Module 3 - Lesson 11:

Multiply Fractions.

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

FLUENCY (10-min) **Whiteboard Exchange: Write and Evaluate Expressions**

Write an expression to represent the statement.
Write the VALUE of the expression.

The difference of 2 fifths and 1 fifth, multiplied by 4

FLUENCY (10-min) **Whiteboard Exchange: Write and Evaluate Expressions**

Write an expression to represent the statement.
Write the VALUE of the expression.

2 times the sum of 2 tenths and 3 tenths

FLUENCY (10-min)

Whiteboard Exchange: Write and Evaluate Expressions

Write an expression to represent the statement.
Write the VALUE of the expression.

1 less than the total of $\frac{2}{6}$ and $\frac{5}{6}$

FLUENCY (10-min) **Whiteboard Exchange: Add or Subtract Fractions**

Raise your hand when you know the answer to each question.
Wait for my signal to say the answer.

$$\frac{1}{2}+\frac{3}{7}=$$

Look at the fractional units.
*Do they have **LIKE units**?*

*No! Are the units **RELATED**?*

*No! **RENAME <u>both fractions</u>** to make fractional units, or denominators, the same*

FLUENCY (10-min) **Whiteboard Exchange: Add or Subtract Fractions**

Raise your hand when you know the answer to each question.
Wait for my signal to say the answer.

$$\frac{2}{3} - \frac{1}{5} =$$

Look at the fractional units.
*Do they have **LIKE units**?*

*No! Are the units **RELATED**?*

*No! **RENAME <u>both fractions</u>** to make fractional units, or denominators, the same*

FLUENCY (10-min) **Whiteboard Exchange: Add or Subtract Fractions**

Raise your hand when you know the answer to each question.
Wait for my signal to say the answer.

$$\frac{5}{4}+\frac{4}{10}=$$

Look at the fractional units.
*Do they have **LIKE units**?*

*No! Are the units **RELATED**?*

*No! **RENAME <u>both fractions</u>** to make fractional units, or denominators, the same*

FLUENCY (10-min) **Whiteboard Exchange: Add or Subtract Fractions**

Raise your hand when you know the answer to each question.
Wait for my signal to say the answer.

$$\frac{7}{6} - \frac{6}{8} =$$

Look at the fractional units.
*Do they have **LIKE units**?*

*No! Are the units **RELATED**?*

*No! **RENAME <u>both fractions</u>** to make fractional units, or denominators, the same*

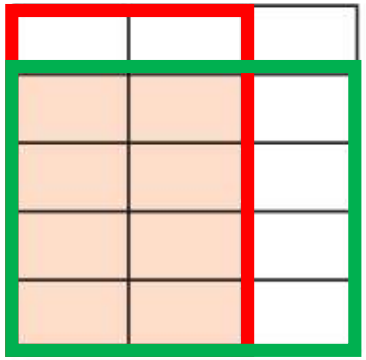
LAUNCH (10-min)

Students analyze incomplete representations of a multiplication expression to complete an equation.

LEARN book page 99.

1. Use the clues in part (a) to complete the equation in part (b).

   a. Analyze the clues and fill in the blanks. The clues represent equivalent expressions.

Clue A	Clue B	Clue C
$\frac{1}{5} \times \frac{1}{3} \times 4 \times$ ***2***	$\frac{4 \times \textbf{2}}{\textbf{5} \times 3}$	

Which clue did you begin with? Why?

Which clue was most helpful? Least helpful?

*Could we write the expression as **2/3 x 4/3**?*

No! The area model shows 4/5 x 2/3.

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

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

   b. Write the multiplication expression that is represented by the clues. Then find the product to complete the equation.

$$\frac{\textbf{4}}{\textbf{5}} \times \frac{\textbf{2}}{\textbf{3}} = \frac{\textbf{8}}{\textbf{15}}$$

LEARN (30-min) **Greater Than, Equal To, Less Than**

Consider the statement "1/4 as much as 3/5".

- *What do you think this statement means?*
- *What multiplication expression can we write to represent the statement?*

"1/4 as much as 3/5" means 1/4 times as much as 3/5 or $\frac{1}{4} \times \frac{3}{5} = \frac{3}{20}$

Notice that we multiplied 3/5 by a fraction LESS THAN ONE and the product is LESS THAN 3/5.

Consider the statement "4/4 as much as 3/5".

- *What do you think this statement means?*
- *What multiplication expression can we write to represent the statement?*

"4/4 as much as 3/5" means 4/4 times as much as 3/5 or $\frac{4}{4} \times \frac{3}{5} = \frac{12}{20}$

Notice that we multiplied 3/5 by EXACTLY ONE and the product is EQUIVALENT to 3/5.

LEARN (30-min) **Greater Than, Equal To, Less Than**

Consider the statement "7/4 as much as 3/5".

- *What do you think this statement means?*
- *What multiplication expression can we write to represent the statement?*

"7/4 as much as 3/5" means 7/4 times as much as 3/5 or $\frac{7}{4} \times \frac{3}{5} = \frac{21}{20}$

Notice that we multiplied 3/5 by a fraction GREATER THAN ONE and the product is MORE THAN 3/5.

When you multiply a number by a fraction less than 1,
the product is LESS THAN THAT NUMBER.

When you multiply a number by a fraction equal to 1,
the product is EQUAL TO THAT NUMBER.

When you multiply a number by a fraction greater than 1,
the product is GREATER THAN THAT NUMBER.

LEARN (30-min) **Compare Expressions Without Evaluating**

Compare these expressions without solving them (at first).

$\frac{1}{3} \times 15 < \frac{5}{4} \times 15$

In this expression, we are multiplying by a fraction **less than one**, therefore the product must be **less than 15**.

In this expression, we are multiplying by a fraction **greater than one**, therefore the product must be **greater than 15**.

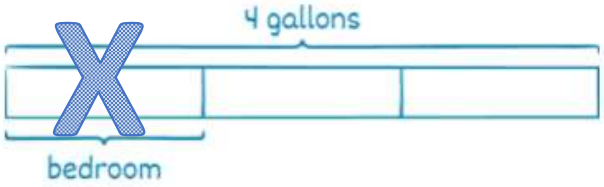
$\frac{3}{4} \times \frac{43}{50} > \frac{1}{4} \times \frac{43}{50}$

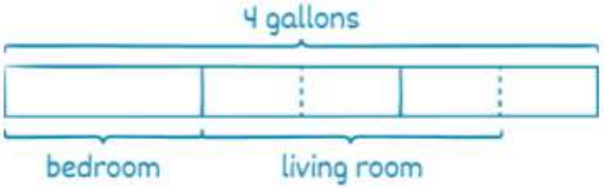
LEARN (30-min) Solve a Real-World Problem

LEARN book page 100.

Use the Read–Draw–Write process to solve each problem.

2. Mrs. Chan has 4 gallons of paint. She uses $\frac{1}{3}$ of it to paint her bedroom. She uses $\frac{3}{4}$ of the remaining paint for her living room. What fraction of the paint does Mrs. Chan use for her living room?





Once she used 1/3 of her paint for the bedroom, she had **2/3 left**.

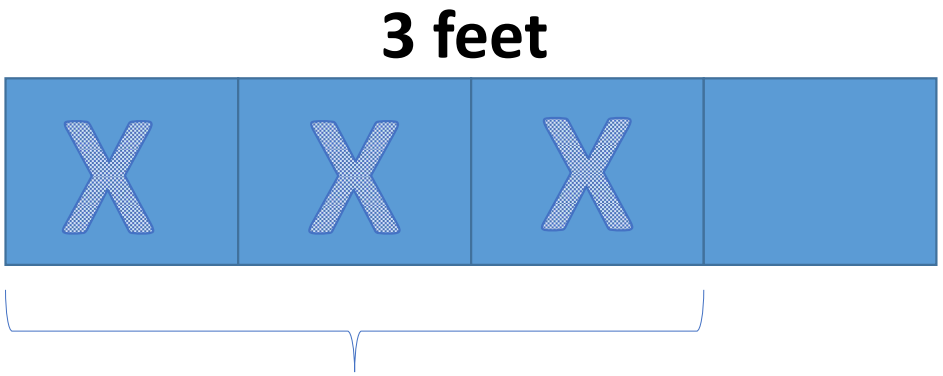
Of the remaining paint, she used **3/4 of it**. How would that look on a tape diagram? What would be the math problem to solve it?

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

LEARN (30-min) **Solve a Real-World Problem**

LEARN book page 100.

3. Blake has 3 feet of ribbon. He uses $\frac{3}{4}$ of the ribbon for a project. He gives his friend $\frac{1}{2}$ of the remaining ribbon. What fraction of the ribbon does Blake give to his friend?



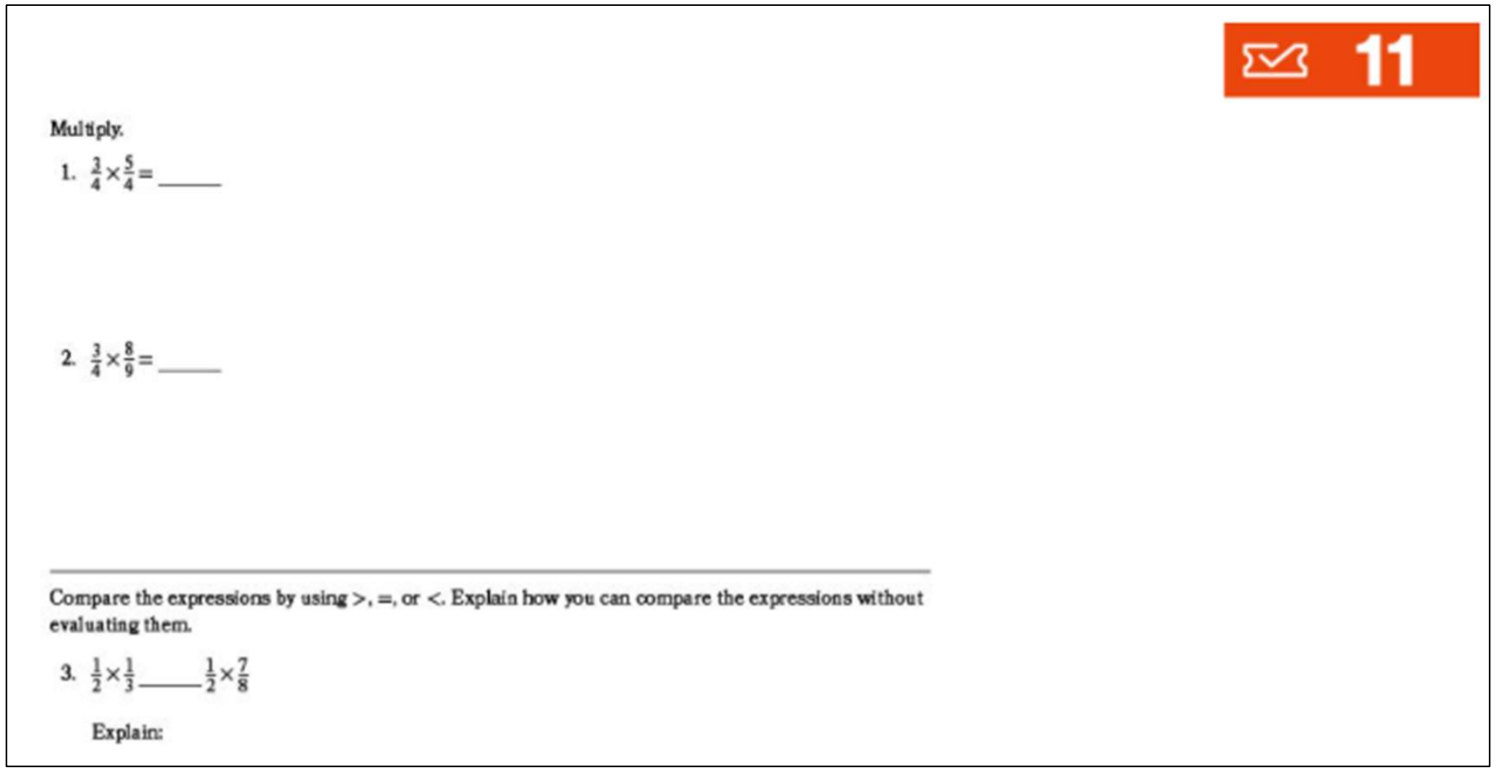
$$\frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$$

Once he used 3/4 of the ribbon, he had **1/4 left**.

Of the remaining ribbon, he gave **1/2 of it away**. What would be the math problem to solve it?

LAND (10-min)

Exit Ticket



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Multiply.

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

2. $\frac{3}{4} \times \frac{8}{9} =$ _____

Compare the expressions by using >, =, or <. Explain how you can compare the expressions without evaluating them.

3. $\frac{1}{2} \times \frac{1}{3}$ _____ $\frac{1}{2} \times \frac{7}{8}$

Explain:

Exit Ticket – PAGE 105

Small Group Time:
Problem Set Page 101 - 103

Homework:
Page 69 APPLY BOOK