Grade 4 Math	
Louisiana Student Standards	**Louisiana Connectors (LC)**
4.OA.A.1 Interpret a multiplication equation as a comparison and represent verbal statements of multiplicative comparisons as multiplication equations, e.g., interpret 35 = 5 x 7 as a statement that 35 is 5 times as many as 7, and 7 times as many as 5.	**LC.4.OA.A.1** Use objects to model multiplication and division situations involving up to 5 groups with up to 5 objects in each group and interpret the results.
4.OA.A.2 Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and/or equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison (Example: 6 times as many vs 6 more than).	**LC.4.OA.A.2a** Determine how many objects go into each group when given the total number of objects and the number of groups where the number in each group or number of groups is not greater than 10. **LC.4.OA.A.2b** Solve multiplicative comparisons with an unknown using up to 2-digit numbers with information presented in a graph or word problem (e.g., an orange hat cost $3. A purple hat cost 2 times as much. How much does the purple hat cost? [3 x 2 = *p*]).
4.OA.A.3 Solve multi-step 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. *Example: Twenty-five people are going to the movies. Four people fit in each car. How many cars are needed to get all 25 people to the theater at the same time?*	**LC.4.OA.A.3a** Solve or solve and check one or two step word problems requiring addition, subtraction or multiplication with answers up to 100. **LC.4.OA.A.3b** Solve problems or word problems using up to three digit numbers and addition or subtraction or multiplication.

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4.OA.B.4 Using whole numbers in the range 1–100, a. Find all factor pairs for a given whole number. b. Recognize that a given whole number is a multiple of each of its factors. c. Determine whether a given whole number is a multiple of a given one-digit number. d. Determine whether a given whole number is prime or composite.	**LC.4.OA.B.4** Identify multiples for a whole number (e.g., 2= 2, 4, 6, 8, 10).
4.OA.C.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*	**LC.4.OA.C.5a** Generate a pattern when given a rule and word problem. (I run 3 miles every day, how many miles have I run in 3 days). **LC.4.OA.C.5b** Extend a numerical pattern when the rule is provided. **LC.4.OA.C.5c** Generate a pattern that follows the provided rule.
4.NBT.A.1 Recognize that in a multi-digit whole number less than or equal to 1,000,000, a digit in one place represents ten times what it represents in the place to its right. *Examples: (1) recognize that 700 ÷ 70 = 10; (2) in the number 7,246, the 2 represents 200, but in the number 7,426 the 2 represents 20, recognizing that 200 is ten times as large as 20, by applying concepts of place value and division.*	**LC.4.NBT.A.1** Compare the value of a number when it is represented in different place values of two 3 digit numbers.
4.NBT.A.2 Read and write multi-digit whole numbers less than or equal to 1,000,000 using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	**LC.4.NBT.A.2a** Compare multi-digit numbers using representations and numbers. **LC.4.NBT.A.2b** Write or select the expanded form for a multi-digit number.

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4.NBT.A.3 Use place value understanding to round multi-digit whole numbers, less than or equal to 1,000,000, to any place.	**LC.4.NBT.A.3** Use place value to round to any place (i.e., ones, tens, hundreds, thousands).
4.NBT.B.4 Use place value understanding to round multi-digit whole numbers, less than or equal to 1,000,000, to any place.	**LC.4.NBT.B.4** Solve multi-digit addition and subtraction problems up to 1000.
4.NBT.B.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	**LC.4.NBT.B.5a** Solve multiplication problems up to two digits by one digit. **LC.4.NBT.B.5b** Solve a 2-digit by 1-digit multiplication problem using 2 different strategies.
4.NBT.B.6 Find whole-number quotients and remainders with up to four-digit dividends and one-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.	**LC.4.NBT.B.6** Separate a group of objects into equal sets when given the number of sets to find the total in each set with the total number less than 50.
4.NF.A.1 Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. (Denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100.)	**LC.4.NF.A.1** Determine equivalent fractions.

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4.NF.A.2 Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model. (Denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100.)	**LC.4.NF.A.2a** Use =, <, or > to compare 2 fractions (fractions with a denominator or 10 or less). **LC.4.NF.A.2b** Compare up to 2 given fractions that have different denominators.
4.NF.B.3 Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$. (Denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100.) a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. *Example: 3/4 = 1/4 + 1/4 + 1/4*. b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples: $3/8 = 1/8 + 1/8 + 1/8$; $3/8 = 1/8 + 2/8$; $2\ 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8$.* c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction. d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.	**LC.4.NF.B.3a** Using a representation, decompose a fraction into multiple copies of a unit fraction (e.g., ¾ = ¼ + ¼ + ¼). **LC.4.NF.B.3b** Add and subtract fractions with like denominators of (2, 3, 4, or 8). **LC.4.NF.B.3c** Add and subtract fractions with like denominators (2, 3, 4, or 8) using representations. **LC.4.NF.B.3d** Solve word problems involving addition and subtraction of fractions with like denominators (2, 3, 4, or 8).

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4.NF.B.4 Multiply a fraction by a whole number. (Denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100.) a. Understand a fraction a/b as a multiple of 1/b. *For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).* b. Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.)* c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*	**LC.4.NF.B.4** Multiply a fraction by a whole or mixed number.
4.NF.C.5 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. *For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.*	**LC.4.NF.C.5** Find the equivalent decimal for a given fraction with a denominator of 10 or 100.
4.NF.C.6 Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram; represent 62/100 of a dollar as $0.62.*	**LC.4.NF.C.6a** Match a fraction with a denominator of 10 or 100 as a decimal (5/10 = .5). **LC.4.NF.C.6b** Read, write or select decimals to the tenths place. **LC.4.NF.C.6c** Read, write or select decimals to the hundredths place.

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4.NF.C.7 Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.	**LC.4.NF.C.7a** Use =, <, or > to compare 2 decimals (decimals in multiples of 10). **LC.4.NF.C.7b** Compare two decimals to the tenths place with a value of less than 1. **LC.4.NF.C.7c** Compare two decimals to the hundredths place with a value of less than 1.
4.MD.A.1 Know relative sizes of measurement units within one system of units, including: ft, in; km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. (Conversions are limited to one-step conversions.) *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), …*	**LC.4.MD.A.1a** Complete a conversion table for length and mass within a single system. **LC.4.MD.A.1b** Identify the appropriate units of measurement for different purposes in a real life context (e.g., measure a wall using feet, not inches).
4.MD.A.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving whole numbers and/or simple fractions (addition and subtraction of fractions with like denominators and multiplying a fraction times a fraction or a whole number), 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.	**LC.4.MD.A.2a** Use the four operations to solve word problems involving distance, time, mass, and money and problems that require conversions from one unit to a smaller unit. **LC.4.MD.A.2b** Select appropriate units for measurement (length, liquid volume, time, money).
4.MD.A.3 Apply the area and perimeter formulas for rectangles in real-world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*	**LC.4.MD.A.3** Solve word problems using perimeter and area where changes occur to the dimensions of a figure.

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4.MD.B.4 Make a line plot to display a data set of measurements in fractions of a unit ($1/2$, $1/4$, $1/8$). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*	**LC.4.MD.B.4a** Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). **LC.4.MD.B.4b** Solve problems involving addition and subtraction of fractions with like denominators by using information presented in line plots.
4.MD.C.5 Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where two rays intersect the circle. b. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles. c. An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees. d.	**LC.4.MD.C.5** Recognize an angle in two-dimensional figures.
4.MD.C.6 Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.	**LC.4.MD.C.6a** Use a protractor or angle ruler to sketch a given angle. **LC.4.MD.C.6b** Measure right angles using a tool (e.g., angle ruler, protractor).
4.MD.C.7 Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real-world and mathematical problems, e.g., by using an equation with a letter for the unknown angle measure.	**LC.4.MD.C.7** Given a picture of a right angle divided into two angles, find the measure of the missing angle when given the measure of one of the two angles.

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4.MD.D.8 Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real-world problems.	**LC.4.MD.D.8a** Match an accurate addition and multiplication equation to a representation. **LC.4.MD.D.8b** Apply the formulas for area and perimeter to solve real world problems. **LC.4.MD.D.8c** Apply the distributive property to solve problems with models.
4.G.A.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	**LC.4.G.A.1a** Recognize a point, line and line segment, rays in two-dimensional figures. **LC.4.G.A.1b** Recognize perpendicular and parallel lines in two-dimensional figures. **LC.4.G.A.1c** Recognize an angle in two-dimensional figures.
4.G.A.2 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.	**LC.4.G.A.2a** Classify two-dimensional shapes based on attributes (# of angles). **LC.4.G.A.2b** Categorize angles as right, acute, or obtuse. **LC.4.G.A.2c** Identify a right triangle.
4.G.A.3 Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.	**LC.4.G.A.3** Recognize a line of symmetry in a figure.