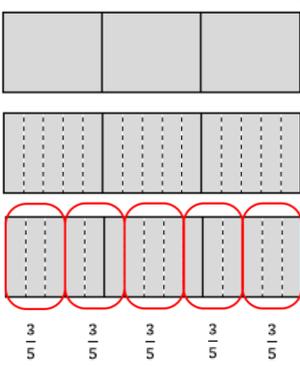
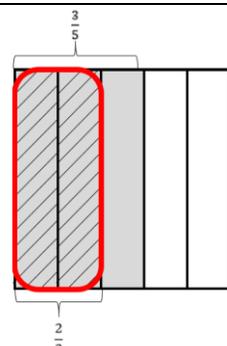
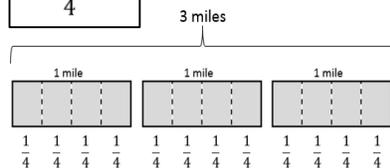


## Grade 5 Important Math Information

### Multiplication and Division with Fractions

Dear Family,

Our class is beginning a unit of study called *Multiplication and Division with Fractions*. This unit of study focuses on understanding fractions as a form of division, using models to multiply and divide fractions, and writing and evaluating expressions that include fractions. The specific learning goals your student will be working toward are listed below with examples of student work showing understanding of each learning goal.

<b>Learning Goal:</b> Understand that fractions can be interpreted as division and solve word problems involving division of whole numbers that result in fractional answers.	
<p style="text-align: center;"><b>Example Problem</b></p> <p>Janice has a piece of fabric that is 3 feet long. She needs to cut the fabric into 5 equal size pieces. How many feet long will each piece of fabric be?</p>	<p style="text-align: center;"><b>Example Student Solution</b></p> <div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p style="font-size: 0.8em;">Each piece of fabric will be <math>\frac{3}{5}</math> foot long.</p> </div> </div> <div style="margin-top: 20px;"> <p style="font-size: 0.8em;">"I divided the fabric into 3 equal pieces to represent the 3 feet of fabric. Next, I divided each foot of fabric into fifths. I circled five equal sized sections to represent the five pieces of fabric that needs to be cut. So, <math>3 \div 5 = \frac{3}{5}</math>."</p> </div>
<b>Learning Goal:</b> Solve real-word and mathematical problems involving multiplication of fractions and mixed numbers and use models and equations to explain the thinking used.	
<p style="text-align: center;"><b>Example Problem</b></p> <p>Mark is planting a garden. <math>\frac{3}{5}</math> of the garden will be vegetables. He wants to plant <math>\frac{2}{3}</math> of the vegetable section with corn. What fraction of the whole garden will be planted with corn?</p>	<p style="text-align: center;"><b>Example Student Solution</b></p> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p style="font-size: 0.8em;">"I drew a square to represent the whole garden. I divided the square into fifths and shaded <math>\frac{3}{5}</math> to represent the vegetable section. Then, I drew stripes in <math>\frac{2}{3}</math> of the vegetable section to represent the corn. When I counted the fraction of the whole garden with stripes I got <math>\frac{2}{5}</math>. So, <math>\frac{2}{3}</math> of <math>\frac{3}{5}</math> equals <math>\frac{2}{5}</math>."</p> </div>  </div> <div style="margin-top: 20px;"> <p style="font-size: 0.8em;"><math>\frac{2}{5}</math> of the whole garden will be planted with corn.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto;"> <math display="block">\frac{2}{3} \times \frac{3}{5} = \frac{2}{5}</math> </div> </div>
<b>Learning Goal:</b> Solve real-word and mathematical problems involving division of unit fractions and whole numbers and use models and equations to explain the thinking used.	
<p style="text-align: center;"><b>Example Problem</b></p> <p>Lyra ran laps around the track for a total of 3 miles. If each lap around the track is <math>\frac{1}{4}</math> mile, how many laps did Lyra run around the track?</p>	<p style="text-align: center;"><b>Example Student Solution</b></p> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p style="font-size: 0.8em;"><math>3 \div \frac{1}{4} = 12</math></p>  </div> <div style="margin-left: 20px;"> <p style="font-size: 0.8em;">"I drew 3 bars to represent the 3 miles that Lyra ran. I divided each bar into fourths to represent each <math>\frac{1}{4}</math> mile lap. When I counted the total number of fourths in the 3 bars, I got 12. So, <math>3 \div \frac{1}{4} = 12</math>."</p> </div> </div> <div style="margin-top: 20px;"> <p style="font-size: 0.8em; border: 1px solid black; padding: 5px; display: inline-block;">Lyra ran 12 laps around the track.</p> </div>

**Learning Goal:** Write expressions that record multiplication and division calculations involving whole numbers and fractions and explain how the expressions relate to the contexts of the problems.

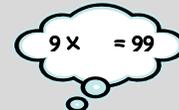
Example Problem	Example Solution
<p>Write an expression that represents the statement:</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;">           Half of the sum of 9 and 8 subtracted from 12.         </div>	<div style="border: 1px solid red; border-radius: 10px; padding: 5px; display: inline-block; margin-bottom: 10px;"> <math>9 + 8</math> </div> <p><i>“The sum of 9 and 8 is <math>9 + 8</math>.”</i></p> <div style="border: 1px solid red; border-radius: 10px; padding: 5px; display: inline-block; margin-bottom: 10px;"> <math>\frac{1}{2} \times (9 + 8)</math> </div> <p><i>“Since we are finding half of the sum of 9 and 8, <math>9 + 8</math> needs to be placed in parentheses. <math>\frac{1}{2}</math> and the multiplication symbol should be placed outside of the parentheses.”</i></p> <div style="border: 1px solid red; border-radius: 10px; padding: 5px; display: inline-block; margin-bottom: 10px;"> <math>12 - \frac{1}{2} \times (9 + 8)</math> </div> <p><i>“<math>\frac{1}{2} \times (9 + 8)</math> still needs to be subtracted from 12 to complete the expression.”</i></p> <div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 10px auto;"> <math>12 - \frac{1}{2} \times (9 + 8)</math> </div>

**Learning Goal:** Evaluate expressions with parentheses, brackets, braces, whole numbers and fractions.

Example Problem	Example Student Solution
<p>Find the value of the expression.</p> $\frac{3}{4} \times (3 \times 2 + 1) - 2$	<div style="margin-bottom: 10px;"> <math>(3 \times 2 + 1) = 7</math> <p><i>“First I need to perform the calculations in the parentheses. I need to multiply before I add. <math>3 \times 2 = 6</math> and <math>6 + 1 = 7</math>”</i></p> </div> <div style="margin-bottom: 10px;"> <math>\frac{3}{4} \times 7 = \frac{21}{4}</math> <p><i>“Next I need to multiply <math>\frac{3}{4} \times 7</math>. <math>\frac{3}{4} \times 7 = \frac{21}{4}</math>.”</i></p> </div> <div style="margin-bottom: 10px;"> <math>\frac{21}{4} - 2 = 5\frac{1}{4} - 2 = 3\frac{1}{4}</math> <p><i>“Last I subtract 2 from <math>\frac{21}{4}</math>. <math>\frac{21}{4}</math> is equivalent to <math>5\frac{1}{4}</math>. <math>5\frac{1}{4} - 2 = 3\frac{1}{4}</math>.”</i></p> </div> <div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 10px auto;"> <math>\frac{3}{4} \times (3 \times 2 + 1) - 2 = 3\frac{1}{4}</math> </div>

**Mathematical Thinking and Practices Learning Goal:**

I can use numbers and symbols to represent situations and explain how the numbers and symbols relate to the situation.



**Things you can do at home to support your student throughout this unit of study:**

Ask your student questions about everyday uses of fractions:

- In the kitchen: “I’m doubling this recipe, and it calls for  $\frac{3}{4}$  cup of sugar. How much sugar do I need?”
- While shopping: “That couch is  $7\frac{3}{4}$  feet long and  $3\frac{1}{2}$  feet wide. How much space will this take up in our living room?”

Practice multiples of numbers and basic multiplication and division facts as well. The more fluent your student is with basic facts, the easier fractions will be!