

Course/Grade Level: Grade Eight Math Curriculum

Focus: Students will apply, interpret, and/or analyze mathematical concepts in number sense, algebraic equations, geometry, and data analysis.

M.8.1 Students will define and/or apply concepts in number sense. Students will...

- M.8.1.1 ▲N demonstrate and explain order of operations with rational numbers (evaluate within grouping symbols, evaluate powers to the second or third power, multiply or divide in order from left to right, then add or subtract in order from left to right). **(8.1.4.K2b)**
- M.8.1.2 ▲ generate and/or solve real-world problems with rational numbers using the concepts of these properties to explain reasoning:
a. commutative, associative, distributive, and substitution properties
b. identity and inverse properties of addition and multiplication
(8.1.2.A1a-b)
- M.8.1.3 ▲ identify all the subsets of the real number system [natural (counting) numbers, whole numbers, integers, rational numbers, irrational numbers] to which a given number belongs. **(8.1.2.K2)**
- M.8.1.4 ▲ demonstrate and explain what happens to the product or quotient when:
a. a positive number is multiplied or divided by a rational number greater than zero and less than one
b. a positive number is multiplied or divided by a rational number greater than one
c. a non-zero real number is multiplied or divided by zero
(8.1.1.K5a-c)
- M.8.1.5 ▲N use and explain computational procedures of rational numbers with addition, subtraction, multiplication, and division of integers. **(8.1.4.K2a)**
- M.8.1.6 explain and determine the absolute value of real numbers. (8.1.1K6)
- M.8.1.7 solve for factors and common factors of simple monomial expressions. e.g., $10mn$, $15m$ and $20m$, the common factor will be $5m$ (8.1.4.K3)
- M.8.1.8 demonstrate scientific notation with real numbers. (7.1.1.A1)

M.8.2 Students will use and demonstrate one- and two-step algebraic equations, tables, and graphs in a variety of situations. Students will...

- M.8.2.1 ▲ solve real-world problems with variables, symbols, expressions, one- or two-step equations with rational number coefficients and constants (and rational solutions, intuitively, analytically and graphically). **(8.2.2.A1a, 8.2.2.A2)**
- M.8.2.2 ▲ generate and/or solve one- and two-step real-world problems using computational procedures and mathematical concepts of rational numbers and applications of percents. **(8.1.4.A1a,c)**
- M.8.2.3 ▲ determine if a given graphical, algebraic, or geometric model is an accurate representation of a given real-world situation. **(8.2.4.A2)**
- M.8.2.4 describe the mathematical relationship between ratios, proportions, and percents and how to solve for a missing monomial or binomial term in a proportion. **(8.2.2.K4)**
- M.8.2.5 solve algebraically the number when a percent and a number are given, what percent one number is of another number, and percent of increase or decrease. **(8.2.2.K5)**
- M.8.2.6 generate or solve simple exponential growth or decay of real-life situations. **(HS 1.4.A1e)**

M.8.3 Students will use and demonstrate one- and two-step linear equations, tables, graphs, and coordinate planes in a variety of situations. Students will...

- M.8.3.1 ▲ translate between the numerical, tabular, graphical, and symbolic representations of linear relationships with integer coefficients and constants. **(8.2.3.A3)**
- M.8.3.2 ▲ solve one- and two-step linear equations in one variable with rational number coefficients and constants intuitively and analytically. **(8.2.2.K3a)**
- M.8.3.3 ▲ use the coordinate plane to:
 - a. list several ordered pairs on the graph of a line and find the slope of the line
 - b. recognize that ordered pairs that lie on the graph of an equation are solutions to that equation
 - c. recognize that points that do not lie on the graph of an equation are not solutions to that equation
 - d. determine the length of a side of a figure drawn on a coordinate plane with vertices have the same x- or y- coordinates**(8.3.4.K1a-d)**

M.8.4 Students will define, demonstrate, and apply geometric concepts of the Pythagorean theorem, polygons, and similar and congruent figures in a variety of situations. Students will...

- M.8.4.1 ▲ use the Pythagorean theorem to:
 - a. determine if a triangle is a right triangle
 - b. find a missing side of a right triangle where the lengths of all three sides are whole numbers**(8.3.1.K6a-b)**
- M.8.4.2 ▲ generate and/or solve one- and two- step real-world problems using computational procedures and mathematical concepts with irrational number pi as an approximation. **(8.1.4.A1b)**
- M.8.4.3 ▲ solve real-world problems using the properties of corresponding parts of similar and congruent figures. **(8.3.1.A1a)**
- M.8.4.4 describe the congruency, similarity, and symmetry of geometric figures using transformations. (8.3.3.A3)
- M.8.4.5 identify and describe properties of polygons (concave, convex), solids and plane figures. (8.3.1.K1)

M.8.5 Students will use concepts and procedures of data analysis of central tendencies and probability in a variety of situations. Students will...

- M.8.5.1 ▲ solve and explain the measures of central tendency (mode, median, mean) for a rational number data set. **(8.4.2.K3)**
- M.8.5.2 ▲ compute the probability of a compound event composed of two independent events in an experiment, simulation, or situation. **(8.4.1.K3)**
- M.8.5.3 ▲ predict solutions based on the theoretical probability of a simple event in an experiment or simulation. **(8.4.1.A4a)**