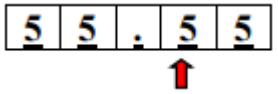
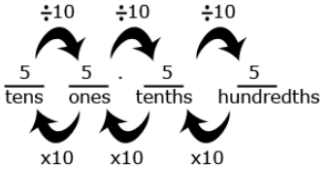
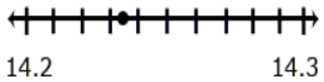
Revised 01/18/2017

Grade 5

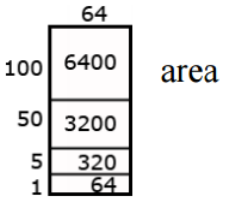
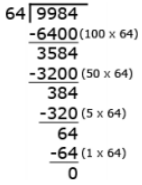
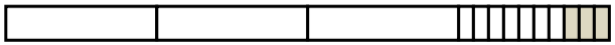
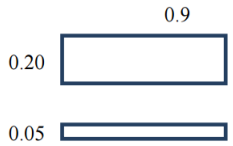
GUSD Fifth Grade Math

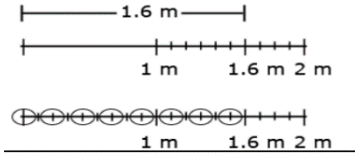
- **O.A.- Operations and Algebraic Thinking**
- **N.B.T.- Numbers and Operations-Base Ten**
- **N.F.- Numbers and Operations-Fractions**
- **M.D.- Measurement and Data**
- **G.-Geometry**

Math Sequence	Standards (Priority)	I can statements…	Examples
5 NBT 1	Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.	I can determine the value of a number using place and period.	The 5 that the arrow points to is 1/10 of the 5 to the left and 10 times the 5 to the right. The 5 in the ones place is 1/10 of 50 and 10 times five tenths.  The 5 that the arrow points to is 1/10 of the 5 to the left and 10 times the 5 to the right. The 5 in the tenths place is 10 times five hundredths. 
5 NBT 2	Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.	I can use basic facts and patters to help me find quotients using mental math.	Example: $2.5 \times 10^3 = 2.5 \times (10 \times 10 \times 10) = 2.5 \times 1{,}000 = 2{,}500$ Students should reason that the exponent above the 10 indicates how many places the decimal point is moving (not just that the decimal point is moving but that you are multiplying or making the number 10 times greater three times) when you multiply by a power of 10. Since we are multiplying by a power of 10 the decimal point moves to the right. 350 ÷ 103 = 350 ÷ 1,000 = 0.350 = 0.35 350/10 = 35, 35 /10 = 3.5 3.5 /10 =.0.35, or 350 x 1/10, 35 x 1/10, 3.5 x 1/10 this will relate well to subsequent work with operating with fractions. This example shows that when we divide by powers of 10, the exponent above the 10 indicates how many places the decimal point is moving (how many times we are dividing by 10 , the number becomes ten times smaller). Since we are dividing by powers of 10, the decimal point moves to the left.

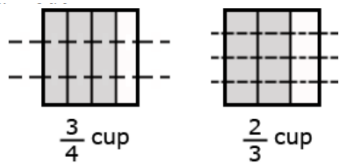
			Students should be able to use the same type of reasoning as above to explain why the following multiplication and division problem by powers of 10 make sense. • $523 \times 10^3 = 523{,}000$ The place value of 523 is increased by 3 places. • $5.223 \times 10^2 = 522.3$ The place value of 5.223 is increased by 2 places. • $52.3 \div 10^1 = 5.23$ The place value of 52.3 is decreased by one place.
5 NBT 3	Read, write, and compare decimals to thousandths. a) Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 x (1/100) + 2 x (1/1000) Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	I can represent numbers less than one using place value.	Some equivalent forms of 0.72 are: 72/100 70/100 + 2/100 7/10 + 2/100 0.720 7 x (1/10) + 2 x (1/100) 7 X (1/10) + 2 x (1/100) + 0 X (1/1000) 0.70 + 0.02 720/1000 Example: Comparing 0.25 and 0.17, a student might think, “25 hundredths is more than 17 hundredths”. They may also think that it is 8 hundredths more. They may write this comparison as 0.25 > 0.17 and recognize that 0.17 < 0.25 is another way to express this comparison. Comparing 0.207 to 0.26, a student might think, “25 hundredths is more than 17 hundredths.” They may think that it is 8 hundredths more. They may write this comparison as 0.25 > 0.17 and recognize that 0.17 < 0.25 is another way to express this comparison.
5 NBT 4	Use place value understanding to round decimals to any place.	I can use place value to help me round numbers.	Example: Round 14.235 to the nearest tenth. Students recognize that the possible answer must be in tenths thus, it is either 14.2 or 14.3. They then identify that 14.235 is closer to 14.2 (14.20) than to 14.3 (14.30). 
5 NBT 5	Fluently multiply multi-digit whole numbers using the standard algorithm.	I can use my math facts to solve larger multiplication problems.	Example: The book company printed 452 books. Each book had 150 pages. How many pages did the book company print? Possible strategies learned in third grade:

			Strategy 1 452 x 150 452 (15 x 10) 452 x 15 = 6780 6780 x 10 = 67800 Strategy 2 452 x 150 452 (100 + 50) 452 x 100 = 45200 452 x 50 = 22600 45200 + 22600 = 67800 Computation algorithm. A set of predefined steps applicable to a class of problems that gives the correct result in every case when the steps are carried out correctly. Computation strategy. Purposeful manipulations that may be chosen for specific problems, may not have a fixed order, and may be aimed at converting one problem into another. Example: Draw an array model for 225 x 12…. 200 x 10, 200 x 2, 20 x 10, 20 x 2, 5 x 10, 5 x 2 225 x 12 200 | 20 | 5 10 | 2,000 | 200 | 50 2 | 400 | 40 | 10 2,000 400 200 40 50 + 10 2,700 Example: True or False (Smarter Balanced) 1. 37 x 4 = 1,480 ÷ 10 2. 215 x 39 = 2,487 ÷ 3 3. 4,086 x 7 = 32,202 4. 9,130 x 86 = 785,180
5 NBT 6	Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division.	I can divide to find a missing factor.	Example: Using expanded notation 2682 ÷ 25 = (2000 + 600 + 80 + 2) ÷ 25 Using understanding of the relationship between 100 and 25, a student might think • I know that 100 divided by 25 is 4 so 200 divided by 25 is 8 and 2000 divided y 25 is 80

	Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.		• 600 divided by 25 has to be 24 • Since 3 X 25 is 75, I know that 80 divided by 25 is 3 with a remainder of 5 • I can't divide 2 by 25 so 2 plus the 5 leaves a remainder of 0. • 80 + 24 + 3 = 107. So, the answer is 107 with a remainder of 7 Using an equation that relates division to multiplication, 25 x n = 2682, a student might estimate the answer to be slightly larger than 100 because s/he recognizes that 25 x 100 = 2500. Example: 9984 ÷ 64 An area model for division is shown below. As the student uses the area model, s/he keeps track of how much of the 9984 is left to divide.  area 
5 NBT 7	Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	I can add, subtract, multiply, and divide decimals by whole numbers and other decimals.	Example: 4 - 0.3 3 tenths subtracted from 4 wholes. The wholes must be divided into tenths. (solution is 3 and 7/10 or 3.7)  Example: You have 0.9 pounds of turkey. You put a fourth or 0.25 of that turkey on your sandwich. How many pounds of turkey did you put on your sandwich? Area Model 

			0.9 x 0.25. I split 0.25 into 0.2 and 0.05 and multiplied them both by 0.9. 0.9 x 0.2 = 0.18 0.9 x 0.05= 0.045 I then combined my two products. 0.18 + 0.045 = 0.225 Example of division: finding the number of groups. Students could draw a segment to represent 1.6 meters. In doing so, s/he would count in tenths to identify the 6 tenths, and be able identify the number of 2 tenths within the 6 tenths. The student can then extend the idea of counting by tenths to divide the one meter into tenths and determine that there are 5 more gro ups of 2 tenths. 
5 NF 1	Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.	I can name fractions in more than one way. I can find common denominators to add and subtract fractions with unlike denominators.	2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)
5 NF 2	Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.	I can use visual models to understand how to add and subtract fractions.	Example: Jerry was making two different types of cookies. One recipe needed 3/4 cup of sugar and the other needed 2/3 cup of sugar. How much sugar did he need to make both recipes? • Mental estimation: A student may say that Jerry needs more than 1 cup of sugar but less than 2 cups. An explanation may compare both fractions to ½ and state that both are larger than ½ so the total must be more than 1. In addition, both fractions are slightly less than 1 so the sum cannot be more than 2.

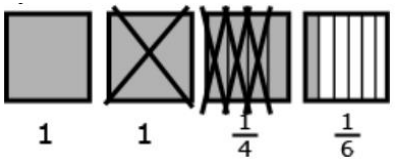
- Area model



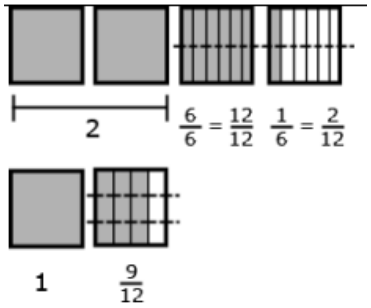
$\frac{3}{4}=\frac{9}{12}$ $\frac{2}{3}=\frac{8}{12}$ $\frac{3}{4}+\frac{2}{3}=\frac{17}{12}=\frac{12}{12}+\frac{5}{12}=1\frac{5}{12}$

Example: Using an area model to subtract

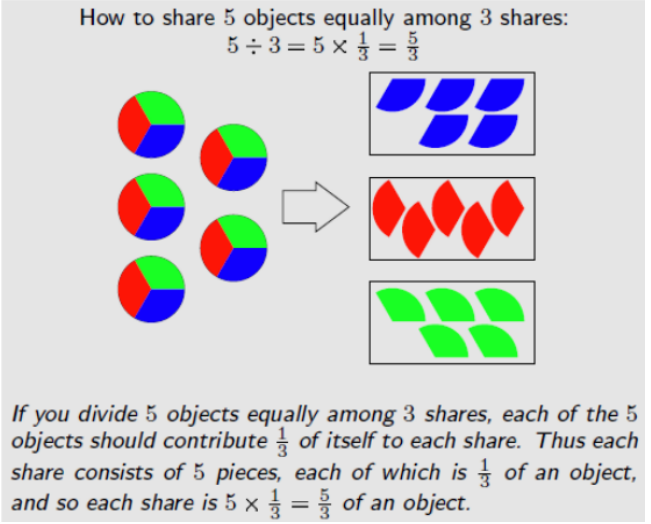
- This model shows 1 ¾ subtracted from 3 1/6 leaving 1 + ¼ = 1/6 which a student can then change to 1 + 3/12 + 2/12 = 1 5/12. 3 1/6 can be expressed with a denominator of 12. Once this is done a student can complete the problem, 2 14/12 – 1 9/12 = 1 5/12.

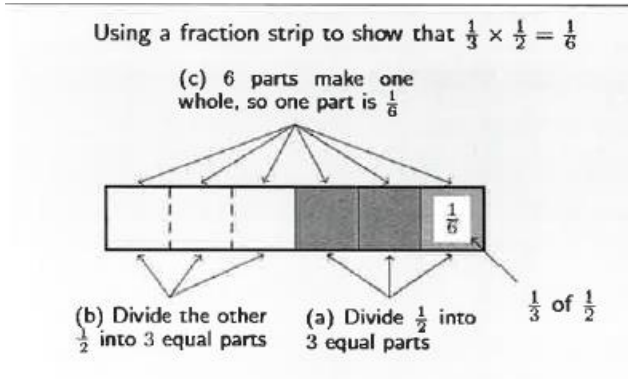


- This diagram models a way to show how 3 1/6 and 1 ¾ can be expressed with a denominator of 12. Once this is accomplished, a student can complete the problem, 2 14/12 – 1 9/12 = 1 5/12

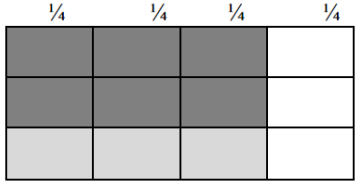


Estimation skills include identifying when estimation is appropriate, determining the level of accuracy needed, selecting the appropriate method of estimation, and verifying solutions or determining the reasonableness of

			situations using various estimation strategies. Estimation strategies for calculations with fractions extend from students' work with whole number operations and can be supported through the use of physical models.
5 NF 3	Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem.	I can use fractions to name the part of a whole, a location on a number line, or part of a set.	Example: Interpret ¾ as the result of dividing 3 by 4, noting that ¾ multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size ¾. 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?  How to share 5 objects equally among 3 shares: $5 \div 3 = 5 \times \frac{1}{3} = \frac{5}{3}$ *If you divide 5 objects equally among 3 shares, each of the 5 objects should contribute $\frac{1}{3}$ of itself to each share. Thus each share consists of 5 pieces, each of which is $\frac{1}{3}$ of an object, and so each share is $5 \times \frac{1}{3} = \frac{5}{3}$ of an object.* Examples: Ten team members are sharing 3 boxes of cookies. How much of a box will each student get? When working this problem a student should recognize that the 3 boxes are being divided into 10 groups, so s/he is seeing the solution to the following equation, 10 x n = 3 (10 groups of some amount is 3 boxes) which can also be written as n = 3 ÷ 10. Using models or diagram, they divide each box into 10 groups, resulting in each team member getting 3/10 of a box.

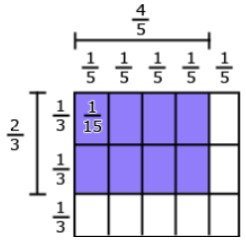
			Two afterschool clubs are having pizza parties. For the Math Club, the teacher will order 3 pizzas for every 5 students. For the student council, the teacher will order 5 pizzas for every 8 students. Since you are in both groups, you need to decide which party to attend. How much pizza would you get at each party? If you want to have the most pizza, which party should you attend? The six fifth grade classrooms have a total of 27 boxes of pencils. How many boxes will each classroom receive? Students may recognize this as a whole number division problem but should also express this equal sharing problem as . They explain that each classroom gets boxes of pencils and can further determine that each classroom get 4 or 4 boxes of pencils.
5 NF 4	Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a) Interpret the product (a/b) x q as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations a x q ÷ b. b) Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.	I can use multiplication to find a fraction of a whole number. I can multiply two fractions to find a fraction of a fraction.	Example:  As they multiply fractions such as 3/5 x 6, they can think of the operation in more than one way. • 3 x (6 ÷ 5) or (3 x 6/5) • (3 x 6) ÷ 5 or 18 ÷ 5 (18/5) Example: Three-fourths of the class is boys. Two-thirds of the boys are wearing tennis shoes. What fraction of the class are boys with tennis shoes? This question is asking what 2/3 of ¾ is, or what is 2/3 x ¾. In this case you have 2/3 groups of size ¾ (a way to think about it in terms of the language for whole numbers is 4 x 5 you have 4 groups of size 5. The array model is very transferable from whole number work and then to binomials.

Student 1
I drew a rectangle to represent the whole class. The four columns represent the fourths of a class. I shaded 3 columns to represent the fraction that are boys. I then split the rectangle with horizontal lines into thirds. The dark area represents the fraction of the boys in the class wearing tennis shoes, which is 6 out of 12. That is 6/12, which equals 1/2.



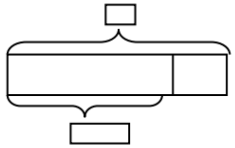
Example:
The home builder needs to cover a small storage room floor with carpet. The storage room is 4 meters long and half of a meter wide. How much carpet do you need to cover the floor of the storage room? Use a grid to show your work and explain your answer.

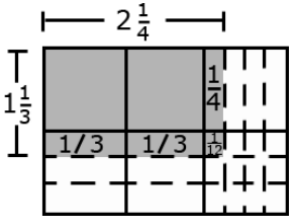
Example:
In solving the problem x , students use an area model to visualize it as a 2 by 4 array of small rectangles each of which has side lengths 1/3 and 1/5. They reason that 1/3 x 1/5 = 1/(3 x 5) by counting squares in the entire rectangle, so the area of the shaded area is (2 x 4) x 1/(3 x 5) = . They can explain that the product is less than because they are finding of . They can further estimate that the answer must be between and because of is more than of and less than one group of .



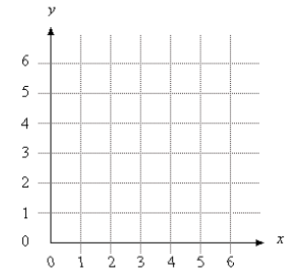
The area model and the line segments show that the area is the same quantity as the product of the side lengths.

GUSD Fifth Grade Math

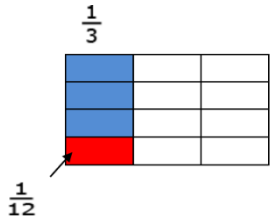
5 NF 5	Interpret multiplication as scaling (resizing), by: a) Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. b) Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence a/b = (n x a)/ (n x b) to the effect of multiplying a/b by 1.	I can use compatible numbers and mental math to estimate the product of a whole number and a fraction.	Example 1: Mrs. Jones teaches in a room that is 60 feet wide and 40 feet long. Mr. Thomas teaches in a room that is half as wide, but has the same length. How do the dimensions and area of Mr. Thomas' classroom compare to Mrs. Jones' room? Example 2: How does the product of 225 x 60 compare to the product of 225 x 30? How do you know? Since 30 is half of 60, the product of 225x 60 will be double or twice as large as the product of 225 x 30. Draw a picture to prove your answer. Example: ¾ x 7 is less than 7 because 7 is multiplied by a factor less than 1 so the product must be less than 7.  This standard asks students to examine how numbers change when we multiply by fractions. Students should have ample opportunities to examine both cases in the standard: a) when multiplying by a fraction greater than 1, the number increases and b) when multiplying by a fraction less the one, the number decreases. This standard should be explored and discussed while students are working with 5.NF.4, and should not be taught in isolation. Example: Mrs. Bennett is planting two flower beds. The first flower bed is 5 meters long and 6/5 meters wide. The second flower bed is 5 meters long and 5/6 meters wide. How do the areas of these two flower beds compare? Is the value of the area larger or smaller than 5 square meters? Draw pictures to prove your answer. Example: 2 2/3 X 8 must be more than 8 because 2 groups of 8 is 16 and 2 2/3 is almost 3 groups of 8. So the answer must be close to, but less than 24. 3/4 = 5 x 3/5 x 4 because multiplying 3/4 by 5/5 is the same as multiplying by 1.

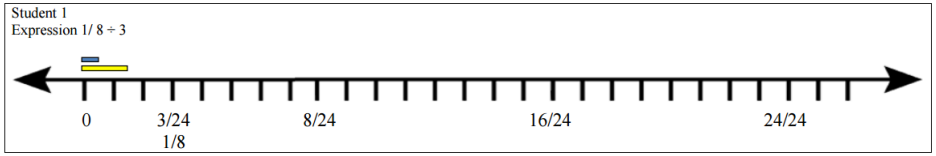
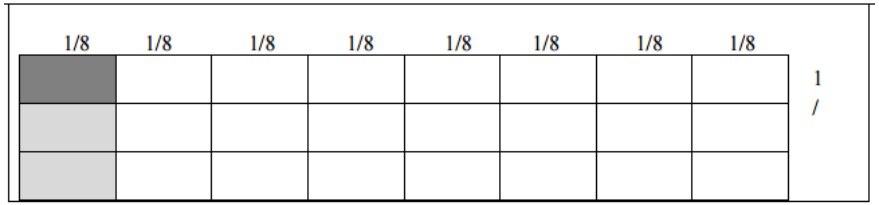
5 NF 6	Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.	I can solve real world problems involving multiplication of fractions and mixed numbers by using fraction models or equations to represent the problem.	Example: Evan bought 6 roses for his mother. 2/3 of them were red. How many red roses were there? Using a visual, a student divides the 6 roses into 3 groups and counts how many are in 2 of the 3 groups.  Example: Mary and joe determined that the dimensions of their school flag needed to be 1 1/3ft. by 2 ¼ ft. What will be the area of the school flag? A student can draw an array to find this product and can also use his or her understanding of decomposing numbers to explain the multiplication. Thinking ahead a student may decide to multiply by 1 1/3 instead of 2 ¼.  The explanation may include the following: • First, I am going to multiply 2 ¼ by 1 and then by 1/3. • When I multiply 2 ¼ by 1, it equals 2 ¼. • Now I have to multiply 2 ¼ by 1/3. • 1/3 times 2 is 2/3. • 1/3 times ¼ is 1/12. So the answer is 2 ¼ + 2/3 + 1/12 or 2 3/12 + 8/12 + 1/12 = 2 12/12 = 3

GUSD Fifth Grade Math

5 G 1	Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).	I can use a pair or perpendicular number lines to define a coordinate system with the intersection of the lines.	Example: Connect these points in order on the coordinate grid below: (2, 2) (2, 4) (2, 6) (2, 8) (4, 5) (6, 8) (6, 6) (6, 4) and (6, 2). **Coordinate Grid** What letter is formed on the  Example: Plot these points on a coordinate grid. Point A: (2,6) Point B: (4,6) Point C: (6,3) Point D: (2,3) Connect the points in order. Make sure to connect Point D back to Point A. 1. What geometric figure is formed? What attributes did you use to identify it? 2. What line segments in this figure are parallel? 3. What line segments in this figure are perpendicular? *solutions: trapezoid, line segments AB and DC are parallel, segments AD and DC are perpendicular* Example: Emanuel draws a line segment from (1, 3) to (8, 10). He then draws a line segment from (0, 2) to (7, 9). If he wants to draw another line segment that is parallel to those two segments what points will he use?

GUSD Fifth Grade Math

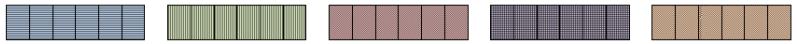
Math Sequence	Standards (Supporting)	I can statements…	Examples
5 OA 1	Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.	I can follow the rules for order of operations when more than one operation is involved.	In fifth grade students begin working more formally with expressions. They write expressions to express a calculation, e.g., writing 2 x (8 + 7) to express the calculation "add 8 and 7, then multiply by 2." They also evaluate and interpret expressions, e.g., using their conceptual understanding of multiplication to interpret 3 x (18932 + 921) as being three times as large as 18932 + 921, without having to calculate the indicated sum or product. Thus, students in Grade 5 begin to think about numerical expressions in ways that prefigure their later work with variable expressions (e.g., three times an unknown length is 3 . L). In Grade 5, this work should be viewed as exploratory rather than for attaining mastery; for example, expressions should not contain nested grouping symbols, and they should be no more complex than the expressions one finds in an application of the associative or distributive property, e.g., (8 + 27) + 2 or (6 x 30) + (6 x 7).
5 OA 2	Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.	I can translate words into numerical expressions.	Example: Write an expression for the steps "double five and then add 26." Student *(2 x 5) + 26*
5 NF 7	Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. a) Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. b) Interpret division of a whole number by a unit fraction, and compute such quotients. c) Solve real world problems involving division of unit fractions by non-zero whole numbers and	I can use models and mental math to divide a whole number by a fraction and a fraction by a fraction.	Example: Knowing the number of groups/shares and finding how many/much in each group/share Four students sitting at a table were given 1/3 of a pan of brownies to share. How much of a pan will each student get if they share the pan of brownies equally? The diagram shows the 1/3 pan divided into 4 equal shares with each share equaling 1/12 of the pan. 

	division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem.		This standard asks students to work with story contexts where a unit fraction is divided by a non-zero whole number. Students should use various fraction models and reasoning about fractions. Example: You have 1/8 of a bag of pens and you need to share them among 3 people. How much of the bag does each person get?  Student 2 I drew a rectangle and divided it into 8 columns to represent my 1/8. I shaded the first column. I then needed to divide the shaded region into 3 parts to represent sharing among 3 people. I shaded one-third of the first column even darker. The dark shade is 1/24 of the grid or 1/24 of the bag of pens.  Student 3 1/8 of a bag of pens divided by 3 people. I know that my answer will be less than 1/8 since I'm sharing 1/8 into 3 groups. I multiplied 8 by 3 and got 24, so my answer is 1/24 of the bag of pens. I know that my answer is correct because (1/24) x 3 = 3/24 which equals 1/8. This standard calls for students to create story contexts and visual fraction models for division situations where a whole number is being divided by a unit fraction.

Example: Create a story context for 5 ÷ 1/6. Find your answer and then draw a picture to prove your answer and use multiplication to reason about whether your answer makes sense. How many 1/6 are there in 5?

Student
The bowl holds 5 Liters of water. If we use a scoop that holds 1/6 of a Liter, how many scoops will we need in order to fill the entire bowl?

I created 5 boxes. Each box represents 1 Liter of water. I then divided each box into sixths to represent the size of the scoop. My answer is the number of small boxes, which is 30. That makes sense since 6 x 5 = 30.



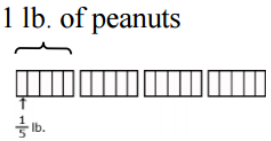
1 = 1/6 + 1/6 + 1/6 + 1/6 + 1/6 a whole has 6/6 so five wholes would be 6/6 + 6/6 + 6/6 + 6/6 + 6/6 =30/6

Student should continue to use visual fraction models and reasoning to solve these real-world problems.

Example:
How many 1/3-cup servings are in 2 cups of raisins?

Student
I know that there are three 1/3 cup servings in 1 cup of raisins. Therefore, there are 6 servings in 2 cups of raisins. I can also show this since 2 divided by 1/3 = 2 x 3 = 6 servings of raisins.

Examples:
Knowing how many in each group/share and finding how many groups/shares
Angelo has 4 lbs of peanuts. He wants to give each of his friends 1/5 lb. How many friends can receive 1/5 lb of peanuts? A diagram for 4 ÷ 1/5 is shown below. Students explain that since there are five fifths in one whole, there must be 20 fifths in 4 lbs.

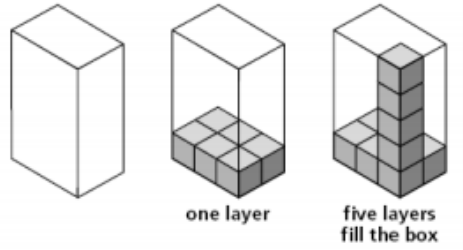


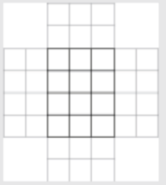
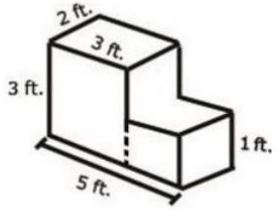
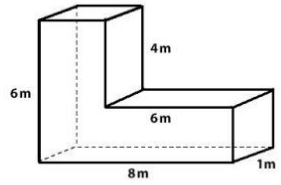
Example:
How much rice will each person get if 3 people share 1/2 lb of rice equally?

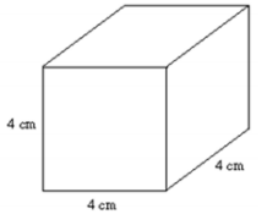
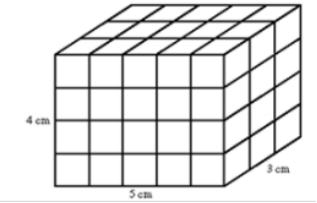
½ ÷ 3 = 3/6 ÷ 3 = 1/6

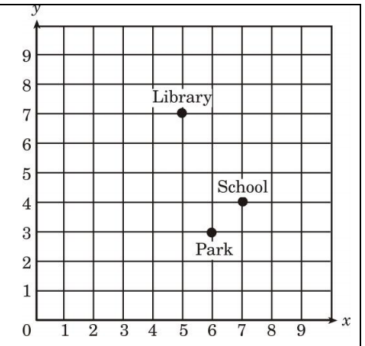
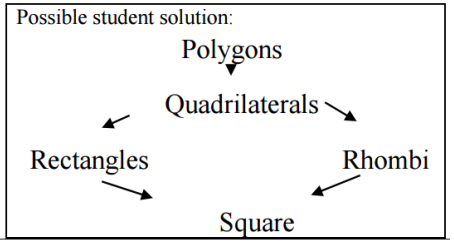
A student may think or draw ½ and cut it into 3 equal groups then determine that each of those part is 1/6. A student may think of ½ as equivalent to 3/6. 3/6 divided by 3 is 1/6.

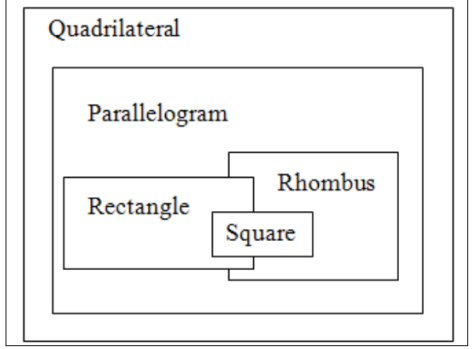
GUSD Fifth Grade Math

5 MD 1	Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.	I can change between one customary unit of length and another by multiplying or dividing, and add and subtract customary units of length	Example: 100 cm = 1 meter. In Grade 5, students extend their abilities from Grade 4 to express measurements in larger or smaller units within a measurement system. This is an excellent opportunity to reinforce notions of place value for whole numbers and decimals, and connection between fractions and decimals (e.g., 2 ½ meters can be expressed as 2.5 meters or 250 centimeters). For example, building on the table from Grade 4, Grade 5 students might complete a table of equivalent measurements in feet and inches. Grade 5 students also learn and use such conversions in solving multi-step, real world problems (see example below).
5 MD 2	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots.	I can make a line plot using fractions.	Example: Students measured objects in their desk to the nearest ½, ¼, or 1/8 of an inch then displayed data collected on a line plot. How many object measured ¼? ½? If you put all the objects together end to end what would be the total length of all the objects?
5 MD 3	Recognize volume as an attribute of solid figures and understand concepts of volume measurement. a) A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume. b) A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.	I can identify volume as an attribute of 3 dimensional shapes.	 (3X2) represented by first layer (3x2) x5
5 MD 4	Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.	I can find the area of solid rectangular prisms knowing what I know about area.	

5 MD 5	Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. a) Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole number products as volumes, e.g., to represent the associative property of multiplication. b) Apply the formulas V = l × w × h and V = b × h for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems. c) Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.	I can find the volume of solid rectangular prisms using what I know about area.	**Net for five faces of a right rectangular prism**  Students are given a net and asked to predict the number of cubes required to fill the container formed by the net. In such tasks, students may initially count single cubes or repeatedly add the number of cubes in a row to determine the number in each layer, and repeatedly add the number in each layer to find the total number of unit cubes. In folding the net to make the shape, students can see how the side rectangles fit together and determine the number of layers. 5. MD.5a & b These standards involve finding the volume of right rectangular prisms (see picture above).Students should have experiences to describe and reason about why the formula is true. Specifically, that they are covering the bottom of a right rectangular prism (length x width) with multiple layers (height). Therefore, the formula (length x width x height) is an extension of the formula for the area of a rectangle. 5.MD.5c This standard calls for students to extend their work with the area of composite figures into the context of volume. Students should be given concrete experiences of breaking apart (decomposing) 3-dimensional figures into right rectangular prisms in order to find the volume of the entire 3-dimensional figure.  

			  Students need multiple opportunities to measure volume by filling rectangular prisms with cubes and looking at the relationship between the total volume and the area of the base. They derive the volume formula (volume equals the area of the base times the height) and explore how this idea would apply to other prisms. Students use the associative property of multiplication and decomposition of numbers using factors to investigate rectangular prisms with a given number of cubic units.
5 G 2	Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.	I can graph points in the coordinate plane.	This standard references real-world and mathematical problems, including the traveling from one point to another and identifying the coordinates of missing points in geometric figures, such as squares, rectangles, and parallelograms.

			Example: Using the coordinate grid, which ordered 
5 G 3	Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.	I can classify quadrilaterals by their angles or pairs of sides.	This standard calls for students to reason about the attributes (properties) of shapes. Student should have experiences discussing the property of shapes and reasoning. Example: If the opposite sides on a parallelogram are parallel and congruent, then rectangles are parallelograms A sample of questions that might be posed to students include: A parallelogram has 4 sides with both sets of opposite sides parallel. What types of quadrilaterals are parallelograms? Regular polygons have all of their sides and angles congruent. Name or draw some regular polygons. All rectangles have 4 right angles. Squares have 4 right angles so they are also rectangles. True or False? A trapezoid has 2 sides parallel so it must be a parallelogram. True or False?
5 G 4	Classify two-dimensional figures in a hierarchy based on properties.	I can name polygons based on the number of sides. I can classify triangles according to the lengths of their sides or the measures of their angles. I can classify quadrilaterals by angles or pairs of sides.	Example: Create a Hierarchy Diagram using the following terms: polygons – a closed plane figure formed from line segments that meet only at their endpoints. quadrilaterals - a four-sided polygon. rectangles - a quadrilateral with two pairs of congruent parallel sides and four right angles. rhombi – a parallelogram with all four sides equal in length. square – a parallelogram with four congruent sides and four right angles. Possible student solution: 

			quadrilateral – a four-sided polygon. parallelogram – a quadrilateral with two pairs of parallel and congruent sides. rectangle – a quadrilateral with two pairs of congruent, parallel sides and four right angles. rhombus – a parallelogram with all four sides equal in length. square – a parallelogram with four congruent sides and four right angles. Possible student solution:  Student should be able to reason about the attributes of shapes by examining: What are ways to classify triangles? Why can't trapezoids and kites be classified as parallelograms? Which quadrilaterals have opposite angles congruent and why is this true of certain quadrilaterals?, and How many lines of symmetry does a regular polygon have?