**Grade 5**  
**Unit 3 Multiplication and Division of Fractions**  
**Mathematics**

**Unit Goals – Stage 1**

**Number of Days:** 34  
**November 29, 2017 – January 30, 2018**

**Unit Description:** In **Unit 3** students extend their understanding of multiplying a fraction by a whole number to multiplying fractions by fractions. Students use line plots and other tools to reason about problem situations. In preparation for grade six work in ratios and proportional reasoning, students interpret multiplication as scaling (resizing). Students use their understanding of the relationship of multiplication and division to develop a conceptual understanding of division with fractions (division of a whole number by a unit fraction and a unit fraction by a whole number).

**Materials:** concrete and visual fraction models (i.e. fraction strips, pattern blocks, color tiles, red/yellow counters), 1 in. and 1 cm grid paper, sticky notes or patty paper, colored pencils, GoMath! MathBoard or whiteboard

**Standards for Mathematical Practice**

| SMP.1 Make sense of problems and persevere in solving them. |
| SMP.2 Reason abstractly and quantitatively. |
| SMP.3 Construct viable arguments and critique the reasoning of others. |
| SMP.4 Model with mathematics. |
| SMP.5 Use appropriate tools strategically. |
| SMP.6 Attend to precision. |
| SMP.7 Look for and make use of structure. |
| SMP.8 Look for and express regularity in repeated reasoning. |

**Transfer Goals**

**Students will be able to independently use their learning to…**

- Make sense of never-before-seen problems and persevere in solving them.
- Construct viable arguments and critique the reasoning of others.

**Making Meaning**

**UNDERSTANDINGS**

**Students will understand that…**

- Division is equal sharing.
- The area model, fraction strips, number lines, and counters can be used to show fraction multiplication.
- Multiplying a number by a fraction is scaling, or resizing that number.
- Line plots visually display data.

**ESSENTIAL QUESTIONS**

**Students will keep considering…**

- How does a fraction represent division?
- How do I use models to show my understanding of fractions?
- How is what we understand about multiplication of whole numbers useful when multiplying fractions?
- How do I use operations with fractions for this grade to solve problems involving information presented in line plots.

**Standards for Mathematical Content Clusters Addressed**

**Number and Operations - Fractions**

| 5.NF.B Apply and extend previous understandings of multiplication and division to multiply and divide fractions. |

**Measurement and Data**

| 5.MD.B Represent and interpret data. |

**Acquisition**

**KNOWLEDGE**

**Students will know…**

- The definitions of the academic vocabulary words such as conversion, line plot, redistribute equally, data set, part of a group, partition, resizing, and scaling.
- The general formula to multiply fractions.

**SKILLS**

**Students will be skilled at and/or be able to…**

- Use visual models or equations to solve fraction multiplication problems.
- Create real world problems involving multiplication of fractions.
- Divide unit fractions by whole numbers and whole numbers by unit fractions.
- Find the area of a rectangle with fractional and whole number side lengths.
- Interpret a fraction as division of the numerator by the denominator \((a/b = a ÷ b)\).
- Make a line plot to display a data set of measurement in fractions of a unit.
Assessed Grade Level Standards

**Standards for Mathematical Content**

**Number and Operations – Fractions**

5.NF.B Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

5.NF.3 Interpret a fraction as division of the numerator by the denominator \( \frac{a}{b} = \frac{a}{b} \). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?

5.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

a. Interpret the product \( \frac{a}{b} \times q \) as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations \( a \times q \div b \). For example, use a visual fraction model to show \( \frac{2}{3} \times 4 = 8/3 \), and create a story context for this equation. Do the same with \( \frac{2}{3} \times 4/5 = 8/15 \). (In general, \( (a/b) \times (c/d) = ac/bd \).)

b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

5.NF.5 Interpret multiplication as scaling (resizing), by:

a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.

b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a
fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence \( \frac{a}{b} = \frac{n \times a}{n \times b} \) to the effect of multiplying \( \frac{a}{b} \) by 1.

5.NF.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

5.NF.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.

a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. For example, create a story context for \( \frac{1}{3} \div 4 \), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that \( \frac{1}{3} \div 4 = \frac{1}{12} \) because \( \frac{1}{12} \times 4 = \frac{1}{3} \).

b. Interpret division of a whole number by a unit fraction, and compute such quotients. For example, create a story context for \( 4 \div \frac{1}{5} \), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that \( 4 \div \frac{1}{5} = 20 \) because \( 20 \times \frac{1}{5} = 4 \).

c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share \( \frac{1}{2} \) lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?

5.MD.B Represent and interpret data.

5.MD.2 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.

Key: [m] = major clusters; [s] = supporting clusters; [a] = additional clusters
Evidence of Learning – Stage 2

Assessment Evidence

Unit Assessment

Students will complete selected response and constructed response items to indicate level of mastery/understanding of the unit standards as outlined in this guide.

Claim 1: Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency. Concepts and skills that may be assess in Claim 1:

5.NF.B
- The student interprets a fraction as division of the numerator by the denominator.
- The student solves problems involving division of whole numbers leading to quotients in the form of fractions or mixed numbers, with or without fraction models.
- The student multiplies a fraction or whole number by a fraction.
- The student multiplies fractional side lengths to find areas of rectangles.
- The student compares the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.
- The student solves real-world problems involving multiplication of fractions and mixed numbers, with or without visual fraction models.
- The student multiplies fractional side lengths to find areas of rectangles.
- The student compares the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.
- The student solves real-world problems involving multiplication of fractions and mixed numbers, with or without visual fraction models.
- The student solves real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, with or without visual fraction models.

5.MD.B
- The student completes or identifies a line plot with fractional units to display a data set.
- The student uses operations on fractions to solve problems involving information presented in line plots.

For selected content, students will need to...

Claim 2: Students can solve a range of well-posed problems in pure and applied mathematics, making productive use of knowledge and problem-solving strategies. Standard clusters that may be assessed in Claim 2:

5.NF.B

Claim 3: The students can clearly and precisely construct viable arguments to support their own reasoning and critique the reasoning of others. Standard clusters that may be assessed in Claim 3:

5.NF.B

Claim 4: The student can analyze complex, real-world scenarios and can construct and use mathematical models to interpret and solve problems. Standard clusters that may be assessed in Claim 4:

5.NF.B

Other Evidence

Formative Assessment Opportunities

- Opening Task - 3 Act Task – How Much Dew?
- Go Math! Show What You Know Chapter 7 & 8, pgs. 305 & 355
- Classroom Challenges (FAL) – Baker Brenda’s Bread
- Go Math! Performance Task Chapter 8 – Trail Teamwork
- Go Math! Standards Practice Book – homework or quizzes
- Go Math! Getting Ready for the Smarter Balance pgs. SB27 – SB44
- District Unit 3 Resource – exit tickets and quizzes (Word or PDF) Spanish (Word or PDF)
- Mini Assessment Achieve the Core - Multiplication and Division of Fractions
- myPD Course #2531 Creating an Assessment in Synergy
# Learning Plan – Stage 3

## Teacher Resources

We encourage using the following resources throughout the unit.

- Think Central
- myPD Course #7534 Mathematics Videos on myPD
- #2821 Go Math! Digital Resources
- #7445 Math Unit Overview: Grades 2 – 5
- #7401 SMPs (includes posters and teacher prompt cards)
- #3578 Understand the Problem: Notice and Wonder Strategy (includes paper resources)
- #2899 Notice and Wonder
- #7455 Lesson Planning Tools (includes 5E template ) Mathematical Task Monitor Chart
- #7393 Growth Mindset
- #7353 Math Normbuilding Activities
- #7420 Math Discourse
- #7547 What is Illustrative Mathematics

- Mathematical Task Monitor Chart

- Engage, Explore and Evaluate Problems
- Which One Doesn't Belong?
- Estimation 180
- Fraction Splat

- Mathematics Framework for California Public Schools – Grade 5
- District Unit 3 Resource – exit tickets and quizzes (Word or PDF) Spanish (Word or PDF)

- Good Questions for Math Teaching (Given to teachers at Tri 3 training 2014-2015)
- Implementing the Common Core State Standards through Mathematical Problem Solving Grades 3 – 5 (Given to teachers at Tri 3 training 2014-2015)

- Using Formative Assessment for Differentiation
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<tr>
<th>Days</th>
<th>Learning Target</th>
<th>Success Criteria</th>
<th>Go Math! Lessons and Activities and Core Resources</th>
<th>Supplemental Materials</th>
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<tbody>
<tr>
<td>Daily</td>
<td>I will know basic math facts by…</td>
<td>• Saying facts orally.</td>
<td>• Maintaining Fluency Through Fact Families (green booklet) pgs. 1 –10, 13 - 28</td>
<td>• myPD Course #2863 Maintaining Fluency through Fact Families - Multiplication and Division</td>
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<td>• Writing fact families.</td>
<td>• Go Math! Strategies and Practice for Skills and Facts Fluency</td>
<td>• myPD Course #3495 Using the Go Math! Strategies and Practice for Skills and Facts Fluency</td>
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<td>• Skip counting.</td>
<td>• Go Math! Strategies and Practice for Skills and Facts Fluency</td>
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<td>• Using them to play games.</td>
<td>• MyPD Course #3495 Using the Go Math! Strategies and Practice for Skills and Facts Fluency</td>
<td>• myPD Course #7446 Elementary Number Talks</td>
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<td>Daily</td>
<td>I can use mental math strategies to add, subtract, multiply and divide by…</td>
<td>• Participating in daily Number Talks.</td>
<td>• Fraction Number Talks</td>
<td>• myPD Course #2818 Multiple Markers - Daily Routine</td>
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<td>• Using estimation.</td>
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<td>• Communicating my reasoning.</td>
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<td>Daily</td>
<td>I can identify and mark multiples of 2 through 12 by…</td>
<td>• Participating in a daily Multiple Markers routine.</td>
<td>• myPD Course #2818 Multiple Markers - Daily Routine</td>
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<td>• Analyzing patterns</td>
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<td>90 minutes per week (Schools / grades with ST Math)</td>
<td>I will persevere in problem solving as I play interactive games to help me understand math by…</td>
<td>• Developing long term problem solving skills.</td>
<td>ST Math Objectives</td>
<td>ST Math Tips</td>
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<td>• Visualizing math concepts.</td>
<td>• Fraction Multiplication</td>
<td>• Go to ST Math Central</td>
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<td>• Making connections between concepts and across grades.</td>
<td>• Fraction Division</td>
<td>• Set goals: 3% progress per week</td>
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<td>• Playing interactive games.</td>
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<td>• Review your classroom reports regularly</td>
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<td>• Monitor/Celebrate progress</td>
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<td>• Monitor/Intervene students with alerts</td>
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<td>• Assign a few homework objectives at a time</td>
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<td>Before the Unit (as needed)</td>
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<td><strong>Give the “Show What You Know” Diagnostic Assessment on pg. 305 &amp; 355</strong></td>
<td><strong>Use the Diagnostic Table if needed for intervention options: On-level, Strategic, Intensive, and Independent.</strong></td>
<td><strong>Rule of Thumb:</strong> Rather than doing the “Vocabulary Builder” on pgs. 306 &amp; 356 as a separate activity, incorporate vocabulary where appropriate in daily lessons. (e.g. as students build conceptual understanding with different tasks, insert mathematical vocabulary during the class discussion, building word walls, or vocabulary lists in notebooks with the students.)</td>
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**Coach’s Note:** For this unit there were several misalignments between the expectations of the Standards and the approach of GoMath! Lessons in Chapters 7 and 8.

These issues include:
- A lack of opportunities for students to apply and extend previous understandings of multiplication and division to multiply and divide fractions as called for by 5.NF.B which is a major cluster in Grade 5.
- Introducing a standard algorithm to multiply and divide fractions without taking time to develop conceptual understanding of the operations.
- Lack of time spent developing the concept of multiplication as scaling as called for by 5.NF.B.5.
- Introducing models and strategies that don’t build conceptual understanding (e.g., circle models for multiplying and estimating or guessing to find missing factors).

The decision was made to replace some of the lessons with other resources in order to provide a coherent learning trajectory for both teachers and students.

**Attention! Attention!**
The Standards do not require simplified form of a fraction. Students should fluently find equivalent fractions.
Delete any directions that require students to write fractions in simplest form.

*CA Mathematics Framework on p.21*

**A Must Watch:** Graham Fletcher: Reasoning with Fractions Through the Lens of a 10 Year Old
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| 1    | I can solve real world problems involving fractions by… | • Using a visual fraction model or equation.  
• Estimating.  
• Constructing a viable argument.  
• Communicating my reasoning. | OPENING TASK – 3 Act Task – How Much Dew?  
• Teacher Resource:  
  o 3 Act Task PowerPoint  
  o myPD Course #3480 Facilitating a 3 Act Math Task  
• Student Resource:  
  o 3 Act Task Recording Sheet | • Sharing Pizza Task  
  o Sharing Pizza Teacher Guide |
| 2 – 4 | I can interpret a fraction as division of the numerator by the denominator by… | • Solving word problems and creating story contexts to represent problems involving division of whole numbers.  
• Using various representations including concrete and pictorial visual fraction models.  
• Using equal sharing to write the amounts in a division problem as a fraction.  
• Partitioning amounts, connecting to the meaning of multiplication by a unit fraction (i.e. 5 objects shared equally among 3 means each of the 5 objects contributes $\frac{1}{3}$ of itself to each share so $5 \div 3 = 5 \times \frac{1}{3} = \frac{5}{3}$)  
• Interpreting the quotient in the context of the problem (writing quotients as fractions or mixed numbers). | 1st Day of Learning Target:  
• Where Shall I Sit? Task  
2nd and 3rd Day of Learning Target:  
• Engage NY Lesson 2 – Interpret a Fraction as Division  
• Granola Bars Task - SMP#3  
• Yummy Ice Cream Sundae Task-Students will be asked to explain the difference of $4 \div 6$ and $6 \div 4$. | Conceptual Understanding:  
• True or false? Dividing by 2 is the same as multiplying by $\frac{1}{2}$?  
• Illustrative Mathematics Teacher’s Guide: How Much Pie? Task  
  o Student Task Page |
|      |                |                  | Application:  
• Illustrative Mathematics Teacher’s Guide: Sharing Lunches Task  
  o Student Task Page  
• Illustrative Mathematics Teacher’s Guide: What is $23 \div 5$? Task  
  o Student Task Page |
# Learning Plan – Stage 3

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<td>• Answering questions such as…</td>
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<td>o What is the relationship between</td>
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<td>7 divided by 8 and $\frac{7}{8}$?</td>
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<td>o How do the numerator and</td>
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<td>denominator of a fraction</td>
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<td>compare with the dividend and</td>
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<td>divisor of a division expression?</td>
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**Coach’s Note:**

The following Learning Targets for multiplying fractions will have Standard 5.NF.5 Interpret multiplication as scaling (resizing) embedded throughout instead of being taught in isolation. We want students to be able to build reasoning about the size of a product. This will help students determine if their solution is reasonable and to help them make reasonable estimates.

The **Standard 5.NF.5** will be addressed again on Days 19 – 20 in order to check for understanding.

5 – 6 I can solve word problems involving finding a fractional part of a group by…

• Understanding that an equation such as $\frac{1}{4} \times 8$ is said as one-fourth of eight or interpreted as $\frac{1}{4}$ of 8 pies.
• Determining how many equal groups to arrange.
• Understanding what the number of circled groups represents.
• Answering questions such as…
  o How did you know how many equal groups to draw?
  o How did you know how many groups to circle?
  o Why is it important to divide into groups that each have the same number?

• Engage NY: Lesson 6 Relate fractions as division to fraction of a set.
• Lesson 7.1: Find Part of Group
  o Go Deeper #11 pg. 310
  o Mathematical Practice pg. 308

**Exit ticket:** How does knowing $\frac{1}{8}$ of 24 help you find $\frac{3}{8}$ of 24? Draw a picture to explain your thinking?

**Teacher Resource:**
- Teaching Channel: Preparing for Fraction Multiplication

**Application:**
- Would $\frac{4}{4} \times 12$ be greater than, less than or equal to 12? How do you know?
- $\frac{1}{7} \times 3\frac{1}{2}$ = 1? What might the missing numbers be?
## Learning Plan – Stage 3
### Suggested Sequence of Key Learning Events and Instruction

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| 7 – 9 | I can solve word problems and create story contexts for problems involving multiplication of any whole number and a fraction by... | • Answering **scaling** questions such as...  
  o Will the product be a whole number or a fraction?  
  o What do you know about the product of any number multiplied by 1?  
  o Are you multiplying by a factor equal to 1, less than 1, or greater than 1? Why is that important?  
  • Using a model: fraction strips, number lines and/or area models.  
  • Interpreting multiplication as repeated addition.  
  • Understanding the similarities and differences between a fraction multiplied by a whole number and a whole number multiplied by a fraction.  
  • Answering **scaling** questions such as...  
  o Why is it helpful to be able to understand whether a product is less than, equal to, or greater than a fraction factor? | **Coach’s Note:**  
Consider starting with one of the following to develop the students conceptual understanding for this Learning Target:  
• Math Solutions Lesson by Marilyn Burns “Introducing Multiplication of Fractions” OR  
• Problem Solving-Grades 3-5: Tasks 4.6 – 4.8, pp. 72-73  
  o Student Task Page (Use these tasks together so students understand that context drives whether we are working with an equal group of fractional parts or the fractional part of a set. The same numbers are used in all of these tasks.)  
  o Exit Ticket: Lesson 7.2: Multiply Fractions and Whole Numbers- EL Strategy pg. 311  
  o Connecting the model to the algorithm  
  o Lesson 7.3: Fraction and Whole Number Multiplication | **Conceptual Understanding:**  
• Engage NY Lesson 7- Multiply any whole number by a fraction using tape diagrams  
**Application:**  
• Raspberry Cake Task  
  A. Use the number line to model \(6 \times \frac{2}{3}\) and then use a different number line to model \(\frac{2}{3} \times 6\). How are these similar and how are they different?  
  B. Write a story for \(6 \times \frac{2}{3}\) and \(\frac{2}{3} \times 6\).  
• Enlarge a Recipe – Banana Bread Task  
  o myPD Video Course#2760 “Formative Assessment with Problem Solving” |
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| 10 – 13  | I can solve word problems and create story contexts for problems involving multiplication of fraction and fraction by... | • Extending my understanding of multiplication with whole numbers to multiplication with fractions.  
• Using fraction models such as the area model or fraction strips.  
• Using models and written numerals to generalize a pattern and eventually generate a rule.  
• Understanding the product is a part of a part.  
• Answering questions such as...  
  o How can you use an area model to show the product of two fractions?  
  o How is solving for the product of a fraction and a whole number the same as or different from solving a fraction of a fraction?  
  o What patterns do you notice in our multiplication sentence?  
  o Based on the patterns you see, what rule could you use to multiply fractions?  
• Answering **scaling** questions such as...  
  o Is the product of two fractions always, sometimes, or never less than 1? | ✪ **Coach's Note:**  
When multiplying a fraction by a fraction, the algorithm is easily taught by multiplying the numerators and multiplying the denominators. This, however, will only help students to understand this standard procedurally **not** conceptually.  

**Coach's Note:**  
It is suggested to teach these lessons in this order. The lessons progress from conceptual understanding to using the algorithm.  

• Engage NY, Lesson 13, Module 4 - Multiply Unit Fraction by Unit Fraction  
• Engage NY, Lesson 14, Module 4 - Multiply Unit Fraction by Non-Unit Fraction  
• Engage NY, Lesson 15, Module 4 - Multiply Non-Unit Fraction by Non-Unit Fraction  
• Exit Ticket | **Procedural Skills and Fluency:**  
• Multiply Fractions Card Game  

**Conceptual Understanding:**  
• Illustrative Mathematics Teachers' Guide: Folding Strips of Paper  
  o Student Page  

**Application**  
• Illustrative Mathematics Teacher's Guide: Cornbread Fundraiser Task  
  o Student Page  
• Is $\frac{4}{4} \times \frac{1}{5}$ greater than, less than, or equal to $\frac{1}{5}$? How do you know? |
| 14 – 16  | I can find the area of a rectangle with fractional side lengths by...             | • Relating area with whole numbers to finding area with fractional sides.  
• Tiling the rectangle with unit squares of the appropriate unit fraction side lengths.  
• Multiplying the side lengths.  
• Representing fraction products as | ✪ **Coach's Note:**  
It is suggested to teach these lessons in this order. The first lesson builds from the previous Learning Target (fraction by fraction) to working with a whole number multiplied by a mixed number or a fraction to the final lesson having a mixed number |

**Teacher Resource:**  
• About the Math TE 333A  

**Conceptual Understanding:**  
• Area and Mixed Numbers Lesson  

**Application:**  
• LearnZillion: Multiply fractions by fractions: finding a part of a part |
## Learning Plan – Stage 3

### Suggested Sequence of Key Learning Events and Instruction

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| 17 – 18    | I can solve real-world problems involving multiplication of fractions and mixed numbers by... | - rectangular areas.  
- Answering **scaling** questions such as...  
  o When multiplying a fraction less than 1 and a mixed number, is the product greater than or less than the mixed number?  
  o When multiplying a whole number greater than zero by a mixed number, is the product greater than or less than the whole number? | - multiplied by a mixed number.  
- LearnZillion: Find the area of a rectangle with fractional side lengths by tiling  
- Engage NY, Lesson 10, Module 5 - Whole by Mixed or Whole by Fractional Side  
- Engage NY, Lesson 11, Module 5 Find the Area of a Mixed Number by Mixed Number by Tiling, Record by Drawing, and Relate to Fraction Multiplication | - Illustrative Mathematics Teacher’s Guide: Chavone’s Bathroom Tiles Task  
  o Student Page  
- The rectangle has a perimeter of two units. What might the area be? |
| 19 – 20    | I can tell the size of a product based on the factors (relative to 1) by... | - Understanding the size of a product **without** multiplying.  
- Understanding **without performing the multiplication** that when a fraction is multiplied by a number less than 1, the product will always be less than both factors.  
- Understanding **without performing the multiplication** that when a fraction is multiplied by a number greater than 1, the product will always be greater than the fraction. | - Engage NY, Lesson 22, Module 4 - Compare the size of the product to the size of the factors  
- Possible Exit Tickets (from Chapter 7 GoMath!)  
  o Math Talk pg. 324  
  o Think Smarter #13 pg. 326  
  o Math Journal Write Math pg. 326  
  o Pg. 339 # 1 - 7 | - Interpret Multiplication as Scaling Task  
Application:  
- Illustrative Mathematics Teacher’s Guide: Fundraising Task  
  o Student Page |
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| 21 - 27 | I can solve real-world problems involving division of unit fractions by whole numbers and whole numbers by unit fractions by… | • Seeing that multiplication by 1 leaves the quantity unchanged.  
• Answering questions such as…  
  o Are you multiplying by a factor equal to 1, less than 1, or greater than 1? Why is that important?  
  o If you multiply a fraction by 1, is the answer always, sometimes or never the same? | 5.NF.5a | 21 - 27 I can solve real-world problems involving division of unit fractions by whole numbers and whole numbers by unit fractions by… | 21 - 27 I can solve real-world problems involving division of unit fractions by whole numbers and whole numbers by unit fractions by… |
| 21 - 27 | Extending understanding of division with whole numbers to fractions.  
• Using visual representations and models to show the action of the problem.  
• Using the relationship between multiplication and division.  
• Answering questions such as…  
  o Why did you start your model with a fraction or with a whole number?  
  o Do you predict the quotient will be greater than or less than ____? Why?  
  o What is being divided or broken up?  
  o Are you trying to determine how much in a group or how many groups? | | | |

**Coach’s Note:**
Instead of rushing into writing equations or giving the traditional rule for division of fractions, give students a great deal of practice seeing the connection between the visual representation/models to the abstract equations.

Students have worked with whole number division since 3rd grade. Use this Engage Task to have students work with both types of division problems (Measurement and Fair Share). This task will allow students to make sense of the problems and solve with a visual representation. Consider leaving the Learning Target open-ended. See myPD course #2850

- Engage Task - Divide Fractions Model 5E Lesson

Then use the following lessons to make connections to the Engage Task.

**Lessons Focused on Measurement Division**
- Engage NY Lesson 25, Module 4 - Divide a Whole Number by a Unit

**Teacher Resources**
- TE Teaching for Depth pg. 355C
- TE About the Math pg. 375A

**Conceptual Understanding**
- LearnZillion - Draw Pictures for Division of Unit Fractions
- LearnZillion - Divide a Unit Fraction by a Whole Number

**Application:**
- Problem Solving-Grades 3-5 Tasks 4.9 & 4.10 pgs. 74-75
- Student Task Page
- Soccer Snacks Performance Task
- Dog Food Task
- LearnZillion - Solve Word Problems Involving Division of Whole Numbers by Fractions by Drawing a Model
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|       | 5.NF.7 | Fraction  | - Lesson 8.2: Problem Solving: Use Multiplication  
  - Exit Ticket – Write a story problem to represent $4 \div \frac{1}{2}$ and include a visual representation for how you solved the story problem. | - FAL Classroom Challenge Teacher Guide, Grades 2-5 |
| 28-29 | I can use my understanding of multiplication and division to multiply and divide fractions in a real world situation by...  
  - Applying and extending my understanding of multiplication and division of fractions.  
  - Communicating my reasoning.  
  - Checking to see if my answers make sense. | FORMATIVE ASSESSMENT LESSON  
  Classroom Challenge: Baker Brenda’s Bread | |
| 30-32 | I can solve problems using data from line plots with fraction measurements by...  
  - Understanding the purpose of a line plot.  
  - Creating line plots.  
  - Identifying fractional units of a data set.  
  - Using operations of fractions.  
  - Interpreting data from line plots to solve multi-step problems.  
  - Equally redistributing the total amount.  
  - Using technology, research real-world examples of line plots in use. | ★ Coach’s Note:  
  Start with the 5E Lesson - Line Plot Task  
  - Illustrative Mathematics Teachers Guide: Fractions on a Line Plot  
  - Exit Ticket/Quiz - Title the Line Plot | Procedural Skills and Fluency:  
  - Survival Badge (Georgia Department of Education, pg. 40 – 44)  
  - Interpret Dot Plots with Fractions  
  Application:  
  - Fractions on a Line Plot Task  
  - Engage NY Lesson 1, Module 4 - Measure and compare pencil lengths to... |
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|      | 5.MD.2          | • Answering questions such as…  
  o What is the relationship between a line and a number line? | • Go Math! Chapter 7 Test (Assessment Guide, pgs. AG 73 – AG 78)  
 • Go Math! Chapter 8 Test (Assessment Guide, pgs. AG 79 – AG 84) OR  
 • Go Math! Chapter 7 Review/Test (Student Book pgs. 349 – 354)  
 • Go Math! Chapter 8 Review/Test (Student Book pgs. 379 – 384) | the nearest 1/2, 1/4, and 1/8 of an inch, and analyze the data through line plots. |
| 33   | I will prepare for the unit assessment on multiplying and dividing fractions by … | • Applying what I’ve learned to complete a task or set of problems. | • Chapter 8 Performance Task – “Trail Teamwork” (Assessment Guide, pg. AG145 – 149D) | |
| 34   | Unit Assessment |                 |                                                 |                        |