



Alignment to Common Core State Standards for Mathematics - Grade 8

Common Core State Standards for Mathematics	I CAN Learn® Lesson #	I CAN Learn® Lesson Title
THE NUMBER SYSTEM		
8.NS.1. Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.	MPA-124	Classifying Numbers in the Real Number System
	MPA-029	Converting Fractions and Decimals
	HA1-485	Writing Rational Numbers as Decimals or Fractions
8.NS.2. Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). For example, by truncating the decimal expansion of $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.	MPA-065	Estimating Square Roots
EXPRESSIONS AND EQUATIONS		
8.EE.1. Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-3} = 3^{-3} = 1/3^3 = 1/27$.	HA1-810	Simplifying Expressions Using the Multiplication Properties of Exponents
	HA1-815	Simplifying Expressions with Negative and Zero Exponents
	HA1-818	Simplifying Expressions Using the Division Properties of Exponents
8.EE.2. Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.	MPA-064	Finding Square Roots
8.EE.3. Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. For example, estimate the population of the United States as 3×10^8 and the population of the world as 7×10^9 , and determine that the world population is more than 20 times larger.	MPA-021	Converting Between Standard and Scientific Notation
	HA1-235	Applying Scientific Notation
8.EE.4. Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.	HA1-235	Applying Scientific Notation
8.EE.5. Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.	MPA-135	Determining the Slope of a Line
	MPA-140	Examining Linear Equations in Slope-Intercept Form
	MPA-142	Solving Problems With Linear Functions and Direct Variation
	HA1-441	Applications of Functions and Relations Involving Distance, Rate, and Time
8.EE.6. 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; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b .	MPA-135	Determining the Slope of a Line
	MPA-140	Examining Linear Equations in Slope-Intercept Form
	HA1-382	Solving Linear Equations Using the Graphing Calculator
8.EE.7. Solve linear equations in one variable.	MPA-100	Solving Two-Step Equations with Positive Coefficients

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	MPA-165	Solving Two-Step Equations with Negative Coefficients
	MPA-101	Solving Two-Step Equations by Combining Like Terms
	MPA-170	Solving Equations Using the Distributive Property
	MPA-175	Solving Equations with Variables on Both Sides
a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).	MPA-101	Solving Two-Step Equations by Combining Like Terms
	MPA-170	Solving Equations Using the Distributive Property
	MPA-175	Solving Equations with Variables on Both Sides
b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	MPA-100	Solving Two-Step Equations with Positive Coefficients
	MPA-165	Solving Two-Step Equations with Negative Coefficients
	MPA-101	Solving Two-Step Equations by Combining Like Terms
	MPA-170	Solving Equations Using the Distributive Property
	MPA-175	Solving Equations with Variables on Both Sides
8.EE.8. Analyze and solve pairs of simultaneous linear equations.		
a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.	HA1-455	Solving Systems of Linear Equations by Graphing
b. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. For example, $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot simultaneously be 5 and 6.	HA1-460	Solving Systems of Linear Equations by the Substitution Method
c. Solve real-world and mathematical problems leading to two linear equations in two variables. For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.	HA1-465	Solving Systems of Linear Equations by the Addition/Subtraction Method
	HA1-470	Solving Systems of Linear Equations by the Multiply/Add/Subtract Method
	HA1-806	Solving Systems of Linear Equations Using the Graphing Calculator
FUNCTIONS		
8.F.1. Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.	HA1-436	Identifying Relations
	HA1-437	Identifying Relations as Functions
8.F.2. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.	HA1-402	Translating Among Multiple Representations of Functions
8.F.3. Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1, 1), (2, 4) and (3, 9), which are not on a straight line.	MPA-142	Solving Problems With Linear Functions and Direct Variation
	MPA-150	Identifying and Graphing Linear and Nonlinear Functions
8.F.4. Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.	MPA-142	Solving Problems With Linear Functions and Direct Variation
8.F.5. Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	HA1-442	Interpreting Graphs of Functions in Real-Life Situations
	MPA-150	Identifying and Graphing Linear and Nonlinear Functions

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	HA1-437	Identifying Relations as Functions
	HA1-402	Translating Among Multiple Representations of Functions
GEOMETRY		
8.G.1. Verify experimentally the properties of rotations, reflections, and translations: a. Lines are taken to lines, and line segments to line segments of the same length.	MPA-180	Examining Line and Rotational Symmetry
b. Angles are taken to angles of the same measure.	MPA-108	Graphing Translations and Reflections on the Coordinate Plane
c. Parallel lines are taken to parallel lines.	MPA-120	Applying Dilations in the Coordinate Plane
8.G.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; given two congruent figures, describe a sequence that exhibits the congruence between them.	HGM-070	Identifying Relationships: Parallel Lines and Segments
	MPA-180	Examining Line and Rotational Symmetry
	MPA-108	Graphing Translations and Reflections on the Coordinate Plane
	MPA-120	Applying Dilations in the Coordinate Plane
8.G.3. Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	MPA-108	Graphing Translations and Reflections on the Coordinate Plane
	MPA-120	Applying Dilations in the Coordinate Plane
8.G.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 dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.	MPA-108	Graphing Translations and Reflections on the Coordinate Plane
	MPA-120	Applying Dilations in the Coordinate Plane
	MPA-180	Examining Line and Rotational Symmetry
8.G.5. Use 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 criterion for similarity of triangles. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.	MPA-059	Properties of Triangles and Quadrilaterals
	MPA-121	Identifying Similar and Congruent Polygons Using Proportions
	MPA-105	Determining the Measure of Angles Made by Parallel Lines and a Transversal
8.G.6. Explain a proof of the Pythagorean Theorem and its converse.	MPA-066	Solving Problems Using the Pythagorean Theorem
8.G.7. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	MPA-066	Solving Problems Using the Pythagorean Theorem
	HA1-515	Using the Pythagorean Theorem
	HA1-516	Applications of the Pythagorean Theorem
8.G.8. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	HA1-520	Finding the Distance Between Two Points on a Coordinate Plane
8.G.9. Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	MPA-115	Finding the Volumes of Prisms, Cylinders, Pyramids, and Cones Using Models
	MPA-076	Finding the Volume of Cylinders
	HA1-890	Using Models to Derive Formulas for Two-Dimensional Geometric Figures
	HA1-891	Using Models to Derive Formulas for Three-Dimensional Solids
STATISTICS AND PROBABILITY		
8.SP.1. Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	MPA-132	Interpreting and Creating Scatterplots
	HA1-965	Determining the Best-Fitting Line
8.SP.2. Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.	MPA-132	Interpreting and Creating Scatterplots
	HA1-965	Determining the Best-Fitting Line

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8.SP.3. Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.	MPA-132	Interpreting and Creating Scatterplots
	HA1-965	Determining the Best-Fitting Line
	MPA-098	Making Predictions from Graphs and Choosing the Correct Graph
8.SP.4. Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?	MPA-099	Recognizing Misleading Statistics and Graphs
	MPA-840	Interpreting Data

MM1-Fundamentals of Mathematics

MPA- Pre-Algebra

HA1-Algebra

Note: The Grade 8 Standards for Mathematical Content were taken from the Common Core State Standards for Mathematics document dated 6/3/10.