

SUPPORTING Focused, Rigorous Math Standards

A Simple Guide to the Colorado Academic Standards in Mathematics

Colorado has updated academic standards in 10 content areas for preschool through 12th-grade. The updated standards are focused and rigorous, conveying the prepared graduate competencies and the points of mastery at each grade level that lead to college and career readiness.

Colorado's Mathematics Standards: Key Points

The Colorado Academic Standards for mathematics incorporate the Common Core State Standards for mathematics as well as Colorado specific standards.

- All levels of the math standards outline concepts and skills students should know and be able to do at each grade level. They include:
 - Number sense, properties and operations;
 - Patterns, functions and algebraic structures;
 - Data analysis, statistics and probability; and
 - Shape, dimension and geometric relationships.
- The math standards provide guidance to teachers on how to navigate their way through more advanced topics such as fractions and geometry and do so by maintaining a continuous progression from grade to grade.
- By drawing on the best lessons from high-performing countries, the math standards provide the foundation for local schools and districts to design and focus their particular math curriculum—in an attempt to move away from the “mile wide and inch deep” curricula.

Elementary Expectations

- The grade-by-grade standards provide students with a solid foundation in whole numbers, addition, subtraction, multiplication, division, fractions and decimals—which taken together provide students with a strong foundation for learning and applying more demanding math concepts and procedures, and for moving into robust applications.
- For example, in kindergarten, the standards follow the practices of high-performing countries and the recommendations of the National Research Council's Early Math Panel report by focusing kindergarten work on the number core: learning how numbers correspond to quantities and learning how to put numbers together and take them apart (the beginnings of addition and subtraction). These are complicated ideas that take time to learn—and research suggests that without these critical building blocks in place, math performance will suffer in later years.
- The focus in the elementary standards is comparable to that seen in high-performing countries. It allows students time to master topics by developing procedural fluency as well as conceptual understanding—rather than the current practices by which many students learn enough to get by on the next

About the Common Core Math Standards

The Common Core State Standards in math are the result of a collaborative effort between state departments of education, teachers, experts in a wide array of fields and professional organizations. The standards allow students to become increasingly more proficient in understanding and using math with a steady progression leading to college and career readiness by the end of high school.

The math standards include skills and knowledge – what students need to know and be able to do as well as mathematical practices – and habits of mind that students should develop to foster mathematical understanding and expertise. An organizational framework illustrating this blend is found at the beginning of each grade and each conceptual category in the standards.

The standards are grounded in evidence, including the best work of states and high-performing nations, frameworks developed for the National Assessment of Educational Progress, academic research, curriculum surveys, assessment data on college- and career-ready performance and input from educators at all levels and from a variety of subjects.

Districts, schools and classroom teachers have decision-making responsibilities for curriculum choices. Therefore, the Colorado Academic Standards do not mandate or suggest any curriculum materials.



test, but forget it shortly thereafter, only to review again the following year.

Middle School Expectations

- Middle school standards include ratios and proportional relationships, the number system, expressions and equations, functions, geometry and statistics and probability.
- Having built a strong foundation in elementary school, students are prepared for robust learning in geometry, algebra and probability and statistics in middle school.
- Today's best state standards as well as international models, education research and the insights of professional mathematicians informed these grade-by-grade progressions for middle school.
- The middle school standards provide a coherent and rich preparation for high school math.

High School Expectations

- The high school standards outline skills and concepts including number and quantity, algebra, functions, geometry and statistics and probability.
- The high school standards call on students to practice applying mathematical ways of thinking to real world issues and challenges; they prepare students to think and reason mathematically.
- The high school standards set a rigorous definition of college and career readiness, not by piling topic upon topic, but by demanding that students develop a depth of understanding and an ability to apply math to novel situations, as college students and employees regularly do. The high school standards emphasize mathematical modeling—the use of math and statistics to analyze empirical situations, understand them more fully and make better decisions.

Where can I learn more?

- For more information, visit the CDE standards webpage: www.cde.state.co.us/standardsandinstruction
- To view all CDE fact sheets, visit: www.cde.state.co.us/Communications/factsheetsandfaq