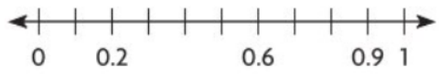
2017 - 2018	Grade 6 Go Math! Quarter 2 Planner Chapter 3 Rational Numbers	13-14 Days

BIG IDEA: In 6th grade, students use fractions, decimals, and integers to represent real-world situations. They extend the number line to represent all rational numbers and recognize that number lines may be either horizontal or vertical, which helps 6th graders move from number lines to coordinate grids. The focus is to learn about negative numbers, their relationship to positive numbers, and the meaning and uses of absolute value. This is the foundation for working with rational numbers, algebraic expressions and equations, functions, and the coordinate plane in 7th and 8th grades. Here are some additional key ideas to keep in mind:

1. Rational Numbers – Students with a deep understanding of rational numbers know that they are a natural extension of whole numbers that allow us to solve problems that can't be solved with just whole numbers or integers. Develop conceptual understanding by emphasizing the following:
   a. A rational number can be represented as a fraction in an infinite number of ways.
   b. A rational number can be represented as a decimal.
   c. Between any two rational numbers there are infinitely more rational numbers.
   d. Every rational number can be expressed as a fraction, but not every fraction is a rational number, e.g. $\frac{\pi}{5}$.
2. Absolute Value – The absolute value of a number represents its distance from zero on the number line regardless of direction.
   a. Emphasizing absolute value as a representation of distance, not unlike miles between cities, helps students understand why the absolute value of a number is always positive.
   b. Understanding absolute value supports students when finding horizontal or vertical distances between two points in the coordinate plane.
   c. This definition of absolute value will be used all the way through calculus.
3. The Number Line Model – The number line is a powerful tool for representing both positive and negative rational numbers. Advantages of utilizing the number line during instruction include:
   a. The number line develops a sense of the relative magnitude of number by providing a visual image of how much greater one fraction is than another or how close together two decimals are (as shown on the right).
   b. The number line provides a context for understanding fractions that is both more versatile than and different from part-whole models. Also, students should be very familiar with its use, beginning in 1st grade.
   c. Placing a fraction on a number line helps students see a fraction as a single number rather than as two numbers with separate values.



Adapted from Go Math: Teaching for Depth, pg. 99E.

HMH Professional Development Videos:

Absolute Value
Absolute Values and Opposites
Distance in the Coordinate Plane

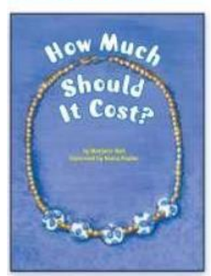
Quarter 2 Fluency Resources:

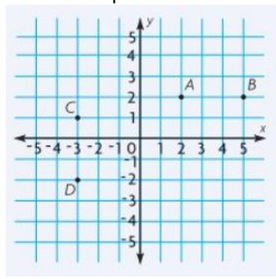
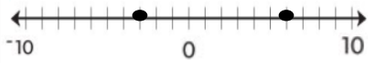
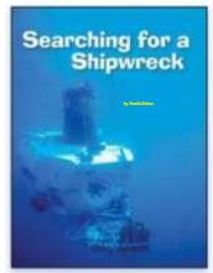
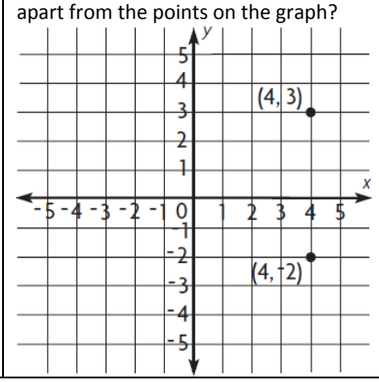
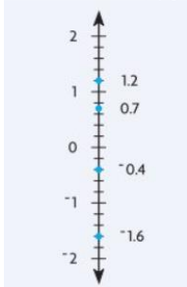
Fluency Resources in Go Math
Building Fluency Through Word Problems
Building Fluency Through Number Talks

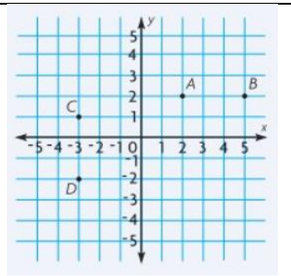
ESSENTIAL QUESTION: How do you write, interpret, and use rational numbers?
STANDARDS: 6.NS.5, 6.NS.6a, 6.NS.6b, 6.NS.6c, 6.NS.7a, 6.NS.7c, 6.NS.7d

ELD STANDARDS:

ELD.PI.6.1- Exchanging information/ideas via oral communication and conversations.
ELD.PI.6.3- Offering opinions and negotiating with/persuading others.
ELD.PI.6.5- Listening actively and asking/answering questions about what was heard.
ELD.PI.6.9- Expressing information and ideas in oral presentations.
ELD.PI.6.11- Supporting opinions or justifying arguments and evaluating others' opinions or arguments.
ELD.PI.6.12- Selecting and applying varied and precise vocabulary.

Lesson		Standards & Math Practices	Essential Question	Math Content/Strategies	Models/Tools Go Math! Teacher Resources G6	Connections (ENGAGE prior knowledge)	Vocabulary	Academic Language Support	Journal
3.5	Absolute Value	6.NS.7c Companion Pg. 47 MP 2, MP 3, MP 4, MP 8	How can you find and interpret the absolute value of rational numbers?	Students must understand absolute value as the distance from 0. Using real-world examples, such as two children living the same distance from school, but in different directions, and asking the students to determine how far each person was to the school. Helping them see that measuring distances ends in a positive number, and how that relates to absolute value, can be helpful to students. HMH PD Video: Absolute Value Absolute Values and Opposites	Integer # Line Integer # Line 2 Number Line	Have students use the Integer # Line 2 and ask them the following questions: 1. Where is 15 below sea level located on the number line? 2. How far is that point away from zero? 3. Where is 12 degrees located on the number line? 4. How far is that point away from zero?	magnitude, absolute value, number line	**ELD Standards** • ELD Standards • ELA/ELD Framework • ELPD Framework • ELL Math Instruction Framework • Integrating the ELD Standards into Math **Access Strategies** • Organizing Learning for Student Access to Challenging Content • Student Engagement Strategies • Problem Solving Steps and Approaches **Equitable Talk** • Accountable Talk Simply Stated • Equitable Talk Conversation Prompts • Accountable Talk Posters • Five Talk Moves Bookmark • Effective Math Talks **Cooperative Learning** • Cooperative Learning Role Cards • Collaborative Learning Table Mats • Seating Chart Suggestions **Math Word Wall - Grades 3-6** **Literature**  *How Much Should It Cost?*	Is |3| equal to |-3|? Use a number line to justify your answer.
3.6	Compare Absolute Value	6.NS.7d Companion Pg. 47 MP 1, MP 2	How can you interpret comparisons involving absolute value?	Teachers can help students understand that absolute value is a numbers' distance from 0 by giving the students absolute values in real-life situations. For example, "James is scuba diving and gets to a depth of 20 feet below the surface. How far is James from the surface?" HMH PD Video: Absolute Values and Opposites	Integer # Line Integer # Line 2 Coordinate Plane Coordinate Plane 2 Coordinate Plane-First Quadrant	Ask the students the following question: "What is the depth of a diver at an elevation of -30 ft?" *Use this question to help the students understand how absolute value can be used in real-life contexts.	quadrants, line symmetry, line of symmetry		Write the values in order from least to greatest: |-12|, |8|, |15|, |-22|
3.7	Rational Numbers and the Coordinate Plane	6.NS.6c Companion Pg. 45 MP 6, MP 8	How do you plot ordered pairs of rational numbers on a coordinate plane?	Students must understand the order of (x, y) coordinates in an ordered pair. Make sure to stress the importance of the order of x and y. Teach the students to use the ordered pair to move the given distance and plot on a coordinate plane.	Integer # Line Integer # Line 2 Coordinate Plane Coordinate Plane 2 Coordinate Plane-First Quadrant	See if students can explain the difference between the locations of: 1. (3,2), and (2,3) (-3,2) and (-2,3)	coordinate plane, x-axis, y-axis, origin, ordered pair, x-coordinate, y-coordinate		Give the students a small coordinate plane to answer the question: Marcus's house is located at (-4, 2) on a map. The library is located 7 units south from Marcus's house on the map. At which point in the library located? Use the coordinate plane to justify your answer.
3.8	Ordered Pair Relationships	6.NS.6b Companion Pg. 45 MP 4, MP 7	How can you identify the relationship between points on	Students need to recognize the quadrants of a coordinate plane and identify if values will have + or - signs in each quadrant. Students also must understand how reflections across an	Coordinate Plane Coordinate Plane 2 Coordinate Plane-First Quadrant Desmos.com	Plot (3,1), (-3,1), (-3,-1), (3,-1) and discuss how the coordinates change and how this relates to their locations.	reflection, quadrants, line symmetry, line of symmetry reflection		Marcus's house is located at (-4, 2). Jeffery's apartment is located at the reflection of Marcus's house

			a coordinate plane?	axis affect the signs of the coordinates.				*From the Grab-and-Go Differentiated Centers Kit –* Students read the book and learn about negative integers as Rosa repays a loan from her father.	across the y-axis. At what point is Jeffery's apartment located? Use the coordinate plane to justify your answer.
3.9	Distance on the Coordinate Plane	6.NS.8 Companion Pg. 49 MP 1, MP 5, MP 8	How can you find the distance between two points that lie on a horizontal or vertical line on a coordinate plane?	Use the absolute value to find the distance between two points on a coordinate plane. Use graphing to help understand the position of points in the four quadrants.  HMH PD Video: Distance in the Coordinate Plane	Coordinate Plane Coordinate Plane 2 Coordinate Plane-First Quadrant Desmos.com	Ask the students the following question: 1. What is the distance between the two points?  2. How can you use the absolute value to find the distance between the two points? *You can also show a vertical number line and have the students practice the same exercise.	distance, coordinate plane, coordinates, vertical line, y-axis	 *Searching for a Shipwreck* *From the Grab-and-Go Differentiated Centers Kit –* Students read the book and learn how integers can describe the sinking of the *Titanic* and the discovery of its ruins.	Graph the points (-3,3), (-3,7), and (4,3) on a coordinate plane. How many units apart is (-3,3) from (-3,7)? How many units apart is (-3,3) from (4,3)?
3.10	Problem Solving • The Coordinate Plane	6.NS.8 Companion Pg. 49 MP 1, MP 5, MP 6	How can you use the strategy *draw a diagram* to help you solve a problem on a coordinate plane?	Students need to understand a word problem may have multiple pieces of information, including starting point, movements and distances. Help students use information in the problem to graph positions on a coordinate plane and find the solution to the problem. HMH PD Video: Distance in the Coordinate Plane	Coordinate Plane Coordinate Plane 2 Coordinate Plane-First Quadrant Desmos.com Maps	Ask the students the following question: What are the two coordinates needed to create a rectangle in which the two remaining vertices are exactly 6 units apart from the points on the graph?  	coordinate plane, graph the location, located at	**Model and Discuss:** *About the Math,* pg. 109A  *About the Math,* pg. 135A	Michelle's house is located at (2, 2) on the map. She walked to the store at (-1, 2). Then she walked south to school. If each unit represents one block and Michelle walked a total of 10 blocks, what is the location of the school?

								 **Vocabulary Strategies:** *Examples and Nonexamples,* pg. 101B- Have students use the chart below to brainstorm examples and nonexamples of integers and opposites. |	Examples	Nonexamples
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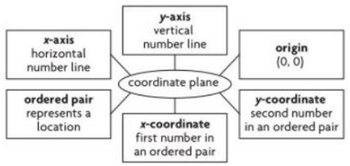
Integers	$^{-}2$, 7	$^{-}2.1$, $\frac{1}{2}$
Opposites	1 and $^{-}1$	1 and 0	 *Real-World Examples,* pg. 119B- Have students work in small groups or pairs to find real-world examples of *absolute value*. Have them explain how the example shows absolute value in the given situation. Use recent news stories, science experiments, magazines, the internet, or textbooks. *Semantic Mapping*, pg. 127B- List the new vocabulary words on the board. Work with students to complete a semantic map for *coordinate plane*, emphasizing this term's relationship to each of the other vocabulary words. 	

ASSESSMENT:
Go Math Chapter 3 Test
Go Math Chapter 3 Performance Task: Negative Numbers Through History
**Common Assignment - Critical Area 1 (*The Number System*) Performance Assessment: Math Carnival

2017 - 2018	Grade 6 Go Math! Quarter 2 Planner CHAPTER 4 Ratios and Rates	12 Days

BIG IDEA: In 6th grade, students are introduced to ratios, rates, and unit rates. The focus for this cluster is the study of ratio concepts and the use of proportional reasoning to solve problems. Students learn how ratios and rates are used to compare two quantities or values and how to model and represent them. Sixth graders find out how ratios are used in real-world situations and discover solutions to percent problems using ratios tables, tape diagrams, and double number lines. Students also convert between standard units of measure. Students need to shift their thinking from reasoning about a single quantity (as with a fraction), to reasoning about two quantities. Students also must recognize a ratio as a multiplicative comparison, not an additive comparison. Here are some additional key ideas to keep in mind:

1. *Ratios and Fractions* – A frequent misconception among students is that a ratio is just another name for a fraction. Students with conceptual understanding of a ratio recognize a number of mathematical connections that link ratios and fractions.
   a. Ratios are often written in fractional notation, but ratios and fractions no not have identical meanings.
   b. Ratios are often used to make part-part comparisons, but fractions (part-whole relationship) are not.
2. *Rates* – Although rate is typically defined as a comparison of two quantities with different units, or as a ratio in which one of the quantities is time, discussing rate as "a set of infinitely many equivalent ratios" can support students in developing a deeper understanding of the concept (Lobato, Ellis, Charles, & Zbiek, 2010). This interpretation of rate also supports students' use of concept in upper level mathematics courses and is a key aspect of proportional reasoning.

Adapted from Go Math: Teaching for Depth, pg. 151E; and The Common Core Mathematics Companion, pg. 6.

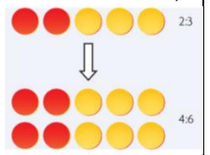
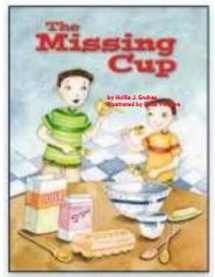
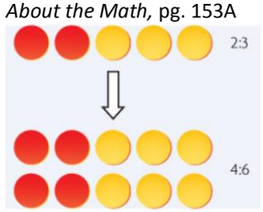
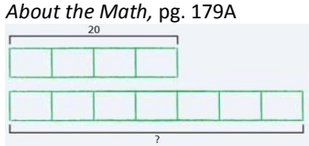
Critical Area Project: Meet Me in St. Louis, Meet Me in St. Louis Support Pages

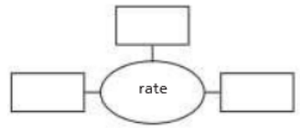
HMH Professional Development Videos:
Ratios, Rates, Tables, and Graphs
Using Ratios to Solve Problems

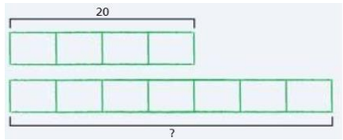
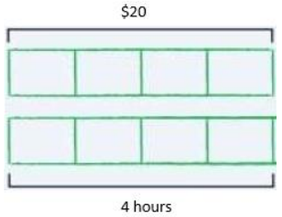
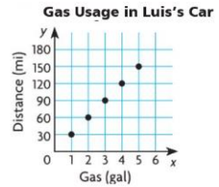
ESSENTIAL QUESTION: How can you use ratios to express relationships and solve problems?
STANDARDS: 6.RP.1, 6.RP.2, 6.RP.3

ELD STANDARDS:

ELD.PI.6.1- Exchanging information/ideas via oral communication and conversations.
ELD.PI.6.3- Offering opinions and negotiating with/persuading others.
ELD.PI.6.5- Listening actively and asking/answering questions about what was heard.
ELD.PI.6.9- Expressing information and ideas in oral presentations.
ELD.PI.6.11- Supporting opinions or justifying arguments and evaluating others' opinions or arguments.
ELD.PI.6.12-Selecting and applying varied and precise vocabulary.

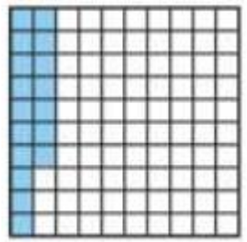
Lesson		Standards & Math Practices	Essential Question	Math Content and Strategies	Models/Tools Go Math! Teacher Resources G6	Connections (ENGAGE prior knowledge)	Vocabulary	Academic Language Support	Journal
4.1	Investigate – Model Ratios	6.RP.1 Companion Pg. 8 MP 5, MP 7	How can you model ratios?	Apply what students already know about multiplication to ratio relationships. For example, if students show the ratio *2 adults for every 3 students* with their counters, they can also show how many students there would be if there were 4 adults. Make sure to point out the red counters were multiplied by 2 and the yellow counters were also multiplied by 2. The two ratios, 2:3 and 4:6, name the same comparison. 	Two-color counters	Students can make comparisons using counters. Give the students counters and have them show 1 yellow and 2 red counters. Have them compare the number of yellow counters to red counters. Have students in pairs to combine their counters and compare their new amounts. Use this to bridge how to use counters to represent comparisons of amounts.	ratio, pattern	**Literature**  *The Missing Cup* *From the Grab-and-Go Differentiated Centers Kit –* Students read this book and learn how two brothers find equivalent fractions when baking for a school bake sale. **Model and Discuss:** *About the Math,* pg. 153A  *About the Math,* pg. 179A  **Vocabulary Strategies:** *Semantic Mapping,* pg. 157B- Have students start with a new vocabulary word and list words or phrases related to that term.	Suppose there was 1 centerpiece for every 5 tables. Use counters to show the ratio of centerpieces to tables. Then make a table to find the number of tables if there are 3 centerpieces.
4.2	Ratios and Rates	6.RP.1 Companion Pg. 8 MP 1, MP 2	How do you write ratios and rates?	Rates are ratios that compare two quantities that have different units of measure. In a unit rate, the second quantity is always 1. Discuss unit rates such as cost per pound of fruit, or cost per gallon of gas. Converting between rate and unit rate can help when comparing prices of multiple items. HMH PD Videos: Ratios, Rates, Tables, and Graphs Using Ratios to Solve Problems	Two-color counters	Review the use of fractions to represent quantities. Ask the students the question: "If 3 pencils out of a package of 8 pencils are blue, what portion of the pencils are blue?" (3/8) Then ask the students the following questions: "What does the number above the fraction bar represent? What does the number below the fraction bar represent?" This helps the students see how the numbers represent values. Later, connect this understanding to how to write ratios.	rate, unit rate		In a kennel, there are 3 German Shepherds, 2 Chihuahuas, and 5 Labs. 1. What is the ratio of German Shepherds to Labs? 3. What is the ratio of Labs to total dogs?
4.3	Equivalent Ratios and Multiplication Tables	6.RP.3a Companion Pg. 10 MP 1, MP 4	How can you use a multiplication table to find equivalent ratios?	Using a table can help students see the multiplicative relationship among equivalent ratios. -Suppose that there are 3 erasers for every 4 pencils. For 2 groups of 4 pencils, there are 3 erasers for each group. Continue the table. Erasers | 3 | 6 | 9 | 12 Pencils | 4 | 8 | 12 | 16 HMH PD Videos: Ratios, Rates, Tables, and Graphs	Multiplication Table	Relating equivalent ratios to equivalent fractions can be helpful for students. Have them complete the following task: Have students model $\frac{1}{2}$ using a circle. Have students draw another circle and model $\frac{2}{4}$. Have the students compare the models and say what they notice. Ask the students, "Is $\frac{1}{2}$ equivalent to $\frac{2}{4}$? How do you know?"	equivalent ratios, equivalent fractions, numerator, denominator		Are the ratios $\frac{1}{3}$ and $\frac{6}{18}$ equivalent? How do you know?

				Using Ratios to Solve Problems		Bridge this idea to equivalent ratios during the lesson.			
4.4	Problem Solving – Use Tables to Compare Ratios	6.RP.3a Companion Pg. 10 MP 1, MP 7	How can you use the strategy *find a pattern* to help you compare ratios?	Use two tables to compare two ratios and determine if the ratios are equivalent. As the students work with tables, point out that each number pair in a column can also be written in fraction form. If the same number appears in either the top or bottom row in the two tables, students can compare the ratios in those columns to determine if the other term is also the same. Students can also compare ratios by writing ratios in simplest form. HMH PD Videos: Ratios, Rates, Tables, and Graphs Using Ratios to Solve Problems	Ratio Tables	Ask the students the following question. "Shauna has 3 red apples for every 4 yellow apples. If she has a total of 18 red apples, how many yellow apples does she have? Use a ratio table to solve and justify your answer. *Have the students use the Ratio Tables to solve.	equivalent ratios, equivalent fractions, numerator, denominator	The best reason to use the strategy *find a pattern* to help you compare ratios is _____. You can solve problems using unit rates by _____. A great way to represent equivalent ratios is to use a graph because _____. A unit rate is a ratio that _____. Equivalent ratios are ratios that _____.	Use tables to show which of these ratios are equivalent: $\frac{4}{6}$, $\frac{10}{25}$, and $\frac{6}{15}$.
4.5	Algebra – Use Equivalent Ratios	6.RP.3a Companion Pg. 10 MP 4, MP 8	How can you use table to solve problems involving equivalent ratios?	Use ratio reasoning to solve real-world problems. Help students make connections between what they are learning and real-life situations, such as planning a class party. Two jars of punch are enough for 12 people. If you expect 36 people at your class party, how can you find the number of jars of punch you will need to buy? How many jars will you need? How many jars of punch would you need for 34 people?	Ratio Tables	Review equivalent ratios and units of measure. Ask the students: "Jennifer and Julio worked over the weekend. Jennifer earned 20 dollars in 4 hours and Juio earned 10 dollars in 2 hours. Who earns money at a faster rate? How do you know?"	equivalent ratios, equivalent fractions, numerator, denominator		Julio can buy 6 candies for $4. How much money will he need to buy 30 candies?
4.6	Find Unit Rates	6.RP.2 Companion Pg. 9 MP 2, MP 6	How can you use unit rates to make comparisons?	When students can find unit rates, it allows them to easily compare rates, such as comparing prices in order to save money. A 14 oz. bottle of syrup costs $3.64. A 17 oz. bottle of syrup costs $4.25. Which one is the better buy? Using unit rates will allow students to compare the prices per ounce to determine the better buy.	Ratio Tables	Review unit rate by asking the students the following questions: "If Jeremy makes 12 burritos in 4 minutes, how many burritos can he make per minute?"	rate, unit rate		Jennifer drives 180 miles in 6 hours. What is her rate of speed written as a unit rate?
4.7	Algebra – Use Unit Rates	6.RP.3b Companion Pg. 10 MP 1, MP 3,	How can you solve problems using unit rates?	In this lesson, students are introduced to using unit rates to solve problems. One approach is to model the known ratio as a unit rate.	Tape diagrams (bar model)	The use of a model may help students solve problems involving unit rate. Use a model to solve the following problem:	rate, unit rate		Pamela can run 24 miles in 3 hours. If she continues to run at this rate, how many miles can she run in 5 hours?

		MP 5		For example, to solve the ratio problem $\frac{20}{4} = \frac{\square}{7}$, Draw a model wherein 4 units represent 20. Since 20 ÷ 4 = 5, each unit represents 5. Then draw a bar model with 7 units.  		"Jim can make $20 in 4 hours washing cars." Have the students create a bar model for this situation like this one:  Then ask the students, "At this rate, how much money will he make in 7 hours?" Have them use a bar model to represent their answer. (similar to model in "Math Content and Strategies" column)			
4.8	Algebra – Equivalent Ratios and Graphs	6.RP.3a Companion Pg. 10 MP 4, MP 7	How can you use a graph to represent equivalent ratios?	Students may wonder how to find the unit rate when this point is not given on a graph. Students can find the unit rate by finding a ratio with a denominator of 1. They can make a table of equivalent ratios for the known points and use the pattern to extend the table to include a ratio with a denominator of 1. Students can also find the unit rate by finding the ordered pair where the x-coordinate is equal to 1. They can use the multiplicative relationship between the x-coordinates and y-coordinates of the ordered pairs of known points to find the unit rate.	Graph paper Coordinate plane Coordinate plane - first quadrant Ratio Tables	Review rates, unit rates, and ratio tables. Ask the students the following question: "Brad solved 10 problems in 2 minutes. At this rate, how many problems could he solve in 9 minutes? Use a ratio table to solve and justify your answer." *Have the students use the Ratio Tables to solve.	Coordinate plane, ordered pair, x-coordinate, y-coordinate		Display the chart from pg. 185 in the student book:  Using a ratio table, how many miles could Luis travel on 12 gallons of gas?
ASSESSMENT: Go Math Chapter 4 Test Go Math Chapter 4 Performance Task - Madurodam									

2017 - 2018	Grade 6 Go Math! Quarter 2 Planner CHAPTER 5 Percents	9-11 Days

BIG IDEA: In 6th grade, students learn about percents and how they are connected to ratios. A percent is a special ratio that compares a number to 100. Students gain understanding of percent by comparing and making connections among the various forms in which a percent may be represented, including ratios, fractions, and decimals (Reys, 2001). Students need extensive experience building representations of percent using base-ten blocks or the area model. The use of an area model helps students conceptually understand the relationships among $\frac{17}{100}$, 0.17, and 17%. (Stein, Smith, Henningsen, & Silver, 2000; Van de Walle, 2004). The model to the right helps students understand that a percent is nothing more than a special type of fraction, specifically a fraction with a denominator of 100. Therefore, the term percent can be interpreted to mean hundredths, and the connection to decimals is clear. When solving percent problems, it's important to see percent problems the same as equivalent-fraction problems in that they involve a part and a whole measured in hundredths, or percents (Van de Walle, 2004). When setting up equivalent ratios (or fractions) to solve percent problems, there is a natural tendency to rush to the formal algorithm for solving proportions, even though the concept of a proportion has not yet been formally introduced. It is important to resist this urge, and instead focus on developing students' conceptual understanding of the multiplicative relationships to build a foundation for later formal proportion work (NRC, 2001). "Ideally, all of these ideas (fractions, decimals, ratio, proportion, and percent) should be conceptually integrated. The better that students connect these ideas, the more flexible and useful their reasoning and problem solving skills will be." (Van de Walle, 2004)



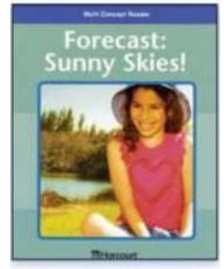
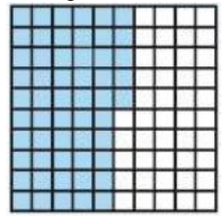
Adapted from Go Math: Teaching for Depth, pg. 193C.

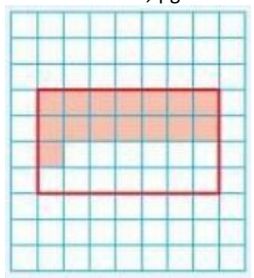
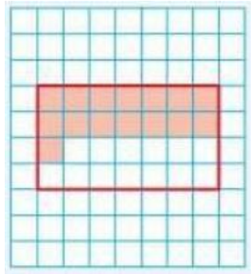
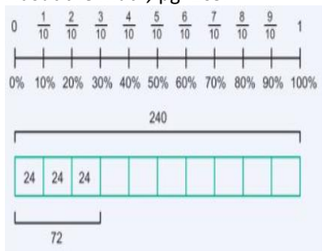
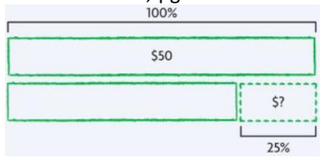
HMH Professional Development Video:
Percents, Fractions, and Decimals

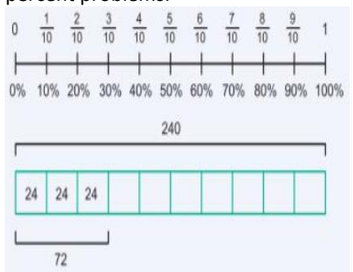
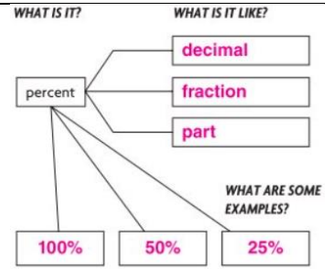
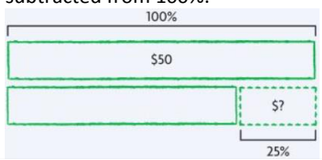
ESSENTIAL QUESTION: How can you use ratio reasoning to solve percent problems?
STANDARDS: 6.RP.3c

ELD STANDARDS:

ELD.PI.6.1- Exchanging information/ideas via oral communication and conversations.
ELD.PI.6.3- Offering opinions and negotiating with/persuading others.
ELD.Pl.6.5- Listening actively and asking/answering questions about what was heard.
ELD.PI.6.9- Expressing information and ideas in oral presentations.
ELD.PI.6.11- Supporting opinions or justifying arguments and evaluating others' opinions or arguments.
ELD.PI.6.12-Selecting and applying varied and precise vocabulary.

Lesson		Standards & Math Practices	Essential Question	Math Content and Strategies	Models/Tools Go Math! Teacher Resources G6	Connections (ENGAGE prior knowledge)	Vocabulary	Academic Language Support	Journal
5.1	Investigate – Model Percents	6.RP.3c Companion Pg. 10 MP 3, MP 5	How can you use a model to show a percent?	Understand percent as the relationship between part and whole. Using models to introduce percent allows students to develop a concrete understanding of percent as the relationship between part and whole. A deeper understanding of percents allows students to see a percent as another way to express equivalent numbers. HMH PD Video: Percents, Fractions, and Decimals	Base-Ten Blocks 10x10 Grids Base-Ten Grid Paper Base Ten 15x20 Base Ten 50x70 Decimal Models Decimal Place Value Chart	Connect to students prior learning of fractions and decimals. Use this graphic organizer to guide your thinking. Percent Engage Activity 1 *We have chosen friendly numbers because students may already know what 50% and 25% is. Allow student responses to guide the conversation.	percent, ratio	**Literature**  *Forecast: Sunny Skies!*	Show students this 10x10 grid.  Have them answer the questions:

								From the Grab-and-Go Differentiated Centers Kit – Students read about two girls who gather data and represent it as a fraction and as a percent in a bar graph.	1. What percent represents the shaded part? 2. What percent of the grid is not shaded?
5.2	Write Percents as Fractions and Decimals	6.RP.3c Companion Pg. 10 MP 2, MP 5, MP 7, MP 8	How can you write percents as fractions and decimals?	Convert percents to fractions and decimals. This lesson reinforces the idea that percents, fractions, and decimals are all different ways to express the same numerical value. Students should understand that 100% represents one whole or the total, converting percents to equivalent benchmarks and relating these concepts to situations students are familiar with. HMH PD Video: Percents, Fractions, and Decimals	10x10 Grids Base-Ten Grid Paper Decimal Place Value Chart	Connect to students understanding of fractions, decimals, and percents. Use this graphic organizer to guide review these ideas to connect to the days learning. Percent Engage Activity 2	percent, ratio	**Model and Discuss:** *About the Math,* pg. 203A 	Explain how percents, fractions, and decimals are related. Use a 10-by-10 grid to make a model that supports your explanation.
5.3	Write Fractions and Decimals as Percents	6.RP.3c Companion Pg. 10 MP 5, MP 8	How can you write fractions and decimals as percents?	Write a percent as a fraction by making the denominator 100; Write a percent as a decimal by removing % and dividing by 100. Students can use grid paper to help them write fractions as a percent. The grid provides a visual aid that can help students estimate the value of a fraction. Then, they can use their estimates to determine if their answers are reasonable.  HMH PD Video: Percents, Fractions, and Decimals	10x10 Grids Base-Ten Grid Paper	The portion of shoppers at a supermarket who pay by credit card is $\frac{1}{4}$. What percent of shoppers at the supermarket pay by credit card? *Relate to the 10 x 10 grids to help with developing conceptual understanding. Make connections between fractions, decimals, and percents.	equivalent fractions	*About the Math,* pg. 209A  *About the Math,* pg. 213A  **Vocabulary Strategies:** *Word Definition Map,* pg. 195B- Give students a word definition map with *percent*. Have them describe what percent is like and give some examples. Have them use the information to fill in the map.	Explain two ways to write $\frac{4}{5}$ as a percent.
5.4	Percent of a Quantity	6.RP.3c Companion Pg. 10	How do you find a percent of a quantity?	Use tape diagrams (bar models) to find percent, fraction, and decimal equivalents. Bar models can be used to find percent, fraction, and decimal	Tape Diagrams (bar model)	Pose the following question: A store had 60 cases of water on the shelf on Monday. If they sold 50% of	percent, equivalent fractions		Explain two ways you can find 35% of 700.

		MP 1, MP 2, MP 5		equivalents, as well as to solve a variety of percent problems. Bar models help to illustrate the relationships among the numbers in percent problems. 		their cases that day, how many cases did they sell? *Discuss their solutions and justification with the class. *Use bar models to break them up and solve. Then ask the students: What if they sold 25% of the cases on Tuesday? How many cases would that be?		 This grid represents _____% because _____. _____% of the squares are shaded. _____ of 100 squares are _____. _____ shows how many out of _____.	
5.5	Problem Solving – Percents	6.RP.3c Companion Pg. 10 MP 1, MP 4, MP 5, MP 6	How can you use the strategy *use a model* to help you solve a percent problem?	Use tape diagrams (bar models) to problem solve. A bar model is used to represent and solve percent problems, one bar representing one whole or 100%. Using comparison bar models, students can then place bars below to show a percent subtracted from 100%. 	Tape Diagrams (bar model)	Pose the following question: A store had 200 cases of water on the shelf on Monday. If they sold 12% of their cases that day, how many cases did they sell? *Discuss their solutions and justification with the class. *Use bar models to break them up and solve. Then ask the students: How many cases do they have left?	percent, equivalent fractions		Shannon has $60 in her piggy bank. Her mom said she can spend 15% of the money on snacks at the store. How much money is Shannon going to be allowed to spend on snacks?
5.6	Find the Whole from a Percent	6.RP.3c Companion Pg. 10 MP 1, MP 4	How can you find the whole given a part and the percent?	Model percent problems using equivalent ratios; percent is equal to the ratio of a part to a whole. Situations involving percent are common in everyday life. Proficient students model simple percent problems by using equivalent ratios. The key relationship that students should grasp is that a percent is equal to the ratio of a part to a whole. Percent = part / whole	Double number line	Pose the following question: A store sold 40 cases of water on Thursday. If that was 50% of the cases they had on the shelf, how many cases were on the shelf at the beginning of the day? *Use bar models to solve. Then ask the students: A larger store also sold 40 cases of water on Thursday. If they sold 25% of their water that day, how much water did they begin with?	equivalent ratios, simplify		Lawrence spent 30% of his money on a pair of shoes. If the shoes cost $60, how much money did Lawrence have before he bought the shoes?
ASSESSMENT: Go Math Chapter 5 Test Go Math Chapter 5 Performance Task - Clearance Sale									

2017 - 2018	Grade 6 Go Math! Quarter 2 Planner CHAPTER 6 Units of Measure	8-9 Days

BIG IDEA: In 6th grade, students are learning how to convert from one unit of measurement to another. Here are some considerations as you help students make sense of conversions:

1. *Making Sense of Conversions* – Students aren't sure whether to multiply or divide when they need to convert from one unit of measure to another. They should think about the relationship of the units. These questions, based on the relationship of the units, will help students determine the operation they should use:
   - How are the units related – what is the relationship or formula?
   - Is the unit being converted smaller or larger than the target unit?

   To illustrate these questions, convert within the U.S. monetary system, which should be familiar to all students.
   - How many dimes are in 23 dollars?
   - How many dollars are in 35 dimes?

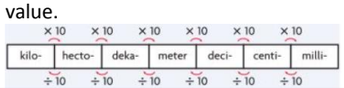
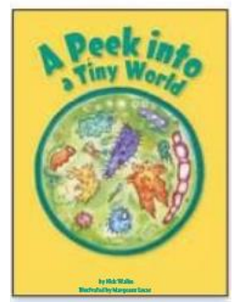
   Encourage discussion and establish the formulas relating the units: 1 dollar = 10 dimes, 1 dime = $\frac{1}{10}$ or 0.1 dollar. Guide students to conclude that when you start with a coin of greater value and convert to a denomination of less value, the result will be a greater number and vice versa. The focus must be on reasoning rather than on determining whether to divide or multiply.
2. *Converting to Other Systems* – Benchmarks such as 1 inch is about 2.5 centimeters may be close enough to help students understand some measures. However, other situations require more accuracy. For example, an inch is equal to 2.54 centimeters. So, to find the number of centimeters in 4 inches, begin with the relationship of inches to centimeters (1 inch = 2.54 centimeters, 4 inches = 4 x 2.54 centimeters). By thinking about the relationship first, it becomes clear to the student whether to multiply or divide.

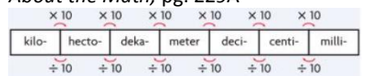
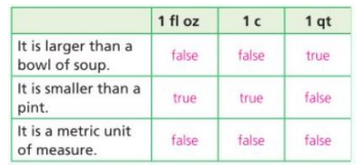
Adapted from Go Math: Teaching for Depth, pg. 227C.

ESSENTIAL QUESTION: How can you use measurements to help you describe and compare objects?
STANDARDS: 6.RP.3

ELD STANDARDS:

ELD.PI.6.1- Exchanging information/ideas via oral communication and conversations.
ELD.PI.6.3- Offering opinions and negotiating with/persuading others.
ELD.PI.6.5- Listening actively and asking/answering questions about what was heard.
ELD.PI.6.9- Expressing information and ideas in oral presentations.
ELD.PI.6.11- Supporting opinions or justifying arguments and evaluating others' opinions or arguments.
ELD.PI.6.12-Selecting and applying varied and precise vocabulary.

Lesson		Standards & Math Practices	Essential Question	Math Content and Strategies	Models/Tools Go Math! Teacher Resources G6	Connections (ENGAGE prior knowledge)	Vocabulary	Academic Language Support	Journal
6.1	Convert Units of Length	6.RP.3d Companion Pg. 10 MP 1, MP 2, MP 6	How can you use ratio reasoning to convert from one unit of length to another?	Use a conversion factor or conversion chart (metric system) to convert from one unit of length to another. A chart is simple to use because the metric system is based on powers of 10, once again emphasizing the importance of place value. 	conversion factor, metric conversion chart	Pose the following question: Justin has a piece of rope that is 4 feet long. How long is his piece of rope in inches? *This is a good bridge to conversions. Using models and drawing pictures helps conceptual understanding.	conversion factor, length, meter	**Literature**  *A Peek into a Tiny World*	The Empire State Building in New York City is 1,250 feet tall. What is the height of the building in yards?
6.2	Convert Units of Capacity	6.RP.3d Companion Pg. 10 MP 2, MP 4,	How can you use ratio reasoning to convert from one unit of capacity to another?	Use a conversion factor or conversion chart (metric system) to convert from one unit of capacity to another. It is important that students learn about the customary	conversion factor, metric conversion chart	Pose the following question: Gina filled a tub with 32 quarts of water. If there are 4 quarts in a gallon, how many gallons of water are in the tub?	capacity, gallon, liter, pint, quart		An Olympic-sized swimming pool holds 660,000 gallons of water. What is the

		MP 8		system of measurement used in the United States, as well as the metric system of measurement, the system used in most other countries. Converting customary units reinforces students' understanding of rates and equivalent rates.		*Use pictorial representations and grouping of quarts to represent gallons.		*From the Grab-and-Go Differentiated Centers Kit –* Students read about using a stage micrometer to make measurements of tiny creatures. **Model and Discuss:** *About the Math,* pg. 229A  **Vocabulary Strategies:** *Semantic Feature Analysis,* pg. 233B- Have pairs of students complete the table. 	capacity of the pool in quarts?
6.3	Convert Units of Weight and Mass	6.RP.3d Companion Pg. 10 MP 1, MP 2, MP 3	How can you use ratio reasoning to convert from one unit of weight or mass to another?	Use a conversion factor or conversion chart (metric system) to convert from one unit of weight or mass to another. Students need to understand the difference between weight and mass, reinforcing the application of the mathematics to science concepts.	conversion factor, metric conversion chart	Pose the following question: A large bag of rice weighs 5 pounds. If there are 16 ounces in a pound, what is the weight of the bag in ounces? *Use pictorial representations and grouping of ounces to represent pounds.	gram, mass, ounce, pound, ton, weight		The USS Missouri, a retired US battleship, weighs 45,000 tons. What is the weight of the ship in pounds?
6.4	Transform Units	6.RP.3d Companion Pg. 10 MP 1, MP 3, MP 5	How can you transform units to solve problems?	Analyze the units in a problem and determining their relationship to solve problems. The skills students need to transform units are the same whether the context involves a simple unit conversion or applying a rate such as boxes per minute.		Pose the following question: A machine assembles 8 key chains per hour. How many key chains does the machine assemble in 12 hours? *Use a bar model for help with conceptual understanding.	capacity, gallon, liter, pint, quart, gram, mass, ounce, pound, ton, weight		Samuel's car travels 25 miles on 1 gallon of gas. How many gallons of gas would he need to travel 300 miles?
6.5	Problem Solving – Distance, Rate, and Time Formulas	6.RP.3d Companion Pg. 10 MP 1, MP 7	How can you use the strategy *use a formula* to solve problems involving distance, rate, and time?	Use formulas to represent relationships between distance, rate and time; problem solve by dividing out common units. In this lesson, students use 3 different formulas representing the relationships among distance, rate, and time. Ratios and rates are different units of measure.		Pose the following question: Jennifer runs 5 miles per hour while she trains for her track meet. At this rate, how many miles will she run in 2 hours? *Discuss responses and ask how this can be represented using a bar model. Then ask the students: If she continued at this rate, how long would it take her to run 35 miles? *encourage students to show their justification using a bar model.	formula		Juanita rides her bike at an average rate of 18 miles per hour. At this rate, how far will she travel if she rides for 3.5 hours?

	1 fl oz	1 c	1 qt
It is larger than a bowl of soup.	false	false	true
It is smaller than a pint.	true	true	false
It is a metric unit of measure.	false	false	false

ASSESSMENT:

Go Math Chapter 6 Test

Go Math Chapter 6 Performance Task - Decathlon

Critical Area Project 2 (*Ratios and Rates*): Meet Me in St. Louis (See Chapter 4 TE, pg. 149), Meet Me in St. Louis Support Pages

**Common Assignment - Critical Area 2 (*Ratios and Rates*) Performance Assessment: Trip to Mexico