Math 3-8
Performance Level Descriptors (PLDs)

Standard`	Minimally Proficient	Partially Proficient	Proficient	Highly Proficient
	The Minimally Proficient student	The Partially Proficient student	The Proficient student	The Highly Proficient student
Operations and Algebraic Thinking				
3.OA.A.1	Identify whole number products with visual support.	Interpret whole number products with visual support.	Interpret products of whole numbers as the total number of objects in equal groups (e.g., interpret 5 x 7 as the total number of objects in 5 groups of 7 objects each).	Interpret products of whole numbers within 100, representing context using pictures, numbers, and words.
3.OA.A.2	Identify whole number quotients with visual support.	Interpret whole number quotients with visual support.	Interpret whole number quotients of whole numbers (e.g., interpret 56 ÷ 8 as the number of objects in each group when 56 objects are partitioned equally into 8 groups, or as a number of groups when 56 objects are partitioned into equal groups of 8 objects each).	Interpret quotients of whole numbers within 100, representing context using pictures, numbers, and words.
3.OA.A.3	Identify products and quotients within 100 to solve word problems involving equal groups and arrays when a visual model is given.	Multiply and divide within 100 to solve word problems involving equal groups and arrays when a visual model is given.	Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities.	Multiply and divide within 100 to solve multi-step word problems involving equal groups, arrays, and measurement quantities.
3.OA.A.4	Recognize the unknown whole number in a multiplication or division equation, when the unknown number is the solution using visual support/arrays.	Determine the unknown whole number in a multiplication or division equation, when the unknown number is the product or quotient using visual support/arrays.	Determine the unknown whole number in a multiplication or division equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 x □ = 48, 5 = □ ÷ 3, 6 x 6 = □ .	Determine an unknown whole number in a multiplication and division equation. Students will use the given context to generate an equation.
3.OA.B.5	Apply properties of operations as strategies to multiply and divide. Properties include commutative properties of multiplication. (Students do not need to use the formal terms for these properties.)	Apply properties of operations as strategies to multiply and divide. Properties include commutative and associative properties of multiplication. Students do not need to use the formal terms for these properties.)	Apply properties of operations as strategies to multiply and divide. Properties include commutative and associative properties of multiplication and the distributive property. (Students do not need to use the formal terms for these properties.)	Use multiple strategies of operations to multiply and divide within a word problem.
3.OA.B.6	Identify division as unknown factor problems by finding missing number in the second factor position with visual support/ arrays.	Solve division as unknown factor problems by finding missing number in the second factor position with visual support/arrays.	Understand division as an unknown-factor problem (e.g., find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8).	Solve division as unknown factor problems by using the relationship between multiplication and division. Model multiplication and division in a variety of ways.
3.OA.C.7	Multiply and divide within 100 using visual support/arrays.	Organize expressions to multiply and divide within 100 using visual support/ arrays.	Fluently multiply and divide within 100. By the end of Grade 3, know from memory all multiplication products through 10 x 10 and division quotients when both the quotient and divisor are less than or equal to 10.	Fluently multiply and divide within 100 within range of contexts.

3.OA.D.8	Solve one-step word problems using the four operations with visual support/arrays. Represent these problems using equations with a letter standing for the unknown quantity. Utilize understanding of the Order of Operations when there are no parentheses.	Solve two-step word problems using the four operations using visual support. Represent these problems using equations with a letter standing for the unknown quantity. Utilize understanding of the Order of Operations when there are no parentheses.	Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Utilize understanding of the Order of Operations when there are no parentheses.	Solve two-step word problems with large whole numbers and using multiple operations.
3.OA.D.9	Identify addition patterns using visual supports.	Identify multiplication and subtraction patterns using visual supports.	Identify patterns in the addition table and the multiplication table and explain them using properties of operations (e.g. observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends).	Create and extend arithmetic patterns, explain patterns using properties of operations.
3.OA.D.10	Recognize whether an answer is reasonable or not when rounding.	Use rounding to determine the reasonableness of answers when using the four operations to solve problems.	When solving problems, assess the reasonableness of answers using mental computation and estimation strategies including rounding.	Recognize the reasonableness of answers using different types of estimation strategies when using the four operations to solve problems. Choose the best estimation strategy for a specific purpose.

Number and Operations in Base Ten				
3.NBT.A.1	Use place value understanding to round a two-digit number to the nearest 10.	Use place value understanding to round a three-digit number to the nearest 100.	Use place value understanding to round whole numbers to the nearest 10 or 100.	Use rounding strategies in real-world situations.
3.NBT.A.2	Fluently add and subtract within 1000 using strategies and algorithms based on the relationship between addition and subtraction.	Fluently add and subtract within 1000 using strategies and algorithms based on place value and/or the relationship between addition and subtraction.	Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.	Explain the method used in finding the sum or difference; recognize and identify an error and shows the correct answer.
3.NBT.A.3	Skip count by 10, 20 or 50 to multiply single-digit whole numbers by multiples of 10 in the range 10-90.	Use grouping strategies (associative property) to multiply single-digit whole numbers by multiples of 10 in the range 10-90.	Multiply one-digit whole numbers by multiples of 10 in the range 10 to 90 using strategies based on place value and the properties of operations (e.g., 9 x 80, 5 x 60).	Show product of single-digit whole numbers by multiples of 10 using multiple strategies.

Number and Operations - Fractions				
3.NF.A.1	Identify a fraction (1/b) as the quantity formed by one part when a whole is partitioned into b equal parts given visual support.	Understand a fraction (1/b) as the quantity formed by one part when a whole is partitioned into b equal parts.	Understand a fraction (1/b) as the quantity formed by one part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b.	Apply understanding of unit fractions to real world, multi-step problems.
3.NF.A.2	Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. Identify a unit fraction as being between 0 and 1 on a number line. b. Recognize a partition that creates 1/2 or 1/4 on a number line. c. Recognize that if 1 is in the numerator of a fraction, then it is a unit fraction.	Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. Identify 1/2 and 1/3 on a number line. b. Identify the partitions on a number line that would represent common fractions. c. Identify unit fractions.	Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Understand that each part has size 1/b and that the end point of the part based at 0 locates the number 1/b on the number line. b. Represent a fraction a/b on a number line diagram by marking off a lengths 1/b from 0. Understand that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line including values greater than 1. c. Understand a fraction 1/b as a special type of fraction that can be referred to as a unit fraction (e.g. 1/2, 1/4).	Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. Create a number line to locate any unit fraction that represents a real world value b. Create a number line to locate fractions greater than 1 that represents a real world value c. Create unit fractions to compare values in multi-step, real world contexts
3.NF.A.3	Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. a. Understand equivalent fractions using denominators of 2, 4 and 8 given visual models. b. Recognize and generate equivalent fractions using denominators of 2, 4 and 8 given visual models. c. Express and recognize fractions that are equivalent to 1. d. Compare two fractions with the same denominator and records results using symbols.	Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. a. Understand equivalent fractions using denominators of 2, 4 and 8. b. Recognize and generate equivalent fractions using denominators of 2, 4 and 8. c. Express and recognize fractions that are equivalent to whole numbers. d. Compare two fractions with the same numerator and records results using symbols.	Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. a. Understand two fractions as equivalent if they have the same relative size compared to 1 whole. b. Recognize and generate simple equivalent fractions. Explain why the fractions are equivalent. c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Understand that comparisons are valid only when the two fractions refer to the same whole. Record results of comparisons with the symbols >, =, or <, and justify conclusions.	Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. a. Identify equivalent fractions by creating fraction models to compare fractions that pertain to the same whole. b. Explain why two fractions are equivalent. Identify equivalent fractions by creating fraction models to compare fractions that pertain to the same whole. c. Express whole numbers as fractions with denominators greater than 1. d. Create and compare two fractions that have the same numerator or same denominator using symbols within a context.

Measurement and Data				
3.MD.A.1	Solve problems involving measurement. a. Tell, write, and measure time to the nearest minute. b. Can add money using symbols $, ".", ¢.	Solve problems involving measurement. a. Solve one-step word problems involving addition or subtraction of time intervals in minutes with scaffolding. b. Can add money using symbols $, ".", ¢.	Solve problems involving measurement. a. Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes (e.g., representing the problem on a number line diagram). b. Solve word problems involving money through $20.00, using symbols $, ".", ¢.	Solve problems involving measurement. a. Create and solve multi-step time interval problems. b. Solve two-step word problems involving money through $20 using symbols $, ".", ¢.
3.MD.A.2	Using grams, kilograms or liters, measure and estimate liquid volumes and masses of objects using models.	Using grams, kilograms or liters, solve simple one-step measurement word problems using either addition or subtraction.	Measure and estimate liquid volumes and masses of objects using metric units. (Excludes compound units such as cm3 and finding the geometric volume of a container.) Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units. Excludes multiplicative comparison problems (problems involving notions of “times as much”).	Using grams, kilograms or liters, estimate and solve multi-step measurement word problems involving any of the four operations.
3.MD.B.3	Complete a scaled picture graph or bar graph (with a scale factor of 1 or 5) to represent data set with support.	Complete a scaled picture graph or bar graph to represent a data set with support. Solve one-step "how many more" and "how many less" problems using information presented in scaled bar graphs.	Create a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs.	Create own scale and graph based on given data parameters.
3.MD.B.4	Generate measurement data by measuring lengths to the nearest half-inch. Show the data by making a line plot, where the horizontal scale is marked by whole numbers or halves with supports.	Generate measurement data by measuring lengths to the nearest quarter-inch. Show the data by making a line plot, where the horizontal scale is marked by whole numbers, halves, or quarters with supports.	Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch to the nearest quarter-inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.	Show the data by making a line plot, where the student decides whether the horizonal scale is marked by whole numbers, halves, or quarters based on the given data.
3.MD.C.5	Understand area as an attribute of plane figures and understand concepts of area measurement. a. Can identify a square unit. b. Can distinguish area from length and width.	Understand area as an attribute of plane figures and understand concepts of area measurement. a. Understand area is measured using square units. b. Recognize overlapping and gaps in square unit place on a figure would not accurately describe area	Understand area as an attribute of plane figures and understand concepts of area measurement. a. A square with side length 1 unit, called “a unit square,” is said to have “one square unit” of area, and can be used to measure area. b. A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.	Understand area as an attribute of plane figures and understand concepts of area measurement. a. Can identify and use different unit squares. b. Cover a plane figure with unit squares of different sizes to show that the area of the same figure can be expressed as different numbers in different units.
3.MD.C.6	Find the area of a rectangle by counting squares covering the rectangle and expresses the area without units.	Find area of a rectangle by counting unit squares.	Measure areas by counting unit squares (e.g., square cm, square m, square in, square ft, and improvised units).	Find the area of 2 plane figures by creating and counting unit squares.

3.MD.C.7	Relate area to the operations of multiplication and addition. a. Find the area of one rectangles by tiling. b. Multiply side lengths with both sides less than or equal to 5 to find area. c. Determine a missing value in an area model that represents the distributive property where all values are less than of equal to 5. d. Find the area of a rectilinear figure that is composed of two rectangles with side lengths less than or equal to 5 in a mathematical context.	Relate area to the operations of multiplication and addition. a. Show that the area of a rectangle found by tiling is the same as would be found by multiplying the side lengths. b. Multiply side lengths with one side less than or equal to 5 to find area. c. Determines a missing value in an area model that represents the distributive property. d. Find the area of a simple decomposition.	Relate area to the operations of multiplication and addition. a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths. b. Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving realworld and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning. c. Use tiling to show that the area of a rectangle with whole-number side lengths a and b + c is the sum of a × b and a × c. Use area models to represent the distributive property in mathematical reasoning. d. Understand that rectilinear figures can be decomposed into non-overlapping rectangles and that the sum of the areas of these rectangles is identical to the area of the original rectilinear figure. Apply this technique to solve problems in real-world contexts.	Relate area to the operations of multiplication and addition. a. Confirm tiling and multiplication of side lengths in self created example. b. Compare the area of 2 plane figures by multiplying their side lengths and compares their sizes. c. Create a word problem using the distributive property to find the area of rectangles. d. Design area problems in which decomposition is integral to understanding and solving the problem.
3.MD.C.8	Find the perimeter of plane figures (given the side lengths).	Solve mathematical problems involving perimeters of plane figures, understand the difference in area and perimeter.	Solve real-world and mathematical problems involving perimeters of plane figures and areas of rectangles, including finding the perimeter given the side lengths, finding an unknown side length. Represent rectangles with the same perimeter and different areas or with the same area and different perimeters.	Construct rectangles that have the same perimeter but different areas and the reverse.

Geometry				
3.G.A.1	Identify properties of squares.	Understand the properties of quadrilaterals and the subcategories of quadrilaterals.	Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples quadrilaterals that do not belong to any of these subcategories.	Recognize and sort examples of quadrilaterals that have shared attributes and that the shared attributes can define a larger category; draw examples and non-examples of quadrilaterals that are not rhombuses, rectangles, or squares.
3.G.A.2	Partition shapes into b parts with equal areas. Express the area of each part as a unit fraction 1/b of the whole. (limited to halves and quarters).	Partition shapes into b parts with equal areas. Express the area of each part as a unit fraction 1/b of the whole. (limited to halves, quarters, and eighths).	Partition shapes into b parts with equal areas. Express the area of each part as a unit fraction 1/b of the whole. (Grade 3 expectations are limited to fractions with denominators b = 2,3,4,6,8.)	Partition shapes into parts with equal areas and expresses the area as a unit fraction of the whole to answer questions presented in a context.

Standard	Minimally Proficient	Partially Proficient	Proficient	Highly Proficient
	The Minimally Proficient student	The Partially Proficient student	The Proficient student	The Highly Proficient student
Operations and Algebraic Thinking				
4.OA.A.1	Identify multiplication equations that represent verbal statements of multiplicative comparisons with visual support.	Interpret multiplication equations that represent verbal statements of multiplicative comparisons with visual support. Recognize that a multiplication equation is a comparison.	Represent verbal statements of multiplicative comparisons as multiplication equations. Interpret a multiplication equation as a comparison (e.g., 35 is the number of objects in 5 groups, each containing 7 objects, and is also the number of objects in 7 groups, each containing 5 objects).	Create verbal statements of multiplicative comparisons to represent a given multiplication equation. Explain how a multiplication equation is a comparison.
4.OA.A.2	Identify products and quotients within 1000 to solve word problems involving multiplicative comparison when a visual model is given.	Multiply or divide within 1000 to solve word problems involving multiplicative comparison when a visual model is given.	Multiply or divide within 1000 to solve word problems involving multiplicative comparison (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison).	Identify a word problem involving multiplicative comparison within 1000 that is solved by a given multiplication or division expression.
4.OA.A.3	Solve two-step word problems using the four operations with visual support. Identify the remainder as a fraction of the divisor. Identify equations with a letter standing for the unknown quantity that represents these problems.	Solve multistep word problems using the four operations. Identify the remainder as a fraction of the divisor. Identify equations with a letter standing for the unknown quantity that represents these problems.	Solve multistep word problems using the four operations, including problems in which remainders must be interpreted. Understand how the remainder is a fraction of the divisor. Represent these problems using equations with a letter standing for the unknown quantity.	Solve multistep word problems using the four operations, including problems in which remainders must be interpreted. Explain why the remainder is a fraction of the divisor. Create word problems that can be solved using equations with a letter standing for the unknown quantity.
4.OA.B.4	Identify a factor pair for a whole number in the range 1 to 100.	Identify all factor pairs for a whole number in the range 1 to 100 and identify whole numbers that are a multiple of a given factor.	Find all factor pairs for a whole number in the range 1 to 100 and understand that a whole number is a multiple of each of its factors.	Explain why a whole number is a multiple of each of its factors.
4.OA.C.5	Identify a number pattern that follows a given rule.	Identify a number pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.	Generate a number pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself and explain the pattern informally (e.g., 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).	Create a rule for a given number pattern. Explain features of the pattern that are not explicit in the rule and explain the rule informally.
4.OA.C.6	Recognize whether an answer is reasonable or not when rounding.	Use rounding to determine the reasonableness of answers when using the four operations to solve problems.	When solving problems, assess the reasonableness of answers using mental computation and estimation strategies including rounding.	Recognize the reasonableness of answers using different types of estimation strategies when using the four operations to solve problems. Choose the best estimation strategy for a specific purpose.

Number and Operations in Base Ten				
4.NBT.A.1	Identify which place value in a multi-digit whole number represents ten times the value of a given place value.	Given two multi-digit whole numbers, with a digit in different place values in each number, identify how many times the value of the digit is in one number compared to the other number.	Apply concepts of place value, multiplication, and division to understand that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.	Apply concepts of place value, multiplication, and division to explain why a digit in one place represents ten times what it represents in the place to its right.
4.NBT.A.2	Identify three-digit whole numbers using base-ten numerals and number names. Compare two three-digit numbers based on meanings of the digits in each place.	Identify multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place.	Read and write multi-digit whole numbers 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.	Read, write, and order multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare more than two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
4.NBT.A.3	Use place value understanding to round three-digit whole numbers to the hundreds place.	Use place value understanding to round multi-digit whole numbers to the largest place.	Use place value understanding to round multi-digit whole numbers to any place.	Explain how to round multi-digit whole numbers to any place.
4.NBT.B.4	Fluently add and subtract multi-digit whole numbers using strategies and algorithms based on the relationship between addition and subtraction.	Fluently add and subtract multi-digit whole numbers using strategies and algorithms based on place value and/or the relationship between addition and subtraction.	Fluently add and subtract multi-digit whole numbers using a standard algorithm.	Recognize and explain an error made while finding a sum or a difference, and give the correct answer.
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 visual models.	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 the calculation by using rectangular arrays and/or area models.	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.	Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers. Explain the calculation by using equations.
4.NBT.B.6	Identify whole-number quotients with up to four-digit dividends and one-digit divisors.	Demonstrate understanding of division by identifying whole-number quotients and remainders with up to four-digit dividends and one-digit divisors.	Demonstrate understanding of division by finding whole-number quotients and remainders with up to four-digit dividends and one-digit divisors.	Demonstrate understanding of division by explaining the meaning of whole-number quotients and remainders with up to four-digit dividends and one-digit divisors.

Number and Operations - Fractions				
4.NF.A.1	Identify equivalent fractions.	Generate equivalent fractions.	Explain why a fraction *a/b* is equivalent to a fraction (*n x a*)/(*n x 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 understand and generate equivalent fractions.	Explain why a fraction *a/b* is equivalent to a fraction (*n x a*)/(*n x b*) by using visual fraction models. Explain why the number and size of the parts is important in determining if two fractions are the same size. Use this principle to explain and generate equivalent fractions.
4.NF.A.2	Compare two fractions with different numerators and different denominators (e.g., by creating common denominators or numerators and by comparing to a benchmark fraction). a. Determine whether or not two fractions refer to the same size whole. b. Compare two fraction models using the symbols >, =, or <.	Compare two fractions with different numerators and different denominators (e.g., by creating common denominators or numerators and by comparing to a benchmark fraction). a. Determine whether or not comparing two fractions is valid based on whether or not the fractions refer to the same size whole. b. Compare two fractions using the symbols >, =, or <.	Compare two fractions with different numerators and different denominators (e.g., by creating common denominators or numerators and by comparing to a benchmark fraction). a. Understand that comparisons are valid only when the two fractions refer to the same size whole. b. Record the results of comparisons with symbols >, =, or <, and justify the conclusions.	Compare two fractions with different numerators and different denominators (e.g., by creating common denominators or numerators and by comparing to a benchmark fraction). a. Explain why comparisons are valid only when two fractions refer to the same size whole. b. Record the results of comparing multiple fractions with symbols >, =, or <, and justify the conclusions.
4.NF.B.3	Understand a fraction *a/b* with *a* > 1 as a sum of unit fractions (1/*b*). a. Recognize addition of fractions as joining parts referring to the same whole. b. Identify a correct decomposition of a fraction into a sum of fractions with the same denominator in one way (e.g., 3/8 = 1/8 + 1/8+1/8). c. Add mixed numbers with like denominators, where regrouping is not necessary. d. Identify the solution to word problems involving addition of fractions referring to the same whole and having like denominators.	Understand a fraction *a/b* with *a* > 1 as a sum of unit fractions (1/*b*). a. Recognize addition and subtraction of fractions as joining and separating parts referring to the same whole. b. Identify a correct decomposition of a fraction into a sum of fractions with the same denominator in more than one way (e.g., 3/8 = 1/8 + 1/8+1/8; 3/8 = 2/8 + 1/8; 2 1/8 = 1 + 1 + 1/8 + or 2 1/8 = 8/8 + 8/8 + 1/8). c. Add and subtract mixed numbers with like denominators where regrouping is not necessary. d. Identify the solution to word problems involving addition and subtraction of fractions referring to the same whole and having like denominators.	Understand a fraction *a/b* with *a* > 1 as a sum of unit fractions (1/*b*). a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. b. Decompose a fraction into a sum of fractions with the same denominator in more than one way (e.g., 3/8 = 1/8 + 1/8+1/8; 3/8 = 2/8 + 1/8; 2 1/8 = 1 + 1 + 1/8 + or 2 1/8 = 8/8 + 8/8 + 1/8). c. Add and subtract mixed numbers with like denominators (e.g., by using properties of operations and the relationship between addition and subtraction and/or by replacing each mixed number with an equivalent fraction). d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators.	Understand a fraction *a/b* with *a* > 1 as a sum of unit fractions (1/*b*). a. Explain how addition and subtraction of fractions is joining and separating parts referring to the same whole. b. Explain how to decompose a fraction into a sum of fractions with the same denominator in more than one way (e.g., 3/8 = 1/8 + 1/8+1/8; 3/8 = 2/8 + 1/8; 2 1/8 = 1 + 1 + 1/8 + or 2 1/8 = 8/8 + 8/8 + 1/8). c. Explain how to add and subtract mixed numbers with like denominators (e.g., by using properties of operations and the relationship between addition and subtraction and/or by replacing each mixed number with an equivalent fraction). d. Solve word problems involving addition and subtraction of fractions referring to the same whole but having different denominators.

4.NF.B.4	Build fractions from unit fractions. a. Identify the product when a whole number is multiplied by a unit fraction. In general, $a/b = a \times 1/b$. b. Identify the product when a whole number is multiplied by a fraction. In general, $n \times a/b = (n \times a)/b$. c. Identify the solution to word problems involving multiplication of a whole number by a fraction.	Build fractions from unit fractions. a. Determine the product when a whole number is multiplied by a unit fraction. In general, $a/b = a \times 1/b$. b. Determine the product when a whole number is multiplied by a fraction. In general, $n \times a/b = (n \times a)/b$. c. Determine the solution to word problems involving multiplication of a whole number by a fraction.	Build fractions from unit fractions. a. Understand a fraction a/b as a multiple of a unit fraction $1/b$. In general, $a/b = a \times 1/b$. b. Understand a multiple of a/b as a multiple of a unit fraction $1/b$, and use this understanding to multiply a whole number by a fraction. In general, $n \times a/b = (n \times a)/b$. c. Solve word problems involving multiplication of a whole number by a fraction. *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?*	Build fractions from unit fractions. a. Explain why a fraction a/b is a multiple of a unit fraction $1/b$. b. Understand a multiple of a/b as a multiple of a unit fraction $1/b$, and use this understanding to multiply a whole number by a fraction. In general, $n \times a/b = (n \times a)/b$. c. Create word problems involving multiplication of a whole number by a fraction.
4.NF.C.5	Identify equivalent fractions, one with denominator 10 and one with denominator 100. *For example, identify 3/10 as equivalent to 30/100.*	Identify equivalent fractions, one with denominator 10 and one with denominator 100. Identify the sum of two fractions with respective denominators 10 (tenths) and 100 (hundredths). *For example, identify 3/10 as equivalent to 30/100, and identify that 3/10 + 4/100 = 34/100.*	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 (tenths) and 100 (hundredths). *For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.* (Note: 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.)	Express a fraction with denominator 10 as an equivalent fraction with denominator a multiple of 10, and use this technique to add two fractions with the respective denominators. *For example, express 3/10 as 300/1000, and add 3/10 + 40/1000 = 340/1000.*
4.NF.C.6	Identify decimal notation for fractions with denominators 10 (tenths) or 100 (hundredths).	Identify decimal notation for fractions with denominators 10 (tenths) or 100 (hundredths), and locate these decimals on a number line.	Use decimal notation for fractions with denominators 10 (tenths) or 100 (hundredths), and locate these decimals on a number line.	Use decimal notation for fractions and mixed numbers with denominators a multiple of 10. Explain the location of these decimals on a number line.
4.NF.C.7	Compare two decimals, referring to the same whole, to hundredths.	Compare two decimals, referring to the same whole, to hundredths. Record the results of comparisons with the symbols >, =, or <.	Compare two decimals to hundredths by reasoning about their size. Understand that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <.	Compare two decimals to hundredths by reasoning about their size. Explain why comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <.

Measurement and Data				
4.MD.A.1	Identify the relative sizes of measurement units within one system of units which could include km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, identify measurements in a larger unit in terms of a smaller unit.	Identify the relative sizes of measurement units within one system of units which could include km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, identify measurements in a larger unit in terms of a smaller unit and in a smaller unit in terms of a larger unit.	Know relative sizes of measurement units within one system of units which could include 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 and in a smaller unit in terms of a larger unit. *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).*	Explain how different sizes of measurement units within one system of units relate to each other. Within a single system of measurement, explain how to convert measurements from a larger unit to a smaller unit and from a smaller unit to a larger unit. Generate a conversion table for measurements within one system of units.
4.MD.A.2	Use the four operations to identify solutions to word problems and problems in real-world context involving distances, intervals of time (hr, min, sec), liquid volumes, masses of objects, and money, including decimals. Represent measurement quantities using number lines that feature a measurement scale.	Use the four operations to identify solutions to word problems and problems in real-world context involving distances, intervals of time (hr, min, sec), liquid volumes, masses of objects, and money, including decimals and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using a variety of representations, including number lines that feature a measurement scale.	Use the four operations to solve word problems and problems in real-world context involving distances, intervals of time (hr, min, sec), liquid volumes, masses of objects, and money, including decimals and problems involving fractions with like denominators, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using a variety of representations, including number lines that feature a measurement scale.	Explain how to use the four operations to solve word problems and problems in real-world context involving distances, intervals of time (hr, min, sec), liquid volumes, masses of objects, and money, including decimals and problems involving fractions with like denominators, and problems that require expressing measurements given in a smaller unit in terms of a larger unit. Represent measurement quantities using a variety of representations, including number lines that feature a measurement scale.
4.MD.A.3	Identify the area and perimeter for rectangles in mathematical problems.	Identify the area and perimeter for rectangles in mathematical problems and problems in real-world contexts.	Apply the area and perimeter formulas for rectangles in mathematical problems and problems in real-world contexts including problems with unknown side lengths.	Explain the difference between the area and perimeter formulas for rectangles. Use the area and perimeter formulas to determine unknown side lengths of a rectangle.
4.MD.B.4	Identify 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 of fractions by using information presented in line plots.	Identify 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.	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.	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Create problems involving addition and subtraction of fractions 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. Recognize that a “one-degree angle” turns through 1/360 of a circle. b. Recognize that an “*n* degree angle” turns through *n* /360 of a circle.	Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: a. Identify a one-degree angle, with its common endpoint at the center of a circle, as being 1/360 of the circle. b. Identify an “*n* degree angle," with its common endpoint at the center of a circle, as being *n* /360 of the circle.	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 the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a “one-degree angle,” and can be used to measure angles. b. An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees.	Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: a. Explain how an angle is measured with reference to a circle with its center at the common endpoint of the rays and how the angle measure is the same as the fraction of the circular arc between the points where the two rays intersect the circle. b. Explain why an angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees.
4.MD.C.6	Identify angles measures in whole-number degrees using a protractor, when one of the rays is horizontal.	Identify angles measures in whole-number degrees using a protractor. Add a second ray to sketch angles of specified measure when given a horizontal ray.	Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.	Measure angles in whole-number degrees using a protractor, including when the angle does not have a horizontal ray.
4.MD.C.7	Solve addition problems to find unknown angles on a diagram within mathematical problems as well as problems in real-world contexts.	Solve addition and subtraction problems to find unknown angles on a diagram within mathematical problems as well as problems in real-world contexts.	Understand angle measures 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 within mathematical problems as well as problems in real-world contexts.	Understand angle measures 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.) Create addition and subtraction problems, mathematical problems as well as problems in real-world contexts, for angles represented on a diagram.

Geometry				
4.G.A.1	Identify points, lines, line segments, rays, angles, and lines in two-dimensional figures.	Identify and draw points, lines, line segments, rays, angles, and perpendicular and parallel lines in two-dimensional figures.	Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	Explain characteristics that define points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines.
4.G.A.2	Identify two-dimensional figures based on the presence or absence of parallel or perpendicular lines.	Identify 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.	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 (e.g., understand right triangles as a category, and identify right triangles).	Classify two-dimensional figures into more than one category based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size (e.g., understand right triangles as a category, and identify right triangles).
4.G.A.3	Identify a line of symmetry for a two-dimensional figure.	Identify line-symmetric figures and draw lines of symmetry.	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.	Explain that a line of symmetry for a two-dimensional figure is a line across the figure such that the figure can be folded along the line into matching parts. Draw line-symmetric figures.

Standard	Minimally Proficient	Partially Proficient	Proficient	Highly Proficient
	The Minimally Proficient student	The Partially Proficient student	The Proficient student	The Highly Proficient student
Operations and Algebraic Thinking				
5.OA.A.1	Use parenthesis in numerical expressions and evaluate numeric expressions.	Evaluate numerical expressions with parentheses and brackets.	Use parentheses and brackets in numerical expressions, and evaluate expressions with these symbols (Order of Operations).	Use parentheses and brackets to create multiple numerical expressions equivalent to a given value.
5.OA.A.2	Identify simple expressions that record calculations with numbers, and identify numerical expressions without evaluating them.	Write simple expressions that record calculations with numbers, and identify numerical expressions without evaluating them.	Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them (e.g., express the calculation "add 8 and 7, then multiply by 2" as 2 x (8 + 7). Recognize that 3 x (18,932 + 921) is three times as large as 18,932 + 921, without having to calculate the indicated sum or product).	Write simple expressions that record multi-step calculations with numbers, and interpret multi-step numerical expressions without evaluating them.
5.OA.B.3	Identify two numerical patterns using two given rules (e.g., identify terms in the resulting sequences). Identify the apparent relationships between corresponding terms. Identify ordered pairs consisting of corresponding terms from the two patterns.	Determine the missing values in two numerical patterns using two given rules (e.g., determine the missing terms in the resulting sequences). Identify the apparent relationships between corresponding terms. Identify ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.	Generate two numerical patterns using two given rules (e.g., generate terms in the resulting sequences). Identify and explain the 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 (e.g., 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 how the rules for two numerical patterns relate to the relationships between the corresponding terms in those patterns (e.g., given the rule "add 3" and the starting number 0, and given the rule "add 6" and the starting number 0, observe that the terms in one sequence are twice the corresponding terms in the other sequence, and recognize that "add 3" is twice "add 6").
5.OA.B.4	Identify prime numbers.	Understand prime numbers have only two factors and identify the prime factorization of numbers.	Understand primes have only two factors and decompose numbers into prime factors.	Explain how to decompose numbers into prime factors.

Number and Operations in Base Ten				
5.NBT.A.1	Identify which place value in a multi-digit number represents 10 times the value of a given place value, or identify which place value in a multi-digit number represents 1/10 the value of a given place value.	Given two multi-digit numbers, with a digit in different place values in each number, identify how many times the value of the digit is in one number compared to the other number (e.g. the value of the 4 in 29,143 is 1/100 times the value of the 4 in 74,851).	Apply concepts of place value, multiplication, and division to understand 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.	Apply concepts of place value, multiplication, and division to explain why a digit in one place represents ten times what it represents in the place to its right and 1/10 of what it represents in the place to its left.
5.NBT.A.2	Identify patterns in the number of zeros of the product when multiplying a number by powers of 10, and identify patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10.	Find patterns in the number of zeros of the product when multiplying a number by powers of 10, and find patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10.	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.	Given a pattern in the number of zeros of the product when multiplying a number by powers of 10, or a pattern in the placement of the decimal point when multiplying or dividing a number by a power of 10, create a possible equation that represents the pattern and explain why there are multiple correct equations.
5.NBT.A.3	Read and write, decimals to tenths. a. Identify decimals to tenths using base-ten numerals and number names. b. Compare two decimals to tenths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	Read, write, and compare decimals to hundredths. a. Identify decimals to hundredths using base-ten numerals, number names, and expanded form. b. Compare two decimals to hundredths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	Read, write, and compare decimals to thousandths. a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form. b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	Read, write, and compare decimals to thousandths. a. Order multiple decimals to thousandths using base-ten numerals, number names, and expanded form. b. Compare more than 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.4	Use place value understanding to round decimals to the tenths place.	Use place value understanding to round decimals to the hundredths place.	Use place value understanding to round decimals to any place.	Explain how to use place value understanding to round decimals to any place.
5.NBT.B.5	Identify the product of two multi-digit whole numbers.	Calculate the product of two multi-digit whole numbers.	Fluently multiply multi-digit whole numbers using a standard algorithm.	Explain how to use a standard algorithm to multiply multi-digit whole numbers.
5.NBT.B.6	Apply understanding of division to identify whole-number quotients of whole numbers with up to three-digit dividends and two-digit divisors.	Apply understanding of division to identify whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors.	Apply and extend understanding of division to find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors.	Apply and extend understanding of division to find whole-number quotients of whole numbers with more than four-digit dividends and two-digit divisors.
5.NBT.B.7	Add and subtract decimals (without regrouping) to hundredths, connecting objects or drawings to strategies based on place value, properties of operations, and/or the relationship between operations.	Add, subtract, and multiply decimals to hundredths, connecting objects or drawings to strategies based on place value, properties of operations, and/or the relationship between operations.	Add, subtract, multiply, and divide decimals to hundredths, connecting objects or drawings to strategies based on place value, properties of operations, and/or the relationship between operations. Relate the strategy to a written form.	Add, subtract, multiply, and divide decimals to hundredths. Relate the strategy to a written form. Apply this to real-world context.

Number and Operations - Fractions				
5.NF.A.1	Identify the sum or difference of fractions with unlike denominators.	Identify the sum or difference of fractions with unlike denominators (including mixed numbers).	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 (e.g., 2/3 + 5/4 = 8/12 + 15/12 = 23/12).	Explain how to find the sum or difference of 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
5.NF.A.2	Identify the solution to word problems involving addition and subtraction of fractions referring to the same whole, by using visual models to represent the problem. Use benchmark fractions and number sense of fractions to identify an estimate.	Identify the solution to word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators by using a variety of representations, equations, and visual models to represent the problem. Use benchmark fractions and number sense of fractions to identify an estimate and assess the reasonableness of answers.	Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators by using a variety of representations, equations, and visual models to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers (e.g., recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2).	Create word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators. Explain how to estimate mentally and assess the reasonableness of answers.
5.NF.B.3	Identify a fraction that results from dividing the whole number numerator by the whole number denominator. Identify the solution to word problems involving division of whole numbers leading to answers in the form of fractions.	Determine the fraction that results from dividing the whole number numerator by the whole number denominator. Identify the solution to word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers.	Interpret a fraction as the number that results from dividing the whole number numerator by the whole number 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. *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?*	Explain the meaning of a fraction as the number that results from dividing the whole number numerator by the whole number denominator, and why multiplying a fraction by the denominator results in the numerator. Create word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers.

5.NF.B.4	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number and a fraction by a fraction. a. Identify the product (a/b) x q as a parts of a partition of q into b equal parts using a visual fraction model. b. Identify the product of a fraction multiplied by a fraction (a/b) x (c/d) as (ac /bd) using a visual fraction model. c. Identify the area of a rectangle with fractional side lengths that has been tiled with unit squares of the appropriate unit fraction side lengths. Identify the product of fractional side lengths to find areas of rectangles.	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number and a fraction by a fraction. a. Identify the product (a/b) x q as a parts of a partition of q into b equal parts. b. Identify the product of a fraction multiplied by a fraction (a/b) x (c/d) as ac /bd . Identify the correct story context for a given equation in the form (a /b) x (c /d) = ac /bd . c. Find the area of a rectangle with fractional side lengths that has been tiled with unit squares of the appropriate unit fraction side lengths. Identify the product of fractional side lengths to find areas of rectangles. Recognize that fraction products are rectangular areas.	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number and a fraction by a fraction. a. Interpret the product (a/b) x q as a parts of a partition of q into b equal parts. *For example, use a visual fraction model to show (2/3) x 4 = 8/3, and create a story context for this equation.* b. Interpret the product of a fraction multiplied by a fraction (a/b) x (c/d). Use a visual fraction model and create a story context for this equation. *For example, use a visual fraction model to show (2/3) x (4/5) = 8/15, and create a story context for this equation.* In general, (a/b) x (c/d) = ac/bd . c. 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.	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number and a fraction by a fraction. a. Explain why the product (a/b) x q is a parts of a partition of q into b equal parts, and create a word problem for an equation given in the form (a /b) x q . b. Explain why the product of a fraction multiplied by a fraction (a/b) x (c/d) is the product of the numerators divided by the product of the denominators ac /bd . Create a story context for an given equation in the form (a/b) x (c/d) = ac/bd . c. Given a rectangle with fractional side lengths, explain how tiling the rectangle with unit squares of the appropriate fractional side lengths and calculating the sum of area of those tiles is the same as multiplying the side lengths of the rectangle. Explain the connection between the product of two fractions and the area of a rectangle with side lengths equal to those fractions.

5.NF.B.5	Interpret multiplication as scaling (resizing), by: a. Identifying how the size of the product relates to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication, given a visual model. b. Identifying that multiplying a given number by a fraction greater than 1 results in a product greater than the given number; identifying that multiplying a given number by a fraction less than 1 results in a product smaller than the given number.	Interpret multiplication as scaling (resizing), by: a. Identifying how the size of the product relates to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication, given a visual model. b. Identifying that multiplying a given number by a fraction greater than 1 results in a product greater than the given number; identifying that multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and identifying that multiplying a given fraction by a fraction equal to 1 results in an equivalent fraction.	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; 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.	Interpret multiplication as scaling (resizing), by: a. Explaining how the size of a product compares to the size of one factor on the basis of the size of the other factor. b. Demonstrating how multiplying a given number by a fraction greater than 1 results in a product greater than the given number; demonstrating how multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and demonstrating how the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ relates to the effect of multiplying a/b by 1.
5.NF.B.6	Identify the solutions to problems in real-world contexts involving multiplication of fractions, by using visual models.	Identify the solutions to problems in real-world contexts involving multiplication of fractions, by using a variety of representations including equations and models.	Solve problems in real-world contexts involving multiplication of fractions, including mixed numbers, by using a variety of representations including equations and models.	Create problems in real-world contexts involving multiplication of fractions, including mixed numbers, given a representation such as an equation or a model.

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. Identify the quotient of a unit fraction by a non-zero whole number. b. Identify the quotient of a whole number by a unit fraction. c. Identify the solutions to problems in real-world context involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, using visual models.	Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. a. Compute the quotient of a unit fraction by a non-zero whole number. b. Compute the quotient of a whole number by a unit fraction. c. Identify the solutions to problems in real-world context involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, using a variety of representations.	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. Use the relationship between multiplication and division to justify conclusions. 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 justify conclusions (e.g., 4 ÷ (1/5) = 20 because 20 x (1/5) = 4). c. Solve problems in real-world context involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, using a variety of representations.	Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. a. Use the relationship between multiplication and division to explain how to divide a unit fraction by a non-zero whole number. b. Use the relationship between multiplication and division to explain how to divide a whole number by a unit fraction. c. Create problems in real-world context involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions.

Measurement and Data				
5.MD.A.1	Identify equivalent, different-sized standard measurement units within a given measurement system, and use these conversions in solving one-step, real-world problems.	Convert among different-sized standard measurement units within a given measurement system, and use these conversions in solving two-step, real-world problems.	Convert among different-sized standard measurement units within a given measurement system, and use these conversions in solving multi-step, real-world problems.	Create multi-step, real-world problems that require converting among different-sized standard measurement units within a given measurement system.
5.MD.B.2	Identify a line plot that displays a data set of measurements in fractions of a unit (1/2, 1/4). Use operations on fractions for this grade to identify solutions to one-step problems involving information presented in line plots.	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4). Use operations on fractions for this grade to solve one- or two-step problems involving information presented in line plots.	Make a line plot to display a data set of measurements in fractions of a unit (1/8, 1/2, 3/4). 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.*	Make a line plot to display a data set of measurements in fractions of a unit. Use operations on fractions for this grade to solve multi-step problems involving information presented in line plots.
5.MD.C.3	Recognize volume as an attribute of solid figures and understand concepts of volume measurement. a. Identify a “unit cube,” and know that it can be used to measure volume. b. Match the number of unit cubes it takes to pack a solid figure without gaps or overlaps to the volume of the figure.	Recognize volume as an attribute of solid figures and understand concepts of volume measurement. a. Define a “unit cube” and "one cubic unit." b. Identify that a solid figure which can be packed without gaps or overlaps using *n* unit cubes, and thus has a volume of *n* cubic units.	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.	Recognize volume as an attribute of solid figures and understand concepts of volume measurement. a. Explain why a cube with side length 1 unit, called a “unit cube,” and why it is said to have “one cubic unit” of volume. b. Explain why 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.4	Identify volumes by counting unit cubes.	Measure volumes by counting unit cubes.	Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.	Look for patterns in measuring volumes of prisms by counting unit cubes. Fluently use cubic cm, cubic in, cubic ft, and improvised units.

5.MD.C.5	Relate volume to the operations of multiplication and addition and solve mathematical problems and problems in real-world contexts involving volume. a. Identify the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, or by multiplying the edge lengths. b. Understand and use the formula $V = l \times w \times h$ for rectangular prisms to identify volumes of right rectangular prisms with whole-number edge lengths. c. Understand volume as additive. Identify volumes of solid figures composed of two non-overlapping right rectangular prisms.	Relate volume to the operations of multiplication and addition and solve mathematical problems and problems in real-world contexts involving volume. a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, or by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. b. Understand and use the formulas $V = l \times w \times h$ and $V = B \times h$, where in this case B is the area of the base ($B = l \times w$), for rectangular prisms to identify volumes of right rectangular prisms with whole-number edge lengths to solve mathematical problems. c. Understand volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms, applying this technique to solve mathematical	Relate volume to the operations of multiplication and addition and solve mathematical problems and problems in real-world contexts 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. Understand and use the formulas $V = l \times w \times h$ and $V = B \times h$, where in this case B is the area of the base ($B = l \times w$), for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths to solve mathematical problems and problems in real-world contexts. c. Understand volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms, applying this technique to solve mathematical problems and problems in real-world contexts.	Relate volume to the operations of multiplication and addition and solve mathematical problems and problems in real-world contexts involving volume. a. Explain why the volume of a right rectangular prism can be calculated by multiplying the edge lengths, and explain why this is equivalent to 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. Create problems in real-world contexts that require understanding and using the formulas $V = l \times w \times h$ and $V = B \times h$. c. Understand volume as additive. Find volumes of solid figures composed of more than two non-overlapping right rectangular prisms, applying this technique to solve mathematical problems and problems in real-world contexts.

Geometry				
5.G.A.1	Identify the axes and the origin (0 , 0) of a coordinate system. Identify the *x* - and *y*- coordinates of an ordered pair.	Describe a coordinate system as having 2 axes that intersect at the origin (0 , 0). Identify an ordered pair and the *x* - and *y* -coordinates of an ordered pair.	Understand and describe a coordinate system as perpendicular number lines, called axes, that intersect at the origin (0 , 0). Identify a given point in the first quadrant of the coordinate plane using an ordered pair of numbers, called coordinates. Understand that the first number (*x*) indicates the distance traveled on the horizontal axis, and the second number (*y*) indicates the distance traveled on the vertical axis.	Understand and describe a coordinate system. Identify points in the coordinate plane using coordinates. Explain that the *x* -coordinate indicates the distance traveled on the horizontal axis, and the *y* -coordinate indicates the distance traveled on the vertical axis.
5.G.A.2	Identify points graphed in the first quadrant of the coordinate plane.	Graph points in the first quadrant of the coordinate plane, and identify the coordinate values of points in the context of the situation.	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.	Create real-world and mathematical problems that can be solved by graphing points in the first quadrant of the coordinate plane. Explain the meaning of the coordinate values of points in the context of the situation.
5.G.B.3	Identify attributes belonging to a category of two-dimensional figures.	Recognize that attributes belonging to a category of two-dimensional figures also belong to a subcategory of that category.	Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.	Explain why attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.
5.G.B.4	Identify two-dimensional figures based on properties limited to sides and angles.	Classify two-dimensional figures based on properties limited to sides and angles.	Classify two-dimensional figures in a hierarchy based on properties.	Draw or construct two-dimensional figures based on properties or classifications.

Standard	Minimally Proficient	Partially Proficient	Proficient	Highly Proficient
	The Minimally Proficient student	The Partially Proficient student	The Proficient student	The Highly Proficient student
Ratios and Proportional Relationships				
6.RP.A.1	Understand the concept of a ratio as comparing two quantities. Use ratio language to identify a ratio relationship between two quantities.	Understand the concept of a ratio as comparing two quantities multiplicatively. Use ratio language to describe a ratio relationship between two quantities using a limited variety of representations.	Understand the concept of a ratio as comparing two quantities multiplicatively or joining/composing the two quantities in a way that preserves a multiplicative relationship. Use ratio language to describe a ratio relationship between two quantities. *For example, "There were 2/3 as many men as women at the concert."*	Explain the concept of a ratio as comparing two quantities multiplicatively or joining/composing the two quantities in a way that preserves a multiplicative relationship. Use ratio language to describe a ratio relationship between two quantities.
6.RP.A.2	Identify a unit rate associated with a ratio and use basic unit rate language to describe it.	Determine a unit rate associated with a ratio and use unit rate language to describe it.	Understand the concept of a unit rate a/b associated with a ratio a : b with b ≠ 0, and use rate language (e.g., for every, for each, for each 1, per) in the context of a ratio relationship. (Complex fraction notation is not an expectation for unit rates in this grade level.)	Explain the concept of a unit rate a/b associated with a ratio a : b with b ≠ 0, and use rate language in the context of a ratio relationship.
6.RP.A.3	Use ratio and rate reasoning to solve mathematical problems and problems in real-world context (e.g., by reasoning about data collected from measurements, tables of equivalent ratios, tape diagrams, double number line diagrams, or equations). a. Use tables of equivalent ratios relating quantities with whole-number measurements, identify missing values in the tables, and identify the pairs of values plotted on the coordinate plane. Use tables to compare ratios. b. Identify the unit rate for unit rate problems including those involving unit pricing and constant speed. c. Identify a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity). Identify solutions to percent problems when the percent is the unknown. d. Use ratio reasoning to match measurement units; transform units appropriately when multiplying quantities.	Use ratio and rate reasoning to solve mathematical problems and problems in real-world context (e.g., by reasoning about data collected from measurements, tables of equivalent ratios, tape diagrams, double number line diagrams, or equations). a. Use tables of equivalent ratios relating quantities with whole-number measurements, determine missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios. b. Define unit rate for unit rate problems including those involving unit pricing and constant speed. c. Identify a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity). Identify solutions to percent problems when the percent or the part is the unknown. d. Use ratio reasoning to identify measurement units; transform units appropriately when multiplying or dividing quantities.	Use ratio and rate reasoning to solve mathematical problems and problems in real-world context (e.g., by reasoning about data collected from measurements, tables of equivalent ratios, tape diagrams, double number line diagrams, or equations). 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. b. Solve unit rate problems including those involving unit pricing and constant speed. 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 percent problems with the unknown in all positions of the equation. d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.	Use ratio and rate reasoning to solve mathematical problems and problems in real-world context (e.g., by reasoning about data collected from measurements, tables of equivalent ratios, tape diagrams, double number line diagrams, or equations). a. Explain the pattern in tables of equivalent ratios relating quantities with whole-number measurements, explain how to find missing values in the tables, and how to plot the pairs of values on the coordinate plane. Use tables to compare ratios. b. Solve unit rate problems involving more than one unit rate. c. Explain why a percent of a quantity is a rate per 100. Create and solve percent problems with the unknown in all positions of the equation. d. Use ratio reasoning to convert measurement units when more than one conversion is required; manipulate and transform units appropriately when multiplying or dividing quantities.

The Number System				
6.NS.A.1	Compute quotients of fractions to solve mathematical problems using visual fraction models to represent the problem.	Compute quotients of fractions to solve mathematical problems using visual fraction models and equations to represent the problem.	Interpret and compute quotients of fractions to solve mathematical problems and problems in real-world context involving division of fractions by fractions using visual fraction models and equations to represent the problem. *For example, create a story context for 2/3 ÷ 3/4 and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that 2/3 ÷ 3/4 = 8/9 because 3/4 of 8/9 is 2/3. In general, a/b ÷ c/d = ad/bc.*	Compute quotients of fractions to solve mathematical problems and problems in real-world context involving mixed numbers using visual fraction models and equations to represent the problem. Interpret the solution in the context of the problem.
6.NS.B.2	Fluently divide three-digit numbers by two-digit numbers using a standard algorithm.	Fluently divide four-digit numbers by two-digit numbers using a standard algorithm.	Fluently divide multi-digit numbers using a standard algorithm.	Fluently divide multi-digit numbers to solve real-world problems, not including multi-digit decimals, using a standard algorithm and assess the reasonableness of the result.
6.NS.B.3	Fluently add, subtract, and multiply multi-digit decimals, where decimals are limited to the hundredths, using a standard algorithm for each operation.	Fluently add, subtract, multiply, and divide multi-digit decimals, where the divisor is a whole number, using a standard algorithm for each operation.	Fluently add, subtract, multiply, and divide multi-digit decimals using a standard algorithm for each operation.	Fluently add, subtract, multiply, and divide multi-digit decimals to solve real world problems, using a standard algorithm for each operation, and assess the reasonableness of the result..
6.NS.B.4	Use previous understanding of factors to find the greatest common factor and the least common multiple. a. Select the greatest common factor of two whole numbers less than or equal to 100 using visual models. b. Select the least common multiple of two whole numbers less than or equal to 12 using visual models. c. Identify the distributive property to express a sum of two whole numbers 1 to 100 with a common factor as a multiple of a sum of two whole numbers. For example, express 16 + 8 as 2(8 + 4).using visual models.	Use previous understanding of factors to find the greatest common factor and the least common multiple. a. Identify the greatest common factor of two whole numbers less than or equal to 100. b. Identify the least common multiple of two whole numbers less than or equal to 12. c. Identify the distributive property to express a sum of two whole numbers 1 to 100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example, express 16 + 8 as 8(2 + 1).	Use previous understanding of factors to find the greatest common factor and the least common multiple. a. Find the greatest common factor of two whole numbers less than or equal to 100. b. Find the least common multiple of two whole numbers less than or equal to 12. c. Use the distributive property to express a sum of two whole numbers 1 to 100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example, express 36 + 8 as 4(9 + 2).	Use previous understanding of factors to find the greatest common factor and the least common multiple. a. Find two whole numbers when given their greatest common factor. b. Find two whole numbers when given their least common multiple. c. Use the greatest common factor and the distributive property to express a sum of two whole numbers greater than 100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example, express 336 + 270 as 6(56 + 45).

6.NS.C.5	Understand that positive and negative numbers are used together to describe quantities having opposite directions or values. Identify positive and negative numbers that represent quantities in real-world context, identifying the meaning of 0 in each situation.	Understand that positive and negative numbers are used together to describe quantities having opposite directions or values. Identify real-world context that can be represented with positive and negative numbers, defining the meaning of 0 in each situation.	Understand that positive and negative numbers are used together to describe quantities having opposite directions or values. Use positive and negative numbers to represent quantities in real-world context, explaining the meaning of 0 in each situation.	Understand that positive and negative numbers are used together to describe quantities having opposite directions or values. Use positive and negative numbers to represent quantities in real-world context, explaining the meaning of 0 in each situation. Interpret and represent changes in positive and negative numbers representing quantities in real-world situations in terms of the context.
6.NS.C.6	Understand a rational number can be represented 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. a. Identify the opposite of a number. b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize a negative coordinate indicates left or down while a positive coordinate indicates up or right. c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram.	Understand a rational number can be represented 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. a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line and that 0 is its own opposite. b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; indicate the quadrant a point lies in based on the sign of the coordinates. c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and on a coordinate plane.	Understand a rational number can be represented 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. 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 and that 0 is its own opposite. 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. 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.	Understand a rational number can be represented 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. 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 and that 0 is its own opposite. Indicate whether a number will be to the left or right of 0 on the number line, given the number of negative symbols it has. b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; explain why it is that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. c. Create real world problems that are solved by given rational numbers on a number line diagram; create real world problems that are solved by given pairs of integers and other rational numbers on a coordinate plane.

6.NS.C.7	Understand ordering and absolute value of rational numbers. a. Identify a statement of inequality given the position of the two numbers on a number line. b. Identify correct statements of order for rational numbers in real-world context. c. Understand the absolute value of a rational number is always positive. d. Compare the absolute value of two positive numbers in mathematical problems and problems in real-world context.	Understand ordering and absolute value of rational numbers. a. Create a statement of inequality given the position of the two numbers on a number line. b. Write statements of order for rational numbers in real-world context. c. Understand the absolute value of a rational number as its distance from 0 on the number line. d. Compare the absolute value of two numbers in mathematical problems and problems in real-world context.	Understand ordering and absolute value of rational numbers. a. Interpret statements of inequality as statements about the relative position of two numbers on a number line. b. Write, interpret, and explain statements of order for rational numbers in real-world context. 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 real-world context. d. Distinguish comparisons of absolute value from statements about order in mathematical problems and problems in real-world context.	Understand ordering and absolute value of rational numbers. a. Justify the relative position of multiple numbers on a number line given statements of inequality about their relative positions. b. Create scenarios in real-world context that fit statements of order for rational numbers. c. Solve problems involving understanding 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 real-world context. d. Explain comparisons of absolute value from statements about order in mathematical problems and problems in real-world context.
6.NS.C.8	Solve mathematical problems by graphing points in all one quadrant of the coordinate plane. Count spaces between coordinates to find whole number distances between points with the same first coordinate or the same second coordinate.	Solve mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates to find whole number distances between points with the same first coordinate or the same second coordinate.	Solve mathematical problems and problems in real-world context 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.	Justify solutions to mathematical problems and problems in real-world context solved 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.

Expressions and Equations				
6.EE.A.1	Write and evaluate numerical expressions involving a single number with a whole-number exponent.	Write and evaluate numerical expressions involving a single term and whole-number exponents.	Write and evaluate numerical expressions involving whole-number exponents.	Write and evaluate numerical expressions involving multiple terms and whole-number exponents.
6.EE.A.2	Write, read, and evaluate algebraic expressions. a. Write expressions that record a single operation with numbers and variables. b. Match part of an expression to its mathematical term (sum, term, and product); view one part of an expression as a single entity. c. Identify the value of an expression with one variable given the specific value of the variable. Include expressions that arise from formulas used to solve mathematical problems and problems in real-world context. Perform arithmetic operations in the conventional order when there are no parentheses to specify a particular order (Order of Operations).	Write, read, and evaluate algebraic expressions. a. Write expressions that record two operations with numbers and variables. b. Identify parts of an expression using mathematical terms (sum, term, and product); view one or more parts of an expression as a single entity. c. Identify the value of an expression with two variables given specific values of their variables. Include expressions that arise from formulas used to solve mathematical problems and problems in real-world context. 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).	Write, read, and evaluate algebraic expressions. a. Write expressions that record operations with numbers and variables. b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, and coefficient); view one or more parts of an expression as a single entity. c. Evaluate expressions given specific values of their variables. Include expressions that arise from formulas used to solve mathematical problems and problems in real-world context. 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).	Write, read, and evaluate algebraic expressions. a. Write expressions that record operations, including exponents, with numbers and variables. b. Create expressions given mathematical terms (sum, term, product, factor, quotient, and coefficient); explain how one part of an expression relates to other parts of the expression. c. Evaluate expressions with multiple variables and multiple operations given specific values of their variables. Include expressions that arise from formulas used to solve mathematical problems and problems in real-world context. 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.EE.A.3	Apply the Associative and Commutative properties of operations to generate equivalent expressions involving whole-numbers.	Apply the properties of operations to generate equivalent expressions involving whole-numbers.	Apply the properties of operations to generate equivalent expressions. *For example, apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x.*	Apply the properties of operations to generate equivalent expressions involving rational numbers and whole-number exponents in real-world contexts.
6.EE.A.4	Identify when two expressions are equivalent in cases of repeated addition.	Identify when two expressions are equivalent in cases where the resulting expression only has one term.	Identify when two expressions are equivalent. *For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.*	Create equivalent expressions.
6.EE.B.5	Understand solving an equation or inequality as a process of reasoning to find the value(s) of the variables that make that equation or inequality true. Use substitution to identify a whole number in a specified set that makes an equation or inequality true.	Understand solving an equation or inequality as a process of reasoning to find the value(s) of the variables that make that equation or inequality true. Use substitution to identify a number in a specified set that makes an equation or inequality true.	Understand solving an equation or inequality as a process of reasoning to find the value(s) of the variables that make that equation or inequality true. Use substitution to determine whether a given number in a specified set makes an equation or inequality true.	Explain how solving an equation or inequality is the process of reasoning to find the value(s) of the variables that make that equation or inequality true.

6.EE.B.6	Identify what the variables represent when solving mathematical problems and problems in real-world context; understand that a variable can represent an unknown number.	Identify what the expressions represent when solving mathematical problems and problems in real-world context; understand that a variable can represent an unknown number or any number in a specified set.	Use variables to represent numbers and write expressions when solving mathematical problems and problems in real-world context; understand that a variable can represent an unknown number or any number in a specified set.	Solve problems by writing an expression with a variable that represents several possible rational numbers within a mathematical or real-world context; understand that a variable can represent an unknown number or any number in a specified set.
6.EE.B.7	Solve mathematical equations of the form x + p = q, x - p = q, and px = q, for cases in which p, q and x are all non-negative whole numbers.	Solve mathematical problems and problems in real-world context by solving equations of the form x + p = q, x - p = q, px = q, and x/p = q for cases in which p, q and x are all non-negative whole numbers.	Solve mathematical problems and problems in real-world context by writing and solving equations of the form x + p = q, x - p = q, px = q, and x/p = q for cases in which p, q and x are all non-negative rational numbers.	Create mathematical problems and problems in real-world context that can be solved using equations of the form x + p = q, x - p = q, px = q, and x/p = q for cases in which p, q and x are all non-negative rational numbers.
6.EE.B.8	Recognize that inequalities of the form x > c, x < c, x ≥ c, or x ≤ c have infinitely many solutions; identify solutions of such inequalities on number lines.	Recognize that inequalities of the form x > c, x < c, x ≥ c, or x ≤ c have infinitely many solutions; identify solutions of compound inequalities on number lines.	Write an inequality of the form x > c, x < c, x ≥ c, or x ≤ c to represent a constraint or condition to solve mathematical problems and problems in real-world context. Recognize that inequalities have infinitely many solutions; represent solutions of such inequalities on number lines.	Given an inequality of the form x > c, x < c, x ≥ c, or x ≤ c create mathematical problems and problems in real-world context that could be represented by the inequality.
6.EE.C.9	Given a graph or table representing two quantities that change in relationship to one another, identify an equation that expresses one quantity in terms of the other quantity.	Given a graph or table representing two quantities that change in relationship to one another, identify the dependent and independent variables, and write an equation that expresses one quantity in terms of the other quantity.	Use variables to represent two quantities that change in relationship to one another to solve mathematical problems and problems in real-world context. Write an equation to express one quantity (the dependent variable) in terms of the other quantity (the independent variable). Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.	Given an equation where variables represent two quantities that change in relationship to one another, create a problem in real-world context that could be represented by the equation. Explain the relationship between the dependent and independent variables and relate these to the equation.

Geometry				
6.G.A.1	Find the area of right triangles and polygons decomposed into right triangles and rectangles, given all the measurements.	Find the area of triangles and polygons decomposed into right triangles and rectangles, given some of the measurements.	Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques to solve mathematical problems and problems in real-world context.	Find the area of triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques to solve mathematical problems and problems in real-world context, including decimal and fractional measurements..
6.G.A.2	Use the formula V = B · h, where in this case, B is the area of the base (B = l x w) to find volumes of right rectangular prisms with whole number edge lengths in mathematical problems and problems in real-world context.	Use the formula V = B · h, where in this case, B is the area of the base (B = l x w) to find volumes of right rectangular prisms with one fractional edge length in mathematical problems and problems in real-world context.	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. Understand and use the formula V = B · h, where in this case, B is the area of the base (B = l x w) to find volumes of right rectangular prisms with fractional edge lengths in mathematical problems and problems in real-world context.	Explain that the volume of a right rectangular prism with fractional edge lengths found by multiplying the edge lengths of the prism. Understand the formula V = B · h, where in this case, B is the area of the base (B = l x w). Given the volume, use the formula to find edge lengths of right rectangular prisms with fractional edge lengths in mathematical problems and problems in real-world context.
6.G.A.3	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.	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 to solve mathematical problems and problems in a real-world context.	Use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques to solve mathematical problems and problems in a real-world context. Finds a missing vertex of a polygon given other vertices.
6.G.A.4	Represent three-dimensional figures using nets made up of rectangles and triangles.	Use the nets representing three-dimensional figures to find the surface area of these figures.	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 to solve mathematical problems and problems in real-world context.	Represent three-dimensional figures with fractional edges using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques to solve mathematical problems and problems in real-world context.

Statistics and Probability				
6.SP.A.1	Identify a statistical question.	Change a non-statistical question into a statistical question.	Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for variability in the answers. *For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.*	Create a statistical question given a context.
6.SP.A.2	Identify a set of data by its center, spread, and overall shape.	Describe a set of data by its center, spread, and overall shape.	Understand that a set of data collected to answer a statistical question has a distribution whose general characteristics can be described by its center, spread, and overall shape.	Create a set of data with a distribution whose general characteristics can be described by a given center, spread, and overall shape.
6.SP.A.3	Recognize mean, median, and mode as measures of center and range as a measure of variation.	Calculate mean, median, and mode as measures of center and range as a measure of variation.	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 uses a single number to describe the spread of the data set.	Recognize how a measure of center or a measure of variation would be impacted by outliers in a numerical data set.
6.SP.B.4	Identify an appropriate display for numerical data including histograms, dot plots, and box plots.	Construct an appropriate display for numerical data including histograms, dot plots, and box plots.	Display and interpret numerical data by creating plots on a number line including histograms, dot plots, and box plots.	Display and interpret numerical data by creating plots on a number line including histograms, dot plots, and box plots, and explaining what the display indicates about the data.
6.SP.B.5	Summarize numerical data sets in relation to their context by: a. Reporting the number of observations in a dot plot. b. For the attribute under investigation, identify its units of measurement. c. Distinguish between measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation). d. Identify mean and mean absolute deviation as the best choice of measures of center and variability for a symmetric data distribution.	Summarize numerical data sets in relation to their context by: a. Reporting the number of observations in a histogram. b. For the attribute under investigation, identify how it was measured. c. Calculate measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation. d. Identify median and interquartile range as the best choice of measures of center and variability for a skewed data distribution.	Summarize numerical data sets in relation to their context by: a. Reporting the number of observations. b. Describing the nature of the attribute under investigation including how it was measured and its units of measurement. c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute 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. 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.	Summarize numerical data sets in relation to their context by: a. Reporting the number of observations given calculations for a measure of center or variability. b. Describing the nature of the attribute under investigation including explaining why it was measured a particular way and why certain units of measurement were used. c. Comparing data sets using measures of center (median and/or mean) and variability (interquartile range and/or mean absolute 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. d. Choose the appropriate measure of center and variability for data set and explains the reasoning for the choice.

Standard	Minimally Proficient	Partially Proficient	Proficient	Highly Proficient
	The Minimally Proficient student	The Partially Proficient student	The Proficient student	The Highly Proficient student
Ratios and Proportional Relationships				
7.RP.A.1	Identify unit rates associated with ratios involving simple fractions, including ratios of quantities measured in like units.	Compute unit rates associated with ratios involving simple fractions, including ratios of quantities measured in like units.	Compute unit rates associated with ratios involving both simple and complex fractions, including ratios of quantities measured in like or different units.	Interpret unit rates associated with ratios involving both simple and complex fractions, including ratios of quantities measured in like or different units.
7.RP.A.2	Recognize and represent proportional relationships between quantities. a. Identify two quantities in a proportional relationship. b. Identify the constant of proportionality (unit rate) in tables or graphs. c. Identify equations to represent proportional relationships. d. Identify a point (x, y) on the graph of a proportional relationship.	Recognize and represent proportional relationships between quantities. a. Decide whether two quantities are in a proportional relationship. b. Identify the constant of proportionality (unit rate) in tables, graphs, equation. c. Represent proportional relationships by equations. d. Identify 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.	Recognize and represent proportional relationships between quantities. a. 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). b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. c. Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn. d. 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.	Recognize and represent proportional relationships between quantities. a. Explain 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). b. Interpret the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. c. Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn. d. 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.RP.A.3	Use proportional relationships to solve one-step ratio and percent mathematical problems (e.g., simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error).	Use proportional relationships to solve one-step ratio and percent problems (e.g., simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error).	Use proportional relationships to solve multi-step ratio and percent problems (e.g., simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error).	Interpret proportional relationships when solving multi-step ratio and percent problems (e.g., simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error).

The Number System				
7.NS.A.1	Add and subtract integers and other rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. a. Identify opposite quantities. b. Identify a number and its opposite that have a sum of 0. c. Identify the distance between two rational numbers on the number line as the absolute value of their difference. d. Identify properties of operations as strategies to add and subtract rational numbers.	Add and subtract integers and other rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. a. Identify situations in which opposite quantities combine to make 0. b. Recognize $p + q$ as the number located a distance $\|q\|$ from p, in the positive or negative direction depending on whether q is positive or negative. Identify a number and its opposite that have a sum of 0 (are additive inverses). c. Recognize 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. d. Identify properties of operations as strategies to add and subtract rational numbers.	Add and subtract integers and other rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. a. Describe situations in which opposite quantities combine to make 0. b. 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 context. c. 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 context. d. Apply properties of operations as strategies to add and subtract rational numbers.	Add and subtract integers and other rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. a. Interpret situations in which opposite quantities combine to make 0. b. Explain $p + q$ 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 context. c. 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 context. d. Apply properties of operations as strategies to add and subtract rational numbers.

7.NS.A.2	Multiply and divide integers and other rational numbers. a. Identify 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. Identify products of rational numbers. b. Identify 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 $–(p/q) = (–p)/q = p/(–q)$. c. Multiply and divide rational numbers. d. Identify decimal form of a rational number.	Multiply and divide integers and other rational numbers. a. Recognize 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. Identify products of rational numbers by describing real-world context. b. Recognize 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 $–(p/q) = (–p)/q = p/(–q)$. Identify quotients of rational numbers by describing real-world context. c. Use properties of operations as strategies to multiply and divide rational numbers. d. Identify decimal form of a rational number ; know that the decimal form of a rational number terminates in 0's or eventually repeats.	Multiply and divide integers and other rational numbers. 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 context. 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 context. c. Apply properties of operations as strategies to multiply and divide rational numbers. d. Convert a rational number to decimal form using long division; know that the decimal form of a rational number terminates in 0's or eventually repeats.	Multiply and divide integers and other rational numbers. a. Explain 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 context. b. Explain 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 context. c. Apply properties of operations as strategies to multiply and divide rational numbers in a real-world context. d. Convert a rational number to decimal form using long division; know that the decimal form of a rational number terminates in 0's or eventually repeats.
7.NS.A.3	Identify the solution of mathematical problems four operations with rational numbers.	Identify the solution of mathematical problems and problems in real-world context involving the four operations with rational numbers. Computations with rational numbers extend the rules for manipulating fractions to complex fractions where $a/b \div c/d$ when $a, b, c,$ and d are all integers and $b, c,$ and $d \neq 0$.	Solve mathematical problems and problems in real-world context involving the four operations with rational numbers. Computations with rational numbers extend the rules for manipulating fractions to complex fractions where $a/b \div c/d$ when $a, b, c,$ and d are all integers and b, c , and $d \neq 0$.	Solve mathematical problems and problems in real-world context involving the four operations with rational numbers and interpert the solution. Computations with rational numbers extend the rules for manipulating fractions to complex fractions where a/b ÷ c/d when a,b,c,and d are all integers and b,c, and d ≠ 0.

Expressions and Equations				
7.EE.A.1	Identify properties of operations used to add, subtract, factor, and expand linear expressions with integer coefficients.	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with integer coefficients.	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients and interpret the meaning in a real-world context.
7.EE.A.2	Identify an expression in different forms.	Identify an expression in different forms, and understand the relationship between the different forms and their meanings in a problem context. For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."	Rewrite an expression in different forms, and understand the relationship between the different forms and their meanings in a problem context. For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."	Rewrite an expression in different forms, and explain the relationship between the different forms and their meanings in a problem context. For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."
7.EE.B.3	Solve multi-step mathematical problems and problems in real-world context posed with positive and negative rational numbers in one form.	Solve multi-step mathematical problems and problems in real-world context posed with positive and negative rational numbers in any form. Convert between forms as appropriate.	Solve multi-step mathematical problems and problems in real-world context posed with positive and negative rational numbers in any form. Convert between forms as appropriate and assess the reasonableness of answers. For example, If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50 per hour.	Create problems with a real-world context given multi-step equations with positive and negative rational numbers. Convert between forms as appropriate and interpret the reasonableness of answers.
7.EE.B.4	Use variables to represent quantities in mathematical problems and problems in real-world context, and construct simple equations and inequalities to solve problems. a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are integers. b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are integers.	Use variables to represent quantities in mathematical problems and problems in real-world context, and construct simple equations and inequalities to solve problems. a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are integers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are rational numbers. Graph the solution set of the inequality.	Use variables to represent quantities in mathematical problems and problems in real-world context, and construct simple equations and inequalities to solve problems. a. 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. b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.	Use variables to represent quantities in mathematical problems and problems in real-world context, and construct simple equations and inequalities to solve problems. a. Solve real-world 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, explaining the sequence of the operations used in each approach. b. Solve real-world problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.

Geometry				
7.G.A.1	Solve problems involving scale drawings of geometric figures, by identifying the scale.	Solve problems involving scale drawings of geometric figures, with a given scale.	Solve problems involving scale drawings of geometric figures, such as computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	Solve complex problems involving scale drawings of geometric figures, such as computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.
7.G.A.2	Classify geometric shapes with given conditions using a variety of methods. 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.	Identify geometric shapes with given conditions using a variety of methods. 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.	Draw geometric shapes with given conditions using a variety of methods. 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.	Draw complex geometric shapes with given conditions using a variety of methods. Focus on constructing triangles from three measures of angles or sides, explaining when the conditions determine a unique triangle, more than one triangle, or no triangle.
7.G.A.3	Identify the two-dimensional figures that result from slicing three-dimensional figures parallel or perpindicular to the base.	Identify the two-dimensional figures that result from slicing three-dimensional figures.	Describe the two-dimensional figures that result from slicing three-dimensional figures.	Describe the two-dimensional figures that result from slicing irregular three-dimensional figures.
7.G.B.4	Identify area and circumference of a circle to solve problems.	Understand and use the formulas for the area and circumference of a circle to solve problems.	Understand and use the formulas for the area and circumference of a circle to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.	Understand and use the formulas for the area and circumference of a circle to solve problems and interpret the solution; explain the relationship between the circumference and area of a circle.
7.G.B.5	Identify supplementary, complementary, vertical, and adjacent angles in a figure.	Use facts about supplementary, complementary, vertical, and adjacent angles in multi-step problems to solve simple equations for an unknown angle in a figure.	Use facts about supplementary, complementary, vertical, and adjacent angles in multi-step problems to write and solve simple equations for an unknown angle in a figure.	Use facts about supplementary, complementary, vertical, and adjacent angles in multi-step problems to write and solve simple equations for an unknown angle in a figure and explain the solution.
7.G.B.6	Identify solutions mathematical problems and problems in a real-world context involving area of two-dimensional objects composed of triangles, quadrilaterals, and other polygons.	Solve mathematical problems and problems in a real-world context involving area of two-dimensional objects composed of triangles, quadrilaterals, and other polygons. Identify solutions to mathematical problems and problems in real-world context involving volume and surface area of three-dimensional objects composed of cubes and right prisms.	Solve mathematical problems and problems in a real-world context involving area of two-dimensional objects composed of triangles, quadrilaterals, and other polygons. Solve mathematical problems and problems in real-world context involving volume and surface area of three-dimensional objects composed of cubes and right prisms.	Solve mathematical problems and problems in a real-world context involving area of two-dimensional objects composed of triangles, quadrilaterals, and other polygons. Solve mathematical problems and problems in real-world context involving volume and surface area of three-dimensional objects.

Statistics and Probability				
7.SP.A.1	Identify statistics that 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.	Recognize 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. Recognize that random sampling tends to produce representative samples and support valid inferences.	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.	Interpret statistics that 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.SP.A.2	Use data from a random sample to identify inferences about a population with an unknown characteristic of interest.	Use data from a random sample to identify 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.	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. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.	Interpret data from a random sample to draw inferences about multiple populations 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.SP.B.3	Compare the degree of visual overlap of two numerical data distributions with similar variabilities.	Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities.	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. For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.	Interpret 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.SP.B.4	Identify measures of center and measures of variability for numerical data from random samples for two populations.	Use measures of center and measures of variability for numerical data from random samples to identify informal comparative inferences about two populations.	Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.	Interpret measures of center and measures of variability for numerical data from random samples to draw comparative inferences about two populations.
7.SP.C.5	Identify that a probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	Identify 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 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	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 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring and use this to solve real-world problems.

7.SP.C.6	Identify the approximate probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency.	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 identify the approximate relative frequency given the probability.	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. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.	Explain 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. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.
7.SP.C.7	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. a. Identify a uniform probability model that assigns equal probability to all outcomes to determine probabilities of events. b. Identify a probability model (which may not be uniform) that observes frequencies in data generated from a chance process.	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. a. Use a uniform probability model that assigns equal probability to all outcomes to determine probabilities of events. b. Use a probability model (which may not be uniform) that observes frequencies in data generated from a chance process.	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. a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected. b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?	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. a. Develop and explain a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected. b. Develop and explain a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?

Standard	Minimally Proficient	Partially Proficient	Proficient	Highly Proficient
	The Minimally Proficient student	The Partially Proficient student	The Proficient student	The Highly Proficient student
The Number System				
8.NS.A.1	Identify irrational numbers.	Know that numbers that are not rational are called irrational. Identify a decimal expansion of irrational number.	Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion. Know that numbers whose decimal expansions do not terminate in zeros or in a repeating sequence of fixed digits are called irrational.	Explain that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion. Explain that numbers whose decimal expansions do not terminate in zeros or in a repeating sequence of fixed digits are called irrational.
8.NS.A.2	Approximate irrational numbers on a number line diagram.	Use rational approximations of irrational numbers to compare the size of irrational numbers. Locate them approximately on a number line diagram.	Use rational approximations of irrational numbers to compare the size of irrational numbers. Locate them approximately on a number line diagram, and estimate their values.	Use rational approximations of irrational numbers to compare the size of irrational numbers. Locate them approximately on a number line diagram, and calculate their values.
8.NS.A.3	Understand that given any two distinct rational numbers, a < b, identify a rational number c and an irrational number d such that a < c < b and a < d < b.	Understand that given any two distinct rational numbers, a < b, identify a rational number c and an irrational number d such that a < c < b and a < d < b. Given any two distinct irrational numbers, a < b, identify a rational number c and an irrational number d such that a < c < b and a < d < b.	Understand that given any two distinct rational numbers, a < b, there exist a rational number c and an irrational number d such that a < c < b and a < d < b. Given any two distinct irrational numbers, a < b, there exists a rational number c and an irrational number d, such that a < c < b and a < d < b.	Explain that given any two distinct rational numbers, a < b, there exist a rational number c and an irrational number d such that a < c < b and a < d < b. Given any two distinct irrational numbers, a < b, there exist a rational number c and an irrational number d such that a < c < b and a < d < b.

Expressions and Equations				
8.EE.A.1	Apply the properties of integer exponents to identify equivalent numerical expressions.	Apply the properties of integer exponents to generate equivalent numerical expressions.	Understand and apply the properties of integer exponents to generate equivalent numerical expressions.	Understand and apply the properties of integer exponents to generate and interpret equivalent numerical expressions.
8.EE.A.2	Use square root and cube root symbols to represent solutions to equations of the form x2 = p and x3= p, where p is a positive rational number. Know that √2 is irrational. a. Identify square roots of perfect squares less than or equal to 100. b. Identify cube roots of perfect cubes less than or equal to 500.	Use square root and cube root symbols to represent solutions to equations of the form x2 = p and x3= p, where p is a positive rational number. Know that √2 is irrational. a. Identify square roots of perfect squares less than or equal to 225. b.Identify cube roots of perfect cubes less than or equal to 1000.	Use square root and cube root symbols to represent solutions to equations of the form x2 = p and x3= p, where p is a positive rational number. Know that √2 is irrational. a. Evaluate square roots of perfect squares less than or equal to 225. b. Evaluate cube roots of perfect cubes less than or equal to 1000.	Use square root and cube root symbols to represent solutions to equations of the form x2 = p and x3= p, where p is a positive rational number. Know that √2 is irrational. a. Evaluate square roots less than or equal to 225. b. Evaluate cube roots less than or equal to 1000.
8.EE.A.3	Identify numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities.	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities.	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and express how many times larger or smaller one is than the other.	Use numbers expressed in the form of a single digit times an integer power of 10 to interpret very large or very small quantities, and express how many times larger or smaller one is than the other.
8.EE.A.4	Perform operations with numbers expressed in scientific notation.	Perform operations with numbers expressed in scientific notation including problems where both decimal and scientific notation are used. Use scientific notation for measurements of very large or very small quantities.	Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities.	Perform operations with numbers expressed in scientific notation including problems where both decimal and scientific notation are used. Use scientific notation to interpret for measurements of very large or very small quantities.
8.EE.B.5	Graph proportional relationships.	Graph proportional relationships interpreting the unit rate as the slope of the graph. Compare two different proportional relationships.	Graph proportional relationships interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.	Graph proportional relationships interpreting the unit rate as the slope of the graph. Compare and explain two different proportional relationships represented in different ways.
8.EE.B.6	Use similar triangles to identify that the slope is the same between any two distinct points on a non-vertical line in the coordinate plane.	Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane. Use the equation y = mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at (0, b).	Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane. Derive the equation y = mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at (0, b).	Use similar triangles to prove why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane. Derive the equation y = mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at (0, b).

8.EE.C.7	Fluently solve linear equations and inequalities in one variable. a. Identify linear equations in one variable with one solution, infinitely many solutions, or no solution. b. Identify the solution to linear equations and inequalities with rational number coefficients.	Fluently solve linear equations and inequalities in one variable. a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solution. b. Solve linear equations and inequalities with rational number coefficients.	Fluently solve linear equations and inequalities in one variable. a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solution. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form x = a, a = a, or a = b results (where a and b are different numbers). b. Solve linear equations and inequalities with rational number coefficients, including solutions that require expanding expressions using the distributive property and collecting like terms.	Fluently solve linear equations and inequalities in one variable. a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solution. Explain which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form x = a, a = a, or a = b results (where a and b are different numbers). b. Explain how to solve linear equations and inequalities with rational number coefficients, including solutions that require expanding expressions using the distributive property and collecting like terms.
8.EE.C.8	Analyze and solve pairs of simultaneous linear equations. a. Identify the point of intersection for graphs of two linear equations in two variables. b. Identify solutions to simple systems of equations by inspection. c. Solve mathematical problems using two linear equations in two variables.	Analyze and solve pairs of simultaneous linear equations. a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs. b. Estimate solutions to sytems of two lyniear equations in two variables by graphing the equations,including cases of no solution and infinite number of solutions. Solve simple cases by inspection. c. Solve mathematical problems and problems in real-world context using two linear equations in two variables.	Analyze and solve pairs of simultaneous linear equations. a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously. b. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations, including cases of no solution and infinite number of solutions. Solve simple cases by inspection. c. Solve mathematical problems and problems in real-world contexts leading to two linear equations in two variables.	Analyze and solve pairs of simultaneous linear equations. a. Explain that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs because points of intersection satisfy both equations simultaneously. b. Solve systems of two linear equations in two variables algebraically, and solve solutions by graphing the equations including cases of no solution and infinite number of solutions. Solve simple cases by inspection. c. Solve mathematical problems and problems in real-world context by creating two linear equations in two variables.

Functions				
8.F.A.1	Identify a function rule that assigns to each input exactly one output. (Function notation is not required in Grade 8.)	Generate a function rule that assigns to each input exactly one output. Identify the graph of a function as the set of ordered pairs consisting of an input and the corresponding output. (Function notation is not required in Grade 8.)	Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output. (Function notation is not required in Grade 8.)	Explain that a function is a rule that assigns to each input exactly one output. Explain that the graph of a function is the set of ordered pairs consisting of an input and the corresponding output. (Function notation is not required in Grade 8.)
8.F.A.2	Identify properties of two functions each represented in the same way (algebraically, graphically, numerically in tables, or by verbal descriptions).	Compare properties of two functions each represented in the same way (algebraically, graphically, numerically in tables, or by verbal descriptions).	Compare properties of two functions, each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.	Interpret properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).
8.F.A.3	Identify a linear function whose graph is a straight line.	Interpret the equation y = mx + b as defining a linear function whose graph is a straight line.	Interpret the equation y = mx + b as defining a linear function whose graph is a straight line; give examples of functions that are not linear. For example, the function A = s^2 giving the area of a square as a function of its side length is not linear, because its graph contains the points (1, 1), (2, 4), and (3, 9), which are not on a straight line.	Interpret the equation y = mx + b as defining a linear function whose graph is a straight line; give real-world examples of functions that are not linear.
8.F.B.4	Given a description of a situation, identify a function to model a linear relationship between two quantities.	Given a description of a situation, generate a function to model a linear relationship between two quantities. Identify the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or a graph.	Given a description of a situation, generate a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or a graph. Track how the values of the two quantities change together. Interpret the rate of change and initial value of a linear function in terms of the situation it models, its graph, or its table of values.	Given a description of a situation, generate a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or a graph. Interpret how the values of the two quantities change together. Interpret the rate of change and initial value of a linear function in terms of the situation it models, its graph, or its table of values.
8.F.B.5	Identify a graph that exhibits the qualitative features of a function that has been described verbally.	Identify the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	Interpret the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

Geometry				
8.G.A.1	Identify the properties of rotations, reflections, and translations. Properties include: lines are taken to lines, line segments are taken to line segments of the same length, angles are taken to angles of the same measure, parallel lines are taken to parallel lines.	identify experimentally the properties of rotations, reflections, and translations. Properties include: lines are taken to lines, line segments are taken to line segments of the same length, angles are taken to angles of the same measure, parallel lines are taken to parallel lines.	Verify experimentally the properties of rotations, reflections, and translations. Properties include: lines are taken to lines, line segments are taken to line segments of the same length, angles are taken to angles of the same measure, parallel lines are taken to parallel lines.	Prove the properties of rotations, reflections, and translations. Properties include: lines are taken to lines, line segments are taken to line segments of the same length, angles are taken to angles of the same measure, parallel lines are taken to parallel lines.
8.G.A.2	Given two congruent figures, identify a sequence that demonstrates congruence.	Understand that a two-dimensional figure is congruent to another if one can be obtained from the other by a sequence of rotations, reflections, and translations; given two congruent figures, identify a sequence that demonstrates congruence.	Understand that a two-dimensional figure is congruent to another if one can be obtained from the other by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that demonstrates congruence.	Prove that a two-dimensional figure is congruent to another if one can be obtained from the other by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that demonstrates congruence.
8.G.A.3	Identify the effect of dilations, translations, rotations, and reflections on two-dimensional figures.	Identify the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	Describe and interpret the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.
8.G.A.4	Given two similar two-dimensional figures, identify a sequence that demonstrates similarity.	Understand that a two-dimensional figure is similar to another if, and only if, one can be obtained from the other by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, identify a sequence that demonstrates similarity.	Understand that a two-dimensional figure is similar to another if, and only if, one can be obtained from the other by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that demonstrates similarity.	Explain that a two-dimensional figure is similar to another if, and only if, one can be obtained from the other by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that demonstrates similarity.
8.G.A.5	Use facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.	Identify facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.	Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals explaining why this is so.	Prove arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.
8.G.B.6	Identify examples of the application of the converse of the Pythagorean Theorem.	Apply the converse of the Pythagorean Theorem.	Understand the Pythagorean Theorem and its converse.	Prove the converse of the Pythagorean Theorem.
8.G.B.7	Apply the Pythagorean Theorem to determine the hypotenuse in right triangles in real-world context and mathematical problems in two dimensions.	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world context and mathematical problems in two dimensions.	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world contexts and mathematical problems in two and three dimensions.	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world context and mathematical problems in two and three dimensions and interpret the results.

8.G.B.8	Use the Pythagorean Theorem to find the distance between two points in the first quadrant of a coordinate system.	Use the Pythagorean Theorem to find the distance between two points in a coordinate system.	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	Apply the Pythagorean Theorem to find the scaled distance between two points in a coordinate system.
8.G.C.9	Apply formulas for volumes of cones, cylinders, and spheres.	Understand and use formulas for volumes of cones, cylinders, and spheres.	Understand and use formulas for volumes of cones, cylinders, and spheres and use them to solve real-world context and mathematical problems.	Know and use formulas for volumes of cones, cylinders and spheres and use them to solve real-world context and mathematical problems.

Statistics and Probability				
8.SP.A.1	Construct scatter plots for bivariate measurement data.	Construct scatter plots for bivariate measurement data to investigate and describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	Construct and interpret scatter plots for bivariate measurement data to investigate and describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	Construct and interpret scatter plots for bivariate measurement data to investigate and interpret patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.
8.SP.A.2	For scatter plots that suggest a linear association, informally fit a straight line.	Identify straight lines used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.	Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.	Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.
8.SP.A.3	Identify properties of the equation of a linear model to solve problems in the context of bivariate measurement data.	Use the equation of a linear model to solve problems in the context of bivariate measurement data, identifying the slope and intercept.	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.	Create an equation for a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.
8.SP.A.4	Construct a two-way table summarizing data on two categorical variables collected from the same subjects.	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects.	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables.	Explain patterns of association seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables.
8.SP.B.5	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. a. Identify the probability of a compound event. b. Identify sample spaces for compound events using organized lists, tables, tree diagrams and other methods. c. Use a simulation to identify frequencies for compound events.	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. a. Identify the probability of a compound event as the fraction of outcomes in the sample space for which the compound event occurs. b. Represent sample spaces for compound events using organized lists, tables, tree diagrams, and other methods. c. Use a simulation to generate frequencies for compound events.	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulations. a. Understand that the probability of a compound event is the fraction of outcomes in the sample space in which the compound event occurs. b. Represent sample spaces for compound events using organized lists, tables, tree diagrams, and other methods. Identify the outcomes in the sample that composes the event. c. Design and use a simulation to generate frequencies for compound events.	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. a. Explain why the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. b. Represent sample spaces for compound events using organized lists, tables, tree diagrams, and other methods. Identify and interpret the outcomes in the sample space that composes the event. c. Design and use a simulation to generate frequencies for compound events and interpret in context.