

Grade 7

Adopted 2023

Seventh Grade

Math Attributes

Problem-Solving

- P. Learners can analyze information and formulate a flexible, systematic plan to problem-solve authentic situations and reflect on the reasonableness of the solution, making revisions when necessary. [7.MA.P](#)

Connections

- C. Learners can create connections within and across concepts and provide examples of how they relate to other learning and ideas using supporting evidence. [7.MA.C](#)

Reasoning and Proof

- R. Learners can reason logically, citing evidence to evaluate and explain what they see, think, and conclude through exploration and justification. [7.MA.R](#)

Number and Operations

Number Systems

1. Describe the absolute value of a number as its distance from zero on a number line. [7.NO.NS.1](#)
2. Recognize common fractions and decimal equivalencies up to a denominator of 10. Convert a rational number to a decimal using technology. [7.NO.NS.2](#)

Operations

1. Add, subtract, multiply, and divide integers using visual models and properties of operations in multi-step problems, including authentic problems. [7.NO.O.1](#)
2. Add, subtract, multiply, and divide non-negative fractions in multi-step problems, including authentic problems. [7.NO.O.2](#)
3. Add, subtract, multiply, and divide non-negative decimals to the hundredth place in multi-step problems using strategies or procedures, including authentic problems. [7.NO.O.3](#)

Algebraic Reasoning

Ratios and Proportional Relationships

1. Calculate unit rates associated with ratios of rational numbers, including ratios of lengths, areas, and other quantities measured in like or different units. **7.AR.RP.1**
2. Analyze the relationship between the dependent and independent variables of a proportional relationship using graphs and tables. Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, k)$ where k is the unit rate. **7.AR.RP.2**
3. Identify the constant of proportionality in tables, graphs, equations, diagrams, and descriptions of proportional relationships. Represent proportional relationships by an equation of the form $y = kx$, where k is the constant of proportionality, and describe the meaning of each variable (y, k, x) in the context of the situation. **7.AR.RP.3**
4. Use proportional relationships to solve multi-step problems involving ratios, percents, and scale drawings of geometric figures, including authentic problems. **7.AR.RP.4**

Expressions and Equations

1. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions involving variables, integers, and/or nonnegative fractions and decimals with an emphasis on writing equivalent expressions. **7.AR.EE.1**
2. Write and solve equations of the form $px + q = r$ and $p(x + q) = r$, including authentic problems. **7.AR.EE.2**
3. Write and solve one- or two-step inequalities where coefficients and solutions are integers and/or non-negative fractions and decimals, including authentic problems. Graph the solution set of the inequality and interpret it in the context of the problem. **7.AR.EE.3**

Geometry and Measurement (GM)

Area and Volume

1. Describe the relationship between the circumference and diameter of a circle (π). Apply given formulas to calculate the area and circumference of a circle, including authentic problems. [7.GM.AV.1](#)
2. Calculate areas of polygons by composing and/or decomposing them into rectangles and triangles, including authentic problems. Solve problems involving the volume of prisms and right pyramids using nets, including authentic problems. [7.GM.AV.2](#)
3. Solve problems involving the volume of prisms and composite solids, including authentic problems. [7.GM.AV.3](#)

Geometric Figures

1. Draw triangles from given conditions using appropriate tools. Defend whether a unique triangle, multiple triangles, or no triangle can be constructed when given three measures of angles or sides. [7.GM.GF.1](#)
2. Describe the following angle-pair relationships: supplementary angles, complementary angles, vertical angles, and adjacent angles. Solve for an unknown angle in a figure by applying facts about these angles. [7.GM.GF.2](#)

Data, Probability, and Statistics

Data Analysis

1. Identify the strengths and weaknesses of a population sample including bias in the process of the data collection. [7.DPS.D.1](#)
2. Analyze and draw inferences about a population using single and multiple random samples by using given measures of center and variability for the numerical data set. [7.DPS.D.2](#)

Probability

1. Develop a probability model to find probabilities of theoretical events and contrast probabilities from an experimental model. [7.DPS.P.1](#)
2. Develop a probability model to find theoretical probabilities of independent compound events. [7.DPS.P.2](#)