

2013-14 CC-CA Math 7 BK (B195860)—Blueprint Summary

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						2013-2014 CA		2013-2014 CA	
Status						Draft		Draft	
# Standards Assessed						12		7	
Number of Items per Standard (max)						2		4	
Number of Items per Standard (min)						1		1	
Number of Items per Standard (avg)						1.5		2.1	
Standard	Description	CST #	CST %	Yr #	Yr %	#	%	#	%
Total		64.98	100%	33	100%	18	100%	15	100%
California Item Bank									
MA.7.NS	Number Sense								
MA.7.NS.1.0	Students know the properties of, and compute with, rational numbers expressed in a variety of forms:								
MA.7.NS.1.1	Read, write, and compare rational numbers in scientific notation (positive and negative powers of 10) with approximate numbers using scientific notation.	1	1.5%						
MA.7.NS.1.2	Add, subtract, multiply, and divide rational numbers (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers.	4	6.2%						
MA.7.NS.1.3	Convert fractions to decimals and percents and use these representations in estimations, computations, and applications.	1	1.5%						
MA.7.NS.1.4	Differentiate between rational and irrational numbers.	1	1.5%						
MA.7.NS.1.5	Know that every rational number is either a terminating or repeating decimal and be able to convert terminating decimals into reduced fractions.	1	1.5%						
MA.7.NS.1.6	Calculate the percentage of increases and decreases of a quantity.	1	1.5%						
MA.7.NS.1.7	Solve problems that involve discounts, markups, commissions, and profit and compute simple and compound interest.	5	7.7%						
MA.7.NS.2.0	Students use exponents, powers, and roots and use exponents in working with fractions:								
MA.7.NS.2.1	Understand negative whole-number exponents. Multiply and divide expressions involving exponents with a common base.	1	1.5%						
MA.7.NS.2.2	Add and subtract fractions by using factoring to find common denominators.	1	1.5%						
MA.7.NS.2.3	Multiply, divide, and simplify rational numbers by using exponent rules.	3	4.6%						
MA.7.NS.2.4	Use the inverse relationship between raising to a power and extracting the root of a perfect square integer; for an integer that is not square, determine without a calculator the two integers between which its square root lies and explain why.	1	1.5%						
MA.7.NS.2.5	Understand the meaning of the absolute value of a number; interpret the absolute value as the distance of the number from zero on a number line; and determine the absolute value of real numbers.	2	3.1%						
MA.7.AF	Algebra and Functions								
MA.7.AF.1.0	Students express quantitative relationships by using algebraic terminology, expressions, equations, inequalities, and graphs:								
MA.7.AF.1.1	Use variables and appropriate operations to write an expression, an equation, an inequality, or a system of equations or inequalities that represents a verbal description (e.g., three less than a number, half as large as area A).	1	1.5%						
MA.7.AF.1.2	Use the correct order of operations to evaluate algebraic expressions such as $3(2x + 5)^2$.	1	1.5%						

MA.7.AF.1.3	Simplify numerical expressions by applying properties of rational numbers (e.g., identity, inverse, distributive, associative, commutative) and justify the process used.	5	7.7%						
MA.7.AF.1.4	Use algebraic terminology (e.g., variable, equation, term, coefficient, inequality, expression, constant) correctly.	0.33	0.5%						
MA.7.AF.1.5	Represent quantitative relationships graphically and interpret the meaning of a specific part of a graph in the situation represented by the graph.	0.67	1.0%						
MA.7.AF.2.0	Students interpret and evaluate expressions involving integer powers and simple roots:								
MA.7.AF.2.1	Interpret positive whole-number powers as repeated multiplication and negative whole-number powers as repeated division or multiplication by the multiplicative inverse. Simplify and evaluate expressions that include exponents.	1	1.5%						
MA.7.AF.2.2	Multiply and divide monomials; extend the process of taking powers and extracting roots to monomials when the latter results in a monomial with an integer exponent.	1	1.5%						
MA.7.AF.3.0	Students graph and interpret linear and some nonlinear functions:								
MA.7.AF.3.1	Graph functions of the form $y = nx^2$ and $y = nx^3$ and use in solving problems.	0.67	1.0%						
MA.7.AF.3.2	Plot the values from the volumes of three-dimensional shapes for various values of the edge lengths (e.g., cubes with varying edge lengths or a triangle prism with a fixed height and an equilateral triangle base of varying lengths).	0.33	0.5%						
MA.7.AF.3.3	Graph linear functions, noting that the vertical change (change in y-value) per unit of horizontal change (change in x-value) is always the same and know that the ratio ("rise over run") is called the slope of a graph.	2	3.1%						
MA.7.AF.3.4	Plot the values of quantities whose ratios are always the same (e.g., cost to the number of an item, feet to inches, circumference to diameter of a circle). Fit a line to the plot and understand that the slope of the line equals the quantities.	2	3.1%						
MA.7.AF.4.0	Students solve simple linear equations and inequalities over the rational numbers:								
MA.7.AF.4.1	Solve two-step linear equations and inequalities in one variable over the rational numbers, interpret the solution or solutions in the context from which they arose, and verify the reasonableness of the results.	5	7.7%						
MA.7.AF.4.2	Solve multistep problems involving rate, average speed, distance, and time or a direct variation.	5	7.7%						
MA.7.MG	Measurement and Geometry								
MA.7.MG.1.0	Students choose appropriate units of measure and use ratios to convert within and between measurement systems to solve problems:								
MA.7.MG.1.1	Compare weights, capacities, geometric measures, times, and temperatures within and between measurement systems (e.g., miles per hour and feet per second, cubic inches to cubic centimeters).	0.67	1.0%						
MA.7.MG.1.2	Construct and read drawings and models made to scale.	0.33	0.5%						

MA.7.MG.1.3	Use measures expressed as rates (e.g., speed, density) and measures expressed as products (e.g., person-days) to solve problems; check the units of the solutions; and use dimensional analysis to check the reasonableness of the answer.	3	4.6%						
MA.7.MG.2.0	Students compute the perimeter, area, and volume of common geometric objects and use the results to find measures of less common objects. They know how perimeter, area, and volume are affected by changes of scale:								
MA.7.MG.2.1	Use formulas routinely for finding the perimeter and area of basic two-dimensional figures and the surface area and volume of basic three-dimensional figures, including rectangles, parallelograms, trapezoids, squares, triangles, circles, prisms, and cylinders.	0.33	0.5%						
MA.7.MG.2.2	Estimate and compute the area of more complex or irregular two- and three-dimensional figures by breaking the figures down into more basic geometric objects.	0.33	0.5%						
MA.7.MG.2.3	Compute the length of the perimeter, the surface area of the faces, and the volume of a three-dimensional object built from rectangular solids. Understand that when the lengths of all dimensions are multiplied by a scale factor, the surface area is multiplied by the square of the scale factor and the volume is multiplied by the cube of the scale factor.	0.33	0.5%						
MA.7.MG.2.4	Relate the changes in measurement with a change of scale to the units used (e.g., square inches, cubic feet) and to conversions between units (1 square foot = 144 square inches or $[1 \text{ ft}^2] = [144 \text{ in}^2]$, 1 cubic inch is approximately 16.38 cubic centimeters or $[1 \text{ in}^3] = [16.38 \text{ cm}^3]$).	0.33	0.5%						
MA.7.MG.3.0	Students know the Pythagorean theorem and deepen their understanding of plane and solid geometric shapes by constructing figures that meet given conditions and by identifying attributes of figures:								
MA.7.MG.3.1	Identify and construct basic elements of geometric figures (e.g., altitudes, mid-points, diagonals, angle bisectors, and perpendicular bisectors; central angles, radii, diameters, and chords of circles) by using a compass and straightedge.	0.33	0.5%						
MA.7.MG.3.2	Understand and use coordinate graphs to plot simple figures, determine lengths and areas related to them, and determine their image under translations and reflections.	0.33	0.5%						
MA.7.MG.3.3	Know and understand the Pythagorean theorem and its converse and use it to find the length of the missing side of a right triangle and the lengths of other line segments and, in some situations, empirically verify the Pythagorean theorem by direct measurement.	4	6.2%						
MA.7.MG.3.4	Demonstrate an understanding of conditions that indicate two geometrical figures are congruent and what congruence means about the relationships between the sides and angles of the two figures.	2	3.1%						
MA.7.MG.3.5	Construct two-dimensional patterns for three-dimensional models, such as cylinders, prisms, and cones.								

MA.7.MG.3.6	Identify elements of three-dimensional geometric objects (e.g., diagonals of rectangular solids) and describe how two or more objects are related in space (e.g., skew lines, the possible ways three planes might intersect).	1	1.5%						
MA.7.PS	Statistics, Data Analysis, and Probability								
MA.7.PS.1.0	Students collect, organize, and represent data sets that have one or more variables and identify relationships among variables within a data set by hand and through the use of an electronic spreadsheet software program:								
MA.7.PS.1.1	Know various forms of display for data sets, including a stem-and-leaf plot or box-and-whisker plot; use the forms to display a single set of data or to compare two sets of data.	1	1.5%						
MA.7.PS.1.2	Represent two numerical variables on a scatterplot and informally describe how the data points are distributed and any apparent relationship that exists between the two variables (e.g., between time spent on homework and grade level).	1	1.5%						
MA.7.PS.1.3	Understand the meaning of, and be able to compute, the minimum, the lower quartile, the median, the upper quartile, and the maximum of a data set.	3	4.6%						
MA.7.MR	Mathematical Reasoning								
MA.7.MR.1.0	Students make decisions about how to approach problems:								
MA.7.MR.1.1	Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns.								
MA.7.MR.1.2	Formulate and justify mathematical conjectures based on a general description of the mathematical question or problem posed.								
MA.7.MR.1.3	Determine when and how to break a problem into simpler parts.								
MA.7.MR.2.0	Students use strategies, skills, and concepts in finding solutions:								
MA.7.MR.2.1	Use estimation to verify the reasonableness of calculated results.								
MA.7.MR.2.2	Apply strategies and results from simpler problems to more complex problems.								
MA.7.MR.2.3	Estimate unknown quantities graphically and solve for them by using logical reasoning and arithmetic and algebraic techniques.								
MA.7.MR.2.4	Make and test conjectures by using both inductive and deductive reasoning.								
MA.7.MR.2.5	Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning.								
MA.7.MR.2.6	Express the solution clearly and logically by using the appropriate mathematical notation and terms and clear language; support solutions with evidence in both verbal and symbolic work.								
MA.7.MR.2.7	Indicate the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy.								
MA.7.MR.2.8	Make precise calculations and check the validity of the results from the context of the problem.								

MA.7.MR.3.0	Students determine a solution is complete and move beyond a particular problem by generalizing to other situations:								
MA.7.MR.3.1	Evaluate the reasonableness of the solution in the context of the original situation.								
MA.7.MR.3.2	Note the method of deriving the solution and demonstrate a conceptual understanding of the derivation by solving similar problems.								
MA.7.MR.3.3	Develop generalizations of the results obtained and the strategies used and apply them to new problem situations.								
Common Core Item Bank									
Introduction	Introduction								
MA.7.1	Students extend their understanding of ratios and develop understanding of proportionality to solve single- and multi-step problems. Students use their understanding of ratios and proportionality to solve a wide variety of percent problems, including those involving discounts, interest, taxes, tips, and percent increase or decrease. Students solve problems about scale drawings by relating corresponding lengths between the objects or by using the fact that relationships of lengths within an object are preserved in similar objects. Students graph proportional relationships and understand the unit rate informally as a measure of the steepness of the related line, called the slope. They distinguish proportional relationships from other relationships.								
MA.7.2	Students develop a unified understanding of number, recognizing fractions, decimals (that have a finite or a repeating decimal representation), and percents as different representations of rational numbers. Students extend addition, subtraction, multiplication, and division to all rational numbers, maintaining the properties of operations and the relationships between addition and subtraction, and multiplication and division. By applying these properties, and by viewing negative numbers in terms of everyday contexts (e.g., amounts owed or temperatures below zero), students explain and interpret the rules for adding, subtracting, multiplying, and dividing with negative numbers. They use the arithmetic of rational numbers as they formulate expressions and equations in one variable and use these equations to solve problems.								

MA.7.3	Students continue their work with area from Grade 6, solving problems involving the area and circumference of a circle and surface area of three-dimensional objects. In preparation for work on congruence and similarity in Grade 8 they reason about relationships among two-dimensional figures using scale drawings and informal geometric constructions, and they gain familiarity with the relationships between angles formed by intersecting lines. Students work with three-dimensional figures, relating them to two-dimensional figures by examining cross-sections. They solve real-world and mathematical problems involving area, surface area, and volume of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes and right prisms.								
MA.7.4	Students build on their previous work with single data distributions to compare two data distributions and address questions about differences between populations. They begin informal work with random sampling to generate data sets and learn about the importance of representative samples for drawing inferences.								
MA.7.RP	Ratios and Proportional Relationships								
MA.7.RP.A	Analyze proportional relationships and use them to solve real-world and mathematical problems.								
MA.7.RP.A.1	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.								
MA.7.RP.A.2	Recognize and represent proportional relationships between quantities.								
MA.7.RP.A.2.a	Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.			2	6.1%			2	13.3%
MA.7.RP.A.2.b	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.			2	6.1%			2	13.3%
MA.7.RP.A.2.c	Represent proportional relationships by equations.			2	6.1%			2	13.3%
MA.7.RP.A.2.d	Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate.			1	3.0%			1	6.7%
MA.7.RP.A.3	Use proportional relationships to solve multistep ratio and percent problems.			4	12.1%			4	26.7%
MA.7.NS	The Number System								
MA.7.NS.A	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.			2	6.1%	2	11.1%		
MA.7.NS.A.1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.			1	3.0%	1	5.6%		
MA.7.NS.A.1.a	Describe situations in which opposite quantities combine to make 0.			1	3.0%	1	5.6%		

MA.7.NS.A.1.b	Understand $p + q$ as the number located a distance $ q $ from p , in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.			2	6.1%	2	11.1%		
MA.7.NS.A.1.c	Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.			1	3.0%	1	5.6%		
MA.7.NS.A.1.d	Apply properties of operations as strategies to add and subtract rational numbers.			2	6.1%	2	11.1%		
MA.7.NS.A.2	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.								
MA.7.NS.A.2.a	Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.								
MA.7.NS.A.2.b	Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.								
MA.7.NS.A.2.c	Apply properties of operations as strategies to multiply and divide rational numbers.								
MA.7.NS.A.2.d	Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.								
MA.7.NS.A.3	Solve real-world and mathematical problems involving the four operations with rational numbers.			2	6.1%	2	11.1%		
MA.7.EE	Expressions and Equations			1	3.0%	1	5.6%		
MA.7.EE.A	Use properties of operations to generate equivalent expressions.								
MA.7.EE.A.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.								
MA.7.EE.A.2	Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.			2	6.1%	2	11.1%		
MA.7.EE.B	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.			1	3.0%	1	5.6%		
MA.7.EE.B.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.			3	9.1%	1	5.6%	2	13.3%

MA.7.EE.B.4	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.			2	6.1%	2	11.1%		
MA.7.EE.B.4.a	Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.								
MA.7.EE.B.4.b	Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p , q , and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.								
MA.7.G	Geometry								
MA.7.G.A	Draw, construct, and describe geometrical figures and describe the relationships between them.								
MA.7.G.A.1	Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.			2	6.1%			2	13.3%
MA.7.G.A.2	Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.								
MA.7.G.A.3	Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.								
MA.7.G.B	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.								
MA.7.G.B.4	Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.								
MA.7.G.B.5	Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.								
MA.7.G.B.6	Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.								
MA.7.SP	Statistics and Probability								
MA.7.SP.A	Use random sampling to draw inferences about a population.								
MA.7.SP.A.1	Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.								

MA.7.SP.A.2	Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.								
MA.7.SP.B	Draw informal comparative inferences about two populations.								
MA.7.SP.B.3	Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.								
MA.7.SP.B.4	Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.								
MA.7.SP.C	Investigate chance processes and develop, use, and evaluate probability models.								
MA.7.SP.C.5	Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.								
MA.7.SP.C.6	Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.								
MA.7.SP.C.7	Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.								
MA.7.SP.C.7.a	Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.								
MA.7.SP.C.7.b	Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.								
MA.7.SP.C.8	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.								
MA.7.SP.C.8.a	Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.								
MA.7.SP.C.8.b	Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event.								
MA.7.SP.C.8.c	Design and use a simulation to generate frequencies for compound events.								

Key:

Orange: This standard has 6 or more items on the assessment.

Purple: This standard has 26 or more items on the blueprint.