

EXECUTIVE SUMMARY

From the Mathematics Common Core Workgroup

23 July 2010

The consensus of the Mathematics group was to add minimal standards to the Common Core State Standards (CCSS) in mathematics. Each sub-group (P-4, 5-8, 9-12) unpacked (analyzed, separated, compared, and elaborated) the standards within the CCSS for Mathematics and provided the following recommendations:

The P-4 group added Prekindergarten standards to provide foundational support for kindergarten standards and beyond and two grade level standards, one at the Kindergarten level and one at the first grade level.

Standards were created for Pre-Kindergarten using the National Council of Teachers of Mathematics (NCTM) Focal Points, an existing draft of the New York State Pre-K Learning Standards, and the 2005 NYS Mathematics Core Curriculum. The recommended Pre-K standards were written and formatted to align with the CCSS Kindergarten standards.

No new standards were recommended as additions to the rest of the grade levels (2-12).

The groups analyzed each grade level of the Mathematics CCSS to determine what topics and expectations are different from the current NYS grade-level expectations. As an example, polynomials no longer appear in grade eight and have been moved to grade nine. CCSS topics and expectations not included in the NYS Mathematics Core Curriculum (Revised 2005) were also noted at each grade level.

Two guidance documents were started during this process to assist NYS educators in developing revised curriculum and improved instructional programs aligned to the CCSS. As the teams analyzed the standards, they created instructional recommendations around the CCSS standards as well as clarification of some of the standards by defining some of the language within the CCSS. The 9-12 team unpacked the standards (there are no grade-level standards at this level) and created outlines for courses titled Integrated Algebra, Geometry, and Algebra 2. These courses incorporate the mathematics that all students should study in order to be college and career ready. Additional mathematics indicated by a (+) in the CCSS, are those that students should learn in a fourth year high school course which prepares them for advanced mathematics courses such as calculus, advanced statistics, or discrete mathematics.

STANDARDS ADDED

PreKindergarten: Please see Appendix A for the recommended set of PreK standards that are aligned with the CCSS Kindergarten standards and are organized by domain.

Grade K:

Develop understanding of ordinal numbers (first through tenth) to describe the relative position and magnitude of whole numbers.

Justification: this has real-world applications, it bridges a Pre-K standard, and it is present in the NCTM Focal Points.

Grade 1:

Recognize and identify coins, their names, and their value.

Justification: this has real-world applications and provides a necessary foundation for the grade 2 standard (2.MD.8 – Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and cent symbols appropriately....).

FURTHER RECOMMENDATIONS

The whole group (P-12) recommends that additional materials and guidance be created to assist the field throughout implementation of the CCSS and the committee's recommendations.

These recommendations are as follows:

- Professional Development will be needed to change and/or improve: teaching methods, higher level questioning techniques, teaching styles, and lesson development need to be revised and adapted to achieve the standards in the Common Core.
- Support materials are needed to help teachers implement the Common Core Standards. These materials need to provide curriculum guidance that unpacks the standards with specific examples that further illuminate the standards and suggested instructional activities. Additionally, these support materials should provide insights and guidance for addressing the needs of:
 - Pre-K through 12 Students, including those with disabilities, who lack adequate fluency, comprehension and pre-requisite skills, but are expected to perform at a specific grade level.
 - English Language Learners (ELL). These materials should include:
 - Examples of mathematical processes as they are carried out in other countries and cultures to provide a bridge for teachers to assist ELL students meet the Common Core Standards.
 - Pedagogical strategies to allow ELL students to gain access to the mathematical language and content contained in the Common Core Standards.
- The following resource materials are needed:
 - Glossary (CCSS glossary is incomplete)
 - Crosswalk from the Mathematics Core Curriculum (Revised 2005) to the Common Core State Standards

- Course Outlines for the High School Level Courses of Study including Pacing Guides and recommended study units
 - Learning Projects that can be replicated across the state and accessible to all (modeled through the use of technology)
 - Sample tasks for further clarification of each standard to illuminate expectations
 - Online videos of mathematical instructional strategies
 - Specific use of dynamic software and graphing calculators to help students make connections and investigate.
-
- Implement a statewide rollout (possibly through the use of technology, but ideally face to face in the Big 5 and regionally through the BOCES for the initial rollout) of the standards and provide some of these resource materials at that time. It is critical we include our higher education partners.
 - The current NYS math course structure (i.e., Integrated Algebra, Geometry, and Algebra 2 & Trigonometry) should remain intact as the CCSS were able to be aligned with this current structure.
 - Due to time restraints, a Committee will need to be commissioned to investigate and recommend how the CCSS advanced mathematics standards, indicated by a (+), might impact additional math courses beyond Algebra 2 & Trigonometry. This Committee sees an opportunity to use the (+) standards to create courses around Advanced Statistics, Pre-Calculus, and other areas.