Grade 8 Common Core Mathematics

Student "I CAN" Statements

CRITICAL AREA OF FOCUS #1
Formulate and reason about expressions and equations, including modeling an association in bivariate data (relations of two variables) with a linear equation, and solving linear equations and systems of linear equations

I CAN…

- graph proportional relationships and determine slope by comparing changes in y-variables to changes in x-variables
- show, using similar triangles in a coordinate plane, that any two points on a non-vertical line can generate the value m (slope)
- solve linear equations for one variable using properties of equality and algebra
- solve linear equations with rational coefficients, and simplify terms using properties of arithmetic (distributive, associative, commutative)
- solve real-world mathematical problems leading to a linear equation in one variable.
- graph solutions to a system of linear equations in two variables when the lines intersect
- graph a system of linear equations without solution by demonstrating that the system consists of parallel (non-intersecting) lines.
- solve real-world mathematical problems leading to two linear equations in two variables.
- construct and interpret scatter for measurement data to investigate patterns of association between two quantities.
- describe and explain patterns in plots such as clustering, outliers, positive or negative association, linear association, and nonlinear association
- examine and describe associations between two events using data gathered from the same group of participants. (For example, an association students' grades and the amount of television watched)
- express data in two variables using an equation in slope-intercept form (y=*m*x+b)

CRITICAL AREA OF FOCUS #2
Grasp the concept of a function and use functions to describe quantitative relationships

I CAN…

- graph a function as a set of ordered pairs consisting of an input and a single corresponding output.
- compare properties of two functions if each is represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions)

Created for Greater Cleveland Council of Teachers of Mathematics
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- Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a non-vertical straight line; give examples of functions that are not linear (quadratics)
- construct a function to model a linear relationship between two quantities
- describe the functional relationship between two quantities by (qualitatively) analyzing a graph

CRITICAL AREA OF FOCUS #3
Analyze two- and three-dimensional figures and space using distance, angle, similarity, congruence, and applying the Pythagorean Theorem

I CAN…

- use similar triangles to explain why the slope *m* is the same between any two distinct points on a non-vertical line in the coordinate plane
- demonstrate and verify experimentally the properties of rotations, reflections, and translations of lines and other plane figures
- demonstrate 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.
- demonstrate 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 dilations;
- describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.
- present informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criteria for showing similarity of triangles.
- apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real world mathematical problems in two and three dimensions.
- understand and apply the Pythagorean Theorem to determine the distance between two points in a two- or three-dimensional coordinate system.
- recall the formulas for the volumes of cones, cylinders, and spheres and use them to solve real world mathematical problems.