



SuccessMaker®

Massachusetts Curriculum Framework
for Mathematics 2017, Grade 8

Alignments to SuccessMaker
Providing rigorous intervention

Massachusetts Curriculum Framework for Mathematics 2017 Grade 8	Item Code	SuccessMaker Item Description
(8.NS) The Number System		
(8.NS.A) Know that there are numbers that are not rational, and approximate them by rational numbers.		
(8.NS.A.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).	SMMA_LO_02141	Drag rational and irrational values to their correct positions on a number line.
(8.EE) Expressions and Equations		
(8.EE.A) Work with radicals and integer exponents.		
(8.EE.A.1) Know and apply the properties of integer exponents to generate equivalent numerical expressions.	SMMA_LO_01104	Multiply or divide two numbers with exponents (same base, exponents less than 18).
	SMMA_LO_01111	Find the missing exponent in a multiplication or division number sentence.
(8.EE.A.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.	SMMA_LO_01120	Find the square root of a number using a calculator (numbers to 4000).
(8.EE.A.3) Use numbers expressed in the form of a single digit multiplied by an integer power of 10 to estimate very large or very small quantities, and express how many times as much one is than the other.	SMMA_LO_02070	Write very small numbers in scientific notation.
	SMMA_LO_02071	Write very large numbers in scientific notation.
	SMMA_LO_02072	Compare numbers written in scientific notation.
	SMMA_LO_02515	Student do operations in scientific notations and convert to and from scientific notation.

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(8.EE.A.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.	SMMA_LO_01113	Express a number in scientific notation (exponents 1 to 6).
	SMMA_LO_01121	Given the scientific notation, determine the standard notation of a number (the power of 10 has an exponent of 1 to 6).
	SMMA_LO_01122	Find the missing exponent for a number written in scientific notation (the exponent is 1 to 6).
(8.EE.B) Understand the connections between proportional relationships, lines, and linear equations.		
(8.EE.B.5) Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.	SMMA_LO_02073	Graph proportional relationships and interpret the unit rate as the slope of the graph.
	SMMA_LO_02074	Compare a proportional relationship represented as a graph to a proportional relationship represented as a table.
	SMMA_LO_02516	Students write, graph, and compare two linear functions.
(8.EE.B.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 .	SMMA_LO_02075	Use similar triangles to explain why the slope m is the same between any two distinct points on a nonvertical line in the coordinate plane.

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	SMMA_LO_02076	Derive the equation $y = mx$ for a line through the origin, and $y = mx + b$ for a line intercepting the vertical axis at b .
(8.EE.C) Analyze and solve linear equations and pairs of simultaneous linear equations.		
(8.EE.C.7) Solve linear equations in one variable.		
(8.EE.C.7.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).	SMMA_LO_02079	Transform a given multi-step equation into a simpler form.
(8.EE.C.7.b) Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	SMMA_LO_02145	Generate and solve an equation with variables on both sides of the equal sign in a real-world context.
(8.EE.C.8) Analyze and solve pairs of simultaneous linear equations.		
(8.EE.C.8.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.	SMMA_LO_02080	Identify the solution to a system of linear equations by locating the point of intersection on its graph.
(8.EE.C.8.b) Solve systems of two linear equations in two variables algebraically (using substitution and elimination strategies), and estimate solutions by graphing the equations. Solve simple cases by inspection.	SMMA_LO_02133	If a system of linear equations has 0 or infinitely many solutions, solve it by inspection. If it has 1 solution, solve it either algebraically or by graphing.

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(8.EE.C.8.c) Solve real-world and mathematical problems leading to two linear equations in two variables.	SMMA_LO_02134	Model a real-world problem with a system of linear equations. Then solve it by locating the intersection point of the graphs of the two equations.
(8.F) Functions		
(8.F.A) Define, evaluate, and compare functions.		
(8.F.A.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.	SMMA_LO_01811	Given a list of ordered pairs of a relation, identify two ordered pairs that show the relation is not a function.
	SMMA_LO_01812	Given a graph of a relation, identify two ordered pairs on the graph that show the relation is not a function.
	SMMA_LO_01835	Given a set of graphs of relations, identify which graphs represent functions.
	SMMA_LO_01682	Identify the addition or subtraction rule of the function.
	SMMA_LO_01684	Identify the multiplication or division rule of the function.
	SMMA_LO_01722	Identify the one-step rule in the relation or function (addition and subtraction).
	SMMA_LO_01723	Identify the one-step rule in the relation or function (multiplication and division).
	SMMA_LO_01724	Generate a table of values given a rule.
	SMMA_LO_01742	Identify an expression to describe the pattern generated by a table.
	SMMA_LO_01752	Identify a two-step expression to describe the pattern generated by a table (input = 100).
	SMMA_LO_01753	Identify a two-step expression to describe the pattern generated by a table (input = 1000).
	SMMA_LO_01757	Complete an input/output table given a one-step rule; then plot the ordered pairs on a coordinate grid.

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	SMMA_LO_01836	Complete a table of values and graph the equation of a quadratic function.
	SMMA_LO_01837	Complete a table of values and graph the equation of a linear function.
(8.F.A.2) Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	SMMA_LO_02101	Identify the rate of change and the y-intercept of two linear functions, one represented graphically, and one represented either algebraically or in a table.
	SMMA_LO_02102	Identify the rate of change and the y-intercept of two linear functions, one represented in a verbal description, and one represented either graphically or algebraically.
	SMMA_LO_02103	Identify the rate of change and the y-intercept of two linear functions, one represented in a table, and one represented either algebraically or in a verbal description.
(8.F.A.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.	SMMA_LO_01828	Identify if an equation is a linear or exponential function.
	SMMA_LO_01829	Identify if an equation is a linear or quadratic function.
	SMMA_LO_01831	Identify whether graphs are linear or quadratic.
	SMMA_LO_01832	Identify whether graphs are linear or nonlinear.
	SMMA_LO_01833	Identify if an equation is a linear or nonlinear function.
	SMMA_LO_01834	Determine if a table values represents a linear or nonlinear function.
	SMMA_LO_01881	Determine if a table values represents a linear or exponential function.
	SMMA_LO_01882	Determine if a table values represents a linear or quadratic function.
	SMMA_LO_01883	Identify the function that is represented by a table of values (linear and nonlinear).
(8.F.B) Use functions to model relationships between quantities.		

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(8.F.B.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.	SMMA_LO_01806	Complete an input/output table and identify the algebraic equation that describes the one-step rule.
	SMMA_LO_01807	Complete an input/output table and identify the algebraic equation that describes the two-step rule.
	SMMA_LO_02517	Students write and graph a function from a table, intercepting the slope and x- and y-intercepts.
(8.F.B.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.	SMMA_LO_01830	Identify whether graphs are linear or exponential.
(8.G) Geometry		
(8.G.A) Understand congruence and similarity using physical models, transparencies, or geometry software.		
(8.G.A.1) Verify experimentally the properties of rotations, reflections, and translations:	SMMA_LO_00599	Identify a figure as a slide, reflection (flip), or turn of another figure.
	SMMA_LO_00637	Identify congruent angles.
	SMMA_LO_00648	Identify a set of geometric figures that show a reflection (flip).
	SMMA_LO_00665	Identify a reflection, a rotation, and a translation of a geometric figure.
	SMMA_LO_01776	Identify a transformation as a slide, flip, or a turn.

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(8.G.A.1.a) Lines are transformed to lines, and line segments to line segments of the same length.	SMMA_LO_02104	Rotate a figure by 90, 180, or 270 degrees clockwise or counterclockwise on a coordinate plane.
	SMMA_LO_02105	Reflect a figure on a coordinate plane over the x-axis, the y-axis, or the line $y = x$.
	SMMA_LO_02120	Translate a figure on a coordinate plane.
	SMMA_LO_02121	Rotate a figure on a coordinate plane; verify properties of the rotation.
	SMMA_LO_02122	Reflect a figure on a coordinate plane over the x-axis, the y-axis, or the line $y = x$; verify properties of the rotation.
	SMMA_LO_02123	Translate a figure on a coordinate plane; verify properties of the rotation.
(8.G.A.1.b) Angles are transformed to angles of the same measure.	SMMA_LO_02105	Reflect a figure on a coordinate plane over the x-axis, the y-axis, or the line $y = x$.
	SMMA_LO_02105	Reflect a figure on a coordinate plane over the x-axis, the y-axis, or the line $y = x$.
	SMMA_LO_02104	Rotate a figure by 90, 180, or 270 degrees clockwise or counterclockwise on a coordinate plane.
	SMMA_LO_02123	Translate a figure on a coordinate plane; verify properties of the rotation.
	SMMA_LO_02104	Rotate a figure by 90, 180, or 270 degrees clockwise or counterclockwise on a coordinate plane.
	SMMA_LO_02120	Translate a figure on a coordinate plane.
	SMMA_LO_02121	Rotate a figure on a coordinate plane; verify properties of the rotation.
	SMMA_LO_02122	Reflect a figure on a coordinate plane over the x-axis, the y-axis, or the line $y = x$; verify properties of the rotation.

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(8.G.A.1.c) Parallel lines are transformed to parallel lines.	SMMA_LO_02120	Translate a figure on a coordinate plane.
	SMMA_LO_02121	Rotate a figure on a coordinate plane; verify properties of the rotation.
	SMMA_LO_02122	Reflect a figure on a coordinate plane over the x-axis, the y-axis, or the line $y = x$; verify properties of the rotation.
	SMMA_LO_02123	Translate a figure on a coordinate plane; verify properties of the rotation.
(8.G.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. Given two congruent figures, describe a sequence that exhibits the congruence between them.	SMMA_LO_02124	Given two congruent figures, transform one figure so that it lines up with the other. Then, identify the sequence of transformations used.
	SMMA_LO_00600	Identify the figure that is the same size and shape as a given figure.
	SMMA_LO_00606	Identify congruent figures on a geoboard.
(8.G.A.3) Describe the effects of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	SMMA_LO_02125	Reflect a figure, find the coordinates of the reflected figure, and describe the effect of the reflection on the coordinates.
	SMMA_LO_02142	Determine the algebraic expression used to find the coordinates of the image of a figure under a dilation with the origin as the center of dilation.
	SMMA_LO_01736	Determine the missing coordinate of a vertex of a triangle in a transformation.
(8.G.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 dilations. Given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.	SMMA_LO_00645	Identify the polygon that is not similar to the others (counterexample)

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	SMMA_LO_00649	Identify the figure that is not similar to the others. (simple shapes, counterexample)
	SMMA_LO_00847	Identify similar triangles or rectangles on a geoboard.
	SMMA_LO_00610	Identify similar polygons.
	SMMA_LO_00618	Identify two figures as being similar, congruent, or neither.
(8.G.A.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.	SMMA_LO_00672	Establish that alternate interior angles are congruent for parallel lines.
	SMMA_LO_02126	Arrange statements to write a proof of a fact about either the angle sum or the exterior angle of a triangle.
	SMMA_LO_02129	In a figure in which parallel lines are cut by a transversal, identify the transformations that would line one angle up with another angle. Then, describe the relationship between the two angles.
	SMMA_LO_02130	Determine whether or not a diagram gives enough information to determine whether or not two triangles are similar. If so, identify the triangles as similar or not similar.
	SMMA_LO_00635	Count the points of intersection of two or more lines (0 to 5 intersection points).
(8.G.B) Understand and apply the Pythagorean Theorem.		
(8.G.B.6.a) Understand the relationship among the sides of a right triangle.	SMMA_LO_02132	Explain a proof of the converse of the Pythagorean Theorem.
(8.G.B.7) Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	SMMA_LO_01854	Find the measurement of the hypotenuse using the Pythagorean theorem. (2D)

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(8.G.B.8) Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	SMMA_LO_02100	Given two points on a coordinate grid, draw a right triangle whose hypotenuse connects the two points. Then use the Pythagorean Theorem to find the distance between the two points.
(8.G.C) Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.		
(8.G.C.9) Know the formulas for the volumes of cones, cylinders, and spheres, and use them to solve real-world and mathematical problems.	SMMA_LO_00839	Use a formula to find the volume of a cylinder.
	SMMA_LO_00844	Use a formula to find the volume of a cone or a sphere.
(8.SP) Statistics and Probability		
(8.SP.A) Investigate patterns of association in bivariate data.		
(8.SP.A.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.	SMMA_LO_01222	Identify positive, negative, or no association for sets of actual data.
(8.SP.A.3) Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.	SMMA_LO_02143	Choose an approximation based on a trend line for bivariate data.