

# Grade 6

Adopted 2021

## Mathematical Practice Standards

1. Make sense of problems and persevere in solving them. MP.1

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  2. Reason abstractly and quantitatively. MP.2

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  3. Construct viable arguments and critique the reasoning of others. MP.3

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  4. Model with mathematics. MP.4

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  5. Use appropriate tools strategically. MP.5

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  6. Attend to precision. MP.6

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  7. Look for and make use of structure. MP.7

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  8. Look for and express regularity in repeated reasoning MP.8
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**Algebraic Reasoning: Expressions and Equations**

- A. Apply and extend previous understandings of arithmetic to algebraic expressions. **6.AEE.A**
1. Write and evaluate numerical expressions involving whole-number bases and exponents. **6.AEE.A.1**
  2. Write, read, and evaluate expressions in which letters stand for numbers. Apply knowledge of common mathematical terms to move between the verbal and mathematical forms of an expression including expressions that arise from authentic contexts. **6.AEE.A.2**
  3. Apply the properties of operations to generate equivalent expressions and to determine when two expressions are equivalent. **6.AEE.A.3**
- B. Reason about and solve one-variable equations and inequalities. **6.AEE.B**
4. Understand solving an equation or inequality as a process of answering which values from a specified set, if any, make the equation or inequality true. Use substitution to determine which number(s) in a given set make an equation or inequality true. **6.AEE.B.4**
  5. Use variables to represent numbers and write expressions when solving problems in authentic contexts. **6.AEE.B.5**
  6. Write and solve equations of the form  $x + p = q$  and  $px = q$  in problems that arise from authentic contexts for cases in which  $p$ ,  $q$  and  $x$  are all nonnegative rational numbers. **6.AEE.B.6**
  7. Write inequalities of the form  $x > c$  and  $x < c$  to represent constraints or conditions to solve problems in authentic contexts. Describe and graph on a number line solutions of inequalities of the form  $x > c$  and  $x < c$ . **6.AEE.B.7**
- C. Represent and analyze quantitative relationships between dependent and independent variables. **6.AEE.C**
8. Use variables to represent and analyze two quantities to solve problems in authentic contexts. Including those that change in relationship to one another; write an equation to express one quantity in terms of the other quantity. **6.AEE.C.8**

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**Proportional Reasoning: Ratios and Proportions**

- A. Understand ratio concepts and use ratio reasoning to solve problems. **6.RP.A**
1. Understand the concept of a ratio in authentic contexts, and use ratio language to describe a ratio relationship between two quantities. **6.RP.A.1**
  2. Understand the concept of a unit rate in authentic contexts and use rate language in the context of a ratio relationship. **6.RP.A.2**
  3. Use ratio and rate reasoning to solve problems in authentic contexts that use equivalent ratios, unit rates, percents, and/or measurement units. **6.RP.A.3**

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## Numeric Reasoning: Number Systems

- A. Apply and extend previous understandings of multiplication and division to divide fractions by fractions. **6.NS.A**
  - 1. Represent, interpret, and compute quotients of fractions to solve problems in authentic contexts involving division of fractions by fractions. **6.NS.A.1**
- B. Compute fluently with multi-digit numbers and find common factors and multiples. **6.NS.B**
  - 2. Fluently divide multi-digit numbers using accurate, efficient, and flexible strategies and algorithms based on place value and properties of operations. **6.NS.B.2**
  - 3. Fluently add, subtract, multiply, and divide positive rational numbers using accurate, efficient, and flexible strategies and algorithms. **6.NS.B.3**
  - 4. Determine greatest common factors and least common multiples using a variety of strategies. Apply 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. **6.NS.B.4**
- C. Apply and extend previous understandings of numbers to the system of rational numbers. **6.NS.C**
  - 5. 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 authentic contexts, explaining the meaning of zero in each situation. **6.NS.C.5**
  - 6. Represent a rational number as a point on the number line. Extend number line diagrams and coordinate axes to represent points on the line and in the coordinate plane with negative number coordinates. **6.NS.C.6**
  - 7. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. Write, interpret, and explain statements of order for rational numbers and absolute value in authentic applications. **6.NS.C.7**
  - 8. Graph points in all four quadrants of the coordinate plane to solve problems in authentic contexts. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate. **6.NS.C.8**

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## Geometric Reasoning and Measurement

- A. Solve real-world and mathematical problems involving area, surface area, and volume. **6.GM.A**
  - 1. Find the area of triangles, quadrilaterals, and other polygons by composing into rectangles or decomposing into triangles and other shapes. Apply these techniques to solve problems in authentic contexts. **6.GM.A.1**
  - 2. Find the volume of a right rectangular prism with fractional edge lengths by filling it with unit cubes of appropriate unit fraction edge lengths. Connect and apply to the formulas  $V = l w h$  and  $V = b h$  to find volumes of right rectangular prisms with fractional edge lengths to solve problems in authentic contexts. **6.GM.A.2**
  - 3. Draw polygons in the four quadrant coordinate plane given coordinates for the vertices and find the length of a side. Apply these techniques to solve problems in authentic contexts. **6.GM.A.3**
  - 4. Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures, including those from authentic contexts. **6.GM.A.4**

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## Data Reasoning

- A. Formulate Statistical Investigative Questions. **6.DR.A**
  - 1. Formulate and recognize statistical investigative questions as those that anticipate changes in descriptive data related to the question and account for it in the answers. **6.DR.A.1**
- B. Collect and Consider Data. **6.DR.B**
  - 2. Collect and record data with technology to identify and describe the characteristics of numerical data sets using quantitative measures of center and variability. **6.DR.B.2**
- C. Analyze, summarize, and describe data. **6.DR.C**
  - 3. Analyze data representations and describe measures of center and variability of quantitative data using appropriate displays. **6.DR.C.3**
- D. Interpret data and answer investigative questions. **6.DR.D**
  - 4. Interpret quantitative measures of center to describe differences between groups from data collected to answer investigative questions. **6.DR.D.4**