

2010 ACOS MATHEMATICS/ARMT+ SPECIFICATIONS CORRELATION

GRADE 6

2010 ACOS		ARMT+ Specifications					
CURRENT GRADE 6 CONTENT		2003 CONTENT STANDARD		ITEM TYPE	POINTS POSS.	ADDITIONAL INFORMATION	PAGES IN ITEM SPECS
6.1	Understand the concept of ratio, and use ratio language to describe a ratio relationship between two quantities. [6-RP1]						
6.2	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. [6-RP2]						
6.3 6.3a 6.3b 6.3c 6.3d	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 lines, or equations. [6-RP3] 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. [6-RP3a] b. Solve unit rate problems including those involving unit pricing and constant speed. [6-RP3b] 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. [6-RP3c] d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities. [6-RP3d]	6.8	Determine the distance between two points on a scale drawing or a map using proportional reasoning.	Multiple-choice Gridded	4	- Determining the scale may be required. - Scale drawing may be included. - Word problems/real-life situations may be used. - Measuring a scale drawing may be required.	pp. 76-83
		6.9	Convert units of length, weight, or capacity within the same system (customary or metric).	Multiple-choice	4	- Converting from a larger unit to a smaller unit may be required. - Converting from a smaller unit to a larger unit may be required. - Word problems/real-life situations may be used.	pp. 84-87
6.4	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. [6-NS1]						
6.5	Fluently divide multi-digit numbers using the standard algorithm. [6-NS2]	6.1	Demonstrate computational fluency with addition, subtraction, multiplication, and division of decimals and fractions.	Multiple-choice	9	- Mixed numbers or improper fractions may be used. - Common and uncommon denominators may be used. - Fractions may be in simplest form. - No word problems/context problems will be used.	pp. 5-7

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CURRENT GRADE 6 CONTENT		2003 CONTENT STANDARD		ITEM TYPE	POINTS POSS.	ADDITIONAL INFORMATION	PAGES IN ITEM SPECS
6.6	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. [6-NS3]	6.1	Demonstrate computational fluency with addition, subtraction, multiplication, and division of decimals and fractions.	Multiple-choice	9	- Mixed numbers or improper fractions may be used. - Common and uncommon denominators may be used. - Fractions may be in simplest form. - No word problems/context problems will be used.	pp. 5-7
6.7	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 whole numbers with no common factor. [6-NS4]						
6.8	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, debits/credits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. [6-NS5]						
6.9 6.9a 6.9b 6.9c	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-NS6] 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 0 is its own opposite. [6-NS6a] 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. [6-NS6b] 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. [6-NS6c]	6.5	Plot coordinates on grids, graphs, and maps.	Multiple-choice	4	- Identifying coordinates of a point on a grid, graph, or map may be required. - Following directions to locate a point on a grid, graph, or map may be required. - Using ordered pairs to represent the location of a point on a grid, graph, or map may be required. - Identifying coordinates of a point on the coordinate plane may be required. - Real-life situations may be included.	pp. 46-52

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6.10 6.10a 6.10b 6.10c 6.10d	Understand ordering and absolute value of rational numbers. [6-NS7] a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. [6-NS7a] b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. [6-NS7b] 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 [6-NS7c] d. Distinguish comparisons of absolute value from statements about order. [6-NS7d]						
6.11	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. [6-NS8]	6.5	Plot coordinates on grids, graphs, and maps.	Multiple-choice	4	- Identifying coordinates of a point on a grid, graph, or map may be required. - Following directions to locate a point on a grid, graph, or map may be required. - Using ordered pairs to represent the location of a point on a grid, graph, or map may be required. - Identifying coordinates of a point on the coordinate plane may be required. - Real-life situations may be included.	pp. 46-52
6.12	Write and evaluate numerical expressions involving whole-number exponents. [6-EE1]						
6.13 6.13a 6.13b 6.13c	Write, read, and evaluate expressions in which letters stand for numbers. [6-EE2] a. Write expressions that record operations with numbers and with letters standing for numbers. [6-EE2a] b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. [6-EE2b] c. Evaluate expressions at specific values for their variables. Include expressions that arise from formulas 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.) [6-EE2c]						

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6.14	Apply the properties of operations to generate equivalent expressions.[6-EE3]						
6.15	Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). [6-EE4]						
6.16	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. [6-EE5]						
6.17	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. [6-EE6]						
6.18	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. [6-EE7]						
6.19	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. [6-EE8]						
6.20	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. [6-EE9]						
6.21	Find 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. [6-G1]						

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6.22	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. [6-G2]						
6.23	Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems. [6-G3]	6.5	Plot coordinates on grids, graphs, and maps.	Multiple-choice	4	- Identifying coordinates of a point on a grid, graph, or map may be required. - Following directions to locate a point on a grid, graph, or map may be required. - Using ordered pairs to represent the location of a point on a grid, graph, or map may be required. - Identifying coordinates of a point on the coordinate plane may be required. - Real-life situations may be included.	pp. 46-52
6.24	Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems. [6-G4]						
6.25	Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. [6-SP1]	6.10	Interpret information from bar graphs, line graphs, and circle graphs.	Multiple-choice Gridded Open-ended	6	- Word problems/real-life situations may be used. - Comparing types of graphs may be required. - Determining percents may be required. - Money values may be used. - In determining values in graphs, <i>closest</i> may be used.	pp. 88-102
6.26	Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. [6-SP2]	6.10	Interpret information from bar graphs, line graphs, and circle graphs.	Multiple-choice Gridded Open-ended	6	- Word problems/real-life situations may be used. - Comparing types of graphs may be required. - Determining percents may be required. - Money values may be used. - In determining values in graphs, <i>closest</i> may be used.	pp. 88-102

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6.27	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. [6-SP3]						
6.28	Display numerical data in plots on a number line, including dot plots, histograms, and box plots. [6-SP4]						
6.29 6.29a 6.29b 6.29c 6.29d	Summarize numerical data sets in relation to their context, such as by: [6-SP5] a. Reporting the number of observations [6-SP5a] b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. [6-SP5b] c. Giving quantitative measures of center (median and /or mean) and variability (interquartile range and/or mean absolute value deviation) 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. [6-SP5c] d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered. [6-SP5d]						
Additional Standards That Must Be Addressed for ARMT+							
		2003 CONTENT STANDARD		ITEM TYPE	POINTS POSS.	ADDITIONAL INFORMATION	PAGES IN ITEM SPECS
		6.2	Solve problems involving decimals, percents, fractions, and proportions.	Multiple-choice Gridded Open-ended	12	- Multi-step problems with decimals and/or percents may be used. - Determining discount, sale price, or original price may be required. - Determining amount of interest may be required. - Tables and charts may be used. - Word problems may be used. - Fractions in their simplest form may be required. - Determining ratio or proportion may be required. - Determining the percent of change may be required.	pp. 8-32

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	6.3	Solve problems using numeric and geometric patterns.	Multiple-choice Gridded	5	• Pictures or objects may be used. • Determining a rule may be required. • Tables and charts may be used. • Word problems and problems in context may be used. • Fractions may be used.	pp. 33-40
	6.4	Identify two-dimensional and three-dimensional figures based on attributes, properties, and component parts.	Multiple-choice	5	• Matching a net to a three-dimensional figure may be required. • Diagrams of two-dimensional figures or three-dimensional figures may be used. • Word problems/real-life situations may be used.	pp. 41-45
	6.6	Classify angles as acute, obtuse, right, or straight.	Multiple-choice	4	• A diagram may be included. • Pictures of real-life objects may be included.	pp. 53-58
	6.7	Solve problems involving perimeter and area of parallelograms and rectangles.	Multiple-choice Gridded Open-ended	6	• Determining a missing measurement when given the area or perimeter of a parallelogram or a rectangle may be required. • Determining either the area or perimeter of a parallelogram or a rectangle given either the area or perimeter of the figure may be required. • Diagrams may be used. • Determining the area or perimeter of a shaded part of a figure may be required. • Word problems/real-life situations and problems in context may be used. • A comparison of figures may be required.	pp. 59-75
	6.11	Find the probability of a simple event.	Multiple-choice Gridded	4	• Expressing probability as a fraction, decimal, or percent may be required. • Tables may be used. • Word problems/real-life situations may be used. • Diagrams may be included.	pp. 103-108