

2003/2010 ACOS MATHEMATICS CONTENT CORRELATION

GRADE 7

2003 ACOS		2010 ACOS
CURRENT ALABAMA CONTENT PLACEMENT		2010 GRADE 7 CONTENT
7.1	Demonstrate computational fluency with addition, subtraction, and multiplication of integers.	<p>7.4b. 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. [7-NS1b]</p> <p>7.4c. 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. [7-NS1c]</p> <p>7.4d. Apply properties of operations as strategies to add and subtract rational numbers. [7-NS1d]</p> <p>7.5. Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. [7-NS2]</p> <p>7.5b. 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. [7-NS2b]</p> <p>7.5c. Apply properties of operations as strategies to multiply and divide rational numbers. [7-NS2c]</p>
7.1.B.1	Developing algorithms for performing operations on integers	<p>7.4b. 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. [7-NS1b]</p> <p>7.4c. 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. [7-NS1c]</p> <p>7.5b. 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. [7-NS2b]</p>
7.1.B.2	Using inverse properties of addition and of multiplication	<p>7.4a. Describe situations in which opposite quantities combine to make 0. [7-NS1a]</p> <p>7.4c. 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. [7-NS1c]</p>
7.2	Use order of operations to evaluate numerical expressions.	<p>7.4d. Apply properties of operations as strategies to add and subtract rational numbers. [7-NS1d]</p>

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7.2.B.1	Computing absolute values	CONTENT NOW ADDRESSED IN GRADE 6: 6.10. Understand ordering and absolute value of rational numbers. [6-NS7] 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]
7.2.B.2	Finding square roots of perfect squares through 225	CONTENT NO LONGER ADDRESSED IN GRADE 7
7.2.B.3	Evaluating powers	CONTENT NOW ADDRESSED IN GRADE 6: 6.12. Write and evaluate numerical expressions involving whole-number exponents. [6-EE1]
7.2.B.4	Applying properties of operations to compute with integers, fractions, and decimals	7.5. Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. [7-NS2] 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. [7-NS2a] 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. [7-NS2b] c. Apply properties of operations as strategies to multiply and divide rational numbers. [7-NS2c] 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. [7-NS2d]
7.3	Solve problems requiring the use of operations on rational numbers.	7.6. Solve real-world and mathematical problems involving the four operations with rational numbers. (Computations with rational numbers extend the rules for manipulating fractions to complex fractions.) [7-NS3]
7.3.B.1	Describing the method used	CONTENT NO LONGER ADDRESSED IN GRADE 7
7.3.B.2	Determining the reasonableness of results	7.8. 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. [7-EE2]
7.3.B.3	Using percents to solve problems, including problems involving discounts, taxes, commissions, and simple interest	7.9. Solve multistep 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. [7-EE3]
7.4	Express a pattern shown in a table, graph, or chart as an algebraic equation.	7.2d. 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. [7-RP2d] 7.8. 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. [7-EE2]
7.4.B.1	Recognizing the relationships between numerical patterns in tables and their respective graphs in the coordinate plane	7.2a. 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. [7-RP2a] 7.2b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. [7-RP2b]

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7.4.B.2	Determining if a constant rate of change exists in a pattern	7.2a. 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. [7-RP2a] 7.2b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. [7-RP2b]
7.5	Translate verbal phrases into algebraic expressions and algebraic expressions into verbal phrases.	CONTENT NOW ADDRESSED IN GRADE 6: 6.13a. Write expressions that record operations with numbers and with letters standing for numbers. [6-EE2a]
7.5.B.1	Exhibiting understanding of a variable as an unknown quantity	7.10. 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. [7-EE4]
7.6	Solve one- and two-step equations.	7.10a. 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. [7-EE4a]
7.6.B.1	Solving inequalities in one variable	7.10b. 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. [7-EE4b]
7.6.B.2	Graphing solution sets of inequalities on a number line	7.4. 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. [7-NS1]
7.6.B.3	Recognizing properties of equality	CONTENT NO LONGER ADDRESSED IN GRADE 7
7.7	Determine the transformation(s), including translations, reflections, or rotations, used to alter the position of a polygon on the coordinate plane.	CONTENT NOW ADDRESSED IN GRADE 8: 8.18. Describe the effect of dilations, translations, rotations and reflections on two-dimensional figures using coordinates. [8-G3]
7.7.B.1	Determining the type of symmetry (rotational or line) found in a reflection or rotation	CONTENT NOW ADDRESSED IN GRADE 8: 8.18. Describe the effect of dilations, translations, rotations and reflections on two-dimensional figures using coordinates. [8-G3]
7.7.B.2	Graphing transformations of quadrilaterals on the Cartesian plane by plotting the vertices	CONTENT NOW ADDRESSED IN GRADE 8: 8.18. Describe the effect of dilations, translations, rotations and reflections on two-dimensional figures using coordinates. [8-G3]
7.7.B.3	Graphing figures which are similar to other figures using dilations	7.11. 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. [7-G1]
7.8	Recognize geometric relationships among two-dimensional and three-dimensional objects.	7.13. Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids. [7-G3]
7.8.B.1	Drawing geometric figures when given specified components, including base and height	7.12. 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. [7-G2]
7.8.B.2	Investigating properties and relationships among congruent figures	CONTENT NO LONGER ADDRESSED IN GRADE 7
7.8.B.3	Identifying geometric ideas in settings outside the mathematics classroom	CONTENT NO LONGER ADDRESSED IN GRADE 7
7.8.B.4	Using networks to represent and solve problems	CONTENT NO LONGER ADDRESSED IN GRADE 7

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7.9	Solve problems involving circumference and area of circles.	7.14. 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. [7-G4] 7.16. 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. [7-G6]
7.9.B.1	Estimating circumference, diameter, and area	CONTENT NO LONGER ADDRESSED IN GRADE 7
7.9.B.2	Determining appropriate units of measure to describe circumference, diameter, and area	7.14. 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. [7-G4] 7.16. 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. [7-G6]
7.9.B.3	Measuring circumference and diameter using customary and metric units	
7.9.B.4	Using circumference and diameter to approximate the value of π	
7.9.B.5	Identifying π as an irrational number	CONTENT NOW ADDRESSED IN GRADE 8: 8.1. Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number. [8-NS1]
7.9.B.6	Developing formulas for determining circumference and area	7.14. 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. [7-G4] 7.16. 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. [7-G6]
7.10	Find the perimeter of polygons and the area of triangles and trapezoids	7.16. 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. [7-G6]
7.10.B.1	Developing formulas for determining perimeter and area of triangles and trapezoids	
7.11	Solve problems involving ratios or rates, using proportional reasoning.	7.1. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. [7-RP1] 7.2. Recognize and represent proportional relationships between quantities. [7-RP2] 7.2a. 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. [7-RP2a] 7.2b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. [7-RP2b] 7.2c. Represent proportional relationships by equations. [7-RP2c] 7.3. Use proportional relationships to solve multistep ratio and percent problems. [7-RP3]
7.11.B.1	Determining the unit rate	7.1. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. [7-RP1] 7.2b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. [7-RP2b]
7.11.B.2	Converting rates from one unit to another	
7.11.B.3	Converting units of length, weight, or capacity from metric to customary and from customary to metric	CONTENT NO LONGER ADDRESSED IN GRADE 7

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7.12	Determine measures of central tendency (mean, median, and mode) and the range using a given set of data or graphs, including histograms, frequency tables, and stem-and-leaf plots.	7.20. Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. [7-SP4]
7.12.B.1	Creating histograms	CONTENT NOW ADDRESSED IN ALGEBRA I: Al.41. Represent data with plots on the real number line (dot plots, histograms, and box plots). [S-ID1]
7.13	Determine the probability of a compound event.	7.21. 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 $\frac{1}{2}$ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event. [7-SP5] 7.23. 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. [7-SP7] 7.23a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. [7-SP7a] 7.24. Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. [7-SP8] 7.24b. 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. [7-SP8b]
7.13.B.1	Representing outcomes as a list, chart, picture, or tree diagram	7.23b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. [7-SP7b] 7.24. Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. [7-SP8] 7.24a. 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. [7-SP8a] 7.24b. 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. [7-SP8b]
7.13.B.2	Determining the number of possible outcomes by using the fundamental counting principle or other techniques	7.23b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. [7-SP7b] 7.24a. 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. [7-SP8a]
7.13.B.3	Modeling the probability of events through simulations with random numbers	7.22. 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. [7-SP6] 7.23a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. [7-SP7a] 7.24c. Design and use a simulation to generate frequencies for compound events. [7-SP8c]

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CONTENT MOVED TO GRADE 7 IN 2010 ACOS		
8.9	Determine the measures of special angle pairs, including adjacent, vertical, supplementary, and complementary angles, and angles formed by parallel lines cut by a transversal.	7.15. 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. [7-G5]
8.13	Interpret data from populations, using given and collected data.	7.17. 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. [7-SP1] 7.18. 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. [7-SP2]
8.13.B.2	Making predictions by estimating the line of best fit from a scatterplot	7.17. 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. [7-SP1] 7.18. 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. [7-SP2] 7.19. 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. [7-SP3]
Al.5 Al.6	Perform operations of addition, subtraction, and multiplication on polynomial expressions. Factor binomials, trinomials, and other polynomials using GCF, difference of squares, perfect square trinomials, and grouping.	7.7. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. [7-EE1]
NEW GRADE 7 CONTENT IN 2010 ACOS		