Module 3 - Lesson 4:

Multiply a whole number by a fraction.

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

FLUENCY (10-min) **Whiteboard Exchange: Multi-Digit Whole Numbers**

Write and complete the equation by using the standard algorithm.

$22 \times 31 =$ _____

$32 \times 42 =$ _____

$47 \times 25 =$ _____

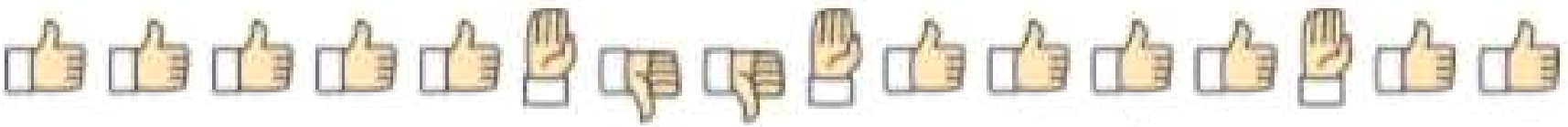
FLUENCY (10-min) **Happy Counting by Thirds – Visualizing a Number line**

When I give this signal, count up. 

When I give this signal, count down. 

When I give this signal, stop. 

Let's count by thirds. The first number you say is 0 thirds. Ready?



FLUENCY (10-min) **Choral Response: Multiply a Whole Number by a Unit Fraction**

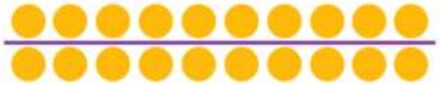
TURN & TALK: How could you partition the array to find ½ of 4?
What is ½ of 4? Raise your hand when you know.

$\frac{1}{2}$ of 4 is _____.

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

$\frac{1}{2}$ of 20 is _____.

$\frac{1}{2}$ of 20 is 10.

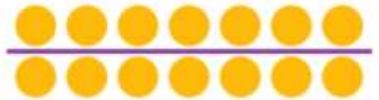


$\frac{1}{2}$ of 6 is _____.

$\frac{1}{2}$ of 6 is 3.

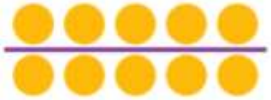
$\frac{1}{2}$ of 14 is _____.

$\frac{1}{2}$ of 14 is 7.



$\frac{1}{2}$ of 10 is _____.

$\frac{1}{2}$ of 10 is 5.



$\frac{1}{3}$ of 6 is _____.

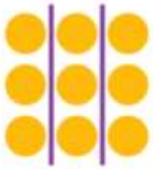
$\frac{1}{3}$ of 6 is 2.

FLUENCY (10-min) **Choral Response: Multiply a Whole Number by a Unit Fraction**

Continue…..

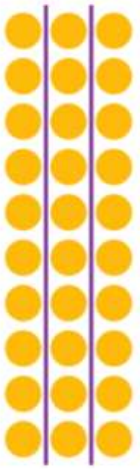
$\frac{1}{3}$ of 9 is _____.

$\frac{1}{3}$ of 9 is 3.



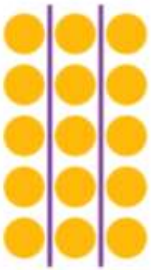
$\frac{1}{3}$ of 30 is _____.

$\frac{1}{3}$ of 30 is 10.



$\frac{1}{3}$ of 15 is _____.

$\frac{1}{3}$ of 15 is 5.



$\frac{1}{3}$ of 21 is _____.

$\frac{1}{3}$ of 21 is 7.

LAUNCH (5-min)

Order expressions from LEAST to GREATEST value by reasoning about the products.

What do you notice?

- *Each card shows a multiplication expression.*
- *Each multiplication expression has a fraction for the first factor.*
- *Most of the fraction are less than 1.*
- *Each expression has a factor of 4.*

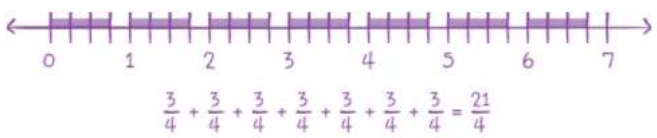
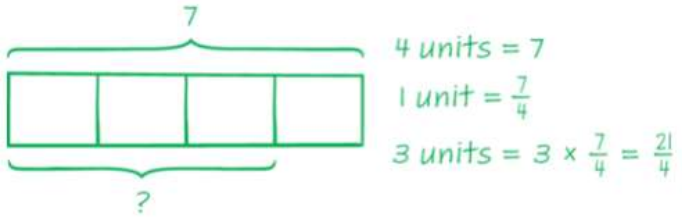
$\frac{4}{5} \times 4$ **$\frac{16}{5}$**	$\frac{5}{4} \times 4$ **$\frac{20}{4}$**	$\frac{1}{3} \times 4$ **$\frac{4}{3}$**
$\frac{1}{2} \times 4$ **$\frac{4}{2}$**	$\frac{1}{5} \times 4$ **$\frac{4}{5}$**	$\frac{3}{8} \times 4$ **$\frac{12}{8}$**

Today, we will multiply fractions and whole numbers.

LEARN (35-min) **Multiply a Whole Number by A Fraction Less than 1**

Let's begin with this problem. Solve it with a partner and discuss.

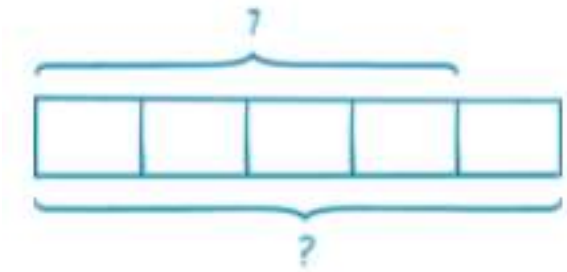
$$\frac{3}{4} \times 7 =$$

Number line Method	Tape Diagram Method	Numerically
		$\frac{3}{4} \times 7 = \frac{3 \times 7}{4}$ $= \frac{21}{4}$ $= 5\frac{1}{4}$

LEARN (35-min) **Multiply a Whole Number by A Fraction Greater than 1**

Let's begin with this problem. Solve it with a partner and discuss.

$$\frac{5}{4} \times 7 =$$

Tape Diagram Method	Numerically
 Notice you needed an extra box here to represent 5/4	$\frac{5}{4} \times 7 = \frac{5 \times 7}{4}$ $= \frac{35}{4}$ $= 8\frac{3}{4}$

LEARN (35-min) **Solve Real-World Problems**

LEARN BOOK – PAGE 33

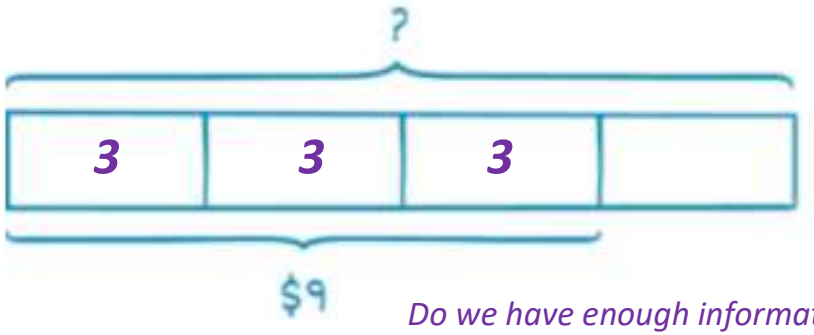
What do you notice about this problem?

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

1. Scott spent $\frac{3}{4}$ of his money on comic books. He spent $9 on comic books. How much money did Scott have before he bought the comic books?

Let's use a tape diagram to represent this problem. We can draw a tape diagram to represent the total amount of money and label it with a question mark because that is what the question asks us to find. How can we show

$$\frac{3}{4} \times ? = 9$$



3 units = 9

1 unit = $\frac{9}{3}$ = 3

4 units = 4 × 3 = 12

$$\frac{3 \times ?}{4} = 9$$

$$\frac{3 \times 12}{4} = \frac{36}{4} = 9$$

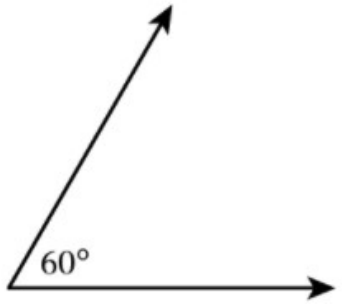
Do we have enough information to find the value of 1 unit?

LEARN (35-min) **Solve Real-World Problems**

LEARN BOOK – PAGE 33

2. Tyler drew the angle shown. Kayla draws an angle with a measure that is $\frac{8}{5}$ the measure of Tyler's angle. What is the measure of Kayla's angle?

"Of" Means "Multiply"



$$\frac{8}{5} \times 60 = \frac{8 \times 60}{5}$$

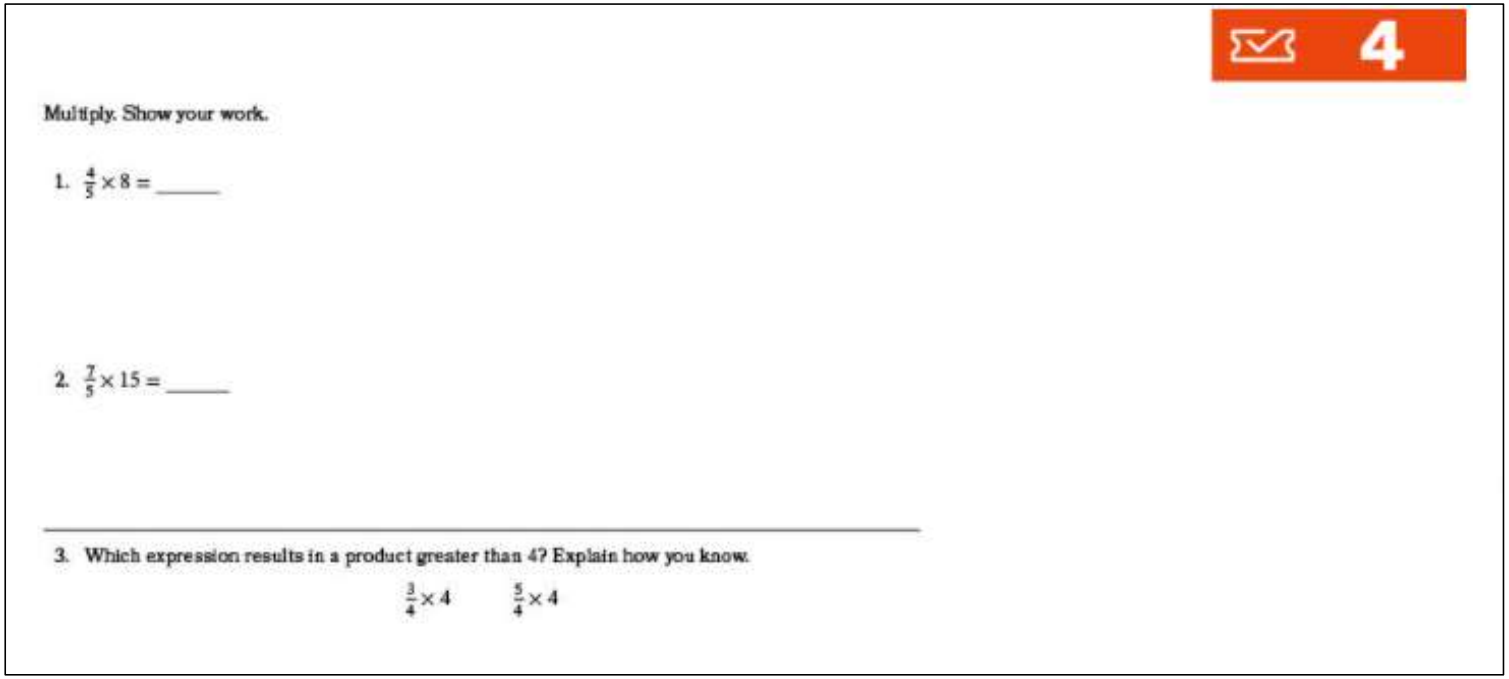
$$= \frac{480}{5}$$

$$= 96$$

LAND (10-min)

Exit Ticket

Exit Ticket – PAGE 39



4

Multiply. Show your work.

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

2. $\frac{7}{5} \times 15 =$ _____

3. Which expression results in a product greater than 4? Explain how you know.

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

Small Group Time:

Problem Set Page 35 & 36

Homework:

Page 27 APPLY BOOK