

Grade 8 CCSS Skills

The Number System

_____ Understand that all numbers have a decimal expansion, and for rational numbers, show that this expansion repeats.

_____ Distinguish between rational and irrational numbers.

_____ Use rational approximations to compare irrational numbers.

_____ Convert a decimal expansion which repeats into a rational number.

_____ Use rational approximations to position irrational numbers on a number line.

Expressions & Equations

_____ Know and use exponent rules.

_____ Use exponent rules to create an equivalent numerical expression.

_____ Solve equations by using square and cubic root symbols.

_____ Know square roots for perfect squares and cube roots for perfect cubes.

_____ Use and understand scientific notation for very large and very small numbers.

_____ Add, subtract, multiply and divide numbers in scientific notation.

_____ Use appropriate units for both very large and very small quantities.

_____ Graph representations of proportional relationships recognizing that slope shows the unit rate.

_____ Compare two different proportional relationships represented in different ways.

_____ Explain slope and determine the equation, $y = mx$ for a line that intersects the origin.

_____ Determine the equation $y = mx + b$ for one which intersects the y -axis at b .

_____ Use similar triangles to explain why the slope is the same between any two distinct points on a non-vertical line in the coordinate plane.

_____ Solve linear equations in one variable.

_____ Give examples of linear equations in one variable with one solution, infinitely many solutions or no solutions.

_____ Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

_____ Solve simultaneous linear equations.

_____ Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs.

_____ Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations.

_____ Solve real-world and mathematical problems leading to two linear equations in two variables.

Functions

- _____ Recognize functions as rules that map each output from exactly one input.
- _____ Compare and contrast two functions both shown in different ways (graphic, tabular, algebraic).
- _____ Identify and distinguish between equations that define linear functions and those that define non-linear functions.
- _____ Generate functions to represent linear relationships between two quantities.
- _____ Describe the functional relationship between two quantities by analyzing a graph.

Geometry

- _____ Experiment to confirm the properties of translations, rotations, and reflections.
- _____ Show that lines are taken to lines, line segments to line segments of the same length, angles to angles of the same measure and parallel lines to parallel lines.
- _____ Identify the congruence of two figures by showing a sequence of transformations that connects them.
- _____ Express the changes on two-dimensional figures caused by dilations, translations, rotations, and reflections with the coordinate system.
- _____ Show similarity of triangles and other 2-D figures through a series of transformations.
- _____ Establish facts about the sum of angles in a triangle and its exterior angles.
- _____ Establish facts about the angles created when parallel lines are cut by a transversal.
- _____ Establish the angle-angle criterion for similarity of triangles.
- _____ Explain a proof of the Pythagorean Theorem and its converse.
- _____ Use Pythagorean Theorem to find unknown dimensions in right triangles.
- _____ Use Pythagorean Theorem to find the distance between two sets of coordinates.
- _____ Recall and use formulas for volume of 3-D objects (cylinders, cones, spheres) to solve real world problems.

Statistics & Probability

- _____ Construct and analyze scatter plots for bivariate measurement data to determine patterns of association.
- _____ Use "best fit" straight lines to identify linear association on scatter plots.
- _____ Solve bivariate measurement data problems using the equation of a linear model.
- _____ Interpret slope and intercept of linear models.
- _____ Understand that a two-way table can be used to display frequency and relative frequency, and to describe associations between the two variables.