

Math 7 Standard Components

7

 Release Test
Questions 2008

 Blue
Print

Component	Component Descriptions	Release Test Questions 2008	Blue Print
7NS 1.1.1	Read, write, and compare rational numbers in scientific notation (positive and negative powers of 10)	1, 2	1
7NS 1.1.2	Read, write, and compare rational numbers in general.		
7NS 1.2.1*	Add & subtract integers.		
7NS 1.2.2*	Add & subtract fractions.	5^w	
7NS 1.2.3*	Add, subtract decimals.		
7NS 1.2.4*	Multiply & Divide integers.		4
7NS 1.2.5*	Multiply & Divide fractions.	6, 7^w	
7NS 1.2.6*	Multiply & Divide terminating decimals.	4^w	
7NS 1.2.7*	Take positive rational numbers to whole number powers (always tested)	3	
7NS 1.3.1	Convert fractions to decimals and use these representations in estimations, computations, and applications.	8	1
7NS 1.3.2	Convert fractions to percents and use these representations in estimations, computations, and applications.	9^w	
7 NS 1.4.0*	Differentiate between rational and irrational numbers.	10, 11	1
7 NS 1.5.1*	Know that every rational number is either a terminating or repeating decimal.		1
7 NS 1.5.2*	Be able to convert terminating decimals into reduced fractions.	12	
7 NS 1.6.1	Calculate the percentage of increases of a quantity.		1
7 NS 1.6.2	Calculate the percentage of decreases of a quantity.	13^w	
7 NS 1.7.1	Solve problems that involve discounts.	14^w, 17^w, 18^w, 19^w	
7 NS 1.7.2	Solve problems that involve markups		
7 NS 1.7.3	Solve problems that involve commissions.	16^w, 20^w	5
7 NS 1.7.4	Solve problems that involve profit.		
7 NS 1.7.5	Compute simple interest	15^w	
7 NS 1.7.6	Compute compound interest *Not Tested		



Math 7 Standard Components

Component	Component Descriptions	Release Test Questions 2008	Blue Print
7 NS 2.1.1	Understand negative whole-number exponents.	21, 22	1
7 NS 2.1.2	Multiply & Divide expressions involving exponents with a common base.		
7 NS 2.2.0*	Add and subtract fractions by using factoring to find common denominators.	23	1
7 NS 2.3.1*	Multiply & divide rational numbers by using exponent rules.	25, 26, 27	3
7 NS 2.3.3*	Simplify rational numbers by using exponent rules.	24	
7 NS 2.4.1	Use the inverse relationship between raising to a power and extracting the root of a perfect square integer.	28, 29	1
7 NS 2.4.2	For an integer that is not square, determine without a calculator the two integers between which its square root lies and explain why.	30	
7 NS 2.5.1*	Understand the meaning of the absolute value of a number and interpret it as the distance of the number from zero on a number line.	33	
7 NS 2.5.2*	Determine the absolute value of real numbers.	32	2
7 NS 2.5.3*	Simplify expressions involving absolute value.	31	
7 AF 1.1.1	Use variables and appropriate operations to write an expression that represent a verbal description.		
7 AF 1.1.2	Use variables and appropriate operations to write an equation that represent a verbal description.	34	
7 AF 1.1.3	Use variables and appropriate operations to write an inequality that represent a verbal description.		1
7 AF 1.1.4	Use variables and appropriate operations to write a system of equations that represent a verbal description. *Not emphasized on CST		
7 AF 1.1.5	Use variables and appropriate operations to write a system of inequalities that represent a verbal description. *Not emphasized on CST		
7 AF 1.2.1	Use the correct order of operations to simplify numeric expressions. (*Pacent)		1
7 AF 1.2.2	Use the correct order of operations to evaluate algebraic expressions such as $3(2x + 5)^2$.	35, 36	
7 AF 1.3.1*	Simplify numerical expressions by applying properties of rational numbers (identity)	37, 43	
7 AF 1.3.2*	Simplify numerical expressions by applying properties of rational numbers (inverse)	40	
7 AF 1.3.3*	Simplify numerical expressions by applying properties of rational numbers (distributive)	38, 39, 41, 42, 44	5
7 AF 1.3.4*	Simplify numerical expressions by applying properties of rational numbers (associative)		
7 AF 1.3.5*	Simplify numerical expressions by applying properties of rational numbers (commutative)		

Math 7 Standard Components

7

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7 AF 1.4.0	Use algebraic terminology (e.g., variable, equation, term, coefficient, inequality, expression, constant) correctly.	45	1/3
7 AF 1.5.0	Represent quantitative relationships graphically and interpret the meaning of a specific part of a graph in the situation represented by the graph.	46, 47	2/3
7 AF 2.1.1	Interpret positive whole-number powers as repeated multiplication.	48	1
7 AF 2.1.2	Interpret negative whole-number powers as repeated division by multiplicative inverse.		
7 AF 2.1.3	Simplify and evaluate expressions that include exponents.		
7 AF 2.2.1	Multiply and divide monomials		1
7 AF 2.2.2	Extend the process (AF2.2.1) of taking powers and extracting roots to monomials when the latter results in a monomial with an integer exponent.	49	
7 AF 3.1.0	Graph functions of the form $y = nx^2$ and $y = nx^3$ and use in solving problems.	50	2/3
7 AF 3.2.0	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).		1/3
7 AF 3.3.1*	Graph linear functions	51	2
7 AF 3.3.2*	Note that the vertical change per unit of horizontal change is always the same and know that the ratio is called the slope of a graph.	52, 53, 54, 55	
7 AF 3.4.0*	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.	56^w	2
7 AF 4.1.1*	Solve two-step linear equations in one variable over integers and interpret the solution or solutions in the context from which they arose, and verify the reasonableness of the results.	57, 59, 60^w, 61	5
7 AF 4.1.2*	Solve two-step linear equations in one variable over fractions and interpret the solution or solutions in the context from which they arose, and verify the reasonableness of the results.		
7 AF 4.1.3*	Solve two-step linear equations in one variable over decimals and interpret the solution or solutions in the context from which they arose, and verify the reasonableness of the results.		
7 AF 4.1.4*	Solve two-step linear inequalities in one variable over integers and interpret the solution or solutions in the context from which they arose, and verify the reasonableness of the results.		
7 AF 4.1.5*	Solve two-step linear inequalities in one variable over fractions and interpret the solution or solutions in the context from which they arose, and verify the reasonableness of the results.		
		58	


 7

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7 AF 4.1.6	Solve two-step linear inequalities in one variable over decimals and interpret the solution or solutions in the context from which they arose, and verify the reasonableness of the results.		5
7 AF 4.2.1*	Solve multistep problems involving rate	63^w	5
7 AF 4.2.2*	Solve multistep problems involving average speed, distance, and time.	62^w, 65^w, 67^w, 69^w	
7 AF 4.2.3*	Solve multistep problems involving rate direct variation.	64^w, 66^w, 68^w	
7 MG 1.1.0	Compare weight, capacities, geometric measures, times, and temperatures within and between measurement systems	70	2/3
7 MG 1.2.0	Construct and read drawings and models made to scale.	71^w, 72^w	1/3
7 MG 1.3.0*	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.	73^w, 74^w, 75^w, 76^w	3
7 MG 2.1.1	Use formulas routinely for finding perimeter of two dimensional figures	77	1/3
7 MG 2.1.2	Use formulas routinely for finding area of two dimensional figures		
7 MG 2.1.3	Use Formulas routinely for finding the surface area of basic 3 dimensional figures.		
7 MG 2.1.4	Use formulas routinely for finding volume of basic three-dimensional figures.		
7 MG 2.2.0	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.	78, 79	1/3
7 MG 2.3.1	Compute the length of the perimeter. *MG 2.1 embedded	80	1/3
7 MG 2.3.2	Compute the surface area of the faces *MG 2.1 embedded		
7 MG 2.3.3	Compute the volume of a three-dimensional object built from rectangular solids.		
7 MG 2.3.4	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. *Almost identical to AF 3.2		
7 MG 2.4.0	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 ft ²] = [144 in ²], 1 cubic inch is approximately 16.38 cubic centimeters or [1 in ³] = [16.38 cm ³]. *Very similar to MG 1.1	81^w	1/3



7

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7 MG 3.1.1	Identify basic elements of geometric figures (e.g., altitudes, midpoints, diagonals, angle bisectors, and perpendicular bisectors; central angles, radii, diameters, and chords of circles)		1/3
7 MG 3.1.2	Construct basic elements of geometric figures by using a compass and straightedge.		
7 MG 3.2.1	Understand and use coordinate graphs to plot simple figures	82	1/3
7 MG 3.2.2	Determine lengths and areas of graphed		
7 MG 3.2.3	Determine their image (from MG 3.2.1) under translation and reflections		
7 MG 3.3.1*	Know and understand the Pythagorean theorem and its converse.		4
7 MG 3.3.2*	Use the Pythagorean theorem to find the length of a 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.	83, 84, 85, 86, 87	
7 MG 3.4.0*	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	88, 89	2
7 MG 3.5.0	Construct two-dimensional patterns for three-dimensional models, such as cylinders, prisms, and cones.		NA
7 MG 3.6.0	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).	90	1
7 PS 1.1.1	Know the Stem and leaf plot		
7 PS 1.1.2	Know the box-and-whisker plot *Covers SDAP 1.3	91	1
7 PS 1.1.3	Use these forms to display a single set of data or to compare two sets of data		
7 PS 1.2.0	Represent two numerical variables on a scatter plot 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)	92^w	1
7 PS 1.3.0	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. *embedded in SDAP 1.1.2	93^w, 94^w, 95^w, 96^w	3

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7

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7 MR1.1.0	Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns.		E
7 MR1.2.0	Formulate and justify mathematical conjectures based on a general description of the mathematical question or problem posed.		E
7 MR1.3.0	Determine when and how to break a problem into simpler parts.		E
7 MR 2.1.0	Use estimation to verify the reasonableness of calculated results.		E
7 MR 2.2.0	Apply strategies and results from simpler problems to more complex problems.		E
7 MR 2.3.0	Estimate unknown quantities graphically and solve for them by using logical reasoning and arithmetic and algebraic techniques.		E
7 MR 2.4.0	Make and test conjectures by using both inductive and deductive reasoning.		E
7 MR 2.5.0	Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning.		E
7 MR 2.6.0	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.		E
7 MR 2.7.0	Indicate the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy.		E
7 MR 2.8.0	Make precise calculations and check the validity of the results from the context of the problem.		E
7 MR 3.1.0	Evaluate the reasonableness of the solution in the context of the original situation.		E
7 MR 3.2.0	Note the method of deriving the solution and demonstrate a conceptual understanding of the derivation by solving similar problems.		E
7 MR 3.3.0	Develop generalizations of the results obtained and the strategies used and apply them to new problem situations.		E