2017-2018 | **Grade 5 Go Math! Quarter 2 Planner** | **15-17 Days**

Chapter 3 Add and Subtract Decimals

BIG IDEA:

1. This chapter extends work from Grade 4 in which students explored and generalized that when a digit moves one place to the left it becomes ten times greater. In Grade 5, students look at what happens as the digit moves to the right (10 is $\frac{1}{10}$ of 100). In this chapter place value reasoning will be expanded to include decimals.
2. Reading and writing decimals are essential skills to extend place value understanding of whole numbers and the relationship among decimal places, which is explored in this standard.
3. Modeling decimal addition and subtraction with base-ten blocks, place value chart, or grid paper provides a method that helps students avoid a common error- operating with decimals as though they are whole numbers, ignoring the significance of the decimal point. They explain their thinking in composing and decomposing numbers. It is important that conceptual understanding is built on place value rather than to simply line up the decimal points and compute. Problem situations extending from those used with whole numbers will provide a context for thinking about reasonableness of results.
4. Building on whole-number experiences, materials and place value charts will help students to relate previous work with composing and decomposing whole numbers to composing and decomposing decimals.

Adapted from The Common Core Math Companion (Gojak & Miles, 2015, Pg. 101) and Go Math: Teaching for Depth, Pg. 107E

Professional Development Videos:

Compare Decimals
Using Base 10 blocks with Decimals Video- Intro
Add Decimals Using Base Ten Blocks
Subtract Decimals on an Open Number Line
Performance Task Video: Decimal Operations

Quarter 2 Fluency Resources:

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

Critical Area Projects:

In the Chef's Kitchen Critical Area Project
The Forester Critical Area Project

Essential Question: How can you add and subtract decimals?
Standards: 5.NBT.1, 5.NBT.3a, 5.NBT.3b, 5.NBT.4, 5.NBT.7

ELD Standards:

ELD.PI.5.1-Exchanging information/ideas via oral communication and conversations.
ELD.PI.5.3-Offering opinions and negotiating with/persuading others.
ELD.PI.5.5-Listening actively and asking/answering questions about what was heard.
ELD.PI.5.9- Expressing information and ideas in oral presentations.
ELD.PI.5.11- Supporting opinions or justifying arguments and evaluating others' opinions or arguments.
ELD.PI.5.12-Selecting and applying varied and precise vocabulary.

Lesson		Standards & Math Practices	Essential Question	Math Content/Strategies	Models/Tools Go Math! Teacher Resources G5	Connections (ENGAGE Prior Knowledge)	Vocabulary	Academic Language Support	Journal
3.1	Investigate • Thousandths	5.NBT.1 MP 5 MP 6 MP 7	How can you describe the relationship between two	The value of one place-value position is 10 times as much as the value of the position to its right and $\frac{1}{10}$ of the value of the position to its left. Extend understanding of decimal place	Decimal Models Decimal Place Value Chart Digit Tiles Base Ten 50x70	What value do the digits have? How does the value of one place value position compare to the place value to the right or left?	Thousandth; hundredth; tenth; place value; digit; how many	**ELD Standards** • ELD Standards • ELA/ELD Framework • ELPD Framework	What is the value of the underlined digit? Mark all that apply. 0.<u>6</u>79 a. 0.6 b. 0.06

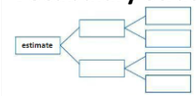
<table>
<tr>
<td></td>
<td></td>
<td>Companion Pg.91</td>
<td>decimal place-value positions?</td>
<td>value to thousandths, taking time to relate the decimal places of tenths, hundredths, and thousandths.
Using Base 10 blocks with Decimals Video-Intro (Stop video at 3:55)
Think-aloud the contrast between the values of tens/tenths, hundreds/hundredths, thousands/thousandths. Have pairs use a place value chart to describe the increase/decreased value of each position. Next, contrast the difference between whole number and decimals.
<table><tr><td>1 thousand = 1,000</td><td>1 thousandth = $\frac{1}{1,000}$</td></tr><tr><td>1 hundred = 100</td><td>1 hundredth = $\frac{1}{100}$</td></tr><tr><td>1 ten = 10</td><td>1 tenth = $\frac{1}{10}$</td></tr></table></td>
<td></td>
<td>$5.00
$0.05
$0.05</td>
<td>times as much; decimal; place value chart</td>
<td rowspan="4">• 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

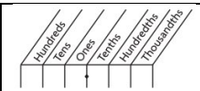
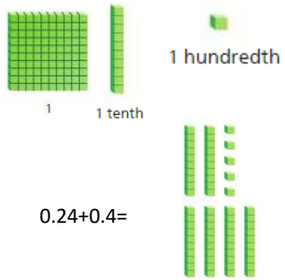
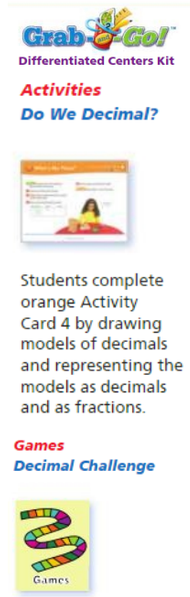
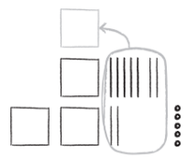
Vocabulary Strategy
  </td>
<td>c. Six tenths
d. Six hundredths
e. $6 \times \frac{1}{10}$</td>
</tr>
<tr>
<td>3.2</td>
<td>Place Value of Decimals</td>
<td>5.NBT.3a
MP 2
MP 7

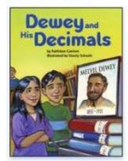
Companion Pg.94</td>
<td>How do you read, write, and represent decimals through thousandths?</td>
<td>Students can use a place-value chart to help see the value of each digit. A decimal can be written in standard form, word form, or extended form. The place of the last digit determines the name of the decimal. Facilitate classroom discussions in which students justify their reasoning when comparing decimal numbers.</td>
<td>Decimal Place Value Chart
Digit Tiles
Base Ten 50x70</td>
<td>What is the value of the underlined digit? Mark all that apply. 0.2<u>8</u>3
a. 0.8
b. 0.08
c. $8 \times \frac{1}{10}$
d. $8 \times \frac{1}{100}$
Eight hundredths</td>
<td>Thousandth; hundredth; tenth; place value; digit; how many times as much; decimal; place value chart</td>
<td>Circle the value that makes the statement true.

In the number 2.175, the value of the digit 2 is 2 (ones, tenths, hundredths, thousandths), and the value of the digit 7 is 7(ones, tenths, hundredths, thousandths).</td>
</tr>
<tr>
<td>3.3</td>
<td>Compare and Order Decimals</td>
<td>5.NBT.3b
MP 2
MP 6

Companion Pg.95</td>
<td>How can you use place value to compare and order decimals?</td>
<td>When comparing decimals in a place-value chart, you compare the digits from left to right to compare the greatest values first.</td>
<td>Decimal Place Value Chart
Digit Tiles
Base Ten 50x70
Number lines</td>
<td>How do you write a decimal that is 10 times as much as 0.04?
How do you write a decimal that is 1/10 as much as 0.5?</td>
<td>Greater than; less than; place value chart; compare; order</td>
<td>Ramon kept a record of how many miles he ran each week during one month.
<table><tr><td>Week</td><td>Distance</td></tr><tr><td>1</td><td>4.754 miles</td></tr><tr><td>2</td><td>4.752 miles</td></tr><tr><td>3</td><td>5.19 miles</td></tr><tr><td>4</td><td>5.75 miles</td></tr></table>Order the weeks from least to greatest.</td>
</tr>
<tr>
<td>3.4</td>
<td>Round Decimals</td>
<td>5.NBT.4
MP 2
MP 7

Companion Pg.96</td>
<td>How can you use place value to round decimals to a given place?</td>
<td>If the digit to the right of the digit in the rounding place is greater than or equal to 5, then the digit in the rounding place increases by 1 and the digits to its right are dropped. If the digit to the right of the digit in the</td>
<td>Decimal Place Value Chart
Digit Tiles
Base Ten 50x70</td>
<td>There were 13,501 visitors to a museum in June. What is this number rounded to the nearest ten thousand? Explain how you round.</td>
<td>Round decimals; nearest hundredths,</td>
<td>Describe how to round 3.987 to the nearest tenth.
OR</td>
</tr>
</table>

				rounding place is less than 5, then the digit in the rounding place stays the same. Presenting problem situations and letting students discuss what place make most sense for rounding in that situation connects the mathematics to everyday life application.	Number Lines		thousandths, tenths		_____rounded to the nearest tenth is 6.5. a. 6.43 b. 6.44 c. 6.53 d. 6.59
3.5	Investigate • Decimal Addition	5.NBT.7 MP 5 MP 6 Companion Pg.101	How can you use base-ten blocks to model decimal addition?	Use base ten blocks and place value mats to model addition and subtraction of decimals. 	Base Ten Blocks Decimal Models Base Ten 50x70 Quick Pictures	How many different ways can you build the number 185 using your Base Ten Blocks? Draw your representations.	Sums of decimals; regrouped; place value position		Clayton Road is 2.25 miles long. Wood Pike Road is 1.7 miles long. Kisha used a quick picture to find the combined length of Clayton Road and Wood Pike Road. Does Kisha's work make sense? Explain why or why not. 
3.6	Investigate • Decimal Subtraction	5.NBT.7 MP 5 MP 6 MP 8 Companion Pg.101	How can you use base-ten blocks to model decimal subtraction?	When you subtract decimal numbers, you regroup the same way you regroup whole numbers. Discuss how the place is related to the value in terms of money	Base Ten Blocks Decimal Models Quick Pictures Base Ten 50x70	How many different ways can you build the number 1.85 using your Base Ten Blocks? Draw your representations.	Difference; regroup; subtracting from; compare		The school is 3.65 miles from Tonya's house and 1.28 miles from Jamal's house. How much farther from school is Tonya's house than Jamal's house? Explain how you can use a quick picture to solve the problem.
3.7	Estimate Decimal Sums and Differences	5.NBT.7 MP 2 MP 5 MP 7 Companion Pg.101	How can you estimate decimal sums and differences?	Rounding and number lines with benchmarks can be used to estimate decimal sums and differences. Ex 12.73 falls between 12.7 and 12.8 Provide real-world examples in which students must round decimals to the appropriate place. Extend previous experiences with rounding whole numbers using the number line.	Benchmarks to estimate Decimal Models Base Ten 50x70	Cassandra ordered a tall Frappuccino for $6.30 and gave the cashier $10. How much change did she get back	Benchmark Round decimals; nearest hundredths, thousandths, tenths		A vet measured the mass of two birds. The mass of the robin was 76.64 grams. The mass of the blue jay was 81.54 grams. Estimate the difference in the masses of the birds.

3.8	Add Decimals	5.NBT.7 MP 4 MP 5 Companion Pg.101	How can place value help you add decimals?	Prior knowledge of expanded notation can be used to demonstrate that aligning the decimal points of addends helps ensure that they add ones to ones, tenths to tenths, hundredths to hundredths.	Quick Picture Decimal Models Base Ten 50x70	Lisa went to In-N-Out Burger and wanted to purchas a double-double for $3.15, fries for $1.40, and a chocolate shake for $1.95. Her mom gave her $6. Does she have enough money? Explain	Sums of decimals; regrouped; place value position	**Literature** ***Dewey and His Decimals*** Students read about the Dewey Decimal system used to order books in the library.	Regina has two electronic files. One has a size of 3.15MB and the other 4.69MB. What is the total size of her files?
3.9	Subtract Decimals	5.NBT.7 MP 2 MP 6 Companion Pg.101	How can place value help you subtract decimals?	Scaffold subtraction problems, beginning with subtracting tenths from tenths, hundredths from hundredths, tenths from hundredths, and hundredths from tenths.	Estimate, regrouping, Decimal Models Base Ten 50x70	Which equation has the same unknown value as $33.74 - 18.9 = \blacksquare$ $18.9 + \blacksquare = 33.74$ $33.74 + \blacksquare = 18.9$ $\blacksquare - 33.74 = 18.9$ $\blacksquare - 18.9 = 33.74$	Difference; regroup; subtracting from; compare		Find the unknown value in the equation. $\blacksquare - 18.9 = 33.74$
3.10	Algebra • Patterns with Decimals **optional lesson	5.NBT.7 MP 3 MP 7 Companion Pg.101	How can you use addition or subtraction to describe a pattern or create a sequence with decimals?	In this lesson, students must identify pattern in number sequence. The following questions will help students' awareness of repeated reasoning in patterns and sequences. What is the change from one term to the next? How could you write a rule so others could write more terms in this sequence?	Decimal Models Base Ten 50x70 Sequence	What's My Pattern? 30 ÷ 6 = 300 ÷ 6 = 3000 ÷ 6 = 30000 ÷ 6 =	Sequence, term	**Literature**  Dewey and His Decimals	Describe the rule for the sequence. 7.35, 7.10, 6.85, 6.60
3.11	Problem Solving• Add and Subtract Money	5.NBT.7 MP 1 MP 4 Companion Pg.101	How can the strategy *make a table* help you organize and keep track of your bank account balance?	Making a table is an organizational tool that enables students to make sense of the data in the problem. There is no single, correct way to organize the data, but tables enable students to more easily recognize the relationships that the data share.	Decimal Models Base Ten 50x70 Make a table	Tina ate 4.2 ounces of trail mix. Lupe ate 4.25 ounces of trail mix. Who ate more and how much more?	Sums of decimals; regrouped; place value position Difference; regroup; subtracting from; compare		Mario has $25. He spends $7.25 on admission to the movies, $6.50 for popcorn, and $3.50 each for 2 hot dogs. How much money does he have left?
3.12	Choose a Method **optional lesson	5.NBT.7 MP 1 MP 2 MP 5 MP 7 Companion Pg.101	Which method could you choose to find decimal sums and differences?	Support students to recognize the place value of numbers and understand how to decompose them, as well as represent them in different ways. Presenting students with a variety of computation situations will help them build a set of strategies that can be used both for solving problems and checking computations for reasonableness.	Decimal Models Properties and mental math, place value	Steve swam the length of the pool in 32.56 seconds. Alex swam the length of the pool in 29.4 seconds. How many seconds faster was Steve's time than Alex?	Sums of decimals; regrouped; place value position Difference; regroup; subtracting from; compare		Raul spent a total of $15.45 on a trip to the movies. He spent $2.50 on bus fares to and from the movie and $6.50 on snacks. How much did she spend on her movie ticket?

Assessments:
Go Math Chapter 3 Test
Go Math Chapter 3 Performance Task: Behind the Scenes
SBAC Claim 1 Example Stems

2017-2018	Grade 5 Go Math! Quarter 2 Planner Chapter 4 Multiply Decimals	11-13 Days

BIG IDEA:

1. Students connect previous experiences with the meaning of multiplication and division of decimals using estimation, models, and place value structure. They begin with modeling using base-ten blocks or grid paper models and relate those models to written equations. They explain their thinking in composing and decomposing numbers. It is important that conceptual understanding is built on place value rather than simply lining up the decimal points to compute.
2. An area model is an effective strategy to teach decimal multiplication. Having a conceptual understanding of multiplying decimals will help students evaluate their results for reasonableness.
3. Estimation focuses students' thinking on the meaning of the numbers and operations. Too often multiplication and division of decimals are taught as a series of rules developed around moving the decimal point with little connection to the meaning of the operations.
4. Problem situations extending from those used with whole numbers will provide a context for thinking about reasonableness of results.

Adapted from The Common Core Math Companion (Gojak & Miles, 2015, Pg. 101) and Go Math: Teaching for Depth, Pg. 165E

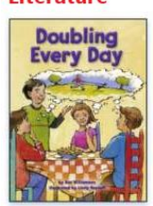
Professional Development Videos:

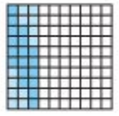
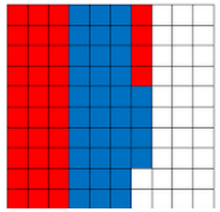
Compare Decimals
HMH Video Podcast Multiply Decimals
Using Base 10 blocks with Decimals Video- Intro

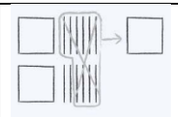
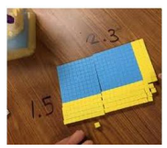
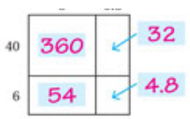
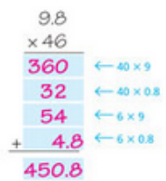
ESSENTIAL QUESTION: How can you solve decimal multiplication problems?
STANDARDS: 5.NBT.2, 5.NBT.7

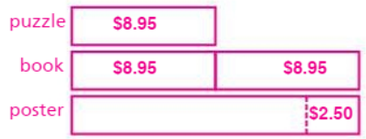
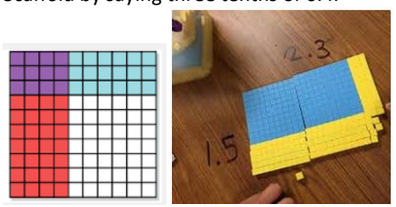
ELD STANDARDS:

ELD.PI.5.1-Exchanging information/ideas via oral communication and conversations.
ELD.PI.5.3-Offering opinions and negotiating with/persuading others.
ELD.PI.5.5-Listening actively and asking/answering questions about what was heard.
ELD.PI.5.9- Expressing information and ideas in oral presentations.
ELD.PI.5.11- Supporting opinions or justifying arguments and evaluating others' opinions or arguments.
ELD.PI.5.12-Selecting and applying varied and precise vocabulary.

Lesson		Standards & Math Practices	Essential Question	Math Content and Strategies	Models/Tools Go Math! Teacher Resources G5	Connections (ENGAGE Prior Knowledge)	Vocabulary	Academic Language Support	Journal
4.1	Algebra• Multiplication Patterns with Decimals	5.NBT.2 MP 4 MP 7 Companion Pg.93	How can patterns help you place the decimal point in a product?	Describe place value patterns in multiplication examples. Use this activity (Pattern Building)to help students explore products of expressions with multiple factors of 10. Facilitate students' discussions with questions that help students find and understand patterns when multiplying by power of ten: *"What do you notice about the product?"* *"Why do you think that works?"*	Decimal Models Decimal Place Value Chart Digit Tiles	Complete the table: 1 x .10 (dime) 10 x .10 100 x .10 # Dimes / Total $$ 1 / $ 0.10 10 / $1.00 100 / 1000 /	Decimal, hundredths, multiplication ones, pattern, place value, product, tenths, thousandths	**Literature** 	A scale model of the Statue of Liberty measures 3.05 ft. What is the actual height if it is 100 times the scale model? OR Indicate whether the product is correct. 1. 0.62 X 10 = 62

				"Will that always be true when you multiply a number by 10?" Multiplication Decimal Patterns		10,000			2. 0.53 X 10 = 5.3 3. 0.09 X 100 = 9 4. 0.60 X 1,000 = 60
4.2	Investigate • Multiply Decimals and Whole Numbers	5.NBT.7 MP 1 MP 4 MP 5 Companion Pg.101	How can you use a model to multiply a whole number and a decimal?	A decimal can be modeled by shading the number of squares it represents. The product is found by adding the shaded squares. Connect previous experiences with the meaning of multiplication and division of whole numbers to multiplication and division of decimals using estimation, models and place value structure. Students should explain their reasoning using models, pictures, words, and numbers. The goal of this lesson is to provide the foundation of multiplication of decimals so that students eventually can use the standard multiplication algorithm to find decimal products. Use base ten and grid paper or base ten blocks (flat represents one whole, the long represents one tenth, and the cube represents one hundredth) to have students model and discuss. Make connections to repeated addition and money (.06 + .06 + .06) 1. $5 \times 0.06 =$ 0.30, or 0.3  HMH Video Podcast Multiply Decimals	Base Ten Blocks Decimal Models Decimal Place Value Chart	Have students answer and ask questions using a food menu to make connections with repeated addition of decimals and multiplication. Fresno Zoo Menu: How much would the following cost? 3 Angus Cheeseburgers? 2 Rustic Pizzas? 4 Garlic Fries? OR How could you describe the relationship between 0.68 and 68?	Product, decimals, hundredths, tenths, rename	 Differentiated Centers Kit **Activities** **One Form to Another** Students complete blue Activity Card 4 by writing money amounts as decimals and fractions. **Literature** **Doubling Every Day** Students read about how Marco finds how much someone would get paid in 30 days if the salary started at $0.01 and doubled every day. **Activities** **Dueling Decimals** Students complete orange Activity Card 13 by writing and solving decimal multiplication problems that include zeros in the factors.	What multiplication sentence does the model represent? 
4.3	Multiplication with Decimals and Whole Numbers **option: integrate this lesson with 4.4	5.NBT.7 MP 5 MP 7 Companion Pg.101	How can you use properties and place value to multiply a decimal and a whole number?	Quick pictures help students visualize decimal multiplication and the process of renaming. Use models such as base-ten blocks in which the flat represents one whole, the long represents one tenth, and the cube represents one hundredth as important representations to help build students' number sense about the size of decimals. Using Base 10 blocks with Decimals Video-Intro (Stop video at 3:55)	Base Ten Blocks Decimal Models Decimal Place Value Chart	Make connections to repeated addition. Task: A movie ticket at UA 8 costs $3.50 as compared to $12.50 at Edwards Cinema. How much would it cost to buy three tickets at UA 8? How much more would it cost to buy the same number of tickets at Edwards Cinema?	Decimal point, product, partial products, tenths, hundredths		Pete wants to make turkey sandwiches for two friends and himself. He wants each sandwich to contain 3.5 ounces of turkey. How many ounces of turkey does he need? Solve by drawing a model.

				 Regroup 10 tenths into 1 whole to get a product of 3.2 1.6 × 2 1.2 — represents the 12 lines + 2 — represents the 2 squares 3.2 Discuss why when multiplying a decimal by a decimal, the product can be smaller than at least one of the factors. Have students estimate and explain why their answer is reasonable. Provide opportunities for students to make explicit connections from concrete and pictorial models to solving written equations.				**Activities** **Market Multiplication** Students complete blue Activity Card 13 by multiplying decimals to find the total price of fruits and vegetables. **Games** **Powerful Products** Students use four numbers to create two decimal factors with the greatest possible product. **Activities** **Tic-Tac-Decimals** Students complete purple Activity Card 13 by estimating and finding the decimal factors for a given product.	
4.4	Multiply Using Expanded Form **option: integrate teach this lesson before 4.3	5.NBT.7 MP 3 MP 4 Companion Pg.101	How can you use expanded form and place value to multiply a decimal and a whole number?	Use models such as base-ten blocks in which the flat represents one whole, the long represents one tenth, and the cube represents one hundredth as important representations to help build students' number sense about the size of decimals. Provide opportunities for students to make connections between concrete and pictorial models and the solving of written equations.  Concrete: Base 10 Blocks Area Model   Partial Products	Base Ten Blocks Decimal Models Decimal Place Value Chart	Twelve 5th grade classrooms are going on a field trip to the Aquarium. If there are 24 students in each classroom, how many lunches will need to be ordered? Use an area model to solve. OR How does using the Distributive Property to find 5 X 25 relate to using the Distributive Property to find 5 X 2.5? Draw a model to justify your thinking.	Expanded form, partial products, decimal factor		Jairo and Christhal are trying to solve a science homework question. They need to find out how much a rock that weighs 4 pounds on Earth would weigh on Venue. They know they can multiply the amount the rock weighs on earth by 0.91 to find its weight on Venus. Select the partial products Ken and Leah would need to add to find the product of 4 and 0.91. Mark all that apply. a. 0.95 b. 0.04 c. 3.65 d. 3.6 e. 0.36

4.5	Problem Solving• Multiply Money	5.NBT.7 MP 1 MP 4 MP 6 Companion Pg.101	How can the strategy *draw a diagram* help you solve a decimal multiplication?	Students use diagrams to help solve two-step problems involving multiplication and addition. The boxes in the diagrams will be different sizes to represent different money amounts. By studying the way same-size or different-size boxes are combined in a diagram, students are able to decide which operations to use and in what order to solve a problem. Use Bar Models to solve and discuss multiplicative comparison problems. 	Draw a diagram	It costs $3.50 for a small snow cone. If a large snow cone costs two times as much, how much will it cost to buy one small and one large snow cone? Fill the boxes to show the costs of snow cones. Small Large	Diagram, product, tenths, hundredths		Three sisters go to the Fresno Fair. Cassandra spends $25.25. Bianka spends three times as much as Cassandra. Julissa spends $9.50 more than Cassandra. How much does Julissa spend? Draw a Bar Model to solve the problem.
4.6	Investigate • Decimals Multiplication	5.NBT.7 MP 1 MP 5 MP 6 Companion Pg.101	How can you use a model to multiply decimals?	Use decimal squares to model multiplication of two decimals in the tenths place. Continue using models such as base-ten blocks, area models, and partial products to develop conceptual understanding. Use word problems that provide a context. 0.3 x 0.4 = 0.12 Scaffold by saying three tenths of 0.4.  Have students ESTIMATE. When I multiply tenths by tenths, the product is in the hundredths. When I multiply tenths by hundredths, the product is in the thousandths.	Decimal Models Decimal Place Value Chart	Make connections to money and taking half: 0.50 (is half of a dollar) 0.50 x 2.00 (half of $2) 0.50 x 1.50 0.50 x 0.80 0.50 x 0.60 Use this to make connections on the 10x10 grid.	Decimal square, decimals greater than 1, tenths, hundredths, shade rows that overlap the columns		One cup of cooked zucchini has 1.9 grams of protein. How much protein is in 0.5 cup of zucchini?
4.7	Multiply Decimals	5.NBT.7 MP 2 MP 6 Companion Pg.101	What strategies can you use to place a decimal point in a product?	Make sure students understand how decimal multiplication relates to multiplication of whole numbers. The actual process of multiplying decimals is identical to the process of multiplying whole numbers. Placing the decimal point in the correct position determines the final value of the	Decimal Place Value Chart Digit Tiles	Find the following products and explain the patterns. 0.45 X 1 = 0.45 X 10 = 0.45 X 100 = 1 X 4,567 =	Decimal point, product, tenths, hundredths		Last week Eloy worked 20.5 hours. This week he works 1.5 times as many hours as he did as week. How many hours does Eloy work this week?

				product. Estimation can help ensure the correct placement of the decimal. Multiplication of currency, weights, and measures are three of the most common forms of multiplication students will use in real-world applications.		0.1 X 4,567 = 0.01 X 4,567= 1X 8.33 = 10 X 8.33 = 100 X 8.33 = 1000 X 8.33 = 39.2 X 10^0= 39.2 X 10^1= 39.2 X 10^2= 39.2 X 10^3= Why does it matter where you place the decimal point in the product?			
4.8	Zeros in the Product	5.NBT.7 MP 1 MP 2 MP 7 MP 8 Companion Pg.101	How do you know you have the correct number of decimal places in your product?	When multiplying decimals, the additional step of placing the decimal point in the product may require writing zeros to ensure that each digit in the product is placed in its correct place-value position. Students who are proficient in the use of place-value will find multiplying decimals to be a logical process. They should understand that writing zeros in the product is a necessary step used to correctly show the value of each digit. A firm grasp of the concept will benefit all students as they encounter decimal multiplication in real-world situations.	Decimal Place Value Chart Digit Tiles	Write each number in a box next to the expression that has the same value. A number may be used more than once. 8.99 89.9 899 $29 \times 31 =$ $29 \times 3.1 =$ $0.29 \times 31 =$ $2.9 \times 31 =$	Product, digits, decimal, hundredths, tenths		Juan has 0.5 of a liter of soda in his refrigerator. He drank 0.08 of the soda. How much of the soda did Juan drink?

Assessments:

Go Math Chapter 4 Test

Go Math Chapter 4 Performance Task: Earning a Bicycle

SBAC Claim 1 Example Stems

2017-2018	Grade 5 Go Math! Quarter 2 Planner Chapter 5 Divide Decimals	11-13 Days

BIG IDEA:

1. Students connect previous experiences with the meaning of multiplication and division of decimals using estimation, models, and place value structure. They begin with modeling using base-ten blocks or grid paper models and relate those models to written equations. They explain their thinking in composing and decomposing numbers.
2. It is important that conceptual understanding is built on place value rather than simply lining up the decimal points to compute. Extending problem situations from those used with whole numbers will provide a context for thinking about reasonableness of results. Too often multiplication and division of decimals are taught as a series of rules developed around moving the decimal point with little connection to the meaning of the operations.
3. Dividing decimals by whole numbers is best modeled using sharing (partitive) division. This is where the total number (dividend) is shared among the given number of groups (divisor). Students use decimal models to represent the dividend and then share them equally among the given number of groups, regrouping as necessary. Contexts also support this process.

Adaptive from The Common Core Mathematics Companion pg.101 and Go Math pg.207E

Professional Development Videos:

HMH PD Video Podcast Division with Decimals

Divide with Decimals

ESSENTIAL QUESTION: How can you solve decimal division problems?

STANDARDS: 5.NBT.2, 5.NBT.7

ELD STANDARDS:

ELD.PI.5.1-Exchanging information/ideas via oral communication and conversations.

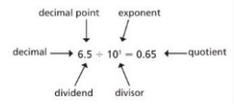
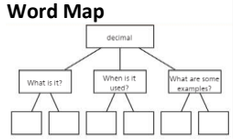
ELD.PI.5.3-Offering opinions and negotiating with/persuading others.

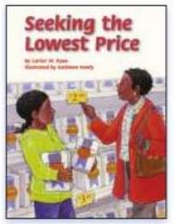
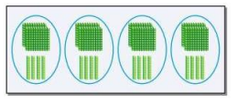
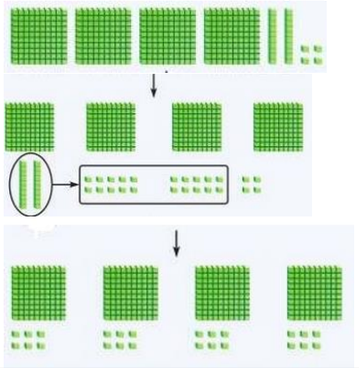
ELD.PI.5.5-Listening actively and asking/answering questions about what was heard.

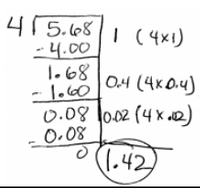
ELD.PI.5.9- Expressing information and ideas in oral presentations.

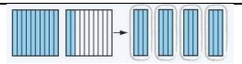
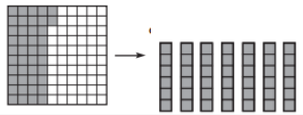
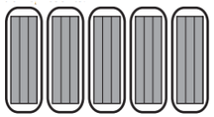
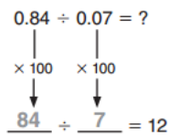
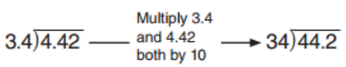
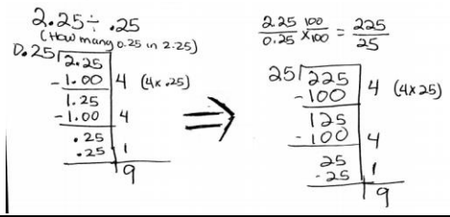
ELD.PI.5.11- Supporting opinions or justifying arguments and evaluating others' opinions or arguments.

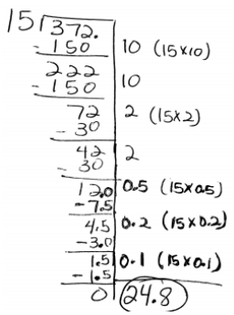
ELD.PI.5.12-Selecting and applying varied and precise vocabulary.

Lesson		Standards & Math Practices	Essential Question	Math Content and Strategies	Models/Tools Go Math! Teacher Resources G5	Connections (ENGAGE Prior Knowledge)	Vocabulary	Academic Language Support	Journal
5.1	Algebra • Division Patterns with Decimals	5.NBT.2 MP 5 MP 6 MP 7 Companion Pg.93	How can patterns help you place the decimal point in the quotient?	Students are already familiar with multiplying by powers of 10 and by 0.1 and 0.01. It is helpful for students to see that dividing by 10^1 and 10^2 is the same as multiplying by 0.1 and 0.01 or finding $\frac{1}{10}$ and $\frac{1}{100}$ of a number. Students learn that patterns for dividing are similar to the patterns for multiplying: the position of the decimal point moves one place to the left for each power of 10. Have students discuss how the pattern for division is similar to the pattern for multiplying decimals. As the divisor increases in value, what happens to the quotient?	Decimal Place Value Chart	Have students answer the following and think about the pattern: 200x1=200; 200÷1=200 200x0.1= 20; 200÷10=20.0 200x0.01; 200÷100=2.0 Tracy uses 1.5 cups of flour to make 1 loaf of banana bread. How many cups of flour does she need to 100 loaves of banana bread?	Decimal, decimal point, dividend, divisor, exponent, quotient	Vocabulary Builder Pg209B  **Word Map**  	Explain how to use a pattern to find $35.6 \div 10^2$. OR The Statue of Liberty is 305.5 feet tall. Mario is building a model of the statue. The model will be one-hundredth as tall as the actual statue. How tall will the model be?

				$36 \times 1 = 36$ $\quad 36 \div 1 = 36$ $36 \times 0.1 = 3.6$ $\quad 36 \div 10 = 3.6$ $36 \times 0.01 = 0.36$ $\quad 36 \div 100 = 0.36$ Scaffold division examples using problem situations beginning with dividing a whole number by a whole number, and progressing to dividing by tenths and hundredths. Expect students to use estimation, the meaning of division, and a variety of contexts to explain why their answer is reasonable. Have students explain their reasoning using models, pictures, words, and numbers. Division Patterns				**Literature**  Differentiated Centers Kit ***Activities*** ***D is for...*** Students complete orange Activity Card 17 by making and solving decimal division equations. ***Literature*** ***Seeking the Lowest Price*** Students read about relating decimal division to money and finding the lowest unit price.	
5.2	Investigate • Divide Decimals by Whole Numbers	5.NBT.7 MP 3 MP 5 Companion Pg.101	How can you use a model to divide a decimal by a whole number?	**Model and Discuss** Students use models to divide decimals by whole numbers. The blocks are used to show the dividend and students share the blocks to form equal groups. The number of blocks in each group is the quotient. Have students use base ten blocks to model and discuss division with decimals. Ex. 9.6 ÷ 4 =  Ex. 4.24 ÷ 4 Model 4.24 and divide it into 4 groups. 	Base Ten Blocks People Cut Outs for Division	Have students think of money to solve the following: "I have $_____ and I share it with _____people. $4.50 ÷ 2 = $8.60 ÷ 2 = $6.90 ÷ 3 = $10.40 ÷ 4 =	Hundredths, tenths, quotient,		Three apples contain a total of 3.15 grams of fiber. Suppose each apple contains the same amount of fiber. How much fiber is in one apple? Use model/drawing to justify your answer.

5.3	Estimate Quotients	5.NBT.7 MP 1 MP 2 Companion Pg.101	How can you estimate decimal quotients?	Students use compatible numbers to estimate the quotient of a decimal dividend by a whole number. Students learn that even when the dividend is a decimal, they can still use basic facts to find compatible numbers. If the whole-number part of the decimal dividend is less than the divisor, students need to rename the decimal as tenths or hundredths first before finding the compatible numbers. Ex – $3.7 \div 5$ Students should think 3.7 as 37 tenths and then estimate with the compatible numbers 35 and 5.	Decimal Place Value Chart	Estimate Using Compatible Numbers. $8{,}345 - 6{,}542 =$ $273{,}945 + 438{,}783 =$ $672 \times 48 =$ $8{,}319 \div 21 =$ Ms. Thomas buys a new computer for $659. She plans to pay it off on 8 monthly payments. If she pays the same amount each month, what is a good estimate of her monthly payment?	Compatible numbers, estimate	**Activities** **Centimeter Division** Students complete blue Activity Card 17 by dividing line segments to solve problems involving the division of decimal numbers by whole numbers. **Games** **Match Up** Students match cards showing decimal division with corresponding cards showing compatible numbers and estimates of quotients.	Armando drove 88.6 miles in 3 hours. What is the best estimate of the average number of miles he can drive each hour? Explain how you determined your estimate.
5.4	Division of Decimals by Whole Numbers	5.NBT.7 MP 2 MP 7 Companion Pg.101	How can you divide decimals by whole numbers?	It is important to learn how to calculate with decimals so we can deal with money in our society. The dollar is the whole number part and the cents are the tenths and hundredths. Provide division example connecting whole number examples to decimals examples to have students recognize and describe place value patterns. Use Estimation, the meaning of division, and a variety of contexts to explain why their answer is reasonable. Use Partial Quotients as a strategy and connections to money. Have students compare $2.25 \div 0.25$ $(how\ many\ quarters\ are\ in\ \$2.25)$ and $225 \div 25$  	Decimal Models Decimal Place Value Chart	Solve and describe the pattern. $350 \div 7 =$ $35 \div 7 =$ $3.5 \div 7 =$ $0.35 \div 7 =$ Mrs. Alvarez has a piece of ribbon that is 2.65 feet long. She cuts the ribbon into 5 equal pieces. What is a good estimate of the length of each piece of ribbon?	Estimate the quotient, place the decimal, share the ones, tenths, hundredths		Pam pays 13.25 for 5 pounds of gummy worms. What is the cost of 1 pound of gummy worms? Justify your answer by using numbers, models, or words.
5.5	Investigate• Decimal Division	5.NBT.7 MP 2 MP 5 MP 6 Companion Pg.101	How can you use a model to divide by a decimal?	Students can use decimal models to divide by a decimal. Students are finding the number of same sized groups. As students model division problems, ask them to identify the dividend, the divisor, and the quotient in each model. **Model and Discuss** Ex. 1.2 ÷ 0.3 = 4 Scaffold by asking, how many groups of 0.3 are there in 1.2?	Decimal Place Value Chart	Have students think of money to solve the following thinking about how many groups of ___ are in ___? $2.50 ÷ $0.25 = $2.50 ÷ $0.50 = $2.40 ÷ $0.20 = $1.20 ÷ $0.30 = $4.80 ÷ $1.20 =	Decimal models, divisor, number sentence, tenths, hundredths, unknown value		Write a number sentence that tells what the model represents. Then write a corresponding word problem.

				 Student response: There are __ groups of __ in __. Ex. $0.42 \div 0.6$ = 7(There are 7 groups of 6hundredths) 					
5.6	Divide Decimals	5.NBT.7 MP 6 MP 7 Companion Pg.101	How can you place the decimal point in the quotient?	Students learn that they can multiply the divisor by a power of 10 to change it to a whole number before dividing. Students should ESTIMATE   Use Partial Quotients as a strategy and connections to money. Have students compare $2.25 \div 0.25$ $(how\ many\ quarters\ are\ in\ \$2.25)$ and $225 \div 25$ 	Decimal Place Value Chart	Have students use inductive reasoning to understand why multiplying dividend and divisor by 10 results in the same quotient by thinking about money. 250÷ 50 = ; 25 ÷ 5 = 500÷100 = ; 50 ÷ 10 = 600÷200 = ; 60 ÷ 20 = 50 ÷ 25 = ; $5.00 ÷ $2.50 25 ÷ 5 =; 2.50 ÷ 0.50 =	Dividend, divisor, power of 10, decimal point, tenths, hundredths		Esther has 4.8 yards of string, which she wants to use to make bracelets. She needs 0.4 yard for each bracelet. Altogether, how many bracelets can Esther make? Explain how you know where to place the decimal point in the quotient.
5.7	Write Zeros in the Dividend	5.NBT.7 MP 1 MP 6	When do you write a zero in the dividend to find a quotient?	Write a zero in the dividend when there aren't enough digits in the dividend to complete the division. Use Partial Quotients as a strategy and connections to money.		On average, how many inches of rain did Broward County receive each day?	Equivalent fractions, remainder		Armando divides 14.2 ounces of trail mix into bags containing 0.5 ounces of trail mix. How many bags of trail mix are

		Companion Pg.101				**Total Rainfall in 5 Days** County: Palm Beach, Broward, Dade Amount of Rain (in inches): 2.3, 3.5, 3.0			
5.8	Problem Solving• Decimal Operations	5.NBT.7 MP 1 MP 2 MP 5 Companion Pg.101	How can you use the strategy *work backward* to solve multistep decimal problems?	Working backward makes it possible to start with the total and use the given information to find the value of the unknown part. Use PARTIAL Quotients as a strategy to divide.	*Work backward*	Suppose Pam made homemade muffins to bring to class. She doubled the recipe to make 2 batches, then gave 3 muffins to her family and ate 1 muffin herself. I brought the remaining 20 muffins to class. How many muffins does 1 batch of the recipe make? Draw a diagram to match the above situation.	Decimal operations, inverse operations, cost of__, product, work backward		Tina uses a $50 gift certificate to buy a pair of pajamas for $17.97, a necklace for $25.49, and 3 pairs of socks that each cost the same amount. Tina has to pay $0.33 because the gift certificate does not cover the total cost of all the items. How much does each pair of socks cost?

Assessments:

Go Math Chapter 5 Test

Go Math Chapter 4 Performance Task: Prize Painting

Critical Area Task: Party Planning

SBAC Claim 1 Example Stems