

## Grade 8 Standards

### Algebraic Reasoning: Expressions and Equations (8.AEE)

*8.AEE.A Expressions and Equations Work with radicals and integer exponents.*

- 8.AEE.A.1 Apply the properties of integer exponents using powers of 10 to generate equivalent numerical expressions.
- 8.AEE.A.2 Represent solutions to equations using square root and cube root symbols.
- 8.AEE.A.3 Estimate very large or very small quantities using scientific notation with a single digit times an integer power of ten.
- 8.AEE.A.4 Perform operations with numbers expressed in scientific notation.

*8.AEE.B Understand the connections between proportional relationships, lines, and linear equations.*

- 8.AEE.B.5 Graph proportional relationships in authentic contexts. Interpret the unit rate as the slope of the graph, and compare two different proportional relationships represented in different ways.
- 8.AEE.B.6 Write the equation for a line in slope intercept form  $y = mx + b$ , where  $m$  and  $b$  are rational numbers, and explain in context why the slope  $m$  is the same between any two distinct points.

*8.AEE.C Analyze and solve linear equations and pairs of simultaneous linear equations.*

- 8.AEE.C.7 Solve linear equations with one variable including equations with rational number coefficients, with the variable on both sides, or whose solutions require using the distributive property and/or combining like terms.
- 8.AEE.C.8 Find, analyze, and interpret solutions to pairs of simultaneous linear equations using graphs or tables.

### Algebraic Reasoning: Functions (8.AFN)

*8.AFN.A Define, evaluate, and compare functions.*

- 8.AFN.A.1 Understand in authentic contexts, that the graph of a function is the set of ordered pairs consisting of an input and a corresponding output.
- 8.AFN.A.2 Compare the properties of two functions represented algebraically, graphically, numerically in tables, or verbally by description.
- 8.AFN.A.3 Understand and identify linear functions, whose graph is a straight line, and identify examples of functions that are not linear.

*8.AFN.B Use functions to model relationships between quantities.*

- 8.AFN.B.4 Construct a function to model a linear relationship in authentic contexts between two quantities.
- 8.AFN.B.5 Describe qualitatively the functional relationship between two quantities in authentic contexts by analyzing a graph.

### Numeric Reasoning: Number Systems (8.NS)

*8.NS.A Know that there are numbers that are not rational, and approximate them by rational numbers.*

- 8.NS.A.1 Know that real numbers that are not rational are called irrational.
- 8.NS.A.2 Use rational approximations of irrational numbers to compare size and locate on a number line.

**Geometric Reasoning and Measurement (8.GM)**

**8.GM.A** *Understand congruence and similarity using physical models, transparencies, or geometry software.*

- 8.GM.A.1 Verify experimentally the properties of rotations, reflections, and translations.
- 8.GM.A.2 Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations.
- 8.GM.A.3 Describe the effect of dilations, translations, rotations and reflections on two-dimensional figures using coordinates.
- 8.GM.A.4 Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and/or dilations.
- 8.GM.A.5 Use informal arguments to establish facts about interior and exterior angles of triangles and angles formed by parallel lines cut with a transversal.

**8.GM.B** *Understand and apply the Pythagorean Theorem.*

- 8.GM.B.6 Distinguish between applications of the Pythagorean Theorem and its Converse in authentic contexts.
- 8.GM.B.7 Apply the Pythagorean Theorem in authentic contexts to determine unknown side lengths in right triangles.
- 8.GM.B.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.

**8.GM.C** *Solve mathematical problems in authentic contexts involving volume of cylinders, cones, and spheres.*

- 8.GM.C.9 Choose and use the appropriate formula for the volume of cones, cylinders, and spheres to solve problems in authentic contexts.

**Data Reasoning (8.DR)**

**8.DR.A** *Formulate Statistical Investigative Questions.*

- 8.DR.A.1 Formulate statistical investigative questions to articulate research topics and uncover patterns of association seen in bivariate categorical data.

**8.DR.B** *Collect and Consider Data.*

- 8.DR.B.2 Collect or consider data using surveys and measurements to capture patterns of association, and critically analyze data collection methods.

**8.DR.C** *Analyze, summarize, and describe data.*

- 8.DR.C.3 Analyze patterns of association between two quantitative or categorical variables and reason about distributions to compare groups.

**8.DR.D** *Interpret data and answer investigative questions.*

- 8.DR.D.4 Interpret scatter plots for bivariate quantitative data to investigate patterns of association between two quantities to answer investigative questions.