



## Mathematics – Grade 6

In sixth grade, students will acquire skills and abilities in five mathematics domains:

### Mathematical Practices

- make sense of problems and persevere in solving them
- reason abstractly and quantitatively
- construct viable arguments and critique the reasoning of others
- model with mathematics
- use appropriate tools strategically
- attend to precision
- look for and make use of structure
- look for and express regularity in repeated reasoning.

### Ratios and Proportional Relationships

- understand the concept of a unit rate  $a/b$  associated with a ratio  $a:b$  with  $b \neq 0$ , and use rate language in the context of a ratio relationship
- use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

### The Number System

- interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions
- fluently divide multi-digit numbers using the standard algorithm
- fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation
- find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12; use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor
- apply number theory concepts, including prime factorization and relatively prime numbers, to the solution of problems
- understand that positive and negative numbers are used together to describe quantities having opposite directions or values; use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation
- understand a rational number as a point on the number line; extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates
- understand ordering and absolute value of rational numbers.

### Expressions and Equations

- write and evaluate numerical expressions involving whole-number exponents
- write, read, and evaluate expressions in which letters stand for numbers
- use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set
- solve real-world and mathematical problems by writing and solving equations of the form  $x + p = q$  and  $px = q$  for cases in which  $p$ ,  $q$ , and  $x$  are all nonnegative rational numbers
- use variables to represent two quantities in a real-world problem that change in relationship to one

another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable; analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.

**Geometry, Statistics and Probability**

- solve real-world and mathematical problems involving area, surface area, and volume
- develop understanding of statistical variability
- summarize and describe distributions.