

A Guide to the Colorado Academic Standards



Mathematics

Sixth Grade



Working Together

To support families and teachers in realizing the goals of the Colorado Academic Standards, this guide provides an overview of the learning expectations for sixth grade mathematics and offers some possible learning experiences students may engage in during this school year.

Why Standards?

Created by Coloradans for Colorado students, the Colorado Academic Standards provide a grade-by-grade road map to help ensure students are ultimately successful in college, careers, and life. The standards aim to improve what students learn and how they learn in ten content areas, emphasizing critical-thinking, creativity, problem solving, collaboration, and communication as important life skills in the 21st century.

Mathematics for Middle Schools (6-8)

The mathematics standards throughout middle and high school build on the strong foundation of number developed during elementary school. Students begin to branch into other areas of mathematics such as probability, statistics and algebra. The study of geometry and geometric proof is also formalized during these years. The work of geometric proof is also extended to all parts of mathematics as students construct viable arguments and critique the reasoning of others. In each grade students investigate the world around them through mathematics. They confront problems and persevere in solving them as they strategically apply mathematical tools and techniques.

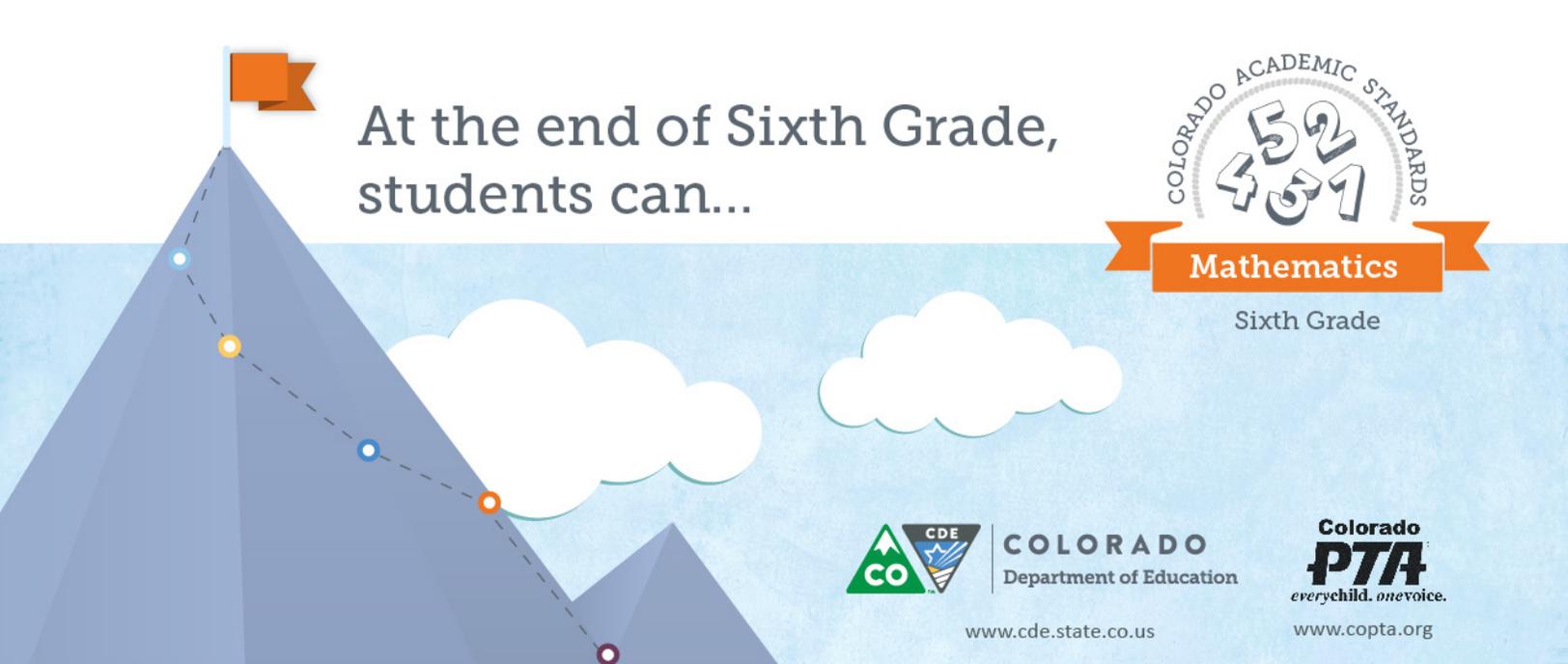
Where can I learn more?

- Contact your school district regarding local decisions related to standards, curriculum, resources, and instruction.
- Colorado Academic Standards Booklets: <http://www.cde.state.co.us/standardsandinstruction/GradeLevelBooks.asp>
- Mary Pittman, Mathematics Content Specialist at 303-854-4560, Pittman_m@cde.state.co.us



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At the end of Sixth Grade,
students can...



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Mathematics Learning Expectations for Sixth Grade

Number Sense, Properties, and Operations

Compare quantities using ratios and unit rates (miles per hour); fluently add, subtract, multiply and divide fractions and decimals; understand the concept of negative numbers and absolute values, extend the number line and coordinate grids to include negative numbers.

Patterns, Functions, and Algebraic Structures

Analyze relationships in tables, graphs, and equations of independent and dependent variables; solve one-variable equations and inequalities; apply the order of operations to evaluate algebraic expressions.

Data Analysis, Statistics, and Probability

Create graphs (dotplots, boxplots, histograms); describe data by examining the center (averages) and spread (variability) of a distribution.

Shape, Dimension, and Geometric Relationships

Understand and apply formulas for the area of triangles and quadrilaterals (parallelograms, trapezoids); find the volume of rectangular boxes; calculate the surface area of three-dimensional figures.

Throughout the Sixth Grade, you may find students...

- Determining a cyclist's speed in miles per hour by creating ratio tables, graphs, and number lines.
- Calculating a better deal (buying a gallon or four quarts of milk) using unit prices or ratios.
- Explaining the connection between a compass on a map and the horizontal and vertical axes on a coordinate grid.
- Recognizing situations involving negative numbers such as temperature, sea level, and bank account balances.
- Designing efficient packaging by creating two-dimensional cutouts and folding them into three-dimensional boxes.
- Distinguishing between the independent and dependent variables within phone plan options.
- Collecting and analyzing data to answer the question: how many hours does the typical sixth grade student sleep?
- Explaining why average home prices are reported as medians rather than means.