Core State Standards are comprised of two subsets of standards – the Mathematical Content Standards and the Standards for Mathematical Practice. The Standards for Mathematical Practice are meant to be integrated into the instruction of the Content Standards within the K through 12 continuums. These standards specifically define ways in which students should be “engaged” with the subject matter of mathematics. Whereas many of these practices were embedded in our GLE/GSEs, or addressed in our process standards, their importance is highlighted within the Common Core State Standards with detailed explanations at the beginning of the document and repeated references throughout it.

**Fluencies** – Unlike our current GLEs, the CCSS explicitly sets a demand for students to attain a variety of fluencies at specific grade levels. The CCSS document uses the phrase “fast and accurate” to describe the notion of fluency. To further clarify the idea they use an analogy of being fluent in a foreign language – the ability to communicate and understand with automaticity. By adhering to the CCSS, students will receive instruction through a progression of stages surrounding a target concept that ultimately provides them with the knowledge and practice needed to acquire the endpoint goal of fluency.

Grade Level	Required Fluency
K	Add/subtract within 5
1	Add/subtract within 10
2	Add/subtract within 20 <sup>1</sup> Add/subtract within 100 (pencil and paper)
3	Multiply/divide within 100 <sup>2</sup> Add/subtract within 1000
4	Add/subtract within 1,000,000
5	Multi-digit multiplication
6	Multi-digit division Multi-digit decimal operations
7	Solve $px + q = r$ , $p(x + q) = r$
8	Solve simple 2 x 2 systems by inspection

<sup>1</sup> By end of year, know from memory all sums of two one-digit numbers

<sup>2</sup> By end of year, know from memory all products of two one-digit numbers <sup>1</sup>

<sup>1</sup> [http://www.parcconline.org/sites/parcc/files/PARCC\\_Draft\\_ModelContentFrameworksForMathematics\\_0.pdf](http://www.parcconline.org/sites/parcc/files/PARCC_Draft_ModelContentFrameworksForMathematics_0.pdf)

### **Shifts in Focus and/or Grade Level for Grades K – 5**

- Mastery of the basic operations has a concentrated focus in the elementary grades. As such, some work with these operations is pushed down to a lower grade. Specifically, work with division moves from grade 4 to grade 3. This concentration on operations lays the foundation for more demanding mathematical concepts and procedures in middle school.
- Most instruction in fractional concepts is concentrated in grades 3 – 5. Application of these concepts is expected in middle school and beyond.
- Algebraic reasoning is integrated into the Operations and Algebraic Thinking domain. The heavy emphasis that our GLEs had on patterning is no longer present.
- Statistics and probability are not experienced until grade 6.
- Data has a narrower focus in the Common Core and is frequently integrated into number concepts. The variety of graphic representations with respect to data is streamlined.

### **Shifts in Focus and/or Grade Level for Grades 6 – 8**

- Algebraic reasoning becomes a focal point with work centered in the domain of Expressions and Equations. Work within this area is generally ramped up in preparation for rigorous concepts in high school algebra.
- Functions are not introduced until grade 8 and emphasize linear models.
- The introduction of integers as a number set moves from grade 5 to grade 6 and the use of whole number exponents moves down to grade 6 from grade 7.
- The Pythagorean Theorem moves from a locally assessed concept to an area of focus for grade 8.
- Formal proof in geometry is delayed until high school.
- The development of statistical thinking begins in grades 6 and evolves through middle school in greater depth – much more than mean, median, and mode.
- The use of formal counting techniques is delayed until high school.
- Probability concepts have been delayed until grade 7 but quickly progress to working with compound probabilities in that grade level.

### **Shifts in Focus/Rigor for High School**

- Standards are organized by Conceptual Categories as opposed to grade spans or courses.
- Appendix A of the document illustrates an approach to organizing the content into four years of coursework.
- Mastery of the standards identified in the first three years of the coursework suggested in Appendix A will prepare students to be college or career ready.
- Standards bearing the symbol + are essential content for students who select enrollment in advanced courses such as calculus, discrete math, or advanced statistics.
- Standards bearing the symbol \* designate the need to instruct them through the lens of modeling.