

BIG IDEA: Previous work with division in Grade 3 focused on the meaning of division (**determining the number of groups or the number of items in a group**), using examples of dividing a number up to 100 by a one-digit number, and relating division to multiplication. By the end of Grade 4, students should be able to model, write, and explain division by a one-digit divisor, seeing the 2 models of division (24 team members, how many groups can be formed? or 24 team members, how many in each group?). As students transition from concrete models to putting their ideas in writing, they can use **partial products/quotients, arrays, area models, and the distributive property** to show their thinking.

Students should continue to become fluent with extending basic facts to efficient recall of situations with remainders, asking themselves questions that relate to the meaning of division using place value and estimation. Students need extensive experience with a variety of practical situations that call for different interpretations of remainders.

Adapted from the Common Core Companion, p. 84

Professional Development Videos:
Place Value and Operations: Whole Numbers 3 – 6
[Divide Whole Numbers](#)

Quarter 2 Fluency Resources:
[Fluency Resources in Go Math](#)
[Building Fluency Through Word Problems](#)
[Building Fluency Through Number Talks](#)

Critical Area Projects: [Food in Space](#); [The Black-Footed Ferret](#)

Essential Question: How can you divide by 1-digit numbers?

Standards: [4.OA.3](#), [4.NBT.6](#)

ELD Standards:

ELD.PI.4.1-Exchanging information/ideas via oral communication and conversations.
ELD.PI.4.3-Offering opinions and negotiating with/persuading others.
ELD.PI.4.5-Listening actively and asking/answering questions about what was heard.

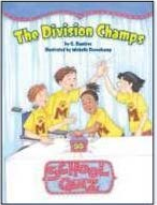

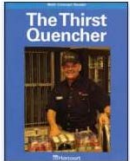

ELD.PI.4.9-Expressing information and ideas in oral presentations.
ELD.PI.4.11-Supporting opinions or justifying arguments and evaluating others’ opinions or arguments.
ELD.PI.4.12-Selecting and applying varied and precise vocabulary.

Lesson	Standards & Math Practices	Essential Question	Math Content and Strategies	Models/Tools Go Math! Teacher Resources G4	Connections (ENGAGE prior knowledge)	Vocabulary	Academic Language Support	Journal	
4.1	Estimate Quotients Using Multiples	4.NBT.6 MP.2 MP.5 MP.7 Companion pg. 84	How can you use multiples to estimate quotients?	Use multiples to estimate quotients. List multiples of the divisor and find between which two numbers the dividend lies. To find the best estimate, students choose the number closer to the dividend.	Listing multiples Large Number Line Student Number Line	Use the relationship between multiplication and division and students’ previous experiences with estimation to estimate quotients. Students need to understand the importance of finding a range between 2 multiples that includes the exact answer. What are the multiples of the number 3? Use the multiples of 3 to estimate 50÷3. Between what multiples of 3 is your estimate?	multiple, counting number, factor, multiplication product	ELD Standards • ELD Standards • ELA/ELD Framework • ELPD Framework • Integrating the ELD standards into Math	Abby did 121 sit-ups in 8 minutes. About how many sit-ups did she do in 1 minute? Between what multiples of 8 is your estimate?
4.2	Investigate • Remainders **AC option to include 4.9 here	4.NBT.6 MP.4 MP.5 Companion pg. 84	How can you use models to divide whole numbers that do not divide evenly?	Use models to divide whole numbers that do not divide evenly. (Extends concept of division to include remainders.)	Base 10 blocks, counters, any collection of items	Use models that make sense to represent division situations. Students can also draw quick pictures to help them organize their work and make it easy to record the answer. Separate 28 counters in groups of 3. How many are left over?	remainder, divide, divisor, dividend, division, quotient	Access Strategies • Organizing Learning for Student Access to Challenging Content • Student Engagement Strategies	Marie baked 60 cookies. If her 28 classmates each ate 2 cookies, how many cookies were left over?

4.3	Interpret the Remainder	4.OA.3 MP.7 MP.8 Companion pg. 36	How can you use remainders in division problems?	Use remainders to solve division problems. Students learn when to use the quotient and the remainder written as a fraction as the answer, when to use one greater than the quotient, and when to use the remainder itself.	Base 10 blocks, counters, any collection of items	I have 38 pennies. If each gum stick costs 5c, how many can I buy? Tony's mother made 86 cookies. If she puts 3 cookies per bag, how many bags will she fill? How many bags will she need for all of the cookies?	remainder, divide, divisor, dividend, division, quotient	<ul style="list-style-type: none"> • Problem Solving Steps and Approaches <p>Equitable Talk</p> <ul style="list-style-type: none"> • Accountable Talk Simply Stated • Equitable Talk Conversation Prompts • Accountable Talk Posters • Five Talk Moves Bookmark • Effective Math Talks <p>Cooperative Learning</p> <ul style="list-style-type: none"> • Cooperative Learning Role Cards • Collaborative Learning Table Mats • Seating Chart Suggestions <p>Math Word Wall - Grades 3-6</p> <p>Math Talk</p> <p>What are base 10 blocks? How can we use them to model division?</p> <p>What is a remainder in division?</p> <p>Describe how breaking up a rectangle into two smaller rectangles applies the Distributive property for division?</p> <p>What is the relationship between addition and subtraction; multiplication and division?</p>	A sporting goods company can shop 6 footballs in each carton. How many cartons are needed to ship 75 footballs? How many cartons will be full?
4.4	Divide Tens, Hundreds, and Thousands	4.NBT.6 MP.6 MP.7 MP.8 Companion pg. 84	How can you divide numbers through thousands by whole numbers through 10?	Divide tens, hundreds, and thousands by whole numbers through 10, using their understanding of place value and basic facts.	Place Value Chart	Review multiplying by 10s, 100s and how that affects place value. If $21 \div 3 = 7$, and if $210 = 21$ tens, then $21 \text{ tens} \div 3 = 7 \text{ tens}$; $210 \div 3 = 70$. Try $240 \div 6$.	hundreds, ones, place value, tens, thousands		Explain how your knowledge of place value helps you find the solution to the following problem: An airplane flew 2,400 miles in 4 hours. If the plane flew the same number of miles each hour, how many miles did it fly in 1 hour?
4.5	Estimate Quotients Using Compatible Numbers	4.NBT.6 MP.1 MP.5 MP.7 Companion pg. 84	How can you use compatible numbers to estimate quotients?	Students must have a mastery of basic division facts to use compatible numbers to estimate quotients.	Place Value Chart	Review how students have used compatible numbers to estimate products. Which compatible number, 1600 or 2000, would you use to estimate $1918 \div 4$? Explain why.	compatible numbers		Marcus has 731 books. He puts about the same number of books on each of 9 shelves in his bookcase. About how many books are on each shelf?
4.6	Investigate • Division & the Distributive Property	4.NBT.6 MP.1 MP.4 MP.5 Companion pg. 84	How can you use the Distributive Property to find quotients?	Use the Distributive Property to find quotients, using models such as grid paper and base 10 blocks, models students should be familiar with in multiplication.	Base-ten blocks Base-Ten Grid Paper Base Ten 15x20 Base Ten 50x70	Describe how breaking up a rectangle into 2 smaller rectangles applies the Distributive Property for division. Use the problem $68 \div 4$.	Distributive Property		Explain how to use the Distributive Property to solve the problem "48 apples divided into 3 groups." Include a model to support your explanation.
4.7	Investigate • Divide Using Repeated Subtraction **AC Option: Teach after 4.1	4.NBT.6 MP.3 MP.6 MP.8 Companion pg. 84	How can you use repeated subtraction and multiples to find quotients?	Use repeated subtraction with counters, and multiples with a number line, to find quotients. If this lesson is taught at the beginning of the chapter, students will realize these strategies are less efficient than using area models, distributive property.	Number Lines	From the Grab and Go Kit, read The Thirst Quencher . Use division to find the number of bottles to fill a vending machine.	difference, multiples		Show how you can use repeated subtraction to find $84 \div 6$. Show it on a number line as well.
4.8	Divide Using Partial Quotients	4.NBT.6 MP.2 MP.7 MP.8	How can you use partial quotients to divide by 1-digit divisors?	Use partial quotients to divide. Students choose whichever multiple of the divisor they are comfortable with as long as it is less than the dividend.	Area models of partial quotients, Conceptual Division	The partial quotient method is a more conceptual approach. Students find how many groups of the divisor are in the entire dividend. In $72 \div 6$, how many groups of 6 are there? $72 \div 8$, groups of 8?	partial quotient		Explain how to use partial quotients to share 235 baseball cards by 5 friends.

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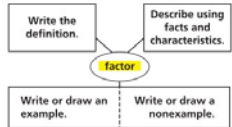
		Companion pg. 84						Math Models Use arrays to show partial quotients or dividends.									
4.9	Investigate ● Model Division with Regrouping **AC Option: Teach with 4.2	4.NBT.6 MP.2 MP.4 MP.6 Companion pg. 84	How can you use base-ten blocks to model division with regrouping?	Use base-ten blocks to model division with regrouping (standard algorithm). Models increase a student’s mastery of basic division facts and forms a foundation for understanding the concept of division.	Base-ten blocks, quick pictures	The Make Connections problem shows the connection to the standard algorithm and may confuse students working through the partial quotient method. Do the problem with models, or pictures, without the standard algorithm steps Model $73 \div 5$ using base 10 blocks.	Partial quotient, area model, rectangular array	$91 \div 7 = ?$ $10 + 3 = 13$ So, $91 \div 7 = 13$	Solve using partial quotients or by drawing a model: In 3 days Donald earned \$42 running errands. He earned the same amount each day. How much did Donald earn from running errands each day?								
4.10	Place the First Digit	4.NBT.6 MP.2 MP.7 MP.8 Companion pg. 84	How can you use place value to know where to place the first digit in the quotient?	Use place value to determine where to place the first digit of a quotient.	Place Value Chart	Problems can be used in this lesson (with area model, partial quotients, etc.), but the algorithm is modeled. Divide 104 by 4 using base 10 blocks, (place value) to place the first digit.	Partial quotient, area model, rectangular array	 $20 + 5 = 25$	Solve using partial quotients or by drawing a model: If there are 798 calories in six 10-oz bottles of apple juice, how many calories are there in one 10-oz bottle of apple juice?								
4.11	Divide by 1-digit Numbers	4.NBT.6 MP.2 MP.7 MP.8 Companion pg. 84	How can you divide multi-digit numbers and check your answers?	Divide multi-digit numbers by 1-digit divisors, by using reasoning skills to make predictions, solve problems, and check their solutions. Use knowledge of multiples to predict whether division problems will result in quotients with remainders.	Place Value Chart	Problems can be used in this lesson (with area model, partial quotients, etc.), but the algorithm is modeled. What is 1 way to divide 96 by 8?	Partial quotient, area model, rectangular array	Vocabulary Strategy Graphic Organizer 	Josey got an answer of 167 r4 for $505 \div 3$. Explain and correct Josey’s error.								
4.12	Problem Solving ● Multistep Division Problems	4.OA.3 MP.1 MP.2 MP.4 Companion pg. 36	How can you use the strategy <i>draw a diagram</i> to solve multistep division problems?	Solve problems by using bar models. Students first find a multiple of a given number or the sum of two numbers, and then divide by another given number. For 2 step problems, students need to draw a bar model for each step to help solve it.	Bar models, Conceptual Division	Problem situations often involve several pieces of information, requiring more than one operation to solve. Using bar models helps students see the relationship between the pieces of information and think through the problems. Students will develop their skill with bar models through repeated use. Draw bar models showing $10 \times 3 = 30$ and $24 \div 8 = 3$.	Inverse operations	Vocab. Chart: <table border="1"> <tr><td>Word</td><td></td></tr> <tr><td>Predicted Meaning</td><td></td></tr> <tr><td>Meaning</td><td></td></tr> <tr><td>Example</td><td></td></tr> </table>	Word		Predicted Meaning		Meaning		Example		Gavin buys 89 blue pansies and 86 yellow pansies. He will plant the flowers in 5 rows with an equal number of plants in each row. Draw a bar model to help you find how many plants will be in each row.
Word																	
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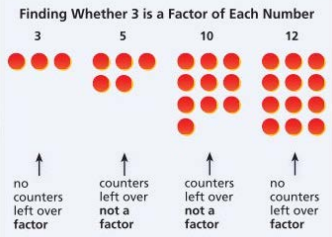

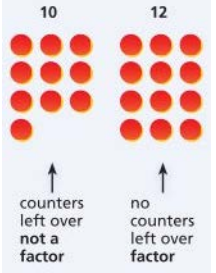
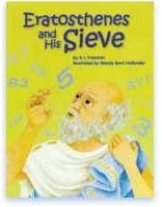
Assessments:

[Go Math Chapter 4 Test](#)

****Common Assignment (Option 1)-** Go Math Chapter 4 Performance Task: [Helping Hands](#)

2017-2018		Grade 4 Go Math! Quarter 2 Planner Chapter 5 Factors, Multiples, and Patterns						9-10 Days	
<p>BIG IDEA: Students extend their understanding of multiplication and division to thinking about these operations in terms of composing and decomposing numbers into factors. Making arrays will help students to build understanding of factors, reinforcing fluency with basic facts and extending to factor pairs beyond the basic facts. Multiples can be related to factors as seen through the arrays. Once students understand factors and multiples, they build on this understanding by defining and identifying prime and composite numbers, concepts important to future work with fractions. Finding, extending, generating, and describing patterns support developing conceptual understanding for all whole number operations as well as an important strategy for solving problems. In finding patterns, students are developing a deeper understanding of the structure of all four operations and begin to make generalizations by constructing rules for their patterns.</p> <p>Adapted from the Common Core Companion, pgs. 38 – 39</p>									
<p>Essential Question: How can you find factors and multiples, and how can you generate and describe number patterns? Standards: 4.OA.4, 4.OA.5</p>									
<p>ELD Standards:</p> <p>ELD.PI.4.1-Exchanging information/ideas via oral communication and conversations. ELD.PI.4.9- Expressing information and ideas in oral presentations. ELD.PI.4.3-Offering opinions and negotiating with/persuading others. ELD.PI.4.11- Supporting opinions or justifying arguments and evaluating others’ opinions or arguments. ELD.PI.4.5-Listening actively and asking/answering questions about what was heard. ELD.PI.4.12-Selecting and applying varied and precise vocabulary.</p>									
Lesson		Standards & Math Practices	Essential Question	Math Content/Strategies	Models/Tools Go Math! Teacher Resources G4	Connections (ENGAGE prior knowledge)	Vocabulary	Academic Language Support	Journal
5.1	Model Factors	4.OA.4 MP.1 MP.4 Companion pg.38	How can you use models to find factors?	Find all the factors of a number by using models. It is important for students to understand how to find factors before they learn how to find the greatest common factor.	Build number arrays using Base-Ten Grid Paper to determine factors	Guide students to make arrays using 24 tiles. List all of the factors of the multiple 24. This might be a good opportunity to review area and perimeter as well. (Having students build arrays for the numbers 1-100 embeds/covers concepts in lessons 5.2, 5.4, 5.5)	array, product, factor	Math Talk Is the number ____, prime or composite, and how do you know? The number ____ is a factor of ____ and a multiple of ____.	Draw all possible arrays to find all of the factors of 36.
5.2	Factors and Divisibility	4.OA.4 MP.2 MP.4 MP.6 Companion pg.38	How can you tell whether one number is a factor of another number?	Determine whether a number is a factor of a given number by using divisibility rules. (divisibility by 2, 3, 5, 6, 9, 10)	Divisibility rules chart, Base-Ten Grid Paper	Divisibility rules help students determine if a number is a factor of another number without having to divide. The rules also aid in understanding primes, composites, and (in later grades) with GCF and LCM. List the first 15 even numbers. What do you notice about the last digits of those numbers?	divisible	How do you use the rule to write numbers in a pattern? How do you use the first term in a pattern?	Juan buys a bag of 42 peaches that he wants to distribute equally into baskets. He will use more than 1 but fewer than 10 baskets. How many baskets does Juan need?
5.3	Problem Solving • Common Factors **AC option: teacher after 5.4-5.5	4.OA.4 MP.1 MP.5 Companion pg.38	How can you use the make a list strategy to solve problems with common factors?	Solve problems by using a graphic organizer divided into two main sections: <i>Read the Problem</i> and <i>Solve the Problem</i> .	Graphic organizer	This strategy is used throughout Go Math, but particularly in this section it refers to problems with common factors. Looking for factor pairs can help ensure that all factors of a number are listed. Have students work in pairs. Each student chooses a different number and makes a list of its factors. Have partners compare their lists and identify all factors that appear on both lists. Ex. 60 and 45	common factor	Vocabulary Strategy Graphic Organizer 	Justin has 20 pencils, 25 erasers, and 40 paper clips. He organizes the into groups with the same number of items in each group. All of the items in a group will be the same type.

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5.4	Factors and Multiples **AC option: teach with 5.5 after 5.2	4.OA.4 MP.6 MP.7 Companion pg.38	How are factors and multiples related?	Understand the relationship between factors and multiples, and determine whether a number is a multiple of a given number. When students establish the factors of a number, they can also know that the number is a multiple of those factors.	List multiples of a number, counters	Students can use counters to help them determine the factors of a number. They can model the number by forming equal groups with the counters. The counter model for determining factors also connects to the concept of finding multiples. Is 3 a factor of 4,7,9? 	common multiple, multiple	Use Grid Paper and Tiles/Cubes to Build Arrays  Use Counters to show	How many items can he put in each group? Ken paid \$12 for two magazines. The cost of each magazine was a multiple of \$3. What are the possible prices of the magazines?
5.5	Prime and Composite Numbers **AC option: teach with 5.4 after 5.2	4.OA.4 MP.4 MP.6 MP.7 Companion pg.38	How can you tell whether a number is prime or composite?	Determine whether a number is prime or composite by building arrays on graph paper. 1 is NOT prime since it does not have 2 distinct factors.	Base-Ten Grid Paper Sieve of Eratosthenes	From the Grab and Go Kit, read Eratosthenes and His Sieve . (Building arrays for numbers reveals factors, multiples, primes and composites.) Using the 100s chart, cross out 1 (not prime), circle 2 and cross out all other multiples of 2. Circle 3 (next number not crossed out) and cross out all the multiples of this number. Repeat until every number is either circled or crossed out.	composite number, prime number	Factors Ex. Factors for 3: 	Lisa says that 43 is a 2-digit odd number that is composite. Is she correct? Explain.
5.6	Algebra • Number Patterns	4.OA.5 MP.1 MP.4 MP.5 MP.7 Companion pg.42	How can you make and describe patterns?	Generate a number pattern and describe features of the pattern, looking closely to discern more than one pattern relationship between numbers in an ordered set.	Diagrams of curved arrows between numbers in an ordered set.	The situations in this lesson provide students with the structure of a pattern rule. Students will be encouraged to look closely to discern more than one pattern relationship between numbers in an ordered set. Find all the patterns in the set of numbers 5, 10, 15, 20, 25, 30.	pattern, term	 Literature 	An artist is arranging tiles in rows to decorate a wall. Each new row has 2 fewer tiles than the row below it. If the first row has 23 tiles, how many tiles will be in the seventh row?

Assessments:

[Go Math Chapter 5 Test](#)

Go Math Chapter 5 Performance Task: [Taking the Subway](#)

****Common Assignment (Option 2)-** Critical Area 1 Performance Task: [Building a House](#)

BIG IDEA: Fourth graders continue to work with **equivalence** beginning with **visual models** and using those models to generalize a pattern and eventually a rule for finding equivalent fractions (with the models, students can describe what happens to the number of pieces in the whole). They justify their reasoning using **pictures, numbers, and words**. Providing experiences with appropriate visual models will help students to develop understanding rather than just following a rule that has no meaning. Through finding and discussing patterns, students construct mathematical arguments to explain their thinking as they build sets of equivalent fractions. All of this work supports the fundamental structure of fractional number that is critical to all future work with fractions in this domain.

In grade 3, students **compared** fractions with like numerators or like denominators. They now extend that understanding to comparing fractions with different numerators and denominators reinforcing the important comparison concept that fractions must refer to the same whole. Students compare two fractions with different denominators by creating equivalent fractions with a common denominator or with a common numerator. Using benchmarks such as 0, $\frac{1}{2}$, or 1 will help students to determine the relative size of fractions.

***Note** that the Standards do not require students to simplify fractions although students may find fractions written in simpler form easier to understand. (i.e. $\frac{50}{100} = \frac{1}{2}$). Having students find equivalent fractions “in both directions” may help students to realize that fractions can be written in simpler form without formally simplifying fractions (CCSS Progressions K-5, NF pg. 5).

****Note** that grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100 (Common Core Companion, pg. 126).

Adapted from The Common Core Companion pgs. 126 – 128

Professional Development Videos:

Fraction Concepts: Grades 3-5

[Equivalent Fractions; Compare Fractions](#)

Essential Question: What strategies can you use to compare fractions and write equivalent fractions?

Standards: [4.NF.1](#), [4.NF.2](#)

ELD Standards:

ELD.PI.4.1-Exchanging information/ideas via oral communication and conversations.

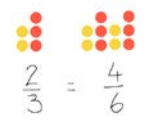
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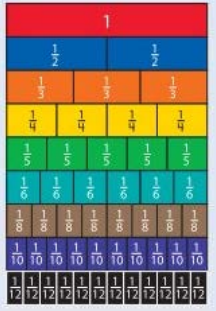
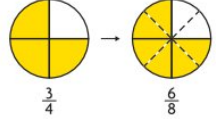
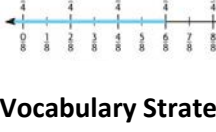
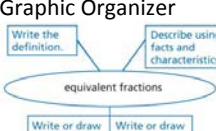
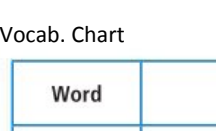
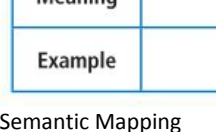
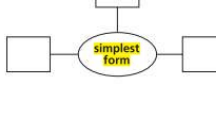
ELD.PI.4.9- Expressing information and ideas in oral presentations.

ELD.PI.4.11- Supporting opinions or justifying arguments and evaluating others’ opinions or arguments.



ELD.PI.4.12-Selecting and applying varied and precise vocabulary.

Lesson		Standards & Math Practices	Essential Question	Math Content/Strategies	Models/Tools Go Math! Teacher Resources G4	Connections (ENGAGE prior knowledge)	Vocabulary	Academic Language Support	Journal
6.1	Investigate ● Equivalent Fractions	4.NF.1 MP.2 MP.4 MP.7 Companion pg.127	How can you use models to show equivalent fractions?	Use area models (grid paper, number lines, patter blocks, counters, and/or fractions strips) to show equivalent fractions. 	Base-Ten Grid Paper Number Lines Fraction Strips Pattern Blocks	Students draw, color, or fold to divide a grid into same-size parts, partitioning a rectangle and shading (i.e. shading $\frac{1}{4}$ part and then comparing to $\frac{2}{8}$ part). Students use same-size pieces to model a given fraction and then place pieces of another size below until both sets are equal in length.	equivalent fractions, denominator, fraction, numerator, renaming fractions	Math Talk Why are ____, ____, ____ called equivalent fractions? How many fractions could you write that are equivalent to ____?	Jamal finished $\frac{5}{6}$ of his homework. Margaret finished $\frac{3}{4}$ of her homework, and Steve finished $\frac{10}{12}$ of his homework. Which two students finished the same amount of homework?
6.2	Generate Equivalent Fractions	4.NF.1 MP.4 MP.7 MP.8	How can you use multiplication to find equivalent fractions?	Use models and multiplication to generate equivalent fractions by multiplying by the BIG ONE (2/2, 3/3, 4/4, 5/5, etc.)	Picture Models Multiplication Fraction Strips	Students transition from using models to using multiplication to generate equivalent fractions. From a picture of $\frac{1}{2}$, show $\frac{2}{4}$, $\frac{3}{6}$, $\frac{4}{8}$ and the	The number one represented as a fraction with same numerator	Match the words simple, simpler, simplest to $\frac{3}{9} = \frac{1}{3} = \frac{6}{18}$	Kareem lives $\frac{4}{10}$ of a mile from the mall. Write two equivalent fractions that show

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		Companion pg.38				relationship to multiplying $\frac{1}{2}$ by 1 ($\frac{2}{2}$, $\frac{3}{3}$, $\frac{4}{4}$).	and denominator	Use fraction models to construct meaning. 	what fraction of a mile Kareem lives from the mall.
6.3	Simplest Form *see note above in Big Idea	4.NF.1 MP.2 MP.4 MP.6 Companion pg.38	How can you write a fraction as an equivalent fraction in simplest form?	Write and identify equivalent fractions in simplest form. A fraction is in simplest form if it is modeled using as few equal-size parts of a whole as possible.	Fraction Strips List factors of 2 Common Factors	Students use fraction models of equivalent fractions to explore how to find the simplest form of a fraction (simplest form using as few equal-size parts of a whole as possible, NOT necessarily dividing numerator and denominator by the GCF. A model of 5/10 has more pieces than $\frac{1}{2}$. *See the note above, under big idea. Show $\frac{1}{2}$ using fraction strips ($\frac{2}{4}$, $\frac{3}{6}$, $\frac{5}{10}$, 6/12)	simplest form, common factor, denominator, equivalent fractions, factor, numerator		At Memorial Hospital, 9 of the 12 babies born on Tuesday. In simplest form, what fraction of the babies born on Tuesday were boys?
6.4	Common Denominators	4.NF.1 MP.2 MP.4 MP.6 Companion pg.38	How can you write a pair of fractions as fractions with a common denominator?	Use equivalent fractions to represent a pair of fractions as fractions with a common denominator, by finding common multiples.	Fraction Strips List Multiples	Cut $\frac{1}{2}$ size pieces and $\frac{1}{3}$ size pieces into smaller pieces that are equal in size (use paper folds or manipulatives)	Common denominator, common multiple, multiple		How can $\frac{5}{6}$ and $\frac{2}{3}$ be broken into pieces that are equal in size? Draw a picture to show the pieces.
6.5	Problem Solving • Find Equivalent Fractions	4.NF.1 MP.1 MP.3 MP.4 Companion pg.38	How can you use the strategy make a table to solve problems using equivalent fractions?	Use the strategy make a table and draw rectangle models to solve problems using equivalent fractions.	Fraction Strips Fraction Models Graphic Organizer (Table)	This lesson applies mathematics to real life situations. A baker cut a pie in half. He cut each half into 3 equal pieces and each piece into 2 equal slices. He sold 6 slices. What fraction of the pie did the baker sell?	Table strategy		Ms. Groves has trays of paints for students in her art class. Each tray has 5 colors. One of the colors is purple. What fraction of the colors in 20 trays is purple?
6.6	Compare Fractions Using Benchmarks	4.NF.2 MP.1 MP.3 MP.4 Companion pg.38	How can you use benchmarks to compare fractions?	Compare fractions using benchmarks 0, $\frac{1}{2}$, and 1. HMH Video Podcast Compare Fractions	Fraction Strips Fraction Benchmark Number Lines Fraction number lines	Review the benchmarks used for rounding (nearest 10, 100) and relate that in comparing fractions. Use fraction strips, number lines, and reasoning to compare fractions to 0, $\frac{1}{2}$, and 1. Make connections between a number line and fraction strips, both models being linear representations of fractions.	benchmark		Erika ran $\frac{3}{8}$ mile. Maria ran $\frac{1}{4}$ mile. Who ran farther?
6.7	Compare Fractions	4.NF.2 MP.2 MP.4 MP.6 Companion pg.38	How can you compare fractions?	Compare fractions using different methods, including using models, using common denominators, and using common numerators.	Fraction Strips Pattern Blocks Common Denominator Common Numerator	Use pattern blocks to make comparisons of $\frac{1}{2}$, and $\frac{1}{3}$; $\frac{2}{3}$ and $\frac{5}{6}$; $\frac{3}{4}$ and $\frac{5}{6}$. By multiplying by ONE, make equivalent fractions with common denominators or common numerators to make comparisons. How do $\frac{3}{8}$ and $\frac{1}{4}$ compare to $\frac{1}{2}$?	common denominator, common numerator		If a recipe uses $\frac{2}{3}$ cup of flour and $\frac{5}{8}$ cup of strawberries, is there more flour or more strawberries in the recipe? How do you know?
6.8	Compare and Order Fractions	4.NF.2 MP.2 MP.4 MP.6 Companion pg.38	How can you order fractions?	Compare and order fractions using number lines, benchmark of $\frac{1}{2}$, equivalent fractions, and comparing fractions that have the same denominator or the same numerator.	Fraction number lines Fraction Benchmark Number Lines	For a recipe for trail mix, James needs $\frac{1}{3}$ cup of walnuts, $\frac{1}{4}$ cup of coconut, $\frac{3}{4}$ cup of oats, and $\frac{2}{3}$ cup of raisins. Which ingredient is closest to 1 cup? List the ingredient in order from least to greatest.	Benchmark, common denominator, common numerator		On 3 days last week, Maria ran $\frac{1}{4}$ mile, $\frac{7}{8}$ mile, and $\frac{3}{5}$ mile. List the distances in order from least to greatest.

[Type here]

								<p>Literature</p>  <p>Grab N Go Literature <i>A Melody in Fractions</i></p> 	
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Assessments:
[Go Math Chapter 6 Test](#)
Go Math Chapter 6 Performance Task: [Have a Seat!](#)

BIG IDEA: The Standard begins with an understanding that addition and subtraction of fractions has the same meaning as addition and subtraction of whole numbers, although the process of addition and subtraction is different with fractions. Addition and subtraction work is limited to examples with like denominators. The concept of unit fractions is foundational as students prepare to add and subtract fractions.

Students must be able to decompose a fraction into unit fractions ($4/5 = 1/5 + 1/5 + 1/5 + 1/5$) and compose fractions from the sum of unit fractions, avoiding misconceptions (such as adding denominators) by giving students multiple opportunities with various **concrete models, pictures, and the number line** and making explicit connections to written equations.

Adapted from The Common Core Companion, p. 132-134

Professional Development Videos:

Fraction Operations: Grades 3-6

[Addition and Subtraction of Fractions using a Fraction Kit](#); [Addition and Subtraction of Fractions using a Set Model](#)

Essential Question: How do you add or subtract fractions that have the same denominator?

Standards: [4.NF.3a](#), [4.NF.3b](#), [4.NF.3c](#), [4.NF.3d](#)

ELD Standards:

ELD.PI.4.1-Exchanging information/ideas via oral communication and conversations.

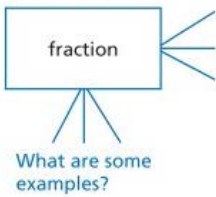
ELD.PI.4.3-Offering opinions and negotiating with/persuading others.


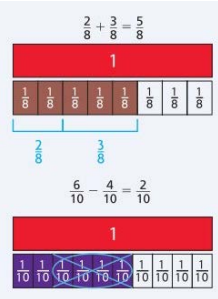

ELD.PI.4.5-Listening actively and asking/answering questions about what was heard.

ELD.PI.4.9- Expressing information and ideas in oral presentations.

ELD.PI.4.11- Supporting opinions or justifying arguments and evaluating others’ opinions or arguments.

ELD.PI.4.12-Selecting and applying varied and precise vocabulary.

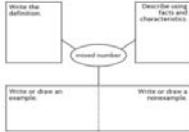



Lesson	Standards & Math Practices	Essential Question	Math Content/Strategies	Models/Tools Go Math! Teacher Resources G4	Connections (ENGAGE prior knowledge)	Vocabulary	Academic Language Support	Journal
7.1	Add and Subtract Parts of a Whole 4.NF.3a MP.4 MP.5 Companion pg. 132	When can you add or subtract parts of a whole?	Understand that to add or subtract fractions they must refer to parts of the same whole. Students practice joining and separating same-size wholes, as well as identifying situations when joining or separating fractions does not work due to different-size wholes.	Fraction Models (Fraction Circles, Pattern Blocks) Fraction Strips Fraction Benchmark Number Lines Fraction # Line Templates	You can only join or separate parts that refer to the same whole. If Randy has $1/4$ of a round cake and $1/4$ of a square cake, are the wholes the same? (draw picture) Does the sum $1/4 + 1/4 = 2/4$ make sense in this situation? Give an example of a situation where the equation $1/4 + 1/4 = 2/4$ makes sense. (draw picture)	Fraction, parts of a whole	Math Talk Explain why the denominator does not change when you add or subtract fractions with like denominators. Vocabulary Strategy Graphic Organizer Word Definition Map: What is it?  What are some examples?	Draw a fraction circle to model $5/6 - 1/6$ and write the difference.
7.2	Write Fractions as Sums 4.NF.3b MP.2 MP.4 MP.8 Companion pg. 134	How can you write a fraction as a sum of fractions with the same denominators?	Decompose a fraction by writing it as a sum of fractions with the same denominators. Students answer the following: How many addends are in the equation? What does each addend represent? Where is the sum? What does it represent?	Fraction Models (Fraction Strips , Fraction Circles, Pattern Blocks) Fraction Tiles Fraction Number Lines Fraction # Line Templates	Compose 1 whole in 3 different ways using a sum of addends. ($1/4 + 1/4 + 1/4 + 1/4$, $1/2 + 1/2 + 1/2 + 1/2$, $1/8 + 1/8 + 1/8 + 1/8 + 1/8 + 1/8$, $1/3 + 1/3 + 1/3$, $1/2 + 1/2$) --- use fraction strips, fraction circles, pattern blocks	unit fraction, denominator, numerator		Write $9/12$ as a sum of unit fractions.

7.3	Add Fractions Using Models **AC option: can combine with 7.4	4.NF.3d MP.2 MP.3 MP.5 Companion pg. 135	How can you add fractions with like denominators using models?	Use models to represent and find sums involving fractions. The model reminds students that the denominator does not change as a result of addition or subtraction.	Fraction Models (Fraction Strips , Fraction Circles , Pattern Blocks) Fraction Benchmark Number Lines Fraction # Line Templates	Fraction models provide visual support for understanding operations with fractions, adding and subtracting equal-size parts of a whole. Have students write equations from their models. $2/8 + 3/8 = 5/8$ (fraction strip or circles – join parts)	Like denominators	Bubble Map Complete the bubble map using the words with a ✓. Possible answers: 	Evan eats 1/8 of a pan of lasagna and his brother eats 2/8 of it. What fraction of the pan of lasagna do they eat?
7.4	Subtract Fractions Using Models **AC option: can combine with 7.3	4.NF.3d MP.1 MP.2 MP.4 MP.5 Companion pg. 135	How can you subtract fractions with like denominators using models?	Use models (take-away and comparison) to represent and find differences involving fractions. The take-away model is useful for situations that ask how much is left. The comparison model is useful for situations that ask questions such as how much more.	Fraction Model (Fraction Strips , Fraction Circles , Pattern Blocks) Fraction Benchmark Number Lines Fraction # Line Templates	Fraction models provide visual support for understanding operations with fractions, adding and subtracting equal-size parts of a whole. Have students write equations from their models. $6/10 - 4/10 = 2/10$ (fraction strip or circles – cross out 4/10)	Like denominators	Use models to show addition and subtraction of fractions. 	Lee reads for 3/4 hour in the morning and 2/4 hour in the afternoon. How much longer does Lee read in the morning than in the afternoon? Use models to help.
7.5	Add and Subtract Fractions	4.NF.3d MP.1 MP.2 MP.4 Companion pg. 135	How can you add and subtract fractions with like denominators?	Solve word problems involving addition and subtraction of fractions with like denominators. Students must understand that fractions with like denominators represent parts of the same-sized whole, so only the numerators need to be added or subtracted in order to find sums and differences, respectively.	Fraction models (Bridging to visualizing without models) Fraction Strips Fraction Benchmark Number Lines Fraction # Line Templates	Error analysis: Luke says $1/5 + 2/5 = 3/10$. Describe his error. (draw a picture, have students discuss, etc.) Explain why the denominator does not change when you add or subtract fractions with like denominators.	Common denominators, like denominators		Compare how you would model and record finding the sum and difference of two rocks weighing 2/8 pound and 3/8 pound.

End of 2nd Quarter

START OF THIRD QUARTER

***Note** that the Standards do not require students to simplify fractions although students may find fractions written in simpler form easier to understand. (i.e. $50/100 = \frac{1}{2}$). Having students find equivalent fractions “in both directions” may help students to realize that fractions can be written in simpler form without formally simplifying fractions.

7.6	Rename Fractions and Mixed Numbers	4.NF.3b MP.1 MP.4 Companion Pg. 134	How can you rename mixed numbers as fractions greater than 1 and rename fractions greater than 1 as mixed numbers?	Write fractions greater than 1 as mixed numbers and write mixed numbers as fractions greater than 1. Students will rename fractions greater than 1 when they add fractions and mixed numbers. They will rename mixed numbers as fractions greater than 1 when they subtract mixed numbers with renaming.	Fraction Strips Mixed Fraction Number Line Pattern Blocks	Explain how to write $1\frac{1}{4}$ as a sum of unit fractions. Have students use a number line and fraction strips to write a $\frac{9}{4}$ as a mixed number. How could students write $\frac{8}{5}$ as a mixed number without using a model? ($\frac{5}{5} = 1$, so $\frac{5}{5} + \frac{3}{5} = 1\frac{3}{5}$) 4 th graders are to use representations of 1 whole ($\frac{4}{4}$, $\frac{5}{5}$, $\frac{3}{3}$, etc.) in renaming, NOT the division algorithm. ($\frac{7}{3} = \frac{3}{3} + \frac{3}{3} + \frac{1}{3}$)	Renaming fractions, mixed number, fractions greater than 1	Model and Talk Write fractions greater than 1 as a sum of representations of 1 whole, unit fractions. How many $\frac{1}{2}$ parts are in 2 wholes? 3 wholes? Represent the answer in 2-3 different ways.	Draw and explain how you can use a number line to rename a fraction greater than 1 as a mixed number. If Julie needs $3\frac{1}{4}$ cups of oatmeal, how many $\frac{1}{4}$ cups of oatmeal will she use?
7.7	Add and Subtract Mixed Numbers	4.NF.3c MP.2 MP.4 MP.8 Companion Pg. 135	How can you add and subtract mixed numbers with like denominators?	Add and subtract mixed numbers in real world situations. For example: How might mixed numbers be used when you follow a recipe? How might mixed numbers be used when you go on a trip? How might mixed numbers be used when you weigh an object?	Fraction Models Vertical Computation of Mixed Numbers Pattern Blocks Pattern Blocks +/-	When students use models to add mixed numbers, have students shade the fractional parts first without any gaps. Adding $1\frac{4}{6} + 2\frac{3}{6}$ will fill up $\frac{6}{6}$ parts of circle with $\frac{1}{6}$ in the next circle. Then add the whole numbers of $1 + 2$ for the grand total of $4\frac{1}{6}$ parts. When subtracting $3\frac{4}{6} - 2\frac{3}{6}$, shade the first mixed number, and then cross out the second number.	Renaming fractions, mixed number, fractions greater than 1	Vocabulary Builder <small>Multistep Word Description (see a Teacher Resource!)</small> Have students fill out the graphic organizer for the term mixed number. Invite students to share their nonexamples for mixed numbers with the class.	James wants to send two gifts by mail. One package weighs $2\frac{3}{4}$ pounds. The other package weighs $1\frac{3}{4}$ pounds. What is the total weight of the packages?
7.8	Subtraction with Renaming	4.NF.3c MP.3 MP.4 Companion Pg. 135	How can you rename a mixed number to help you subtract?	Rename mixed numbers to subtract. Make connections to subtracting whole numbers and the need at times, for renaming (regrouping).	Mixed Fraction Number Line , Renaming (Regrouping) of Mixed Numbers Pattern Blocks Renaming with Pattern Blocks	Review place value subtraction $34 - 16$ and the renaming of $34 = 20 + 14$ in order to subtract $10 + 6$. That applies to $5\frac{3}{8} - 2\frac{7}{8}$ by renaming $5\frac{3}{8} = 4 + \frac{8}{8} + \frac{3}{8} = 4 + \frac{11}{8} - 2\frac{7}{8}$, as taught in lessons 7.6, 7.7.	Renaming fractions	  Activities <i>Fantastic Fractions</i>	Alicia buys a 5-pound bag of rocks for a fish tank. She uses $1\frac{1}{8}$ pounds for a small fish bowl. How much is left?
7.9	Algebra • Fractions and Properties of Addition	4.NF.3c MP.2 MP.7 Companion Pg. 135	How can you add fractions with like denominators using the properties of addition?	Use the properties of addition to add fractions that have a sum of 1, first. Then students can use mental math to add some fractions.	Commutative and Associative Properties of Addition	Review how the properties help with adding $25 + 86 + 75$. How can students mentally add $1\frac{3}{4} + 2\frac{3}{4} + 1\frac{1}{4}$ using the properties?	Associative Property of Addition, Commutative Property of Addition	 Students complete orange Activity Card 8 by drawing pictures of fractions greater than 1. Games <i>Fraction Concentration</i>	A carpenter cut a board into 3 pieces. One piece was $2\frac{5}{6}$ feet long. The second piece was $3\frac{1}{6}$ feet long. The third piece was $1\frac{5}{6}$ feet long. How long was the board?
7.10	Problem Solving • Multistep Fraction Problems	4.NF.3d MP.1 MP.7 Companion Pg. 135	How can you use the strategy <i>act it out</i> to solve multistep problems with fractions?	Use the strategy <i>act it out</i> to solve multistep fraction problems. The problems in this lesson involve repeated addition, which students can act out using various types of models, such as fraction strips or fraction circles.	Fraction Models to <i>Act It Out</i> (Fraction Circles, Fraction Strips , Number Lines)	The act-it-out strategy is actually using models to solve more complicated real-world problems. How many $\frac{2}{5}$ parts are in 2 wholes? Represent the answer in 2-3 different ways.		 Students practice adding and subtracting fractions and mixed numbers to reveal a hidden picture.	Val walks $2\frac{3}{5}$ miles each day. Bill runs 10 miles once every 4 days. In 4 days, who covers the greater distance?

Assessments:

[Go Math Chapter 7 Test](#)

****Common Assignment (Option 1, 3rd Quarter)-** Go Math Chapter 7 Performance Task: [Lending a Hand](#)

[SBAC Practice Problems Hyperlink](#)

[SBAC Claim 1 Example Stems](#)