

Build/Draw/Write to Understand Fractions and their Parts

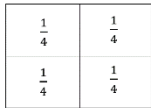
(Note: Different problems may be represented in each progression.)

Name fractions and their parts (3.NF.1)

Four students want to share a large brownie. Show one way the brownie can be shared equally between the students and one way it cannot.

$$\frac{\text{Numerator}}{\text{Denominator}} = \frac{\text{The number of parts}}{\text{How many parts make one whole}}$$

Equal Shares



Unequal Shares



$$\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{4}{4} = 1 \text{ whole}$$

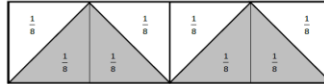
Mr. Motenko painted a mural on his classroom wall. What fractional part of the mural appears to be shaded?



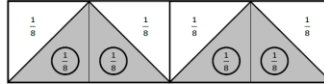
Find the smallest fractional part of the whole...shaded or unshaded.



Separate the whole into equal parts, then label each unit part. (8)



Count to find the numerator. (6)

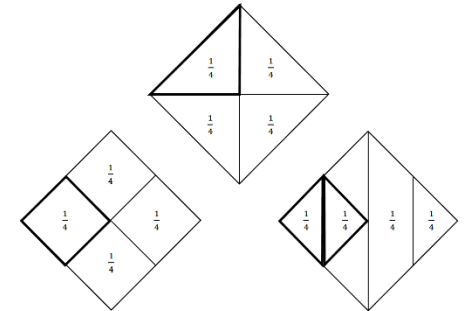


$$\frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} = \frac{4}{8} \quad \text{Numerator=Number of shaded parts}$$

$$\frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} = \frac{4}{8} \quad \text{Denominator=Number of equal parts that make up one whole}$$

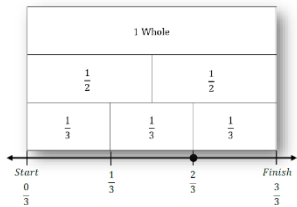
1. $\frac{1}{6} + \frac{1}{6} + \frac{1}{6} = \frac{3}{6}$	2. $\frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7} = \frac{4}{7}$
3. $\frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} = \frac{5}{8}$	4. $\frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10} = \frac{4}{10}$

Ben was asked to fold and label a square piece of paper into fourths. Which diagram does not show fourths?

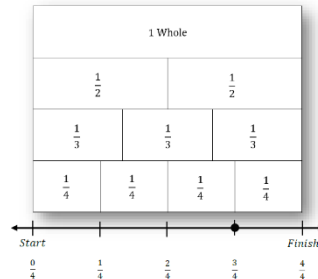


Name fractions on a number line (3.NF.2)

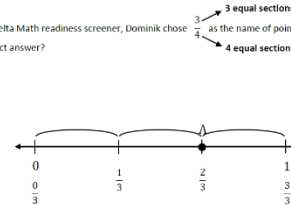
Charlotte ran two-thirds of a 100-yard dash during the first 10 seconds of the race. Draw a point on the number line to represent how far she ran during the first 10 seconds?



Oliver ran a 100-yard dash during a track meet. The point on the number line represents how far he ran after 12 seconds. How much of the race did Oliver complete during the first 12 seconds?



On the Delta Math readiness screener, Dominik chose $\frac{3}{4}$ as the name of point A. Is he correct? If not, what is the correct answer?



Session 4: Guided Practice (We Do – Teacher Notes)

We Do Together: (Teacher Actions)

> Write the name of each equal part between 0 and 1 on the number line. Then, find the location of the point.

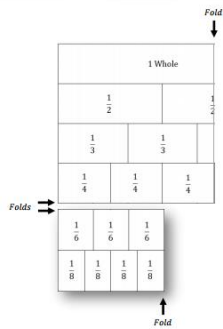
1. Name of each equal part: <u>Fifths</u>	2. Name of each equal part: <u>Fourths</u>
3. Name of each equal part: <u>Thirds</u>	4. Name of each equal part: <u>Sixths</u>

Build/Draw/Write to Compare Fractions

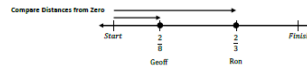
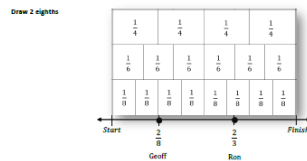
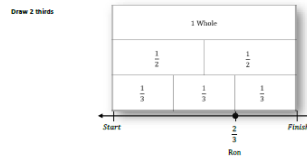
(Continued)

Compare fractions with the same numerator or same denominator (3.NF.3d)

$$\frac{3}{4} > \frac{3}{6}$$

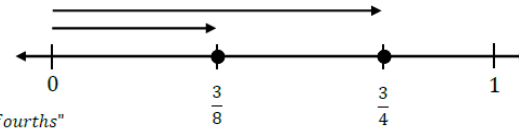


Ron and Geoff ran a 100 yard dash and one of them tripped at the beginning of the race. Ron finished two-thirds of the race during the first 8 seconds and Geoff finished two-eighths of the race during the first 8 seconds. Who is more likely to have tripped at the beginning of the race?



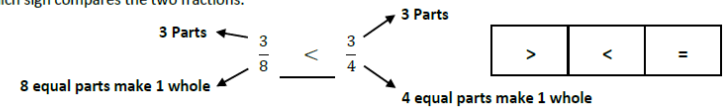
$$\frac{3}{8} < \frac{3}{4}$$

"3 eighths are less than 3 fourths"



On the Delta Math readiness screener, Jarod chose ">" as the answer to the following question:

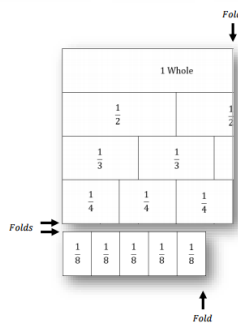
"Which sign compares the two fractions:



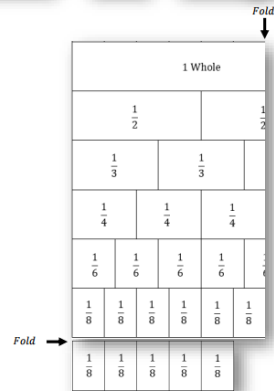
Is he correct? If not, what is the correct answer?

Compare fractions with different numerators and different denominators (4.NF.2)

$$\frac{5}{8} < \frac{3}{4}$$

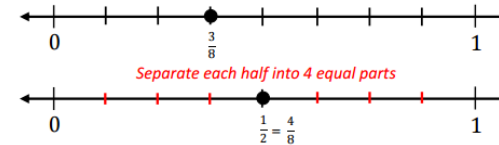


$$\frac{5}{8} < \frac{3}{4} = \frac{6}{8}$$



$$\frac{3}{8} < \frac{1}{2}$$

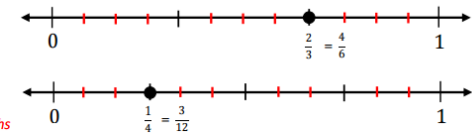
$$\frac{3}{8} < \frac{4}{8}$$



Multiply each third by 4

$$\frac{8}{12} = \frac{4 \times 2}{4 \times 3} > \frac{1 \times 3}{4 \times 3} = \frac{3}{12}$$

Eight-twelfths is greater than three-twelfths





Build/Draw/Write to Understand Mixed Numbers

(Continued)

Convert between improper fractions and mixed numbers (4.NF.3b)

Gianna is baking big brownies for her birthday party. The serving size for each brownie is $\frac{1}{4}$ of a brownie per person. If nine of her friends are invited to the party, how many brownies does she need to feed all of them?

Fold ↓

1 Whole				1 Whole				
$\frac{1}{2}$	$\frac{1}{2}$			$\frac{1}{2}$	$\frac{1}{2}$			
$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$		$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$		
$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	

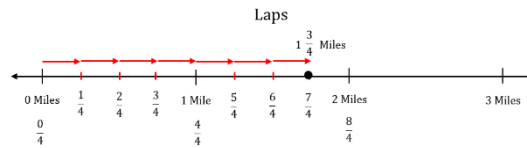
Fold →

$\frac{4}{4}$

$\frac{4}{4}$

$\frac{1}{4}$

Joe begins each track practice by jogging around the track 7 times. If each lap around the track is equal to one-quarter of a mile, how many miles does Joe run at the beginning of each practice? (Write your answer as a mixed number)

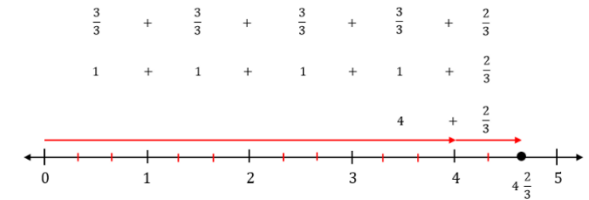


On the Delta Math readiness screener, Aubrey selected the following answer choice. Is she correct? If not, why do you think she chose her answer?

1.

The mixed number $4\frac{2}{3}$ is equivalent to which expression?

- $4 \times \frac{2}{3}$
- $\frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3}$
- $3 + \frac{2}{4}$
- $\frac{3}{3} + \frac{3}{3} + \frac{3}{3} + \frac{3}{3} + \frac{2}{3}$



Name _____ Date _____

5th Grade - RS 4 - 4.NF.3b

Learning Target: I will convert between improper fractions and mixed numbers

Session 4: Guided Practice (We Do – Teacher Notes)

We Do Together: (Teacher Actions)

- > Use your understanding of whole numbers and fractional parts to find each equivalent mixed number or improper fraction.

1.	Improper Fraction $\frac{11}{6}$ = Mixed Number $1\frac{5}{6}$	
2.	Mixed Number $2\frac{1}{2}$ = Improper Fraction $\frac{5}{2}$	
3.	Improper Fraction $\frac{12}{4}$ = Mixed Number 3	
4.	Mixed Number $1\frac{3}{8}$ = Improper Fraction $\frac{11}{8}$	
5.	Improper Fraction $\frac{8}{3}$ = Mixed Number $2\frac{2}{3}$	

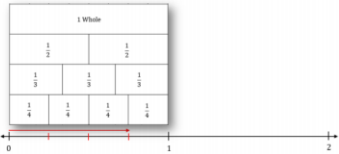
<p>1.</p> $\frac{11}{6} = \frac{6}{6} + \frac{5}{6}$ $= 1 + \frac{5}{6} = 1\frac{5}{6}$	<p>2.</p> $1\frac{5}{9} = 1 + \frac{5}{9}$ $= \frac{9}{9} + \frac{5}{9} = \frac{14}{9}$
<p>3.</p> $2\frac{1}{7} = 1 + 1 + \frac{1}{7}$ $= \frac{7}{7} + \frac{7}{7} + \frac{1}{7} = \frac{15}{7}$	<p>4.</p> $\frac{15}{5} = \frac{5}{5} + \frac{5}{5} + \frac{5}{5}$ $= 1 + 1 + 1 = 3$

Build/Draw/Write to Add and Subtract Mixed Numbers

(Continued)

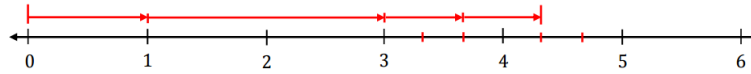
Add and subtract mixed numbers with like denominators (4.NF.3c)

Step 1: Draw $\frac{3}{4}$

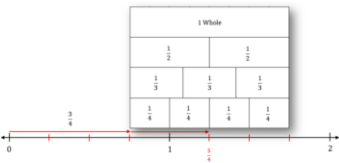


$$1\frac{2}{3} + 2\frac{2}{3} = 3\frac{4}{3} = 4\frac{1}{3}$$

- Draw and combine the wholes
- Draw and combine the fractional parts
- Simplify by grouping 3 of the thirds into another whole

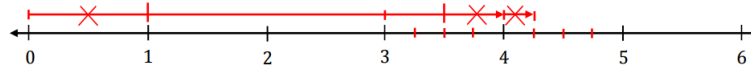


Step 2: Draw $\frac{2}{4}$ added to $\frac{3}{4}$

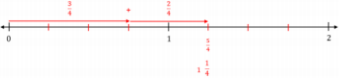


$$4\frac{1}{4} - 1\frac{3}{4} = 3\frac{2}{4} = 2\frac{1}{2}$$

- Draw the total
- Ungroup the whole between 3 and 4 to make more fourths
- Take away 3 fourths, then 1 whole
- Find how much is left and simplify 2 fourths as 1 half

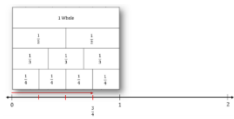


Step 3: Find the total



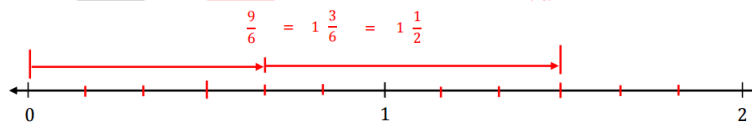
Add and subtract mixed numbers with different denominators (5.NF.1)

Step 1: Draw $\frac{3}{4}$ on the number line



$$\begin{array}{r} 2\frac{2}{3} \times 2 \\ + \frac{5}{6} \\ \hline \end{array} \quad \begin{array}{r} \frac{4}{6} \\ + \frac{5}{6} \\ \hline \end{array}$$

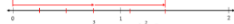
- Draw both fractional parts
- Use a common denominator to find the total (Since 6 is a multiple of 3, use sixths)
- Simplify the total



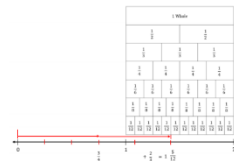
Step 2: Draw $\frac{2}{3}$ added to $\frac{3}{4}$



Step 3: Mark the total

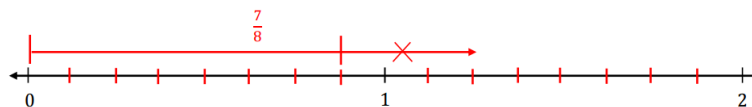


Step 4: Find the total



$$\begin{array}{r} 1\frac{1}{4} \times 2 \\ - \frac{3}{8} \\ \hline \end{array} \quad \begin{array}{r} \frac{2}{8} \\ - \frac{3}{8} \\ \hline \end{array}$$

- Draw the total
- Rewrite the problem with common denominators (Since 8 is a multiple of 4, use 8ths)
- Ungroup the whole to provide enough 8ths
- Take away the known part (3 eighths)



$$1\frac{9}{10}$$

$$1\frac{9}{10}$$

$$+ 2\frac{3}{5} \times 2$$

$$+ 2\frac{6}{10}$$

- Draw both fractional parts
- Use a common denominator to find the total (Since 6 is a multiple of 3, use sixths)
- Simplify the total

$$3\frac{15}{10} = 4\frac{5}{10} = 4\frac{1}{2}$$

$$8\frac{15}{12}$$

$$9\frac{1}{4} \times 3$$

$$\cancel{8\frac{3}{12}}$$

$$- 5\frac{2}{3} \times 4$$

$$- 5\frac{8}{12}$$

$$3\frac{7}{12}$$

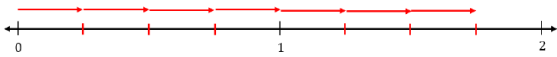
Build/Draw/Write to Multiply Fractions

(Continued)

Multiply a whole number by a fraction (4.NF.4b)

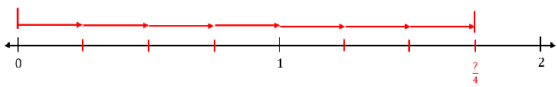
Draw 7 groups of 1-fourth

$$7 \times \frac{1}{4}$$



Identify the total

$$7 \times \frac{1}{4} = \frac{7}{4}$$



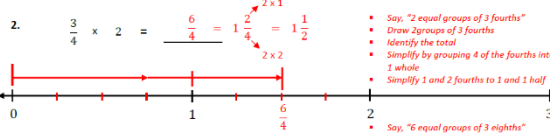
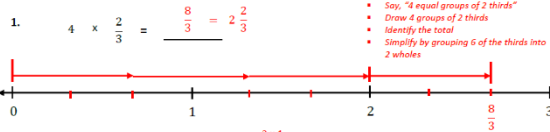
Simplify the total

$$7 \times \frac{1}{4} = \frac{7}{4} = 1 \frac{3}{4}$$



We Do Together: (Teacher Actions)

Use number lines to multiply fractions by whole numbers.

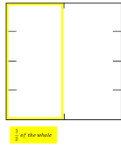


Use your understanding of multiplication as repeated addition to complete each multiplication problem.

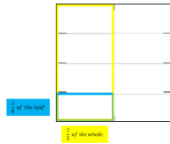
<p>2. $5 \times \frac{2}{3} = 3 \frac{1}{3}$</p> $\frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} = \frac{10}{3} = 3 \frac{1}{3}$	<p>3. $4 \times \frac{3}{7} = 1 \frac{5}{7}$</p> $\frac{3}{7} + \frac{3}{7} + \frac{3}{7} + \frac{3}{7} = \frac{12}{7} = 1 \frac{5}{7}$
<p>4. $\frac{2}{5} \times 3 = 1 \frac{1}{5}$</p> $\frac{2}{5} + \frac{2}{5} + \frac{2}{5} = \frac{6}{5} = 1 \frac{1}{5}$	<p>5. $\frac{3}{4} \times 2 = 1 \frac{1}{2}$</p> $\frac{3}{4} + \frac{3}{4} = \frac{6}{4} = 1 \frac{2}{4} = 1 \frac{1}{2}$

Multiply fractions (5.NF.4b)

Find 1 half of the whole



Find 1 fourth of the half



Find the part of the whole



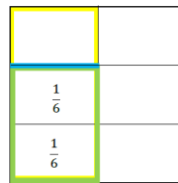
$$\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$$

Bill and Murray split a giant brownie in half to share. Bill ate two-thirds of his portion and Murray ate three-fourths of his portion. How much of the giant brownie did Bill eat?

1 Whole Giant Brownie

$$\frac{2}{3} \times \frac{1}{2} = \frac{2}{6} = \frac{1}{3}$$

$\frac{2}{3}$ of Bill's half



Bill's Half

We Do Together: (Teacher Actions)

Fold your paper to hide the math drawings. Then, multiply to find each answer and simplify, if needed. Use the drawing to check if your answer is correct.

	Find the size of each part and number of parts	Check Your Work
1. $\frac{1}{3} \times \frac{1}{4}$	$\frac{1 \times 1}{3 \times 4} = \frac{1}{12}$	
2. $\frac{1}{2} \times \frac{3}{4}$	$\frac{1 \times 3}{2 \times 4} = \frac{3}{8}$	
3. $\frac{1}{4} \times \frac{2}{3}$	$\frac{1 \times 2}{4 \times 3} = \frac{2}{12} = \frac{1}{6}$	

Build/Draw/Write to Divide Whole Numbers and Fractions

(Continued)

Divide a fraction by a whole number (5.NF.7a)

Fold and outline 1 half of the whole

$\frac{1}{2} \div 4 =$

Find 1 fourth of the half

$\frac{1}{4} \div 4 =$

Unfold and find the part of the whole

$\frac{1}{2} \div 4 = \frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$

Session 3: Guided Practice (We Do – Teacher Notes)

We Do Together: (Teacher Actions)

- Restate each division problem based on your conceptual understanding.
Example: 1 fourth equally divided 2 ways?
- Use the square guide to help you draw each problem.

1. $\frac{1}{4} \div 2 = \frac{1}{8}$

1 fourth equally divided 2 ways

2. $\frac{1}{6} \div 3 = \frac{1}{18}$

1 sixth equally divided 3 ways

3. $\frac{1}{3} \div 4 = \frac{1}{12}$

1 third equally divided 4 ways

4. $\frac{1}{8} \div 6 = \frac{1}{48}$

1 eighth equally divided 6 ways

Session 4: Guided Practice (We Do – Teacher Notes)

We Do Together: (Teacher Actions)

- Fold your paper to hide the math drawings. Then, multiply to find the answer to each division problem.
- Unfold your paper to check if your answer is correct.

	Divide Using Multiplication	Check Your Work
1. $\frac{1}{4} \div 2 = \frac{1}{8}$	$\frac{1}{4} \times \frac{1}{2} = \frac{1 \times 1}{4 \times 2} = \frac{1}{8}$	
2. $\frac{1}{6} \div 3 = \frac{1}{18}$	$\frac{1}{6} \times \frac{1}{3} = \frac{1 \times 1}{6 \times 3} = \frac{1}{18}$	
3. $\frac{1}{3} \div 4 = \frac{1}{12}$	$\frac{1}{3} \times \frac{1}{4} = \frac{1 \times 1}{3 \times 4} = \frac{1}{12}$	
4. $\frac{1}{8} \div 6 = \frac{1}{48}$	$\frac{1}{8} \times \frac{1}{6} = \frac{1 \times 1}{8 \times 6} = \frac{1}{48}$	

Divide a whole number by a fraction (5.NF.7b)

Outline 2 wholes

$2 \div \frac{1}{3} =$

Outline parts of 1 third

$2 \div \frac{1}{3} =$

Find how many parts that make 2 wholes

$2 \div \frac{1}{3} = 6$

Session 3: Guided Practice (We Do – Teacher Notes)

We Do Together: (Teacher Actions)

- Restate each division problem based on your conceptual understanding.
Example: How many groups of 1 eighth make up 3 wholes?
- Use the square guide to help you draw each problem.

1. $3 \div \frac{1}{8} = 24$

3 divided into groups of 1 eighth

2. $2 \div \frac{1}{6} = 12$

2 divided into groups of 1 sixth

Session 4: Guided Practice (We Do – Teacher Notes)

We Do Together: (Teacher Actions)

- Fold your paper to hide the math drawings. Then, multiply to find the answer to each division problem.
- Unfold your paper to check if your answer is correct.

	Divide Using Multiplication	Check Your Work
1. $4 \div \frac{1}{4} =$	$4 \times \frac{4}{1} = \frac{4 \times 4}{1 \times 1} = 16$	
2. $3 \div \frac{1}{5} =$	$3 \times \frac{5}{1} = \frac{3 \times 5}{1 \times 1} = 15$	
3. $2 \div \frac{1}{3} =$	$2 \times \frac{3}{1} = \frac{2 \times 3}{1 \times 1} = 6$	
4. $3 \div \frac{1}{6} =$	$3 \times \frac{6}{1} = \frac{3 \times 6}{1 \times 1} = 18$	



Build/Draw/Write to Multiply and Divide Fractions

(Continued)

Multiply and divide fractions (6.NS.1)



Name _____ Date _____

Learning Target: I will multiply and divide fractions

7th Grade - Readiness Standard 1 - 6.NS.1

Session 2: Guided Practice (We Do – Teacher Notes)

We Do Together: (Teacher Actions)

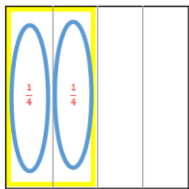
➤ Restate each problem based on your conceptual understanding.

Problem 1: How many groups of 1 fourth are in 1 half?

Problem 2: 1 half of 1 fourth is equal to what part of the whole?

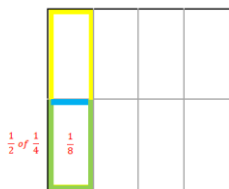
➤ Use the square guide to help you draw the fractions given in each problem.

1. $\frac{1}{2} \div \frac{1}{4} = \underline{\quad 2 \quad}$



$\frac{1}{2}$ of the whole

2. $\frac{1}{2} \times \frac{1}{4} = \underline{\frac{1}{8}}$



$\frac{1}{2}$ of $\frac{1}{4}$

$\frac{1}{4}$
1 half of 1 fourth is 1 eighth of the whole



Name _____ Date _____

Learning Target: I will multiply and divide fractions

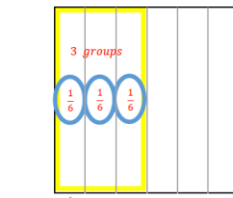
7th Grade - Readiness Standard 1 - 6.NS.1

Session 3: Guided Practice (We Do – Teacher Notes)

We Do Together: (Teacher Actions)

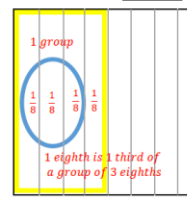
➤ Rewrite and solve each problem using common denominators. Then, use an area model to verify each answer.

1. $\frac{3}{6} \div \frac{1}{6} = \underline{\quad 3 \quad}$ groups of 1 sixth



$\frac{1}{2}$ of the whole

2. $\frac{4}{8} \div \frac{3}{8} = \underline{\quad 1 \frac{1}{3} \quad}$ groups of 3



$\frac{3}{4}$ of the whole



Name _____ Date _____

Learning Target: I will multiply and divide fractions

7th Grade - Readiness Standard 1 - 6.NS.1

Session 4: Guided Practice (We Do – Teacher Notes)

We Do Together: (Teacher Actions)

➤ Solve each problem using Levi's and his dad's methods.

	Divide Using Common Denominators	Multiply by the Reciprocal
1.	$\frac{1}{2} \div \frac{1}{6}$ $\frac{1}{2} \div \frac{1}{6} = \frac{3}{6} \div \frac{1}{6} = \frac{3 \div 1}{6 \div 6} = \frac{3}{1} = 3$	$\frac{1}{2} \times \frac{6}{1} = \frac{1 \times 6}{2 \times 1} = \frac{6}{2} = \frac{3}{1} = 3$
2.	$\frac{3}{8} \div \frac{1}{2}$ $\frac{3}{8} \div \frac{1}{2} = \frac{3}{8} \div \frac{4}{8} = \frac{3 \div 4}{8 \div 8} = \frac{3}{1} = \frac{3}{4}$	$\frac{3}{8} \times \frac{2}{1} = \frac{3 \times 2}{8 \times 1} = \frac{6}{8} = \frac{3}{4}$