In sixth grade, students will acquire skills and abilities in eight Mathematical Practices and five Mathematical 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 the structure
- ❖ Look for and express regularity in repeated reasoning.

Mathematical Domains

- **Ratios and Proportional Relationships**
  - Understand the concept of a ratio, including the distinctions between part:part and part:whole and the value of ratio; part/part and part/whole. Use ratio language to describe the relationship between two quantities.
  - Understand the concept of a unit rate a/b associated with a ratio a:b with $b \neq 0$, and use rate language, including the use of units 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 the division of fractions by fractions by using models and equations.
  - 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 using prime factorization.
  - Find 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.
  - 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.

- Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane.

- **Expressions and Equations**
  - Write and evaluate numerical expressions involving whole-number exponents.
  - Write, read, and evaluate expressions in which letters stand for numbers.
  - Apply the properties of operations to generate equivalent expressions.
  - Identify when two expressions are equivalent.
  - Understand solving an equation or inequality as answering a question: which values from a specified set, if any, are making an equation or inequality true? Use substitution to determine whether a number makes the equation or inequality true.
  - 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 form $x + p = q$ and $px = q$ for cases in which p, q, and x are all nonnegative rational numbers.
  - Write an inequality of form $x > c$ or $x< c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of this sort have infinitely many solutions. Represent the solutions on a number line.
  - 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**
  - Find the area of right triangles, other triangles, etc., by composing into rectangles or decomposing into triangles.
  - Find the volume of a right rectangular prism, with fractional edge lengths.
  - Draw polygons in a coordinate plane and use coordinates to find side lengths
  - Represent 3-dimensional figures using nets made of rectangles and triangles.
  - Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface areas of these figures

- **Statistics and Probability**
  - Develop an understanding of statistical variability.
  - Recognize a statistical question as one that anticipates variability.
  - Understand that a set of data has certain characteristics that can be calculated. Recognize how the measure of a center for a numerical data set summarizes all of its values with a single number.
  - Summarize and describe distributions. Display numerical data in plots on a number line and summarize numerical data sets in relation to their context