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Massachusetts Curriculum Framework
for Mathematics 2017, Grade 6

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Massachusetts Curriculum Framework for Mathematics 2017 Grade 6	Item Code	SuccessMaker Item Description
(6.RP) Ratios and Proportional Relationships		
(6.RP.A) Understand ratio and rate concepts and use ratio and rate reasoning to solve problems.		
(6.RP.A.1) Understand the concept of a ratio including the distinctions between part:part and part:whole and the value of a ratio; part/part and part/whole. Use ratio language to describe a ratio relationship between two quantities.	SMMA_LO_01712	Identify the ratio.
	SMMA_LO_01825	Write a ratio in three different forms.
(6.RP.A.2) Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship, including the use of units.	SMMA_LO_00830	Find the unit price of an item (products 2 x 6 to 25 x 32).
	SMMA_LO_02510	Calculate and compare unit rates involving decimals to the hundredths.
	SMMA_LO_02114	Identify two unit rates for a given word problem.
(6.RP.A.3) Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.	SMMA_LO_02510	Calculate and compare unit rates involving decimals to the hundredths.
(6.RP.A.3.a) Make tables of equivalent ratios relating quantities with whole-number measurements. Find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.	SMMA_LO_02115	Find missing values in a table that represents a proportional relationship, and plot the pairs of values on the coordinate plane.
	SMMA_LO_02116	Complete a comparison statement based on the ratios in two tables.
	SMMA_LO_02194	Represent paired data on a scatterplot.
(6.RP.A.3.b) Solve unit rate problems, including those involving unit pricing, and constant speed.	SMMA_LO_00842	Solve time and distance problems (whole numbers).
	SMMA_LO_01284	Solve a proportion problem in context.
	SMMA_LO_01575	Given a rate and a model, find a distance.

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	SMMA_LO_01625	Find the number of hours worked given the hourly rate and total earned.
	SMMA_LO_01627	Find the amount of an ingredient needed to make two, three or four times a recipe.
	SMMA_LO_01630	Find the total money earned, given the number of hours worked and the hourly rate.
	SMMA_LO_01635	Solve a problem in context using proportions.
	SMMA_LO_00270	Find a percent of a money amount ($0.80 to $10.80).
	SMMA_LO_00275	Find a percent of a number (the percent is greater than or equal to 100).
(6.RP.A.3.c) Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30 / 100 times the quantity); solve problems involving finding the whole, given a part and the percent.	SMMA_LO_00276	Find the percent given the whole and the part.
	SMMA_LO_00277	Find the whole given the percent and the part.
	SMMA_LO_01713	Determine the percent (100 total items).
	SMMA_LO_01714	Express a fraction as a percent (denominator is 100).
	SMMA_LO_02509	Calculate and compare percents.
	SMMA_LO_01114	Identify equivalent representations of numbers.
(6.RP.A.3.d) Use ratio reasoning to convert measurement units within and between measurement systems; manipulate and transform units appropriately when multiplying or dividing quantities.	SMMA_LO_02117	Convert measurement units either by making a table or by multiplying by a unit rate.
(6.NS) The Number System		

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(6.NS.A) Apply and extend previous understandings of multiplication and division to divide fractions by fractions.		
(6.NS.A.1) Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.	SMMA_LO_00487	Divide fractions; simplify if necessary.
	SMMA_LO_00491	Divide a fraction by a mixed number; simplify if necessary.
	SMMA_LO_00492	Divide a whole number by a fraction.
	SMMA_LO_00502	Divide a mixed number by a whole number; simplify if necessary.
	SMMA_LO_00511	Identify the equivalent expression for a fraction, whole number, or a mixed numbers being divided by a fraction, a whole number, or a mixed number.
	SMMA_LO_00512	Divide fractions; simplify.
	SMMA_LO_01788	Divide a fraction by a fraction; simplify if necessary.
	SMMA_LO_01789	Divide a mixed number by a fraction; simplify if necessary.
	SMMA_LO_01790	Divide a mixed number by a mixed number; simplify if necessary.
(6.NS.B) Compute fluently with multi-digit numbers and find common factors and multiples.		
(6.NS.B.2) Fluently divide multi-digit numbers using the standard algorithm.	SMMA_LO_00304	Divide using the long division algorithm (three-digit number, two-digit divisor, remainder).
	SMMA_LO_01754	Extend an iterative pattern.
	SMMA_LO_00301	Estimate the quotient in a long division problem (three-digit dividend, two-digit divisor, remainder).
(6.NS.B.3) Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	SMMA_LO_00226	Align the decimal numbers for a vertical addition problem; then solve (to thousandths).
	SMMA_LO_00228	Align the decimal numbers for a vertical subtraction problem; then solve (to thousandths).

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	SMMA_LO_00233	Align the decimal numbers in a vertical subtraction problem; then solve (decimals to thousandths).
	SMMA_LO_00234	Multiply decimals (to thousandths x hundredths).
	SMMA_LO_00243	Subtract decimals with regrouping (to ten-thousandths).
	SMMA_LO_00244	Multiply decimals (to ten-thousandths x ten-thousandths).
	SMMA_LO_00247	Move the decimal point in the divisor and dividend in a long division problem.
	SMMA_LO_00248	Divide a decimal by a whole number.
	SMMA_LO_00249	Move the decimal point in the divisor and dividend in a long division problem; then find the quotient.
	SMMA_LO_01118	Find a decimal number that is either greater than or less than two decimal numbers.
	SMMA_LO_01785	Add the decimal numbers provided on a data table.
	SMMA_LO_01786	Subtract the decimal numbers provided on a data table.
(6.NS.B.4) Use prime factorization to find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two relatively prime numbers.	SMMA_LO_01108	Given the prime factorization of two numbers, find the common multiple.
	SMMA_LO_01110	Find the greatest common factor for two to three numbers.
	SMMA_LO_01112	Find the least common multiple of two or three numbers.
	SMMA_LO_01087	Using a factor tree, find the prime factors of a number (2 to 32).
	SMMA_LO_01088	Identify a common factor of two numbers (4 to 81).
	SMMA_LO_01096	Identify the common multiples for two to three numbers (2 to 20).

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(6.NS.C) Apply and extend previous understandings of numbers to the system of rational numbers.		
(6.NS.C.5) Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, and positive/negative electric charge). Use positive and negative numbers (whole numbers, fractions, and decimals) to represent quantities in real-world contexts, explaining the meaning of zero in each situation.	SMMA_LO_00804	Read the temperature on a thermometer to nearest degree -10 to 10 degrees).
	SMMA_LO_01314	Read and interpret data in a table to determine the wind chill temperature.
	SMMA_LO_01315	Read and interpret data in a table to determine the time it would take for skin to freeze.
	SMMA_LO_02066	Use positive and negative numbers together to represent quantities having opposite directions or values.
	SMMA_LO_00127	Evaluate -a(a + b), where 9 < a < 19, 1 < b < 9.
	SMMA_LO_00768	Read a thermometer to the nearest 10 degrees (Fahrenheit).
(6.NS.C.6) Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.		
(6.NS.C.6.a) Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., –(–3) = 3, and that zero is its own opposite.	SMMA_LO_01518	Evaluate the expression -(-a), were a has values 1 to 99.

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(6.NS.C.6.b) Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.	SMMA_LO_02108	Given two points, describe how the points are related: reflected across the x-axis, reflected across the y-axis, or reflected across both axes.
(6.NS.C.6.c) Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.	SMMA_LO_00101	Locate the missing integer on a number line (-3 to -12).
	SMMA_LO_01809	Graph a set of ordered pairs from a table on a coordinate plane (Quadrant I).
	SMMA_LO_01810	Graph a set of ordered pairs from a table on a coordinate plane.
(6.NS.C.7) Understand ordering and absolute value of rational numbers.	SMMA_LO_01102	Determine the least or greatest integer (-10 to 10).
(6.NS.C.7.a) Interpret statements of inequality as statements about the relative positions of two numbers on a number line diagram.	SMMA_LO_00209	Compare decimals (to hundredths) to benchmark fractions.
	SMMA_LO_02110	Complete statements of order for rational numbers in real-world contexts.
(6.NS.C.7.b) Write, interpret, and explain statements of order for rational numbers in real-world contexts.	SMMA_LO_02109	Compare rational numbers in real-world contexts.
	SMMA_LO_02110	Complete statements of order for rational numbers in real-world contexts.
(6.NS.C.7.c) Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.	SMMA_LO_01823	Identify absolute value as a distance from zero on a number line.
	SMMA_LO_01824	Evaluate the absolute value of a number.

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(6.NS.C.7.d) Distinguish comparisons of absolute value from statements about order.	SMMA_LO_02111	Compare the absolute values of positive and negative quantities in a real-world situation.
(6.NS.C.8) Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.	SMMA_LO_02112	Graph points on a coordinate plane based on a real-world context.
	SMMA_LO_02113	Find distances between points with the same first coordinate or the same second coordinate by using coordinates and absolute value.
(6.EE) Expressions and Equations		
(6.EE.A) Apply and extend previous understandings of arithmetic to algebraic expressions.		
(6.EE.A.1) Write and evaluate numerical expressions involving whole-number exponents.	SMMA_LO_01098	Give the value of a number (1 to 10) raised to a power (1 to 5).
	SMMA_LO_01100	Match expressions with repeated factors to numbers in exponential form to create equations.
(6.EE.A.2) Write, read, and evaluate expressions in which letters stand for numbers.		
(6.EE.A.2.a) Write expressions that record operations with numbers and with letters standing for numbers.	SMMA_LO_01759	Identify the expression that is a translation of the written phrase.
	SMMA_LO_01815	Identify the written phrase that is a translation of a expression or inequality.
	SMMA_LO_01816	Translate an expression into a written phrase (two-step).
	SMMA_LO_02056	Write expressions that record operations with numbers and variables.

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(6.EE.A.2.b) Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, and coefficient); view one or more parts of an expression as a single entity.	SMMA_LO_02057	Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient).
(6.EE.A.2.c) Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).	SMMA_LO_01683	Given the value for the variable, evaluate an addition expression (sums 4 to 12).
	SMMA_LO_01685	Evaluate an expression with variables using substitution and a value chart (addition, sums to 18).
	SMMA_LO_01739	Evaluate the expression mx + c or mx - c.
	SMMA_LO_01740	Evaluate an expression within a context (multiplication).
	SMMA_LO_01755	Generate a table of values given a one-step rule.
	SMMA_LO_00129	Identify an equivalent expression for a x (b + c) with variables.
(6.EE.A.3) Apply the properties of operations to generate equivalent expressions.	SMMA_LO_02059	Apply the properties of operations to generate equivalent expressions.
	SMMA_LO_01090	Use the commutative and associative properties of addition to find the missing number.
(6.EE.A.4) Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).	SMMA_LO_02060	Choose all expressions that are equivalent to a given expression.
(6.EE.B) Reason about and solve one-variable equations and inequalities.		

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(6.EE.B.5) Understand solving an equation or inequality as a process of answering a question: Which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.	SMMA_LO_00357	Represent solutions for one-variable, one-step equations and inequalities on number lines.
	SMMA_LO_02061	Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
(6.EE.B.6) Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.	SMMA_LO_02062	Write an expression to represent a real-world problem, using variables to represent numbers.
	SMMA_LO_02511	Write expressions from words.
(6.EE.B.7) Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.	SMMA_LO_00356	Solve for a or c in a/b + c/b = d/b (sums 2/3 to 11/12).
	SMMA_LO_00359	Solve for a or b in a ÷ b = c (combinations 2 ÷ 10 to 5 ÷ 12).
	SMMA_LO_00361	Solve for a or b in a ÷ b = c (combinations 6 ÷ 10 to 9 ÷ 12).
	SMMA_LO_00363	Solve for a or b in a x b = x (products 2 x 10 to 12 x 12).
	SMMA_LO_00365	Solve for a or b in a ÷ b = c (combinations 6 ÷ 20 to 9 ÷ 90, multiples of 10).
	SMMA_LO_00366	Solve for a or b in a x b = x (products 2 x 20 to 12 x 90, multiples of 10).
	SMMA_LO_00367	Solve for a or b in a + b = c (decimals to tenths, no regrouping).
	SMMA_LO_00368	Solve for a or b in a - b = c (decimals to tenths, regrouping).
	SMMA_LO_00369	Solve for a or b in a x b = c (products from 0.2 x 0.6 to 0.9 x 0.9).
	SMMA_LO_00370	Solve for a or b in a ÷ b = c (combinations 0.6 ÷ 0.6 to 0.9 ÷ 0.9).

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	SMMA_LO_00371	Solve for a, b, or c in a ÷ b/c = d/e (combinations to 12 ÷ 12).
	SMMA_LO_00373	Solve for a or b in a + b = c (decimals to hundredths).
	SMMA_LO_00374	Solve for a or b in a - b = c (decimals to hundredths, regrouping).
	SMMA_LO_00376	Solve for a or b in a x b = c (products from 0.02 x 0.13 to 0.09 x 0.19).
	SMMA_LO_00378	Solve for a or b in a ÷ b = c (up to 4-digit decimals).
	SMMA_LO_00379	Solve for a in a + b = c or a - b = c in steps (whole number sums and differences 2 to 20).
	SMMA_LO_00380	Solve for x in ax = c in steps (products 4 x 4 to 9 x 10).
	SMMA_LO_00381	Complete the steps to solve for a in a ÷ b = c (combinations 4 x 4 to 9 x 10).
	SMMA_LO_01080	Identify related multiplication and division number sentences that can be used to solve a problem.
	SMMA_LO_01688	Solve a one-step equation (subtraction).
	SMMA_LO_01690	Solve a one-step equation (multiplication).
	SMMA_LO_01692	Solve a one-step equation (division).
	SMMA_LO_01743	Solve a one-step equation in context (addition, two-digit whole numbers).
	SMMA_LO_01744	Solve a one-step equation in context (subtraction, two-digit whole numbers).
	SMMA_LO_01745	Solve a one-step equation in context (division, two-digit whole numbers).
	SMMA_LO_01747	Solve a one-step equation in context (division, two-digit whole numbers).
	SMMA_LO_01795	Solve for a in ba/c = d by multiplying by the reciprocal.
	SMMA_LO_01796	Solve one-step equations (addition and subtraction, fractions).
	SMMA_LO_01797	Solve a one-step equation (multiplication, decimals).
	SMMA_LO_01798	Solve for a in a/b = c.
	SMMA_LO_01847	Solve a one-step equation (fractions, multiplication and division).

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	SMMA_LO_01868	Solve a one-step equation (fractions, addition and subtraction).
	SMMA_LO_01813	Identify the one-step equation that is a translation of the written phrase within a context.
(6.EE.B.8) Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.	SMMA_LO_02064	Write an inequality of the form x > c or x < c to represent a constraint in a real-world problem.
	SMMA_LO_02065	Write an inequality of the form x > c or x < c to represent a constraint in a real-world problem. Then represent the solution on a number line.
	SMMA_LO_02511	Write expressions from words.
(6.EE.C) Represent and analyze quantitative relationships between dependent and independent variables.		
(6.EE.C.9) Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.	SMMA_LO_01741	Write an equation that represents the relationship between independent and dependent quantities from a table.
	SMMA_LO_01750	Complete a table given a two-step rule (single-digit whole numbers).
	SMMA_LO_01751	Complete a table given a two-step rule (whole numbers).
	SMMA_LO_01756	Generate a table of values given a two-step rule.
	SMMA_LO_02195	Identify independent and dependent quantities from tables and graphs

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	SMMA_LO_01758	Complete an input/output table given a two-step rule; then plot the ordered pairs on coordite grid.
	SMMA_LO_02139	Make a table and a graph when given a rule in the form y = ax or y = x + a.
(6.G) Geometry		
(6.G.A) Solve real-world and mathematical problems involving area, surface area, and volume.		
(6.G.A.1) Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.	SMMA_LO_00508	Multiply mixed numbers to determine the area of a rectangle or triangle; simplify if necessary.
(6.G.A.2) Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = lwh$ and $V = bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.	SMMA_LO_00667	Identify geometric solids (prisms, pyramids, cones, or spheres).
(6.G.A.4) Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface areas of these figures. Apply these techniques in the context of solving real-world and mathematical problems.	SMMA_LO_00664	Identify the set of faces for a geometric solid.
	SMMA_LO_00675	Identify the net for a geometric solid.
	SMMA_LO_01772	Identify the net that forms a three-dimensional solid.
	SMMA_LO_00632	Identify faces, edges, and vertices of solids.
	SMMA_LO_00643	Count the vertices, edges, or faces of a prism or pyramid.

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	SMMA_LO_00652	Complete sentences about bases, faces, edges, and vertices of geometric solids.
	SMMA_LO_02138	Classify and sort three-dimensional solids based on attributes using formal geometric language.
(6.SP) Statistics and Probability		
(6.SP.A) Develop understanding of statistical variability.		
(6.SP.A.3) Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.	SMMA_LO_01164	Identify the most frequent value (mode) using a line plot.
(6.SP.B) Summarize and describe distributions.		
(6.SP.B.4) Display numerical data in plots on a number line, including dot plots, histograms, and box plots.	SMMA_LO_01199	Find the five values (upper and lower extremes, median, and upper and lower quartiles) from a set of data that are needed to create a box-and-whiskers plot.
	SMMA_LO_01201	Identify box-and whiskers plot that matches a given set of data.
	SMMA_LO_01202	Identify data sets that match the data represented in a given box-and-whiskers plot.
(6.SP.B.5) Summarize numerical data sets in relation to their context, such as by:		
(6.SP.B.5.c) Giving quantitative measures of center (median, and/or mean) and variability (range and/or interquartile range), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.	SMMA_LO_00151	Find the average (mean) of 3 numbers.
	SMMA_LO_00179	Determine a student's grade point average based on five grades.
	SMMA_LO_00836	Determine the average (mean) of a data set of three to five customary weights or metric masses.

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	SMMA_LO_01166	Find the range of a set of data.
	SMMA_LO_01168	Identify the median of a data set with an odd number of items.
	SMMA_LO_01170	Identify the median of a data set with an even number of items and the two middle values are not equal.
	SMMA_LO_01176	Determine the range of a set of data represented in a line graph.
	SMMA_LO_01210	Determine the average (mean), median, mode, and range.
	SMMA_LO_01719	Determine the mode of a data set.
	SMMA_LO_01726	Determine the median of a data set.
	SMMA_LO_01727	Determine the mean of a data set.
	SMMA_LO_01766	Determine the range of a set of data.
	SMMA_LO_01768	Determine the median of a set of data.
	SMMA_LO_01169	Identify the median of a data set with an even number of items and the two middle values are equal.
	SMMA_LO_01619	Solve a problem in context by finding the average (mean) of three to seven numbers.