

A Shared Vision

The Common Core State Standards for Mathematics (CCSSM) build on many years of work by NCTM to define the mathematics that students need to know and be able to do. NCTM became the first national organization to develop content standards in mathematics with its publication of *Curriculum and Evaluation Standards for School Mathematics* (1989), which was subsequently revised and updated as *Principles and Standards for School Mathematics* (2000). More recently, the Council published *Curriculum Focal Points for Prekindergarten through Grade 8 Mathematics: A Quest for Coherence* (2006) to address issues of curricular consistency, coherence, and depth in the school years before high school. In 2009, NCTM published *Focus in High School Mathematics: Reasoning and Sense Making* to articulate a vision for high school mathematics based on reasoning and sense making and encouraging students to develop reasoning habits throughout their mathematics learning. Since 2009, NCTM has published four additional books in the Focus in High School Mathematics series on specific topics (see the section “Additional Resources” in this guide).

While CCSSM was in development, NCTM organized review panels to provide extensive comments and detailed suggestions to the developers and writers on every successive draft after the first. NCTM diligently monitored the development of CCSSM and advised CCSSI throughout the process. In June of 2010, NCTM expressed its support for the goal and intent of the Common Core State Standards for Mathematics. In the summer of 2011, NCTM helped found the Mathematics Common Core Coalition (MC³), consisting of the National Council of Teachers of Mathematics, the National Council of Supervisors of Mathematics (NCSM), the Association of Mathematics Teacher Educators (AMTE), the Association of State Supervisors of Mathematics (ASSM), the Council of Chief State School Officers (CCSSO), the National Governors Association (NGA), the Smarter Balanced Assessment Consortium (SBAC), and the Partnership for the Assessment of Readiness for College and Careers (PARCC). The purpose of MC³ is to provide ongoing review, research, and communication related to the implementation and assessment of CCSSM.

The Council’s Standards and related work have focused on articulating a rich vision for school mathematics. This vision provided guidance for the development of many state and local standards in the 1990s and the first decade of the new millennium. CCSSM builds on that vision by articulating state standards in detailed form that can be immediately adopted and implemented as state-level curricular frameworks. Despite some differences in the specific content emphases and recommendations, CCSSM and NCTM’s standards-related work share a common vision.

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The Curriculum Principle in *Principles and Standards for School Mathematics* (NCTM 2000) succinctly captures this perspective: “A curriculum is more than a collection of activities: it must be coherent, focused on important mathematics, and well articulated across the grades” (p. 14). One common characteristic of the shared vision of CCSSM and NCTM is the need to have a curriculum that is *focused*. CCSSM articulates this need through the identification of *critical areas* for kindergarten through grade 8. These areas overlap with the Curriculum Focal Points that NCTM identifies in *Curriculum Focal Points for Prekindergarten through Grade 8 Mathematics* (NCTM 2006). The focus in both cases is on “big ideas” of mathematical content, with specific content clusters targeted at each grade level. “Big ideas are mathematical statements of overarching concepts that are central to a mathematical topic and link numerous smaller mathematical ideas into coherent wholes” (preface, p. viii, to all volumes in NCTM’s Essential Understanding Series). Research suggests that a focus on “big ideas” and the development of a holistic understanding improve students’ attitudes and engagement in mathematics learning (McREL 2010).

CCSSM and NCTM’s work both emphasize the importance of a coherent curriculum. CCSSM, *Curriculum Focal Points*, and *Focus in High School Mathematics*, like *Principles and Standards for School Mathematics*, emphasize the need for a mathematics curriculum that is more than a collection of topics distributed across the years. Ideas at one grade level must build on those from previous years and form the basis for ideas in later years. Lessons must be designed to engage students with particular mathematical ideas in the service of big ideas. The organization of the content across grades must reflect both what is mathematically meaningful and what is known from research and practice about learning mathematics.

CCSSM and NCTM’s Standards share a view that important mathematics includes both content and mathematical practices or processes. In this guide, the section “Emphasizing Mathematical Practices and Processes” provides extended discussion of CCSSM’s highlighting of mathematical practices and NCTM’s focus on mathematical processes. Although slightly different in their details, these practices and processes represent both essential mathematics to be learned and ways in which students engage in learning mathematics content.

Interpreting the Common Core State Standards

In CCSSM, *critical areas* lie alongside *domains*, which contain *clusters* of specific standards.



Go to <http://www.nctm.org/more4u> and enter the access code printed on this book's title page for a version of Appendix A with live links for NCTM resources.

Understanding the Common Core State Standards for Mathematics includes knowing what CCSSM contains and how CCSSM relates to familiar guidelines and resources. NCTM materials are useful in making sense of CCSSM's identification of *critical areas*, *domains*, and *clusters of standards* and connecting these ideas to NCTM's prior work.

Prekindergarten–Grade 8

CCSSM identifies *critical areas* of mathematics that students are expected to learn each year from kindergarten through grade 8. These are the big ideas of school mathematics at each grade level. (CCSSM does not address prekindergarten mathematics.) More learning time should be devoted to the critical areas than to other content. In other parts of this guide, the *standards*—which CCSSM organizes into *clusters* that fall under *domains*—are tied to critical areas.

The critical areas that CCSSM identifies for kindergarten through grade 8 align closely with the Focal Points identified for these levels in *Curriculum Focal Points*. Both critical areas and Curriculum Focal Points are sets of mathematical ideas that students are expected to learn at an indicated grade level. In CCSSM, clusters typically correspond to NCTM Content Standards and one or more Expectations associated with particular Standards, as identified in *Principles and Standards*. Portions of books in the Essential Understanding Series articulate mathematical understanding that can be useful to teachers who are working to help students meet standards of CCSSM.

For each grade level, *Making It Happen* (NCTM 2010) provides a chart that details these relationships among CCSSM's critical areas, the Content Standards and Expectations in *Principles and Standards*, the Focal Points in *Curriculum Focal Points*, and the mathematics for teachers treated in the Essential Understanding Series. Each chart is organized according to the template below. Appendix A includes all of these charts.

Interpretation Chart for Each Level, Pre-K–Grade 8

CCSSM Critical Area	<i>Principles and Standards</i>	<i>Curriculum Focal Points</i>	Essential Understanding Series
	For information about instructional goals related to the mathematics content in this critical area	For information about how this content appears within an example of a focused curriculum proposed by NCTM	For an articulation of mathematical understanding that is essential for teachers working in this critical area

Interpreting the Common Core State Standards

Conceptual categories contain *domains*, which contain *clusters* of specific standards.

An educator who is trying to interpret CCSSM might be most likely to ask, “If my current curriculum was written with NCTM Standards and Focal Points in mind, how do the Common Core Standards relate to those?” The charts in Appendix A answer that question logically by first identifying a CCSSM critical area and then showing how it relates to *Principles and Standards* (the broadest perspective) and *Curriculum Focal Points* (a more targeted perspective). Therefore, the columns in the chart appear in that order from left to right. Because books in the Essential Understanding Series address the placement and development of the content related to the CCSSM critical area, the chart places them in the last column, as a transition to professional development and implementation issues. To view the chart for a particular grade level, see Appendix A.

Grades 9–12

In contrast to the way in which CCSSM presents expectations for kindergarten–grade 8, it does not provide grade-by-grade or course-by-course standards for high school mathematics, nor does it identify or articulate critical areas. Instead, the standards for grades 9–12 are organized by six conceptual categories: number and quantity, algebra, functions, modeling, geometry, and statistics and probability. For each of these categories, other than modeling, CCSSM arranges specific standards into *domains*, each of which contains *clusters* of specific *standards*. Standards related to modeling are incorporated in other conceptual categories.

Although *Principles and Standards* also arranges its content guidelines by grade band, its organization is quite different from that of CCSSM. *Principles and Standards* presents five overarching Content Standards that are common across the grade bands, and it breaks each Standard into several areas and gives specific Expectations for each area in a particular grade band.

Focus in High School Mathematics provides guidance about ways to integrate reasoning and sense making into instruction and learning in five content strands across grades 9–12. Reasoning and sense making in each of these strands include several characteristic Key Elements.

The following chart illustrates the very different organizations of CCSSM, *Principles and Standards*, and *Focus in High School Mathematics*. None of the three gives specific grade- or course-level recommendations or critical areas for grades 9–12, although possible “pathways,” along which content can be organized, appear in Appendix A of CCSSM.

Interpreting the Common Core State Standards

Organizational Elements of CCSSM, *Principles and Standards*, and *Focus in High School Mathematics*

CCSSM Conceptual Categories	<i>Principles and Standards</i> Content Standards	<i>Focus in High School Mathematics</i> Content Strands
Number and Quantity --- Algebra Functions Modeling Geometry Statistics and Probability	Number and Operations Measurement Algebra <i>(included in Algebra)</i> --- Geometry Data Analysis and Probability	Number and Measurement <i>(included with Number)</i> Algebraic Symbols Functions --- Geometry Probability and Statistics
Organized by— - Domains - Clusters - Standards	Organized by— - Areas - Expectations	Organized by— - Key Elements

Making It Happen provides charts, arranged according to the template below, to show the connections in the content of the three sets of guidelines. Five such charts organize information about conceptual categories identified in CCSSM. (The charts omit modeling, the sixth CCSSM conceptual category, which does not have specific standards.)

Interpretation Chart for Each Conceptual Category, Grades 9–12

CCSSM Cluster of Standards Identified by Domain	<i>Principles and Standards</i>	<i>Focus in High School Mathematics</i>	Essential Understanding Series
	For information about instructional goals related to the mathematics content in this cluster	For information about promoting reasoning and sense making in this cluster	For an articulation of mathematical understanding that is essential for teachers working in this cluster