



Tier 3

Intervention Lessons

5.NF.4b

Learning Target: I will multiply fractions

Readiness for 6.NS.1: Multiply and divide fractions

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Tier 3 Intervention Planning Guide

Learning Target: I will multiply fractions

Readiness for multiplying and dividing fractions

Recommended Actions	
Beginning (5 min.)	<ul style="list-style-type: none"> ➤ Review the learning target with the whole group ➤ Ask each student to set a goal for the day based on their previous Quick Check Score ➤ Have each student use a highlighter to plot their goal for the day
Middle (15 min.)	<ul style="list-style-type: none"> ➤ Model solving a word problem – “I do” (<i>Sessions 1, 3 and 6 only</i>) ➤ Guided Practice – “We do” <p>Sessions 1 and 2: Fold and highlight squares to multiply fractions</p> <p>Sessions 3, 4 and 5: Use drawings to multiply fractions</p> <p>Sessions 6, 7 and 8: Use understanding of “parts of” fractions to multiply fractions</p>
End (10 min.)	<ul style="list-style-type: none"> ➤ Bring the students back together. ➤ Ask students to reflect on their progress towards the learning target <ul style="list-style-type: none"> ○ What did I learn today about multiplying fractions? ○ How confident do I feel about multiplying fractions on my own? (Thumbs up, down, or sideways) ➤ Assess each student’s progress using the next Quick Check form ➤ Guide students to self-correct their Quick Check ➤ Guide students to chart their progress in their Growth Chart <ul style="list-style-type: none"> ○ If not using Delta Math lessons, record the activity in the table ➤ Collect each student’s Quick Check and Growth Chart
After Session 6	<ul style="list-style-type: none"> ➤ Differentiation Options: <ul style="list-style-type: none"> ○ Allow students who met the learning goal to work independently while others do the guided practice during the next session ○ Exit students who met the learning goal for a third time ➤ Problem solve with a team to plan additional support for students who do not meet the learning goal within 8 sessions



Session 1: Modeling (I Do)

Learning Target: I will multiply fractions

Readiness for multiplying and dividing fractions

Last night, Benjamin's family ate one-half of a square pizza for dinner. The next day, Benjamin ate one-fourth of the left over pizza for his lunch. How much of the whole pizza did Benjamin eat for lunch?



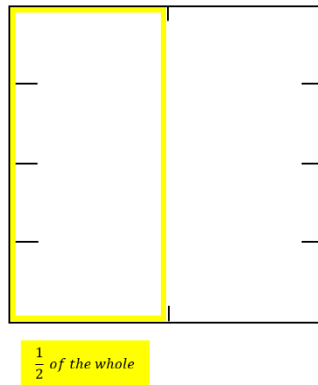
Session 1: Modeling (I Do – Visual Support)

Learning Target: I will multiply fractions

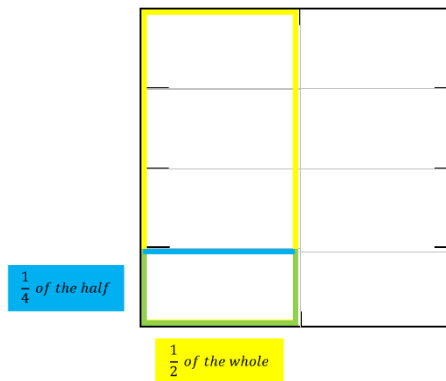
Readiness for multiplying and dividing fractions

Last night, Benjamin’s family ate one-half of a square pizza for dinner. The next day, Benjamin ate one-fourth of the left over pizza for his lunch. How much of the whole pizza did Benjamin eat for lunch?

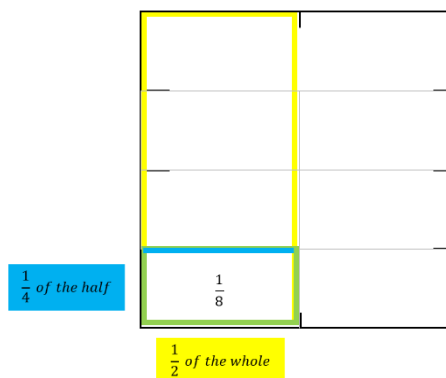
Find 1 half of the whole



Find 1 fourth of the half



Find the part of the whole



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

Session 1: Modeling (I Do - Teacher Notes)

Learning Target: I will multiply fractions

Readiness for multiplying and dividing fractions

Last night, Benjamin’s family ate one-half of a square pizza for dinner. The next day, Benjamin ate one-fourth of the left over pizza for his lunch. How much of the whole pizza did Benjamin eat for lunch?

I am going to think aloud to model solving this problem.

Your job is to watch, listen, think and ask questions.

First, it is important to know what the problem is about.

This problem is about Benjamin eating left-over pizza for lunch.

Second, I need to determine what I need to find.

I need to find how much of the original pizza he ate for lunch.

Third, I need to determine what I know.

I know that he ate 1-fourth of 1-half of the pizza.

Fourth, I need to figure out what I can try.

I am going to try modelling this situation using a square piece of paper.

(Hold up a paper square, use upper right square on page 10, and write the multiplication problem.)

I will begin by folding the square in half to represent the half of the pizza that was not eaten at dinner.

(Fold the square in half and outline it using a yellow highlighter. Open the paper to show students that the highlighted area is half of the whole. Fold it back again to show the highlighted half for the next step.)

Now I need to find 1 fourth of the half.

(Fold the half into fourths, see drawing on page 8, and outline the bottom fourth using blue highlighter.)

This bottom section represents the pizza that Benjamin ate...we need to find it’s fractional part of the whole.

(Open the paper to reveal the whole.)

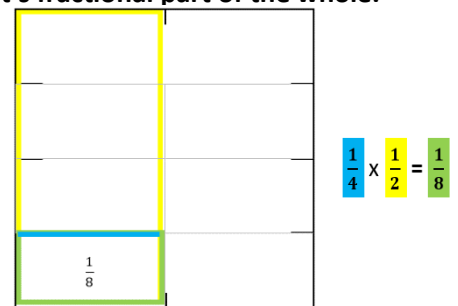
I see that the whole is made up of 8 parts that are all equal to how much Benjamin ate for lunch.

(Trace over the folds with a pencil and count the 8 sections.)

Therefore, this section is equal to 1 eighth of the whole.

(Point to the section and write $\frac{1}{8}$ inside of it.)

It looks like Benjamin ate 1 eighth of the whole pizza for lunch.



Last, I need to make sure that my answer makes sense.

I found that Benjamin ate 1 eighth of the whole pizza for lunch. It makes sense because I represented the pizza with a paper square and folded it to find how much of the whole he ate for lunch.

Finding 1 fourth of 1 half can be represented symbolically with the multiplication problem $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$.

(Write the equation and highlight each fraction.)

During our guided practice, we will use fraction squares as tools to multiply fractions together.



Squares for Multiplying (Set 1)

Directions: Provide each student 2 sheets of squares for the Guided Practice.

Note: The teacher may use the upper right square for the Modeling problem.

(We Do Together, problems 1-4)

			Use for Problem 1				Use for Problem 2
			Use for Problem 3				Use for Problem 4



Squares for Multiplying (Set 2)

Directions: Provide each student 2 sheets of squares for the Guided Practice.

(You Do Together, problems 5-8)

<p>Use for Problem 5</p>	<p>Use for Problem 6</p>
<p>Use for Problem 7</p>	<p>Use for Problem 8</p>



Name _____

Date _____

Learning Target: I will multiply fractions

Session 1: Guided Practice (We Do)

Materials:

- Templates for Squares (2 sheets per student)
- 1 yellow and 1 blue highlighter per student

We Do Together: (Teacher Actions)

- Restate each fraction multiplication problem based on your conceptual understanding.
- Fold and highlight fraction squares to find each answer.

1. $\frac{1}{3} \times \frac{1}{4}$	2. $\frac{1}{2} \times \frac{1}{4}$
3. $\frac{1}{4} \times \frac{2}{3}$	4. $\frac{3}{4} \times \frac{1}{3}$

You Do Together: (As a class, or in small groups)

- Students take turns leading to multiply fractions.

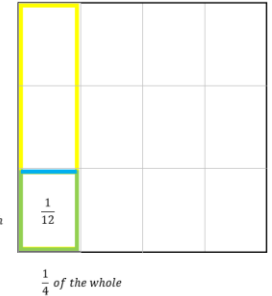
5. $\frac{1}{3} \times \frac{2}{4}$	6. $\frac{1}{2} \times \frac{3}{4}$
7. $\frac{1}{3} \times \frac{3}{4}$	8. $\frac{2}{3} \times \frac{3}{4}$

Learning Target: I will multiply fractions

Session 1: Guided Practice (We Do – Teacher Notes)

Materials:

- Square sheets of paper (8 per student)
- 1 yellow and 1 blue highlighter per student



We Do Together: (Teacher Actions)

- Restate each fraction multiplication problem based on your conceptual understanding.
- Fold and highlight fraction squares to find each answer.

<p>1.</p> $\frac{1}{3} \times \frac{1}{4} = \frac{1}{12}$ <p><i>1 third of 1 fourth is how much of the whole?</i></p>	<p>2.</p> $\frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$ <p><i>1 half of 1 fourth is how much of the whole?</i></p>
<p>3.</p> $\frac{1}{4} \times \frac{2}{3} = \frac{2}{12} = \frac{1}{6}$ <p><i>1 fourth of 2 thirds is how much of the whole?</i></p>	<p>4.</p> $\frac{3}{4} \times \frac{1}{3} = \frac{3}{12} = \frac{1}{4}$ <p><i>3 fourths of 1 third is how much of the whole?</i></p>

You Do Together: (As a class, or in small groups)

- Students take turns leading to create 2 examples and 1 non-example for each sharing situation.

<p>5.</p> $\frac{1}{3} \times \frac{2}{4} = \frac{2}{12} = \frac{1}{6}$ <p><i>1 third of 2 fourths is how much of the whole?</i></p>	<p>6.</p> $\frac{1}{2} \times \frac{3}{4} = \frac{3}{8}$ <p><i>1 half of 3 fourths is how much of the whole?</i></p>
<p>7.</p> $\frac{1}{3} \times \frac{3}{4} = \frac{3}{12} = \frac{1}{4}$ <p><i>1 third of 3 fourths is how much of the whole?</i></p>	<p>8.</p> $\frac{2}{3} \times \frac{3}{4} = \frac{6}{12} = \frac{1}{2}$ <p><i>2 thirds of 3 fourths is how much of the whole?</i></p>



Session 1: Self-Reflection

Learning Target: I will multiply fractions

Briefly discuss student responses:

- What did I learn today about multiplying fractions?

- How confident do I feel about multiplying fractions on my own?
(Thumbs up, down, or sideways)



Quick Check - Form A

Name _____ Date _____

Learning Target: I will multiply fractions.

Directions: Write the answer to each problem. (Work time: 4 minutes)

1.

$$\frac{2}{3} \times \frac{1}{5} = \underline{\hspace{2cm}}$$

2.

$$\frac{1}{5} \times \frac{3}{8} = \underline{\hspace{2cm}}$$

3.

$$\frac{6}{7} \times \frac{2}{5} = \underline{\hspace{2cm}}$$

4.

$$\frac{7}{8} \times \frac{4}{9} = \underline{\hspace{2cm}}$$

5.

$$\frac{5}{9} \times \frac{3}{10} = \underline{\hspace{2cm}}$$

6.

$$\frac{3}{4} \times \frac{4}{5} = \underline{\hspace{2cm}}$$

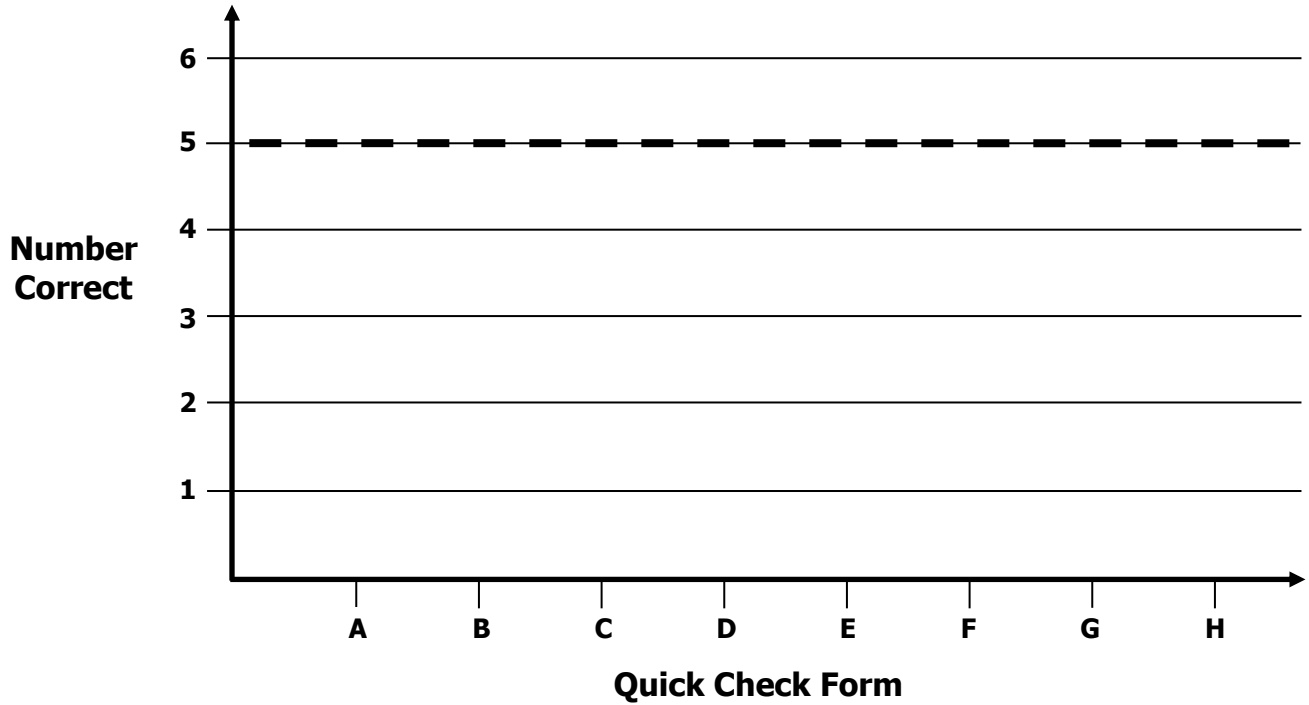


Growth Chart

Name _____ Date _____

Learning Target: I will multiply fractions.

Goal: 5 out of 6 correct



Intervention	Date	Score
Session 1:		
Session 2:		
Session 3:		
Session 4:		
Session 5:		
Session 6:		
Session 7:		
Session 8:		



Name _____

Date _____

Learning Target: I will multiply fractions

Session 2: Guided Practice (We Do)

Materials:

- Templates for Squares (2 sheets per student)
- 1 yellow and 1 blue highlighter per student

We Do Together: (Teacher Actions)

- Restate each fraction multiplication problem based on your conceptual understanding.
- Fold and highlight fraction squares to find each answer.

1. $\frac{1}{3} \times \frac{2}{4}$	2. $\frac{1}{2} \times \frac{3}{4}$
3. $\frac{1}{3} \times \frac{3}{4}$	4. $\frac{2}{3} \times \frac{3}{4}$

You Do Together: (As a class, or in small groups)

- Students take turns leading to multiply fractions.

5. $\frac{1}{3} \times \frac{1}{4}$	6. $\frac{1}{2} \times \frac{1}{4}$
7. $\frac{1}{4} \times \frac{2}{3}$	8. $\frac{3}{4} \times \frac{1}{3}$



Squares for Multiplying (Set 1)

Directions: Provide each student 2 sheets of squares for the Guided Practice.

(You Do Together, problems 1-4)

<p>Use for Problem 1</p>	<p>Use for Problem 2</p>
<p>Use for Problem 3</p>	<p>Use for Problem 4</p>



Squares for Multiplying (Set 2)

(We Do Together, problems 5-8)

<p>Use for Problem 5</p>	<p>Use for Problem 6</p>
<p>Use for Problem 7</p>	<p>Use for Problem 8</p>



Session 2: Self-Reflection

Learning Target: I will multiply fractions

Briefly discuss student responses:

- What did I learn today about multiplying fractions?

- How confident do I feel about multiplying fractions on my own?
(Thumbs up, down, or sideways)



Quick Check - Form B

Name _____ Date _____

Learning Target: I will multiply fractions.

Directions: Write the answer to each problem. (Work time: 4 minutes)

1.

$$\frac{1}{3} \times \frac{2}{3} = \underline{\hspace{2cm}}$$

2.

$$\frac{1}{5} \times \frac{1}{6} = \underline{\hspace{2cm}}$$

3.

$$\frac{8}{9} \times \frac{2}{5} = \underline{\hspace{2cm}}$$

4.

$$\frac{2}{9} \times \frac{3}{4} = \underline{\hspace{2cm}}$$

5.

$$\frac{3}{10} \times \frac{6}{7} = \underline{\hspace{2cm}}$$

6.

$$\frac{3}{4} \times \frac{2}{3} = \underline{\hspace{2cm}}$$

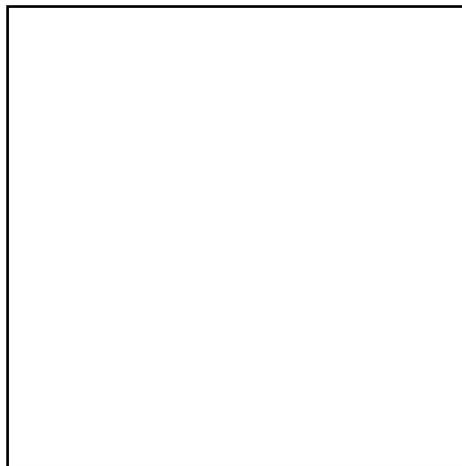


Session 3: Modeling (I Do)

Learning Target: I will multiply fractions

Readiness for multiplying and dividing fractions

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?



Session 3: Modeling (I Do – Visual Support)

Learning Target: I will multiply fractions

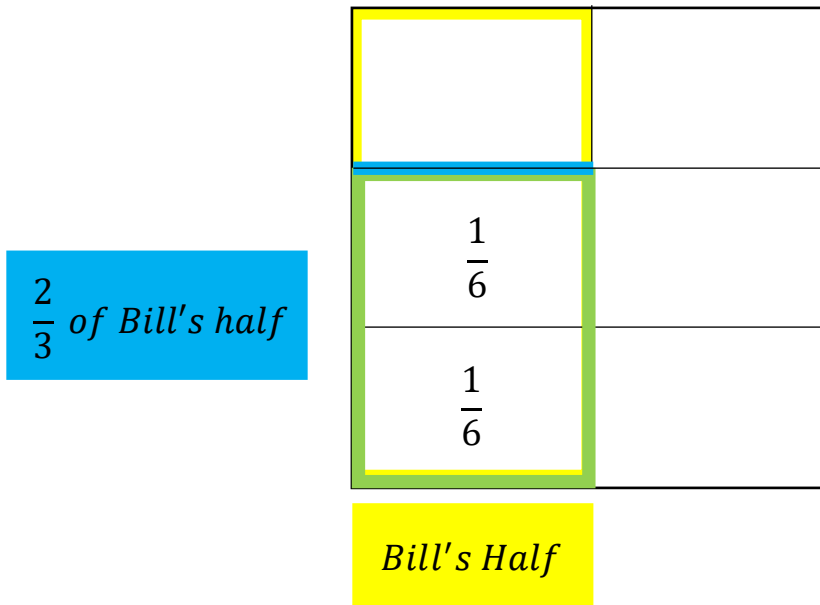
Readiness for multiplying and dividing fractions

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

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

$\begin{matrix} \nearrow 2 \times 1 \\ \searrow 2 \times 3 \end{matrix}$



Session 3: Modeling (I Do - Teacher Notes)

Learning Target: I will multiply fractions

Readiness for multiplying and dividing fractions

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?

I am going to think aloud to model solving this problem.

Your job is to watch, listen, think and ask questions.

First, it is important to know what the problem is about.

This problem is about Bill and Murray sharing a giant brownie.

Second, I need to determine what I need to find.

I need to find how much of the giant brownie Bill ate.

Third, I need to determine what I know.

I know that Bill ate 2 thirds of his half of the brownie.

Fourth, I need to figure out what I can try.

I am going to try using an area drawing to find the part of the whole.

(Write the multiplication problem above the square.)

I will begin by representing Bill's half of the brownie.

(Use the guide for drawing fractions and draw a line separating the 2 halves, outline the left half with a yellow highlighter and label it as "Bill's Half".)

Now I need to find 2 thirds of Bill's half.

(Use the guide for drawing fractions and draw 2 lines that separate Bill's half into 3 equal parts, outline it with a blue highlighter and label it as " $\frac{2}{3}$ of Bill's Half".)

To see what part of the whole this is, I will extend the horizontal lines. (Extend the vertical lines as dotted lines.)

Since the whole is made up of 6 equal parts, then each part is equal to 1 sixth.

(Write " $\frac{1}{6}$ " in the bottom left section.)

And, since Bill ate 2 of the parts, then he ate 2 sixths of the whole brownie.

(Write " $\frac{2}{6}$ " as the answer to the problem above.)

2 sixths can be simplified because the numerator and denominator have a common factor of 2.

(Draw an arrow and write "2 x" next to the numerator and denominator)

The numerator is equal to 2 times 1 and the denominator is equal to 2 times 3.

(Complete the expressions "2 x 1" by the numerator and "2 x 3" by the denominator.)

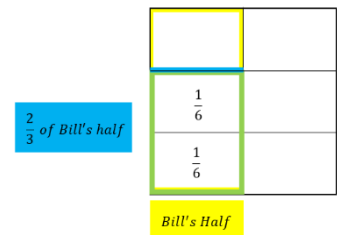
So, 2 sixths is simplified to 1 third. (Write the answer $\frac{1}{3}$.)

Last, I need to make sure that my answer makes sense.

I found that Bill ate 1 third of the whole brownie. It makes sense because I represented the brownie with a square and separated it into fractional parts to find how much of the whole he ate.

1 Whole Giant Brownie

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

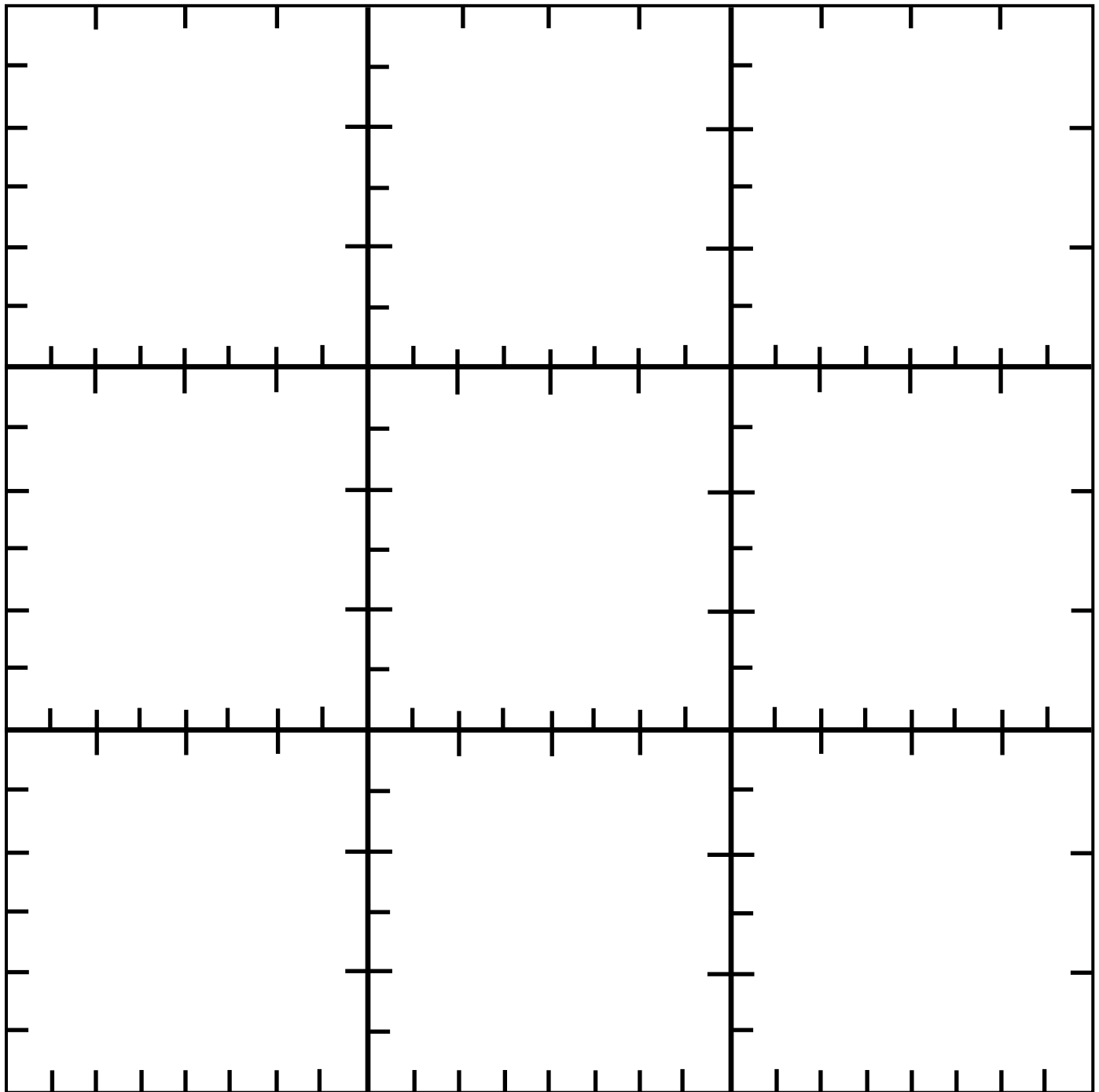




Guides for Drawing Fractions

Directions: Copy on cardstock and cut out 1 square per student.

Note: The sides of each square provide a guide to draw thirds, fourths, sixths and eighths.
Rotate the square to use the side required for each problem.



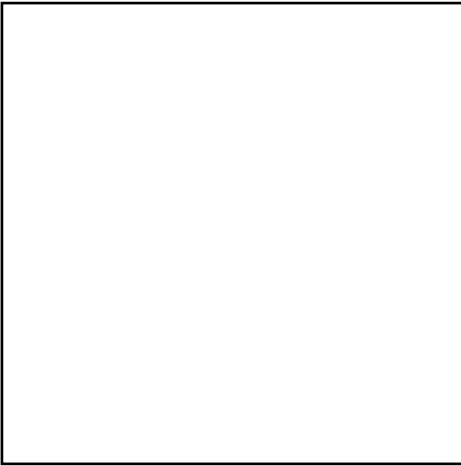
Learning Target: I will multiply fractions

Session 3: Guided Practice (We Do)

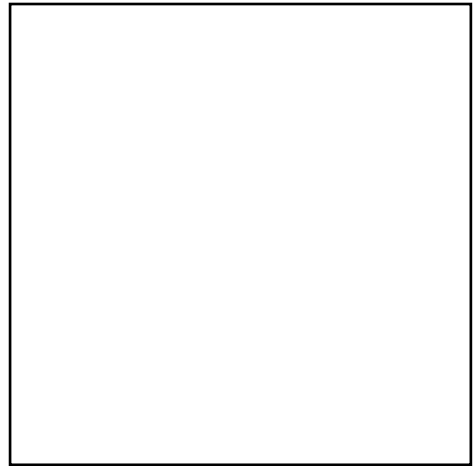
We Do Together: (Teacher Actions)

- Restate each fraction multiplication problem based on your conceptual understanding.
Example: 1 third 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.

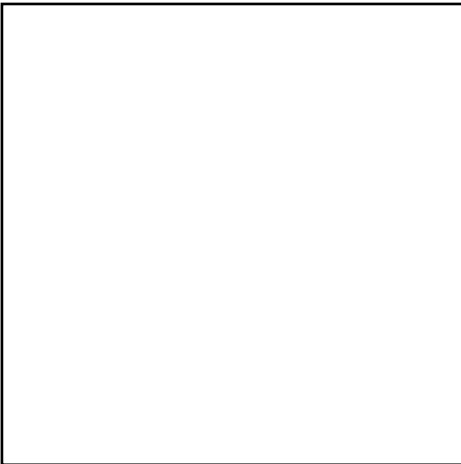
1. $\frac{1}{3} \times \frac{1}{4} =$ _____



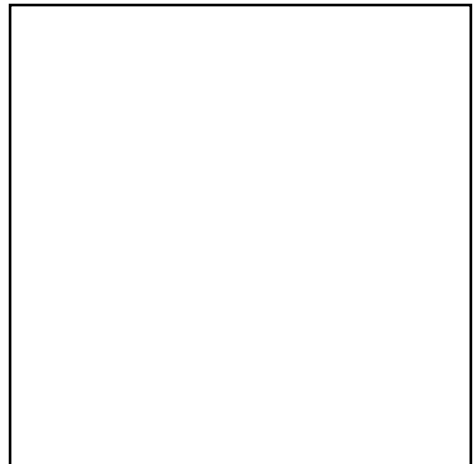
2. $\frac{1}{2} \times \frac{1}{6} =$ _____



3. $\frac{1}{4} \times \frac{2}{3} =$ _____



4. $\frac{3}{4} \times \frac{5}{8} =$ _____



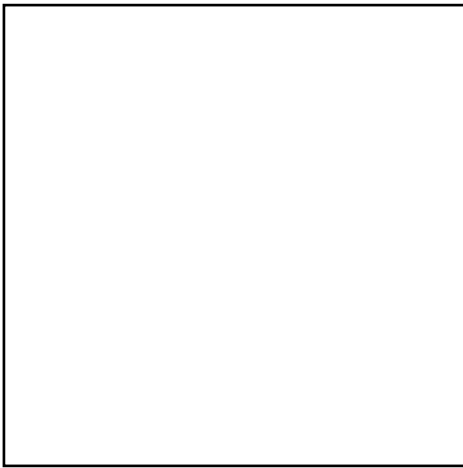
Learning Target: I will multiply fractions

Session 3: Guided Practice (We Do Continued)

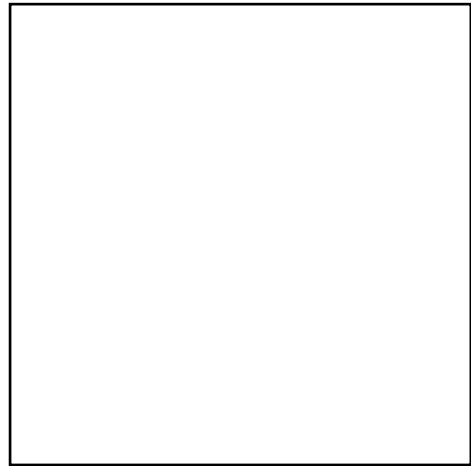
You Do Together: (As a class, or in small groups)

- Students take turns restating each fraction multiplication problem.
- Use the square guide to help you draw the fractions given in each problem.

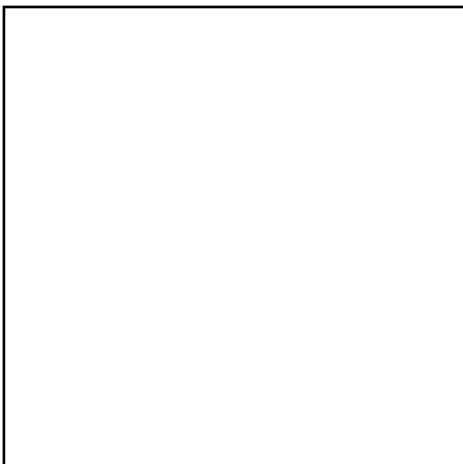
5. $\frac{1}{4} \times \frac{1}{2} =$ _____



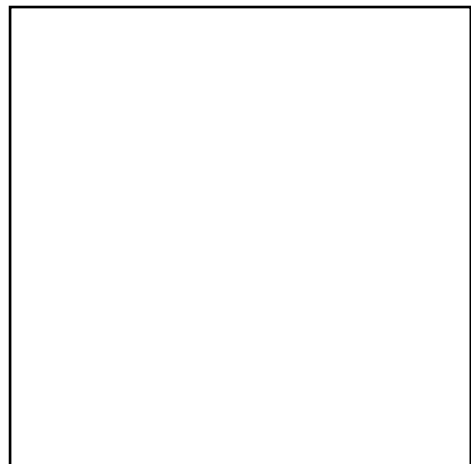
6. $\frac{1}{2} \times \frac{1}{3} =$ _____



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



8. $\frac{3}{4} \times \frac{2}{3} =$ _____



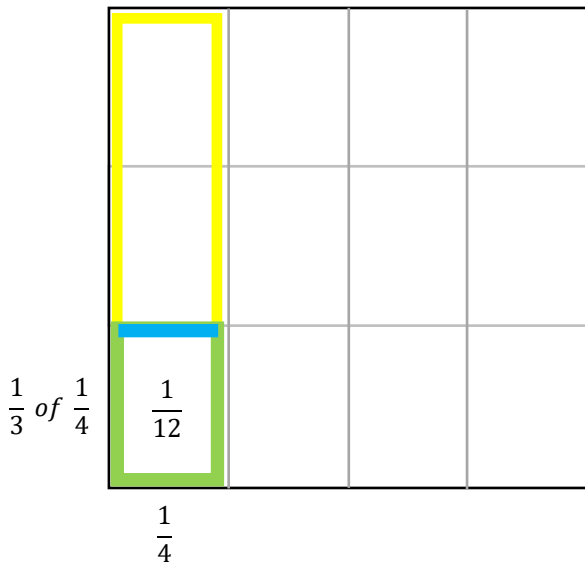
Learning Target: I will multiply fractions

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

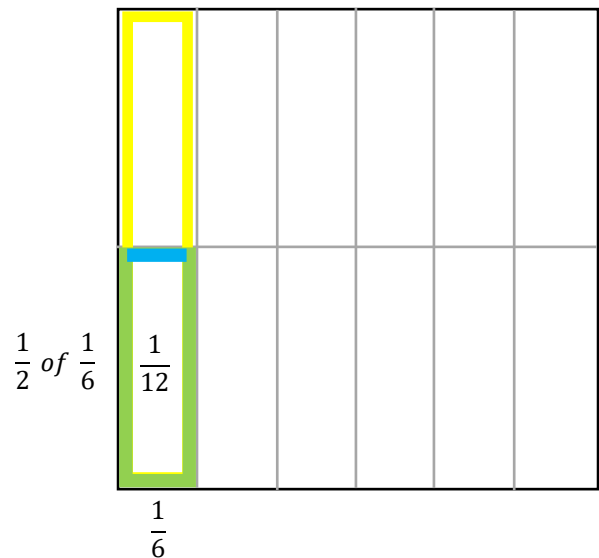
We Do Together: (Teacher Actions)

- Restate each fraction multiplication problem based on your conceptual understanding.
Example: 1 third of 1 fourth is equal to what part of the whole?
- Use the square below to find each answer.

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

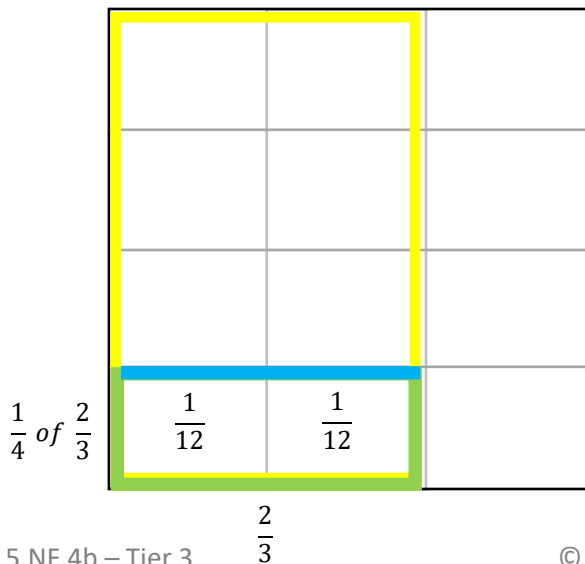


2. $\frac{1}{2} \times \frac{1}{6} = \frac{1}{12}$

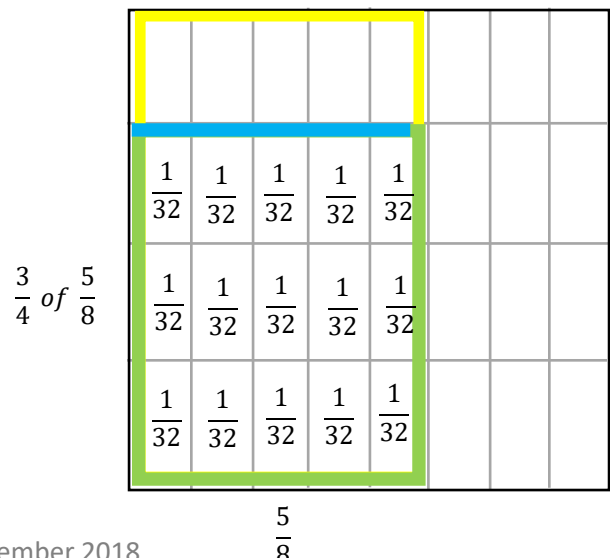


3. $\frac{1}{4} \times \frac{2}{3} = \frac{2}{12} = \frac{1}{6}$

(Red arrows point from 2 to 2x1 and 12 to 2x6)



4. $\frac{3}{4} \times \frac{5}{8} = \frac{15}{32}$





Session 3: Self-Reflection

Learning Target: I will multiply fractions

Briefly discuss student responses:

- What did I learn today about multiplying fractions?

- How confident do I feel about multiplying fractions on my own?
(Thumbs up, down, or sideways)



Quick Check - Form C

Name _____ Date _____

Learning Target: I will multiply fractions.

Directions: Write the answer to each problem. (Work time: 4 minutes)

1.

$$\frac{3}{4} \times \frac{3}{5} = \underline{\hspace{2cm}}$$

2.

$$\frac{4}{5} \times \frac{1}{2} = \underline{\hspace{2cm}}$$

3.

$$\frac{5}{7} \times \frac{2}{5} = \underline{\hspace{2cm}}$$

4.

$$\frac{3}{10} \times \frac{5}{6} = \underline{\hspace{2cm}}$$

5.

$$\frac{6}{7} \times \frac{3}{8} = \underline{\hspace{2cm}}$$

6.

$$\frac{3}{5} \times \frac{5}{5} = \underline{\hspace{2cm}}$$

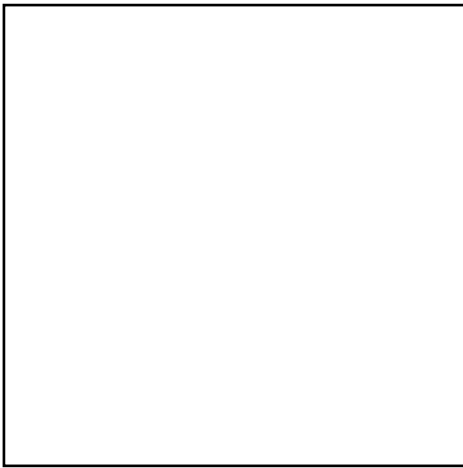
Learning Target: I will multiply fractions

Session 4: Guided Practice (We Do)

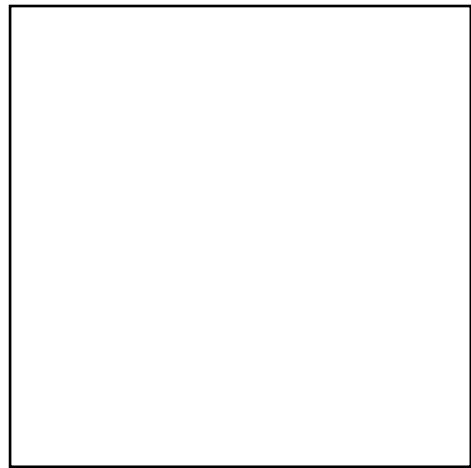
We Do Together: (Teacher Actions)

- Restate each fraction multiplication problem based on your conceptual understanding.
Example: 1 third 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.

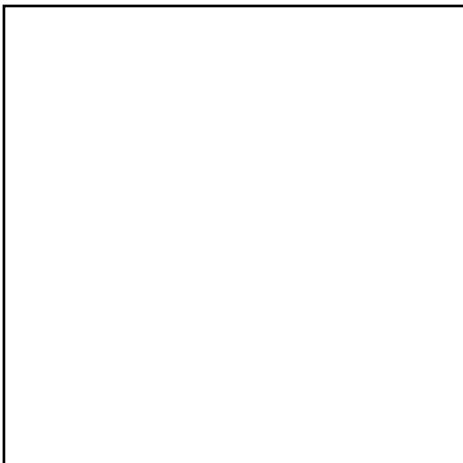
1. $\frac{2}{3} \times \frac{1}{4} =$ _____



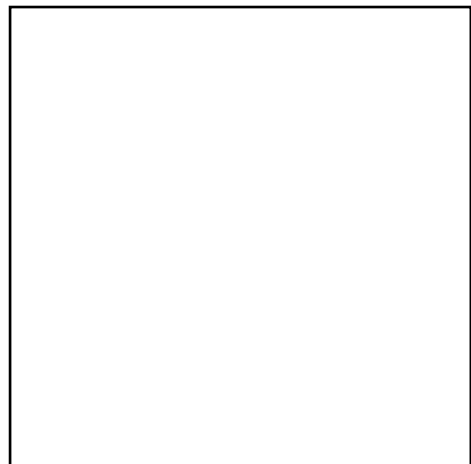
2. $\frac{1}{2} \times \frac{5}{6} =$ _____



3. $\frac{3}{4} \times \frac{2}{3} =$ _____



4. $\frac{1}{4} \times \frac{5}{8} =$ _____



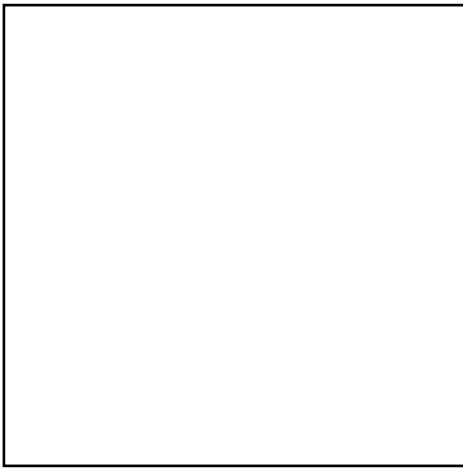
Learning Target: I will multiply fractions

Session 4: Guided Practice (We Do Continued)

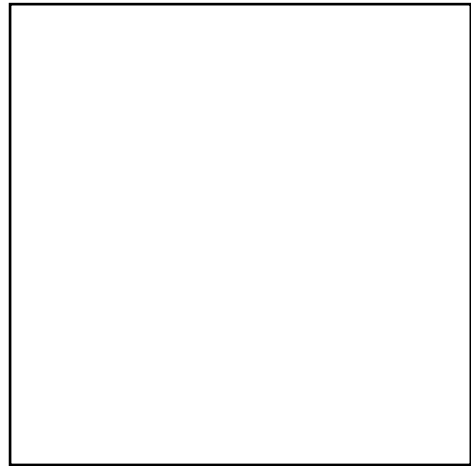
You Do Together: (As a class, or in small groups)

- Students take turns restating each fraction multiplication problem.
- Use the square guide to help you draw the fractions given in each problem.

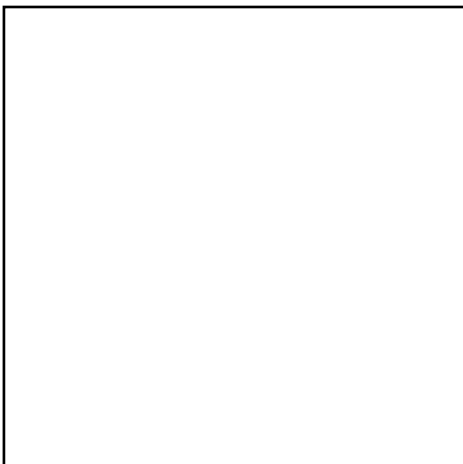
5. $\frac{1}{6} \times \frac{3}{4} =$ _____



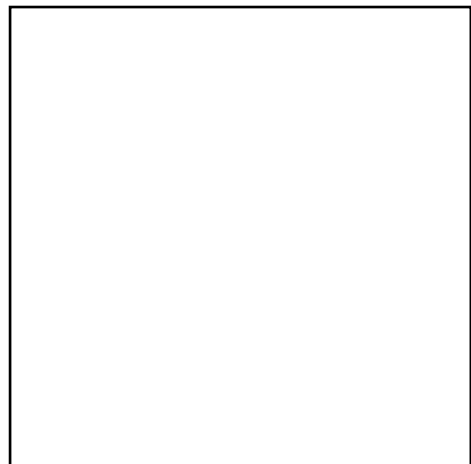
6. $\frac{1}{2} \times \frac{2}{3} =$ _____



7. $\frac{2}{3} \times \frac{3}{4} =$ _____



8. $\frac{3}{4} \times \frac{7}{8} =$ _____





Session 4: Self-Reflection

Learning Target: I will multiply fractions

Briefly discuss student responses:

- What did I learn today about multiplying fractions?

- How confident do I feel about multiplying fractions on my own?
(Thumbs up, down, or sideways)



Quick Check - Form D

Name _____ Date _____

Learning Target: I will multiply fractions.

Directions: Write the answer to each problem. (Work time: 4 minutes)

1.

$$\frac{1}{4} \times \frac{3}{5} = \underline{\hspace{2cm}}$$

2.

$$\frac{2}{5} \times \frac{2}{3} = \underline{\hspace{2cm}}$$

3.

$$\frac{5}{6} \times \frac{4}{5} = \underline{\hspace{2cm}}$$

4.

$$\frac{7}{10} \times \frac{3}{4} = \underline{\hspace{2cm}}$$

5.

$$\frac{8}{9} \times \frac{2}{4} = \underline{\hspace{2cm}}$$

6.

$$\frac{2}{3} \times \frac{3}{5} = \underline{\hspace{2cm}}$$

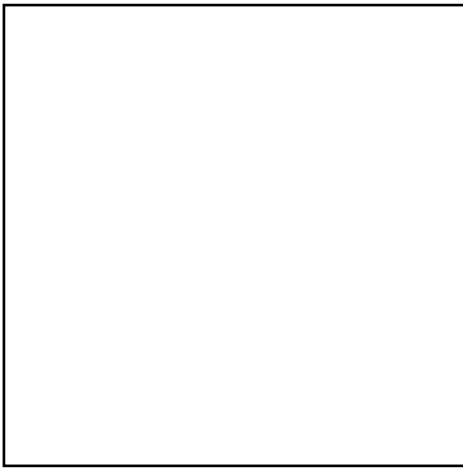
Learning Target: I will multiply fractions

Session 5: Guided Practice (We Do)

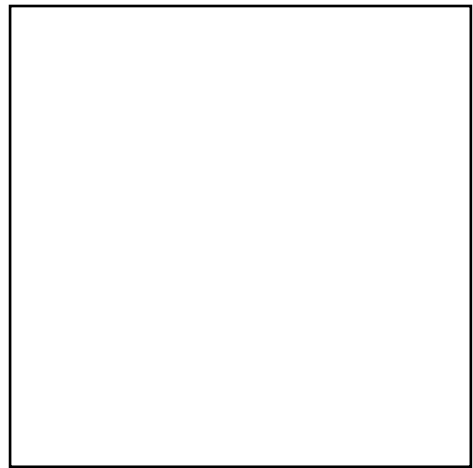
We Do Together: (Teacher Actions)

- Restate each fraction multiplication problem based on your conceptual understanding.
Example: 1 third 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.

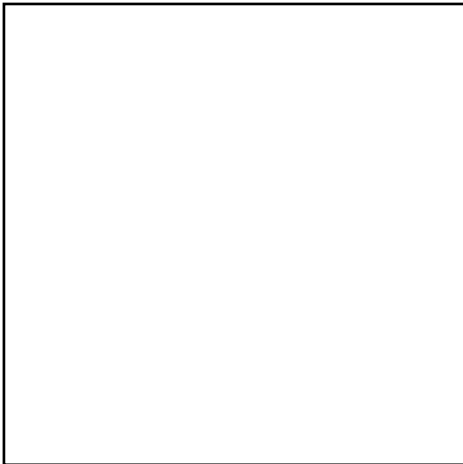
1. $\frac{1}{3} \times \frac{3}{4} =$ _____



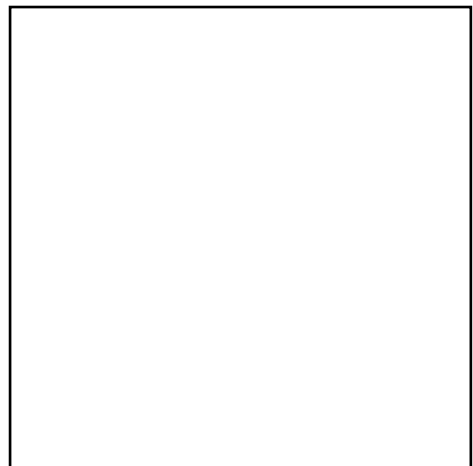
2. $\frac{3}{4} \times \frac{1}{6} =$ _____



3. $\frac{1}{4} \times \frac{7}{8} =$ _____



4. $\frac{2}{3} \times \frac{5}{6} =$ _____



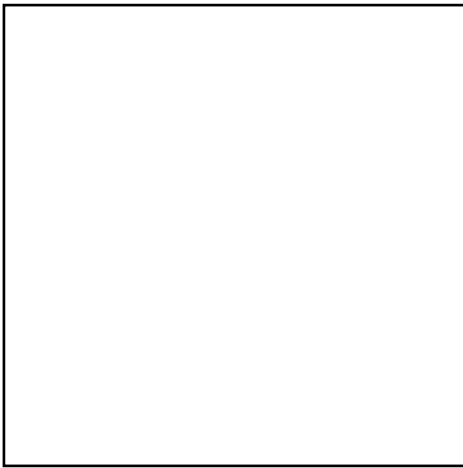
Learning Target: I will multiply fractions

Session 5: Guided Practice (We Do Continued)

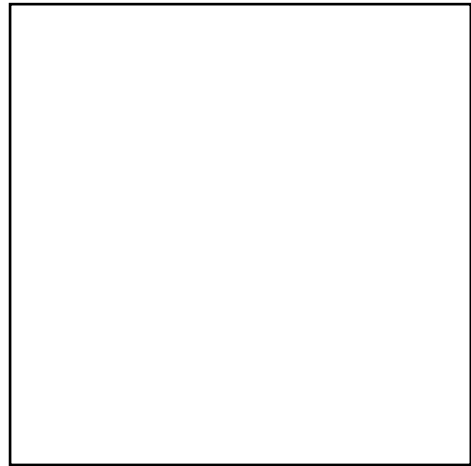
You Do Together: (As a class, or in small groups)

- Students take turns restating each fraction multiplication problem.
- Use the square guide to help you draw the fractions given in each problem.

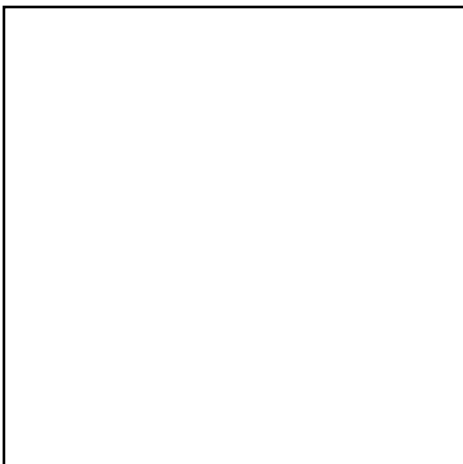
5. $\frac{1}{4} \times \frac{2}{3} =$ _____



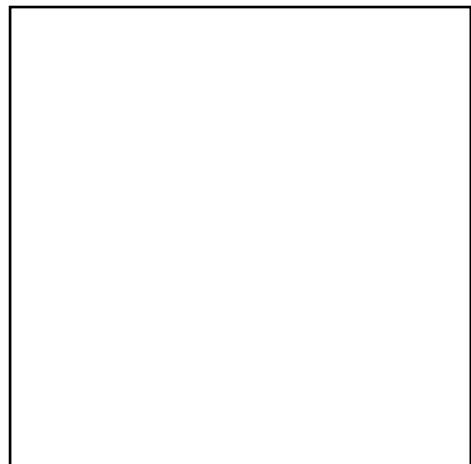
6. $\frac{1}{2} \times \frac{3}{4} =$ _____



7. $\frac{1}{3} \times \frac{5}{8} =$ _____



8. $\frac{3}{4} \times \frac{5}{6} =$ _____





Session 5: Self-Reflection

Learning Target: I will multiply fractions

Briefly discuss student responses:

- What did I learn today about multiplying fractions?

- How confident do I feel about multiplying fractions on my own?
(Thumbs up, down, or sideways)



Quick Check - Form E

Name _____ Date _____

Learning Target: I will multiply fractions.

Directions: Write the answer to each problem. (Work time: 4 minutes)

1.

$$\frac{2}{3} \times \frac{1}{5} = \underline{\hspace{2cm}}$$

2.

$$\frac{1}{5} \times \frac{3}{8} = \underline{\hspace{2cm}}$$

3.

$$\frac{6}{7} \times \frac{2}{5} = \underline{\hspace{2cm}}$$

4.

$$\frac{7}{8} \times \frac{4}{9} = \underline{\hspace{2cm}}$$

5.

$$\frac{5}{9} \times \frac{3}{10} = \underline{\hspace{2cm}}$$

6.

$$\frac{3}{4} \times \frac{4}{5} = \underline{\hspace{2cm}}$$

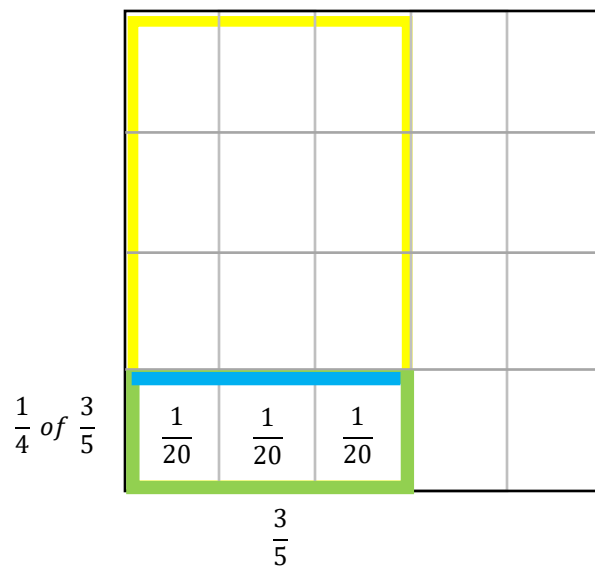
Session 6: Modeling (I Do)

Learning Target: I will multiply fractions

Readiness for multiplying and dividing fractions

Jenn used an area drawing to find the answer to $\frac{1}{4} \times \frac{3}{5}$. Look for structure in her drawing that would help you multiply fractions without making a drawing.

$$\frac{1}{4} \times \frac{3}{5} = \frac{3}{20}$$



Session 6: Modeling (I Do – Visual Support)

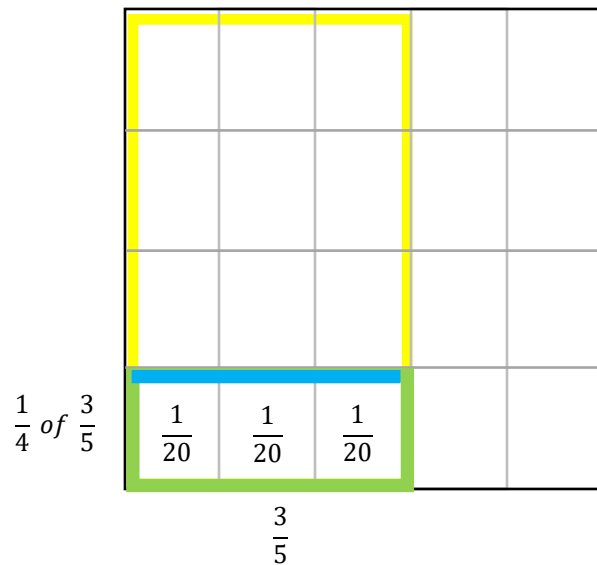
Learning Target: I will multiply fractions

Readiness for multiplying and dividing fractions

Jenn used an area drawing to find the answer to $\frac{1}{4} \times \frac{3}{5}$. Look for structure in her drawing that would help you multiply fractions without making a drawing.

$$\frac{1}{4} \times \frac{3}{5} = \frac{3}{20} = \frac{1 \times 3}{4 \times 5}$$

Number of parts
↓
1 × 3
4 × 5
↑
Size of each part



Session 6: Modeling (I Do - Teacher Notes)

Learning Target: I will multiply fractions

Readiness for multiplying and dividing fractions

Jenn used an area drawing to find the answer to $\frac{1}{4} \times \frac{3}{5}$. Look for structure in her drawing that would help you multiply fractions without making a drawing.

I am going to think aloud to model solving this problem.

Your job is to watch, listen, think and ask questions.

First, it is important to know what the problem is about.

This problem is about Jenn using an area drawing to multiply fractions.

Second, I need to determine what I need to find.

I need to find structure in the drawing to help multiply fractions without making a drawing.

Third, I need to determine what I know.

I know that 1 fourth times 3 fifths is the same as finding 1 fourth of 3 fifths.

Fourth, I need to figure out what I can try.

I am going to try looking for structure in the drawing.

I see that the size of each part in the answer is twentieths.

(Point to the 3 twentieths in the drawing.)

I notice that multiplying the denominators, 4 and 5, is equal to 20.

(Write “= $\frac{\quad}{4 \times 5}$ ” next to the problem.)

The multiplication problem “4 times 5” can also be seen in the drawing.

(Point to the 4 parts separated horizontally and the 5 parts separated vertically.)

Also, I see that the number of parts in the answer is 3.

(Point and count each of the 3 twentieths in the drawing.)

I also notice that multiplying the numerators, 1 and 3 is equal to 3.

(Write the numerators “1 x 3” next to the problem.)

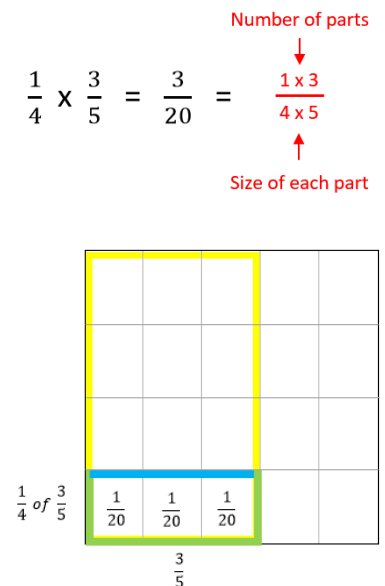
The multiplication problem “1 times 3” can also be seen in the drawing.

(Point to the 1 by 3 rectangle that represents the answer.)

So, anytime I need to multiply two fractions I can always multiply the denominators together to find the size of the parts in the answer, then the numerators to find the number of parts.

Last, I need to make sure that my answer makes sense.

I found that I might be able to multiply fractions without using a drawing. It makes sense because the denominators tell us how many parts make up a whole and the numerators tell us how many parts we have... let's see if it works for the guided practice problems.



Learning Target: I will multiply fractions

Session 6: Guided Practice (We Do)

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. $\frac{1}{3} \times \frac{1}{4}$		
2. $\frac{1}{2} \times \frac{3}{4}$		
3. $\frac{1}{4} \times \frac{2}{3}$		
4. $\frac{3}{4} \times \frac{4}{5}$		

Learning Target: I will multiply fractions

Session 6: Guided Practice (We Do - Continued)

You Do Together: (As a class, or in small groups)

- Fold your paper to hide the math drawings.
- Students take turns leading to multiply fractions, simplify answers if needed and check your work.

	Find the size of each part and number of parts	Check Your Work
5. $\frac{1}{4} \times \frac{1}{2}$		
6. $\frac{1}{2} \times \frac{3}{5}$		
7. $\frac{3}{4} \times \frac{2}{3}$		
8. $\frac{2}{3} \times \frac{7}{8}$		

Learning Target: I will multiply fractions

Session 6: Guided Practice (We Do – Teacher Notes)

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. $\frac{1}{4} \times \frac{2}{3}$	$\frac{1 \times 2}{4 \times 3} = \frac{2}{12} = \frac{1}{6}$ <p style="text-align: center;"> $\begin{matrix} & \nearrow 2 \times 1 \\ & \searrow 2 \times 6 \end{matrix}$ </p>	
4. $\frac{3}{4} \times \frac{4}{5}$	$\frac{3 \times 4}{4 \times 5} = \frac{12}{20} = \frac{3}{5}$ <p style="text-align: center;"> $\begin{matrix} & \nearrow 4 \times 3 \\ & \searrow 4 \times 5 \end{matrix}$ </p>	



Session 6: Self-Reflection

Learning Target: I will multiply fractions

Briefly discuss student responses:

- What did I learn today about multiplying fractions?

- How confident do I feel about multiplying fractions on my own?
(Thumbs up, down, or sideways)



Quick Check - Form F

Name _____ Date _____

Learning Target: I will multiply fractions.

Directions: Write the answer to each problem. (Work time: 4 minutes)

1.

$$\frac{1}{3} \times \frac{2}{3} = \underline{\hspace{2cm}}$$

2.

$$\frac{1}{5} \times \frac{1}{6} = \underline{\hspace{2cm}}$$

3.

$$\frac{8}{9} \times \frac{2}{5} = \underline{\hspace{2cm}}$$

4.

$$\frac{2}{9} \times \frac{3}{4} = \underline{\hspace{2cm}}$$

5.

$$\frac{3}{10} \times \frac{6}{7} = \underline{\hspace{2cm}}$$

6.

$$\frac{3}{4} \times \frac{2}{3} = \underline{\hspace{2cm}}$$

Learning Target: I will multiply fractions

Session 7: Guided Practice (We Do)

We Do Together: (Teacher Actions)

- Restate each fraction multiplication problem based on your conceptual understanding.
Example: 1 third of 3 fourths is equal to what part of the whole?
- Multiply to find the size of each part and number of parts.
- Sketch the multiplication problem to check your answer.

1. $\frac{1}{3} \times \frac{3}{5} =$ _____

2. $\frac{1}{2} \times \frac{1}{4} =$ _____

3. $\frac{3}{4} \times \frac{2}{3} =$ _____

4. $\frac{1}{3} \times \frac{5}{8} =$ _____

Learning Target: I will multiply fractions

Session 7: Guided Practice (We Do Continued)

You Do Together: (As a class, or in small groups)

- Students take turns leading to restating each fraction multiplication problem. Then, multiply the fractions and sketch the problem to check your answer.

5. $\frac{3}{4} \times \frac{2}{3} =$ _____

6. $\frac{1}{2} \times \frac{4}{5} =$ _____

7. $\frac{1}{4} \times \frac{5}{6} =$ _____

8. $\frac{3}{4} \times \frac{7}{8} =$ _____



Session 7: Self-Reflection

Learning Target: I will multiply fractions

Briefly discuss student responses:

- What did I learn today about multiplying fractions?

- How confident do I feel about multiplying fractions on my own?
(Thumbs up, down, or sideways)



Quick Check - Form G

Name _____ Date _____

Learning Target: I will multiply fractions.

Directions: Write the answer to each problem. (Work time: 4 minutes)

1.

$$\frac{3}{4} \times \frac{3}{5} = \underline{\hspace{2cm}}$$

2.

$$\frac{4}{5} \times \frac{1}{2} = \underline{\hspace{2cm}}$$

3.

$$\frac{5}{7} \times \frac{2}{5} = \underline{\hspace{2cm}}$$

4.

$$\frac{3}{10} \times \frac{5}{6} = \underline{\hspace{2cm}}$$

5.

$$\frac{6}{7} \times \frac{3}{8} = \underline{\hspace{2cm}}$$

6.

$$\frac{3}{5} \times \frac{5}{5} = \underline{\hspace{2cm}}$$

Learning Target: I will multiply fractions

Session 8: Guided Practice (We Do)

We Do Together: (Teacher Actions)

- Restate each fraction multiplication problem based on your conceptual understanding.
Example: 1 third of 3 fourths is equal to what part of the whole?
- Multiply to find the size of each part and number of parts.
- Sketch the multiplication problem to check your answer.

1. $\frac{1}{2} \times \frac{3}{5} =$ _____

2. $\frac{1}{3} \times \frac{3}{4} =$ _____

3. $\frac{3}{4} \times \frac{2}{5} =$ _____

4. $\frac{2}{3} \times \frac{5}{8} =$ _____

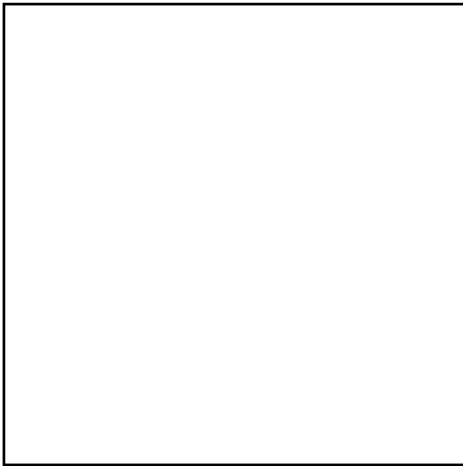
Learning Target: I will multiply fractions

Session 8: Guided Practice (We Do Continued)

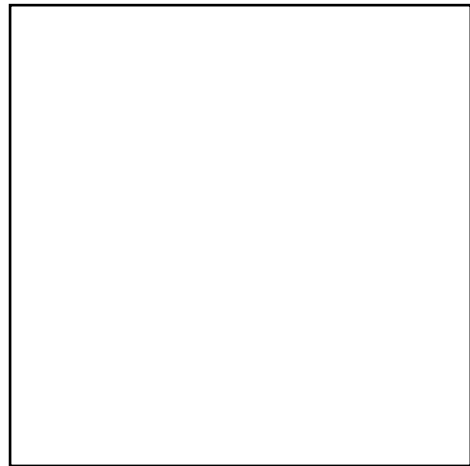
You Do Together: (As a class, or in small groups)

- Students take turns leading to restating each fraction multiplication problem. Then, multiply the fractions and sketch the problem to check your answer.

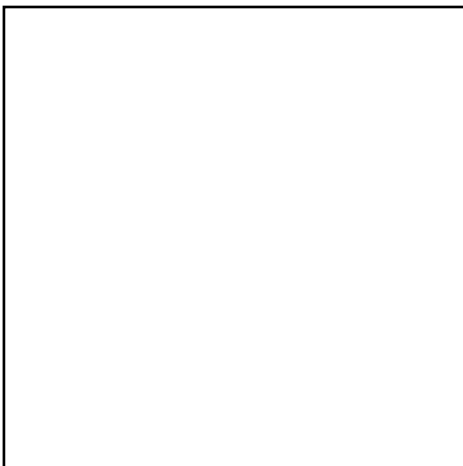
5. $\frac{1}{4} \times \frac{2}{3} =$ _____



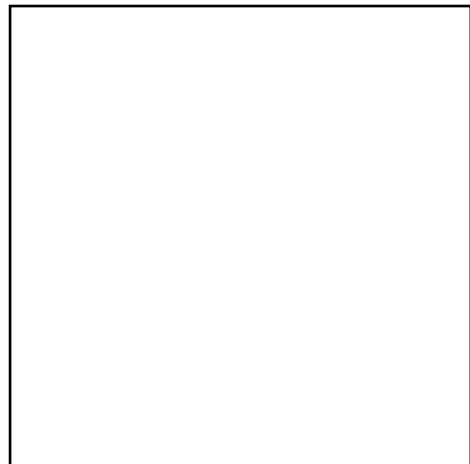
6. $\frac{1}{3} \times \frac{4}{5} =$ _____



7. $\frac{3}{4} \times \frac{5}{6} =$ _____



8. $\frac{2}{4} \times \frac{3}{8} =$ _____





Session 8: Self-Reflection

Learning Target: I will multiply fractions

Briefly discuss student responses:

- What did I learn today about multiplying fractions?

- How confident do I feel about multiplying fractions on my own?
(Thumbs up, down, or sideways)



Quick Check - Form H

Name _____ Date _____

Learning Target: I will multiply fractions.

Directions: Write the answer to each problem. (Work time: 4 minutes)

1.

$$\frac{1}{4} \times \frac{3}{5} = \underline{\hspace{2cm}}$$

2.

$$\frac{2}{5} \times \frac{2}{3} = \underline{\hspace{2cm}}$$

3.

$$\frac{5}{6} \times \frac{4}{5} = \underline{\hspace{2cm}}$$

4.

$$\frac{7}{10} \times \frac{3}{4} = \underline{\hspace{2cm}}$$

5.

$$\frac{8}{9} \times \frac{2}{4} = \underline{\hspace{2cm}}$$

6.

$$\frac{2}{3} \times \frac{3}{5} = \underline{\hspace{2cm}}$$



Independent Practice (You Do)

Learning Target: I will multiply fractions

Readiness for multiplying and dividing fractions

Title of Game: Play “**Multiplication Match-up!**”

Number of Players: 2

Objective: To match your answer cards to unknown problem cards.

Materials:

- 1 set of **Problem** and **Answer** cards per group
- 1 recording sheet per player

Set-up:

- Deal all 10 **Problem** cards face down in a row.
- Deal 5 **Answer** cards face up to each player.

Directions:

- **Player 1** goes first
 - Take a card from the row of face down **Problem** cards and turn it face up
 - Write the problem on the recording sheet
 - And, find the answer in simplest form
- If **Player 1** has the **Answer** card, place it face up on top of the **Problem** card, take both cards and say:
“The answer to ___ is equal to ___.”
- If **Player 1** does not have the answer to the **Problem** card, turn the **Problem** card back over.
- **Players 1 and 2** alternate turns. The **winner** is the first player to match all 5 of their cards.



Names _____ Date _____

Learning Target: I will multiply fractions

Independent Practice: Multiplication Match-up!

(Recording Sheet)



Problem Cards (Set A)

Storage Suggestions: Copy the **Problem (Set A)** cards and **Answer (Set A)** cards in two different colors.

Store 1 set of each in a sealable bag for each pair of students.

Set A ₁	$\frac{1}{2} \times \frac{1}{3}$ Set A	$\frac{1}{2} \times \frac{2}{3}$ Set A	$\frac{1}{2} \times \frac{3}{4}$ Set A	$\frac{1}{2} \times \frac{2}{5}$ Set A
	$\frac{1}{2} \times \frac{4}{5}$ Set A	$\frac{1}{3} \times \frac{3}{4}$ Set A	$\frac{1}{3} \times \frac{3}{5}$ Set A	$\frac{2}{3} \times \frac{1}{4}$ Set A
	$\frac{2}{3} \times \frac{3}{4}$ Set A	$\frac{1}{4} \times \frac{2}{5}$ Set A		
Set A ₂	$\frac{1}{2} \times \frac{1}{3}$ Set A	$\frac{1}{2} \times \frac{2}{3}$ Set A	$\frac{1}{2} \times \frac{3}{4}$ Set A	$\frac{1}{2} \times \frac{2}{5}$ Set A
	$\frac{1}{2} \times \frac{4}{5}$ Set A	$\frac{1}{3} \times \frac{3}{4}$ Set A	$\frac{1}{3} \times \frac{3}{5}$ Set A	$\frac{2}{3} \times \frac{1}{4}$ Set A
	$\frac{2}{3} \times \frac{3}{4}$ Set A	$\frac{1}{4} \times \frac{2}{5}$ Set A		



Answer Cards (Set A)

Storage Suggestions: Copy the **Problem (Set A)** cards and **Answer (Set A)** cards in two different colors.
Store 1 set of each in a sealable bag for each pair of students.

Set A ₁	$\frac{1}{6}$ Set A	$\frac{1}{3}$ Set A	$\frac{3}{8}$ Set A	$\frac{1}{5}$ Set A
	$\frac{2}{5}$ Set A	$\frac{1}{4}$ Set A	$\frac{1}{5}$ Set A	$\frac{1}{6}$ Set A
	$\frac{1}{2}$ Set A	$\frac{1}{10}$ Set A		
Set A ₂	$\frac{1}{6}$ Set A	$\frac{1}{3}$ Set A	$\frac{3}{8}$ Set A	$\frac{1}{5}$ Set A
	$\frac{2}{5}$ Set A	$\frac{1}{4}$ Set A	$\frac{1}{5}$ Set A	$\frac{1}{6}$ Set A
	$\frac{1}{2}$ Set A	$\frac{1}{10}$ Set A		



Problem Cards (Set B)

Storage Suggestions: Copy the **Problem (Set B)** cards and **Answer (Set B)** cards in two different colors.

Store 1 set of each in a sealable bag for each pair of students.

Set B ₁	$\frac{1}{2} \times \frac{1}{6}$ Set B	$\frac{1}{2} \times \frac{3}{6}$ Set B	$\frac{2}{3} \times \frac{3}{6}$ Set B	$\frac{2}{3} \times \frac{4}{6}$ Set B
	$\frac{2}{3} \times \frac{1}{6}$ Set B	$\frac{1}{4} \times \frac{2}{5}$ Set B	$\frac{3}{4} \times \frac{4}{5}$ Set B	$\frac{3}{4} \times \frac{5}{6}$ Set B
	$\frac{2}{5} \times \frac{3}{8}$ Set B	$\frac{4}{5} \times \frac{3}{8}$ Set B		
Set B ₂	$\frac{1}{2} \times \frac{1}{6}$ Set B	$\frac{1}{2} \times \frac{3}{6}$ Set B	$\frac{2}{3} \times \frac{3}{6}$ Set B	$\frac{2}{3} \times \frac{4}{6}$ Set B
	$\frac{2}{3} \times \frac{1}{6}$ Set B	$\frac{1}{4} \times \frac{2}{5}$ Set B	$\frac{3}{4} \times \frac{4}{5}$ Set B	$\frac{3}{4} \times \frac{5}{6}$ Set B
	$\frac{2}{5} \times \frac{3}{8}$ Set B	$\frac{4}{5} \times \frac{3}{8}$ Set B		



Answer Cards (Set B)

Storage Suggestions: Copy the **Problem (Set B)** cards and **Answer (Set B)** cards in two different colors.

Store 1 set of each in a sealable bag for each pair of students.

Set B ₁	$\frac{1}{12}$ Set B	$\frac{1}{4}$ Set B	$\frac{1}{3}$ Set B	$\frac{4}{9}$ Set B
	$\frac{1}{9}$ Set B	$\frac{1}{10}$ Set B	$\frac{3}{5}$ Set B	$\frac{5}{8}$ Set B
	$\frac{3}{20}$ Set B	$\frac{3}{10}$ Set B		
Set B ₂	$\frac{1}{12}$ Set B	$\frac{1}{4}$ Set B	$\frac{1}{3}$ Set B	$\frac{4}{9}$ Set B
	$\frac{1}{9}$ Set B	$\frac{1}{10}$ Set B	$\frac{3}{5}$ Set B	$\frac{5}{8}$ Set B
	$\frac{3}{20}$ Set B	$\frac{3}{10}$ Set B		



Problem Cards (Set C)

Storage Suggestions: Copy the **Problem (Set C)** cards and **Answer (Set C)** cards in two different colors.

Store 1 set of each in a sealable bag for each pair of students.

Set C ₁	$\frac{1}{2} \times \frac{5}{6}$ <p style="text-align: right;">Set C</p>	$\frac{2}{3} \times \frac{9}{10}$ <p style="text-align: right;">Set C</p>	$\frac{1}{3} \times \frac{9}{10}$ <p style="text-align: right;">Set C</p>	$\frac{1}{4} \times \frac{4}{5}$ <p style="text-align: right;">Set C</p>
	$\frac{3}{4} \times \frac{4}{5}$ <p style="text-align: right;">Set C</p>	$\frac{2}{3} \times \frac{7}{10}$ <p style="text-align: right;">Set C</p>	$\frac{3}{5} \times \frac{5}{8}$ <p style="text-align: right;">Set C</p>	$\frac{5}{6} \times \frac{3}{8}$ <p style="text-align: right;">Set C</p>
	$\frac{5}{9} \times \frac{3}{10}$ <p style="text-align: right;">Set C</p>	$\frac{2}{9} \times \frac{3}{8}$ <p style="text-align: right;">Set C</p>		
Set C ₂	$\frac{1}{2} \times \frac{5}{6}$ <p style="text-align: right;">Set C</p>	$\frac{2}{3} \times \frac{9}{10}$ <p style="text-align: right;">Set C</p>	$\frac{1}{3} \times \frac{9}{10}$ <p style="text-align: right;">Set C</p>	$\frac{1}{4} \times \frac{4}{5}$ <p style="text-align: right;">Set C</p>
	$\frac{3}{4} \times \frac{4}{5}$ <p style="text-align: right;">Set C</p>	$\frac{2}{3} \times \frac{7}{10}$ <p style="text-align: right;">Set C</p>	$\frac{3}{5} \times \frac{5}{8}$ <p style="text-align: right;">Set C</p>	$\frac{5}{6} \times \frac{3}{8}$ <p style="text-align: right;">Set C</p>
	$\frac{5}{9} \times \frac{3}{10}$ <p style="text-align: right;">Set C</p>	$\frac{2}{9} \times \frac{3}{8}$ <p style="text-align: right;">Set C</p>		



Answer Cards (Set C)

Storage Suggestions: Copy the **Problem (Set C)** cards and **Answer (Set C)** cards in two different colors.

Store 1 set of each in a sealable bag for each pair of students.

Set C ₁	$\frac{5}{12}$ Set C	$\frac{3}{5}$ Set C	$\frac{3}{10}$ Set C	$\frac{1}{5}$ Set C
	$\frac{3}{5}$ Set C	$\frac{7}{15}$ Set C	$\frac{3}{8}$ Set C	$\frac{5}{16}$ Set C
	$\frac{1}{6}$ Set C	$\frac{1}{12}$ Set C		
Set C ₂	$\frac{5}{12}$ Set C	$\frac{3}{5}$ Set C	$\frac{3}{10}$ Set C	$\frac{1}{5}$ Set C
	$\frac{3}{5}$ Set C	$\frac{7}{15}$ Set C	$\frac{3}{8}$ Set C	$\frac{5}{16}$ Set C
	$\frac{1}{6}$ Set C	$\frac{1}{12}$ Set C		



Questions for Solving Word Problems

Q_1

What is the problem about?

Q_2

What do I need to find?

Q_3

What do I know?

Q_4

What can I try?

Q_5

Does my answer make sense?



Steps for Solving Word Problems

Q₁. What is the problem about?

Q₂. What do I need to find?

Q₃. What do I know?

Q₄. What can I try?

Q₅. Does my answer make sense?