

Grade 6

Adopted 2022

Nebraska Mathematical Processes

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

2. **Reason quantitatively and abstractly and consider the reasoning of others.** MP.2

3. **Create and use representations to organize, record, and communicate mathematical ideas.** MP.3

4. **Analyze mathematical relationships to connect mathematical ideas.** MP.4

5. **Explain and justify mathematical ideas using precise mathematical language in written or oral communication.** MP.5

Grade 6

Number

1. Solve problems and reason with number concepts using multiple representations, make connections within math and across disciplines, and communicate their ideas. 6.CS.1
 1. Numeric Relationships: Students will demonstrate, represent, and show relationships among fractions, decimals, percents, and integers within the base-ten number system. 6.N.1
 - a. Determine common factors and common multiples. 6.N.1.A
 - b. Determine prime factorization of numbers with and without exponents. 6.N.1.B
 - c. Model integers using drawings, words, number lines, models, and symbols. 6.N.1.C
 - d. Determine absolute value of rational numbers. 6.N.1.D
 - e. Compare and order numbers including non-negative fractions and decimals, integers, and absolute values and locate them on the number line. 6.N.1.E
 2. Operations: Students will compute with fractions and decimals accurately. 6.N.2
 - a. Divide multi-digit whole numbers and decimals using an algorithm. 6.N.2.A
 - b. Divide non-negative fractions and mixed numbers. 6.N.2.B
 - c. Evaluate numerical expressions including absolute value and/or positive exponents with respect to order of operations. 6.N.2.C

Ratios And Proportions

2. Students will understand ratio concepts and use ratio reasoning to solve problems. **6.CS.2**
 1. Ratios and Rates: Students will understand the concept of ratios and unit rates, use language to describe the relationship between two quantities, and use ratios and unit rates to solve authentic situations. **6.R.1**
 - a. Determine ratios from concrete models, drawings, and/or words. **6.R.1.A**
 - b. Explain and determine unit rates. **6.R.1.B**
 - c. Find a percent of a quantity as a rate per 100 and solve problems involving finding the whole, given a part and the percent. **6.R.1.C**
 - d. Convert among fractions, decimals, and percents using multiple representations. **6.R.1.D**
 - e. Solve authentic problems using ratios, unit rates, and percents. **6.R.1.E**
 - f. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities. **6.R.1.F**
 2. Represent: Students will represent ratios and rates on the coordinate plane. **6.R.2**
 - a. Identify the ordered pair of a given point in the coordinate plane. **6.R.2.A**
 - b. Plot the location of an ordered pair in the coordinate plane. **6.R.2.B**
 - c. Identify the location of a given point in the coordinate plane (e.g., axis, origin, quadrant). **6.R.2.C**
 - d. Make tables of equivalent ratios relating quantities with whole number measurements. **6.R.2.D**
 - e. Use the constant of proportionality to find the missing value in ratio tables. **6.R.2.E**
 - f. Plot the pair of values from a ratio table on the coordinate plane. **6.R.2.F**
 - g. Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation. **6.R.2.G**

Algebra

3. Solve problems and reason with algebra using multiple representations, make connections within math and across disciplines, and communicate their ideas. **6.CS.3**
 1. Algebraic Processes: Students will apply the operational properties when evaluating expressions and solving equations and inequalities. **6.A.1**
 - a. Recognize and generate equivalent algebraic expressions involving the distributive property and combining like terms. **6.A.1.A**
 - b. Given the value of the variable, evaluate algebraic expressions with non-negative rational numbers with respect to order of operations, which may include absolute value. **6.A.1.B**
 - c. Use substitution to determine if a given value for a variable makes an equation or inequality true. **6.A.1.C**
 - d. Solve one-step equations with non-negative rational numbers using addition, subtraction, multiplication, and division. **6.A.1.D**
 - e. Solve one-step inequalities with whole numbers using addition, subtraction, multiplication, and division and represent solutions on a number line (e.g., graph $3x > 3$). **6.A.1.E**
 2. Applications: Students will solve authentic problems with algebraic expressions, equations, and inequalities. **6.A.2**
 - a. Create algebraic expressions (e.g., one operation, one variable as well as multiple operations, one variable) from word phrases. **6.A.2.A**
 - b. Write equations (e.g., one operation, one variable) to represent authentic situations involving non-negative rational numbers. **6.A.2.B**
 - c. Write inequalities (e.g., one operation, one variable) to represent authentic situations involving whole numbers. **6.A.2.C**

Geometry

4. Solve problems and reason with geometry using multiple representations, make connections within math and across disciplines, and communicate their ideas. **6.CS.4**
 1. Attributes: Students will identify and describe geometric attributes of two-dimensional shapes. **6.G.1**
 - a. Identify and create nets to represent two-dimensional drawings of prisms and pyramids. **6.G.1.A**
 2. Coordinate Geometry: Students will determine location, orientation, and relationships on the coordinate plane. **6.G.2**
 3. Measurement: Students identify geometric attributes that create two- and three-dimensional shapes in order to perform measurements and apply formulas to find area and volume. **6.G.3**
 - a. Determine the area of quadrilaterals and triangles by composition and decomposition of these shapes, as well as applications of properties and formulas. Quadrilaterals include parallelograms and trapezoids. **6.G.3.A**
 - b. Determine the surface area of rectangular prisms and triangular prisms using nets as well as application of formulas. **6.G.3.B**
 - c. Apply volume formulas for triangular prisms. **6.G.3.C**

Data

5. Solve problems and reason with data/probability using multiple representations, make connections within math and across disciplines, and communicate their ideas. **6.CS.5**
 1. Data Collection and Statistical Methods: Students will formulate statistical investigative questions, collect data, and organize data. **6.D.1**
 2. Analyze Data and Interpret Results: Students will represent and analyze the data and interpret the results. **6.D.2**
 - a. Represent data using dot plots, box-and-whisker plots, and histograms. **6.D.2.A**
 - b. Solve problems using information presented in dot plots, box-and-whisker plots, histograms, and circle graphs. **6.D.2.B**
 - c. Find and interpret the mean, median, mode, and range for a set of data. **6.D.2.C**
 - d. Compare the mean, median, mode, and range from two sets of data. **6.D.2.D**
 - e. Compare and interpret data sets based upon their measures of central tendency and graphical representations (e.g., center, spread, shape). **6.D.2.E**
 3. Probability: Students will interpret and apply concepts of probability. **6.D.3**
 - a. Identify a list of possible outcomes for a simple event. **6.D.3.A**
 - b. Describe the theoretical and experimental probability of an event using a fraction, percentage, and decimal. **6.D.3.B**
 - c. Express the degree of likelihood (possible, impossible, certain, more likely, equally likely, or less likely) of simple events. **6.D.3.C**
 - d. Compare and contrast theoretical and experimental probabilities. **6.D.3.D**