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Code	**Adopted Standards**	**Code**	**Current MLS**
5.NBT.A	**Use place value system understanding to perform operations with multi-digit whole numbers to billions and decimals to thousandths.**		
5.NBT.A.1	Read, write and identify numbers from billions to thousandths using number names, base ten numerals and expanded form.	**5.NBT.A.3**	Read, write, and compare decimals to thousandths. a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000). b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
5.NBT.A.2	Compare two numbers from billions to thousandths using the symbols >, = or <, and justify the solution.		
5.NBT.A.3	Understand that in a multi-digit number, a digit represents 1/10 times what it would represents in the place to its left.	**5.NBT.A.1**	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.NBT.A.4	Evaluate the value of powers of 10 and understand the relationship to the place value system.	**5.NBT.A.2**	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.NBT.A.5	Round numbers from billions to thousandths place.	**5.NBT.A.4**	Use place value understanding to round decimals to any place.
5.NBT.A.6	Add and subtract multi-digit whole numbers and decimals to the thousandths place, and justify the solution.	**5.NBT.B.7**	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.NBT.A.7	Multiply multi-digit whole numbers and decimals to the hundredths place, and justify the solution.	**5.NBT.B.5**	Fluently multiply multi-digit whole numbers using the standard algorithm.
5.NBT.A.8	Divide multi-digit whole numbers and decimals to the hundredths place using up to two-digit divisors and four-digit dividends, and justify the solution.	**5.NBT.B.6**	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.NF.A	**Understand the relationship between fractions and decimals (denominators that are factors of 100).**		

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5.NF.A.1	Understand that parts of a whole can be expressed as fractions and/or decimals.		
5.NF.A.2	Convert decimals to fractions and fractions to decimals.	**5.NF.B.3**	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. *For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*
5.NF.A.3	Compare and order fractions and/or decimals to the thousandths place using the symbols >, = or <, and justify the solution.	**5.NBT.A.3**	Read, write, and compare decimals to thousandths. a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000). b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
5.NF.B	**Perform operations and solve problems with fractions and decimals.**		
5.NF.B.4	Estimate results of sums, differences and products with fractions and decimals to the thousandths.	**5.NF.A.2**	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. *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2*.

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5.NF.B.5	Justify the reasonableness of a product when multiplying with fractions. a. Estimate the size of the product based on the size of the two factors. b. Explain why multiplying a given number by a fraction greater than 1 results in a product larger than the given number. c. Explain why multiplying a given number by a fraction less than 1 results in a product smaller than the given number. d. Explain why multiplying the numerator and denominator by the same number is equivalent to multiplying the fraction by 1.	**5.NF.B.5**	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. 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 $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.
5.NF.B.6	Solve problems involving addition and subtraction of fractions and mixed numbers with unlike denominators, and justify the solution.	**5.NF.A.1**	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. *For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)*
		5.NF.A.2	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. *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2*.
		5.NF.B.6	Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

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5.NF.B.7	Extend the concept of multiplication to multiply a fraction or whole number by a fraction. a. Recognize the relationship between multiplying fractions and finding the areas of rectangles with fractional side lengths. b. Calculate and interpret the product of a fraction by a whole number and a whole number by a fraction. c. Calculate and interpret the product of two fractions less than one.	**5.NF.B.4**	Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a. Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. *For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)* b. 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.NF.B.8	Extend the concept of division to divide unit fractions and whole numbers by using visual fraction models and equations. a. Calculate and interpret the quotient of a unit fraction by a non-zero whole number. b. Calculate and interpret the quotient of a whole number by a unit fraction.	**5.NF.B.7**	Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for (1/3) ÷ 4, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) × 4 = 1/3*. b. Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4*. c. 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. *For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?*
5.RA.A	**Represent and analyze patterns and relationships.**		

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5.RA.A.1	Investigate the relationship between two numeric patterns. a. Generate two numeric patterns given two rules. b. Translate two numeric patterns into two sets of ordered pairs. c. Graph numeric patterns on the Cartesian coordinate plane. d. Identify the relationship between two numeric patterns.	**5.OA.B.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. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so*.
5.RA.A.2	Write a rule to describe or explain a given numeric pattern.		
5.RA.B	**Write and interpret numerical expressions.**		
5.RA.B.3	Write, evaluate and interpret numeric expressions using the order of operations.	**5.OA.A.1**	Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
5.RA.B.4	Translate written expressions into algebraic expressions.	**5.OA.A.2**	Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product*.
5.RA.C	**Use the four operations to represent and solve problems.**		
5.RA.C.5	Solve and justify multi-step problems involving variables, whole numbers, fractions and decimals.	**5.NBT.B.7**	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.GM.A	**Classify two- and three-dimensional geometric shapes.**		
5.GM.A.1	Understand that attributes belonging to a category of figures also belong to all subcategories.	**5.G.B.3**	Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.
5.GM.A.2	Classify figures in a hierarchy based on properties.	**5.G.B.4**	Classify two-dimensional figures in a hierarchy based on properties.
5.GM.A.3	Analyze and describe the properties of prisms and pyramids.		
5.GM.B	**Understand and compute volume.**		

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5.GM.B.4	Understand the concept of volume and recognize that volume is measured in cubic units. a. Describe a cube with edge length 1 unit as a "unit cube" and is said to have "one cubic unit" of volume and can be used to measure volume. b. Understand that the volume of a right rectangular prism can be found by stacking multiple layers of the base.	**5.MD.C.3**	Recognize volume as an attribute of solid figures and understand concepts of volume measurement. 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. 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.MD.C.5	Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. a. 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. b. 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. c. 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.MD.C.4	Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.

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5.GM.B.5	Apply the formulas V = l × w × h and V = B × h for volume of right rectangular prisms with whole-number edge lengths.	**5.MD.C.5**	Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. a. 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. b. 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. c. 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.GM.C	**Graph points on the Cartesian coordinate plane within the first quadrant to solve problems.**		
5.GM.C.6	Define a first quadrant Cartesian coordinate system. a. Represent the axes as scaled perpendicular number lines that both intersect at 0, the origin. b. Identify any point on the Cartesian coordinate plane by its ordered pair coordinates. c. Define the first number in an ordered pair as the horizontal distance from the origin. d. Define the second number in an ordered pair as the vertical distance from the origin.	**5.G.A.1**	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.GM.C.7	Plot and interpret points in the first quadrant of the Cartesian coordinate plane.	**5.G.A.2**	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.GM.D	**Solve problems involving measurement and conversions within a measurement system.**		
5.GM.D.8	Convert measurements of capacity, length and weight within a given measurement system.	**5.MD.A.1**	Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05

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5.GM.D.9	Solve multi-step problems that require measurement conversions.		m), and use these conversions in solving multi-step, real world problems.
5.DS.A	**Represent and analyze data.**		
5.DS.A.1	Create a line graph to represent a data set, and analyze the data to answer questions and solve problems.		
5.DS.A.2	Create a line plot to represent a given or generated data set, and analyze the data to answer questions and solve problems, recognizing the outliers and generating the median.	**5.MD.B.2**	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally*.
The following from the 2010 MLS have no corresponding standard in the 2016 updated Missouri Learning Standards.			
		5.NF.B.3	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. *For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*