

2003/2010 ACOS MATHEMATICS CONTENT CORRELATION

GRADE 5

| 2003 ACOS | | 2010 ACOS |
|--|---|--|
| CURRENT ALABAMA CONTENT PLACEMENT | | 2010 GRADE 5 CONTENT |
| 5.1 | Demonstrate number sense by comparing, ordering, rounding, and expanding whole numbers through millions and decimals to thousandths. | 5.4. Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left. [5-NBT1] 5.5. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. [5-NBT2] 5.6. Read, write, and compare decimals to thousandths. [NBT3] 5.6a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$. [5-NBT3a] 5.6b. Compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons. [5-NBT3b] 5.7. Use place value understanding to round decimals to any place. [5-NBT4] |
| 5.1.B.1 | Relating percents to parts out of 100 by using equivalent fractions and decimals | CONTENT NOW ADDRESSED IN GRADE 4: 4.16. Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. (Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade.) [4-NF5] 4.17. Use decimal notation for fractions with denominators 10 or 100. [4-NF6] |
| 5.1.B.2 | Determining the value of a digit to thousandths | 5.6a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$. [5-NBT3a] 5.6b. Compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons. [5-NBT3b] |
| 5.2 | Solve problems involving basic operations on whole numbers, including addition and subtraction of seven-digit numbers, multiplication with two-digit multipliers, and division with two-digit divisors. | CONTENT NOW ADDRESSED IN GRADE 4: 4.3. Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. [4-OA3] |
| 5.2.B.1 | Estimating products and quotients | CONTENT NO LONGER ADDRESSED IN GRADE 5 |
| 5.2.B.2 | Determining divisibility by 2, 3, 4, 5, 6, 9, and 10 | CONTENT NO LONGER ADDRESSED IN GRADE 5 |
| 5.2.B.3 | Demonstrating computational fluency with addition, subtraction, multiplication, and division of whole numbers | 5.8. Fluently multiply multi-digit whole numbers using the standard algorithm. [5-NBT5] 5.9. Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. [5-NBT6] |

| 2003 ACOS | | 2010 ACOS |
|-----------|--|---|
| 5.3 | Solve word problems that involve decimals, fractions, or money. | <p>5.10. Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. [5-NBT7]</p> <p>5.12. Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. [5-NF2]</p> <p>5.13. Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$.) Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. [5-NF3]</p> <p>5.14a. Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal part equivalently, as the result of a sequence of operations $a \times q \div b$. [5-NF4a]</p> <p>5.16. Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. [5-NF6]</p> <p>5.17c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. [5-NF7c]</p> |
| 5.3.B.1 | Solving word problems involving elapsed time | CONTENT NOW ADDRESSED IN GRADE 4: 4. 20. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. [4-MD2] |
| 5.4 | Determine the sum and difference of fractions with common and uncommon denominators. | <p>5.11. Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. [5-NF1]</p> <p>5.12. Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. [5-NF2]</p> <p>5.13. Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$.) Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. [5-NF3]</p> |
| 5.4.B.1 | Changing mixed numbers to improper fractions | |
| 5.4.B.2 | Solving problems involving addition and subtraction of fractions with common and uncommon denominators | |
| 5.4.B.3 | Using least common multiples | CONTENT NO LONGER ADDRESSED IN GRADE 5 |
| 5.4.B.4 | Estimating sums and differences of fractions | 5.12. Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. [5-NF2] |

| 2003 ACOS | | 2010 ACOS |
|-----------|--|--|
| 5.5 | Identify numbers less than zero by extending the number line. | CONTENT NOW ADDRESSED IN GRADE 6: 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] |
| 5.6 | Demonstrate the commutative, associative, and identity properties of addition and multiplication of whole numbers. | 5.9. Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. [5-NBT6] 5.22a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication. [5-MD5a] |
| 5.7 | Write a number sentence for a problem expressed in words. | 5.2. Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. [5-OA2] |
| 5.8 | Identify regular polygons and congruent polygons. | 5.25. Understand that attributes belonging to a category of two –dimensional figures also belong to all subcategories of that category. [5-G3] 5.26. Classify two-dimensional figures in a hierarchy based on properties. [5-G4] |
| 5.8.B.1 | Identifying angles as right, obtuse, acute, or straight | CONTENT NOW ADDRESSED IN GRADE 4: 4.26. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. [4-G1] |
| 5.8.B.2 | Classifying triangles as equilateral, isosceles, or scalene | CONTENT NOW ADDRESSED IN GRADE 4: 4.26. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. [4-G1] 4.27. Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles. [4-G2] |
| 5.8.B.3 | Identifying figures that have rotational symmetry | CONTENT NOW ADDRESSED IN GRADE 8: 8.19. Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them. [8-G4] |
| 5.8.B.4 | Predicting the results of a flip, slide or turn. | CONTENT NOW ADDRESSED IN GRADE 8: 8.19. Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them. [8-G4] |

| 2003 ACOS | | 2010 ACOS |
|-----------|--|--|
| 5.9 | Identify components of the Cartesian plane, including the x-axis, y-axis, origin, and quadrants. | 5.3. Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. [5-OA3] 5.23. Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate). [5-G1] 5.24. Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. [5-G2] |
| 5.10 | Identify the center, radius, and diameter of a circle. | CONTENT NO LONGER ADDRESSED IN GRADE 5 |
| 5.11 | Estimate perimeter and area of irregular shapes using unit squares and grid paper. | 5.14b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas. [5-NF4b] |
| 5.12 | Calculate the perimeter of rectangles from measured dimensions. | CONTENT NOW ADDRESSED IN GRADE 3: 3.23. Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters. [3-MD1] CONTENT NOW ADDRESSED IN GRADE 4: 4.21. Apply the area and perimeter formulas for rectangles in real-world and mathematical problems. [4-MD3] |
| 5.13 | Convert a larger unit of measurement to a smaller unit of measurement within the same system (customary or metric). | 5.18. Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. [5-MD1] |
| 5.14 | Analyze data collected from a survey or experiment to distinguish between what the data show and what might account for the results. | CONTENT NOW ADDRESSED IN GRADE 7: 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] |
| 5.14.B.1 | Evaluating different representations of the same data to determine how well each representation shows important aspects of the data | CONTENT NOW ADDRESSED IN GRADE 7: 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. |

| 2003 ACOS | | 2010 ACOS |
|--|---|--|
| 5.14.B.2 | Using given measures of central tendency (mean, median, and mode) to analyze data | CONTENT NOW ADDRESSED IN GRADE 6: 6. 29c. 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] |
| 5.15 | Use common fractions to represent the probability of events that are neither certain nor impossible. | CONTENT NOW ADDRESSED IN GRADE 7: 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] 7.22. 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] |
| CONTENT MOVED TO GRADE 5 IN 2010 ACOS | | |
| 4.15 | Represent categorical data using tables and graphs, including bar graphs, line graphs, and line plots. | 5.19. Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$.) Use operations on fractions for this grade to solve problems involving information presented in line plots. [5-MD2] |
| 6.1 | Demonstrate computational fluency with addition, subtraction, multiplication, and division of decimals and fractions. | 5.10. Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. [5-NBT7] 5.14. Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. [5-NF4] 5.17. Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. (Students able to multiply fractions in general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. But division of a fraction by a fraction is not a requirement at this grade.) [5-NF7] |
| 6.1.B.8 | Formulating algorithms using basic operations on fractions and decimals | 5.15. Interpret multiplication as scaling (resizing), by: a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. [5-NF5a] b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $\frac{a}{b} = \frac{n \times a}{n \times b}$ to the effect of multiplying $\frac{a}{b}$ by 1. [5-NF5b] 5.17. Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. (Students able to multiply fractions in general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. But division of a fraction by a fraction is not a requirement at this grade.) [5-NF7] |

| 2003 ACOS | | 2010 ACOS |
|-----------|---|---|
| 6.2 | Solve problems involving decimals, percents, fractions, and proportions. | <p>5.10. Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. [5-NBT7]</p> <p>5.16. Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. [5-NF6]</p> <p>5.17a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. [5-NF7a]</p> <p>5.17b. Interpret division of a whole number by a unit fraction, and compute such quotients. [5-NF7b]</p> <p>5.17c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. [5-NF7c]</p> |
| 6.9 | Convert units of length, weight, or capacity within the same system(customary or metric). | 5.18. Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. [5-MD1] |
| 7.2 | Use order of operations to evaluate numerical expressions. | 5.1. Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. [5-OA1] |
| 8.11 | Determine the surface area and volume of rectangular prisms, cylinders, and pyramids. | <p>5.22a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication. [5-MD5a]</p> <p>5.22b. Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems. [5-MD5b]</p> <p>5.22c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems. [5-MD5c]</p> |
| 8.11.B.2 | Determining the appropriate units of measure to describe surface area and volume | <p>5.20. Recognize volume as an attribute of solid figures and understand concepts of volume measurement. [5-MD3]</p> <p>a. A cube with side length 1 unit, called a “unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume. [5-MD3a]</p> <p>b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units. [5-MD3b]</p> <p>5.21. Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units. [5-MD4]</p> <p>5.22. Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. [5-MD5]</p> <p>5.22c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems. [5-MD5c]</p> |

| 2003 ACOS | | 2010 ACOS |
|---|--|---|
| 8.11.B.3 | Developing formulas for determining surface area and volume of rectangular prisms, cylinders, and pyramids | <p>5.22a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication. [5-MD5a]</p> <p>5.22b. Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems. [5-MD5b]</p> |
| NEW GRADE 5 CONTENT IN 2010 ACOS | | |
| | | None |