Module 3 - Lesson 7:

Multiply fractions less than 1 by unit fractions pictorially.

CCSS Standard – 5.NF.B.4.a / 5.NF.B.5.a / 5.NF.B.5.b

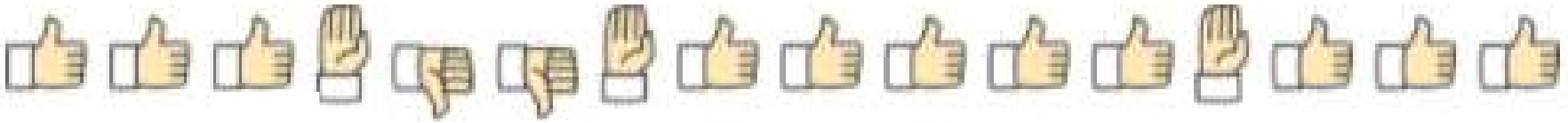
FLUENCY (10-min) **Happy Counting by Fourth – Visualizing a Number line**

When I give this signal, count up. 

When I give this signal, count down. 

When I give this signal, stop. 

Let's count by fourths. Today we will rename the fractions as whole numbers or mixed numbers when possible. The first number you say is 2 fourths. Ready?



FLUENCY (10-min) **Choral Response: Equivalent Fractions**

What is the unknown equivalent fraction?
Raise your hand when you know.

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

$\frac{2}{6} = \frac{1}{\_}$

$\frac{3}{6} = \frac{\_}{2}$

$\frac{3}{9} = \frac{\_}{3}$

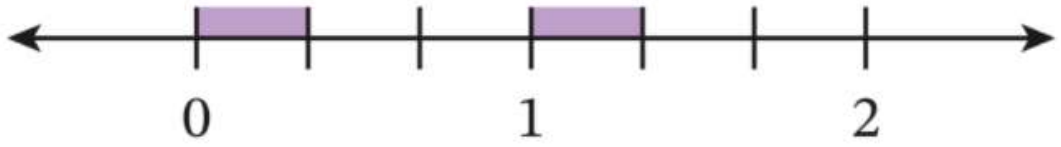
$\frac{4}{6} = \frac{2}{\_}$

$\frac{6}{9} = \frac{\_}{3}$

FLUENCY (10-min)

Whiteboard Exchange: Multiply a Whole Number by a Fraction

Draw the number line and write the statement.
Find the value by using the number line. Write the answer as a whole number when possible.

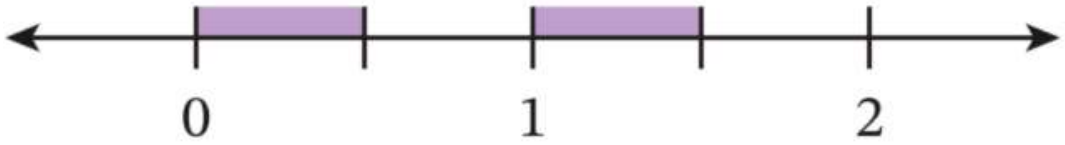


$\frac{1}{3}$ of 2 is $\frac{2}{3}$.

FLUENCY (10-min)

Whiteboard Exchange: Multiply a Whole Number by a Fraction

Draw the number line and write the statement.
Find the value by using the number line. Write the answer as a whole number when possible.



$\frac{1}{2}$ of 2 is $\frac{2}{2}$ or 1.

FLUENCY (10-min)

Whiteboard Exchange: Multiply a Whole Number by a Fraction

Draw the number line and write the statement.
Find the value by using the number line. Write the answer as a whole number when possible.

$\frac{2}{3}$ of 3 is $\frac{6}{3}$ or 2.

FLUENCY (10-min)

Whiteboard Exchange: Multiply a Whole Number by a Fraction

Draw the number line and write the statement.
Find the value by using the number line. Write the answer as a whole number when possible.

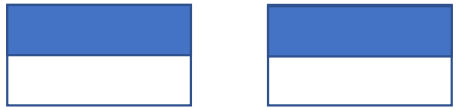
$\frac{3}{4}$ of 2 is $\frac{6}{4}$.

LAUNCH (5-min) **Reason through how to multiply a fraction**

What is ½ of 2? **1**

What equation shows ½ of 2 is 1? **½ x 2 =1**

How do you know ½ of 2 is 1?



What is ½ of 1? **½**

What equation shows ½ of 1 is ½ ? **½ x 1 = ½**

How do you know ½ of 1 is ½ ?

These are easy examples to visualize.

Have you ever thought about **½ of ½?**

Do you think ½ of ½ is greater than or less than ½ of 1? Why?

How might you visualize ½ of ½?

½ x ½ = ¼

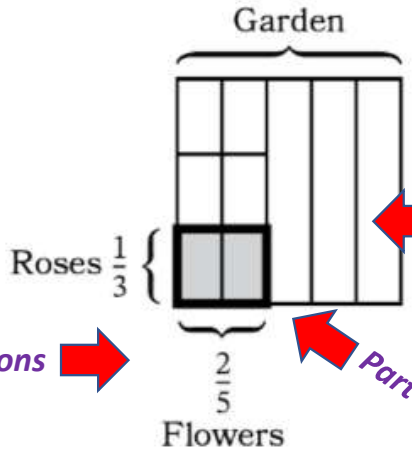
Today, we will find the product of a fraction multiplied by a unit fraction.

LEARN (35-min) **Interpret a Model**

LEARN BOOK PAGE 59

1. Mr. Evans plants flowers in $\frac{2}{5}$ of his garden. $\frac{1}{3}$ of the flowers are roses. What fraction of the garder is roses?

What do you notice and wonder about the problem?



An area model shows the entire garden.

Not all the units are the same size.

The area model is labeled with two fractions

Part of the model is shaded.

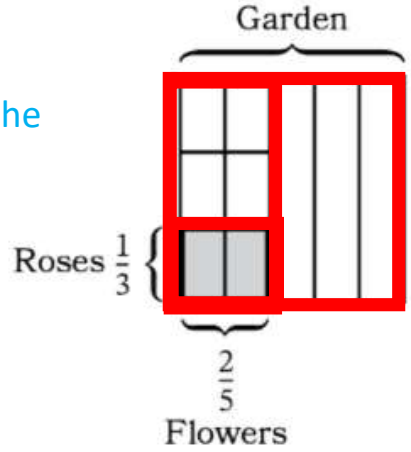
LEARN (35-min) **Interpret a Model**

LEARN BOOK PAGE 59

1. Mr. Evans plants flowers in $\frac{2}{5}$ of his garden. $\frac{1}{3}$ of the flowers are roses. What fraction of the garder is roses?

The problem says Mr. Evans plants flowers in his garden. Which part of the model represents the garden?

The problem says Mr. Evans plants flowers in 2/5 of his garden? Where do you see 2/5 represented in the model?



If the label were not there, how would we know this is 2/5?

The problem says 1/3 of the flowers are roses. Where is that represented in the model?

The shaded part of the model represents 1/3 of 2/5. So, **what expression matches** "1/3 of 2/5"?

$$\frac{1}{3} \times \frac{2}{5} = \frac{2}{15}$$

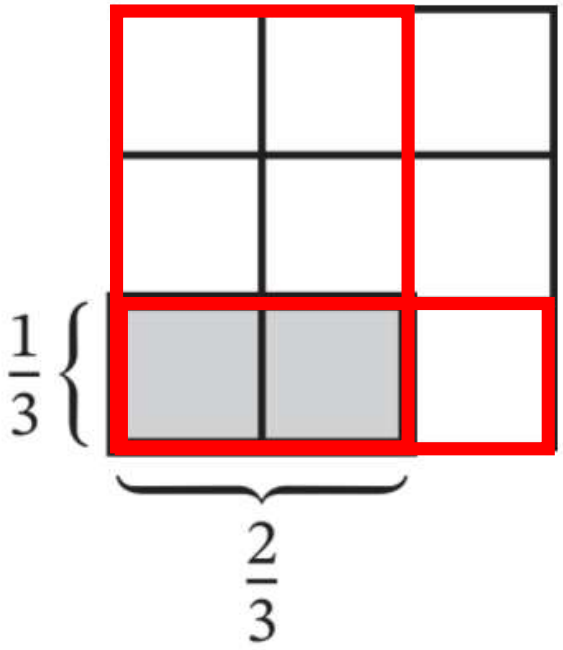
What do you notice about the size of the product compared to the size of each factor?

Does it make sense that the product is less than 2/5? And less than 1/3?

LEARN (35-min) **Interpret a Model**

Name an expression that is represented by the model.

Area Model



Expression

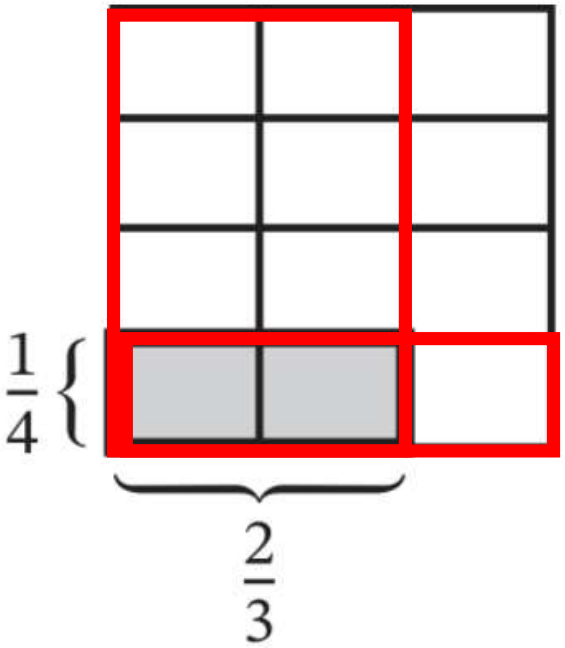
$\frac{1}{3}$ of $\frac{2}{3}$

$\frac{1}{3} \times \frac{2}{3} = \frac{2}{9}$

LEARN (35-min) **Interpret a Model**

Name an expression that is represented by the model.

Area Model



Expression

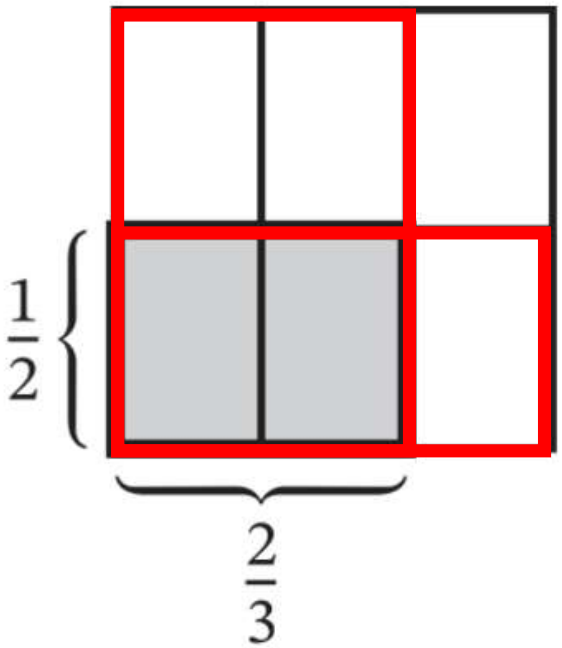
$\frac{1}{4}$ of $\frac{2}{3}$

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

LEARN (35-min) **Interpret a Model**

Name an expression that is represented by the model.

Area Model



Expression

$$\frac{1}{2} \text{ of } \frac{2}{3}$$

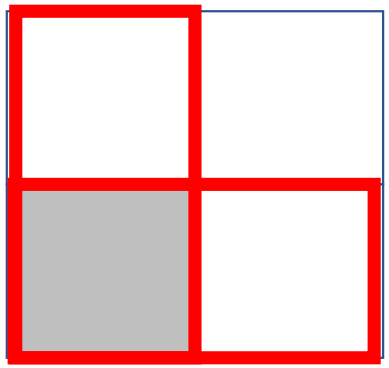
$$\frac{1}{2} \times \frac{2}{3} = \frac{2}{6}$$

LEARN (35-min) **Interpret a Model**

At the beginning of this lesson, I asked you to visualize ½ of ½.
Let's solve this problem with an area model. Page 59 of the LEARN book.

Draw an area model to find the product.

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



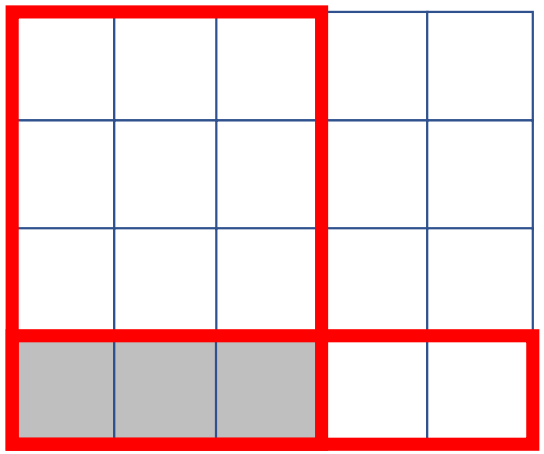
$\frac{1}{2}$ of $\frac{1}{2}$

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

LEARN (35-min) **Interpret a Model**

Page 60 of the LEARN book.

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



$\frac{1}{4}$ of $\frac{3}{5}$

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

LEARN (35-min) **Use a Number Line**

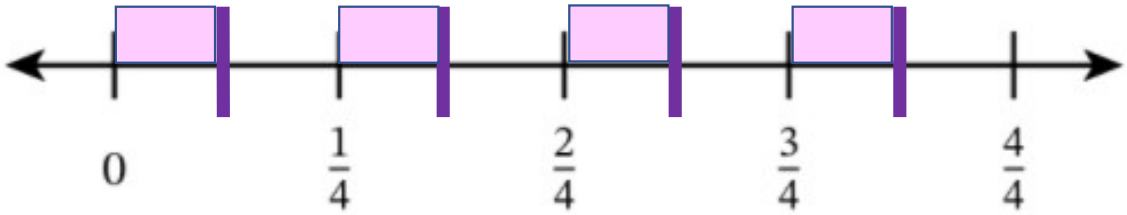
$\frac{1}{2}$ of $\frac{3}{4}$

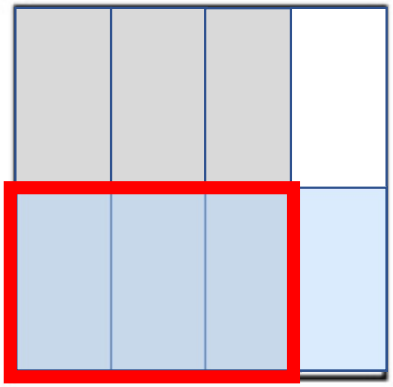
We can also use number lines to represent products of unit fractions.
Page 60 LEARN Book.

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

Find the product by using the area model and the number line.

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





The expression reads "½ of ¾". Therefore, we start by showing a number line in fourths. We then need to show ½ of each fourth.

LAND (10-min)

Exit Ticket

Exit Ticket – PAGE 65

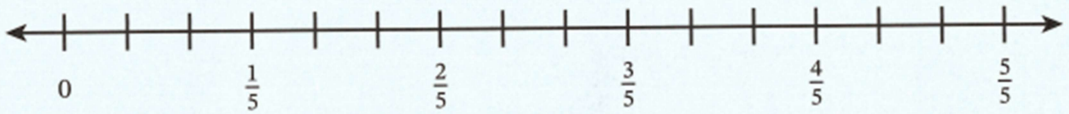
Small Group Time:
Problem Set Pages 61 – 64

Homework:
Page 47 APPLY BOOK

Name _____ Date _____

7

1. Use the number line to find the product. Then complete the equation.



$\frac{1}{3} \times \frac{1}{5} =$ ____

2. Draw an area model to find the product. Then complete the equation.

$\frac{1}{4} \times \frac{2}{3} =$ ____