Name _____

Multiples of Fractions

Essential Question How can you write a product of a whole number and a fraction as a product of a whole number and a unit fraction?

Common Core **Numbers and Operations—Fractions—4.NF.B.4b** *Also 4.NF.B.4c*

MATHEMATICAL PRACTICES
MP1, MP2, MP4

Unlock the Problem Real World

Jen is making 4 pans of baked ziti. For each pan, she needs $\frac{2}{3}$ cup cheese. Her measuring cup can scoop $\frac{1}{3}$ cup of cheese. How many scoops of cheese does she need for the 4 pans?

Example 1 Use a model to write the product of $4 \times \frac{2}{3}$ as the product of a whole number and a unit fraction.

$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$

Think: $\frac{2}{3}$ is 2 third-size parts.

$\frac{2}{3} =$ _____ + _____ or $2 \times$ _____ .

There are 4 pans of baked ziti. Each pan needs $\frac{2}{3}$ cup cheese.

$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$

← 1 pan: $2 \times \frac{1}{3} = \frac{2}{3}$

$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$

← 2 pans: $2 \times 2 \times \frac{1}{3} = 4 \times \frac{1}{3} = \frac{4}{3}$

$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$

← 3 pans: $3 \times 2 \times \frac{1}{3} = 6 \times \frac{1}{3} = \frac{6}{3}$

$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$

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

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

So, Jen needs _____ third-size scoops of cheese for 4 pans of ziti.

Math Talk MATHEMATICAL PRACTICES 7

Identify Relationships
Explain how this model of $4 \times \frac{2}{3}$ is related to a model of 4×2.

1. What if Jen decides to make 10 pans of ziti? Describe a pattern you could use to find the number of scoops of cheese she would need.

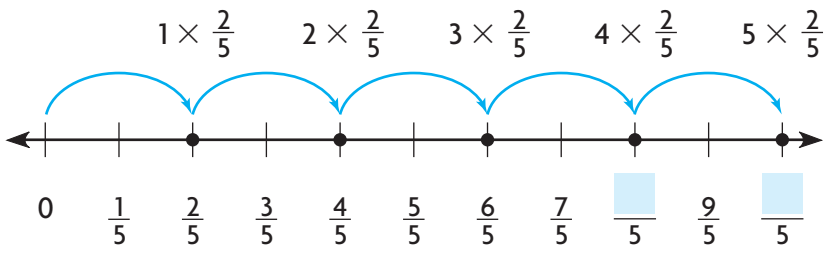
_____

_____

_____

Multiples You have learned to write multiples of unit fractions. You can also write multiples of non-unit fractions.

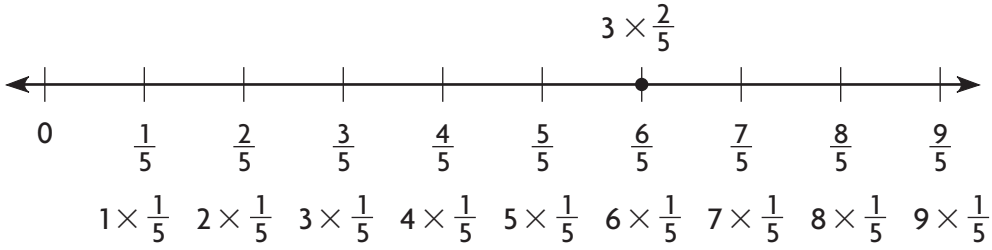
Example 2 Use a number line to write multiples of $\frac{2}{5}$.



Think: Multiply $\frac{2}{5}$ by counting numbers.

Multiples of $\frac{2}{5}$ are $\frac{2}{5}$, ____, ____, ____, and ____.

$3 \times \frac{2}{5} = \frac{6}{5}$. Write $\frac{6}{5}$ as a product of a whole number and a unit fraction.



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

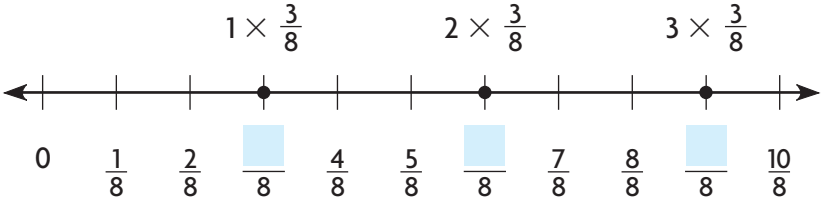
2. Explain how to use repeated addition to write the multiple of a fraction as the product of a whole number and a unit fraction.

_____

_____

Share and Show MATH BOARD

1. Write three multiples of $\frac{3}{8}$.



$1 \times \frac{3}{8} =$ _____

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

$3 \times \frac{3}{8} =$ _____

Multiples of $\frac{3}{8}$ are _____, _____, and _____.

Name _____

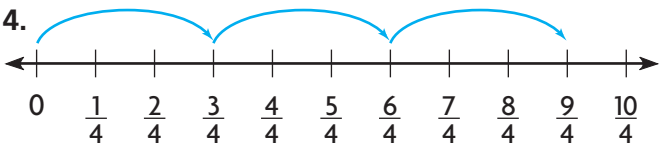
List the next four multiples of the fraction.

2. $\frac{3}{6}$, ____, ____, ____, ____

3. $\frac{2}{10}$, ____, ____, ____, ____

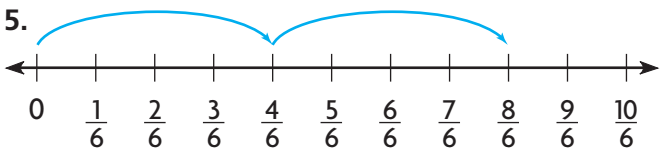
Write the product as the product of a whole number and a unit fraction.

4.



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

5.



$2 \times \frac{4}{6} =$ _____

Math Talk

MATHEMATICAL PRACTICES 2

Use Reasoning Explain how to write a product of a whole number and a fraction as a product of a whole number and a unit fraction.

On Your Own

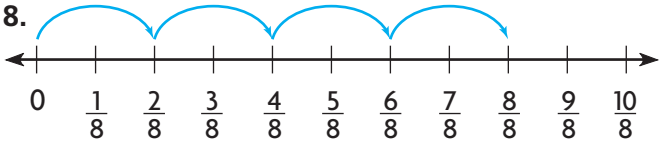
List the next four multiples of the fraction.

6. $\frac{4}{5}$, ____, ____, ____, ____

7. $\frac{2}{4}$, ____, ____, ____, ____

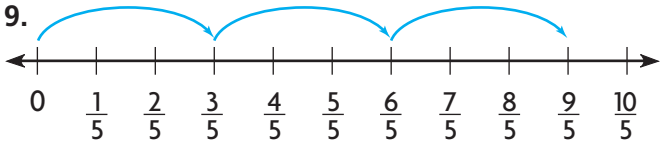
Write the product as the product of a whole number and a unit fraction.

8.



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

9.



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

10. MATHEMATICAL PRACTICE 8 **Use Repeated Reasoning** Are $\frac{6}{10}$ and $\frac{6}{30}$ multiples of $\frac{3}{10}$? Explain.

_____

_____

11. GO DEEPER Which is greater, $4 \times \frac{2}{7}$ or $3 \times \frac{3}{7}$? Explain.

_____

Unlock the Problem

12. THINK SMARTER Josh is watering his plants. He gives each of 2 plants $\frac{3}{5}$ pint of water. His watering can holds $\frac{1}{5}$ pint. How many times will he fill his watering can to water both plants?

a. What do you need to find?

b. What information do you need to use?

c. How can drawing a model help you solve the problem?

d. Show the steps you use to solve the problem.

e. Complete the sentence.

Josh will fill his watering can _____ times.

Personal Math Trainer

13. THINK SMARTER+ Alma is making 3 batches of tortillas. She adds $\frac{3}{4}$ cup of water to each batch. The measuring cup holds $\frac{1}{4}$ cup. How many times must Alma measure $\frac{1}{4}$ cup of water to have enough for the tortillas? Shade the model to show your answer.

$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$
$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$
$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$

Alma must measure $\frac{1}{4}$ cup ☐ times.

Name _____

Multiples of Fractions

Common Core

COMMON CORE STANDARD—4.NF.B.4a
Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

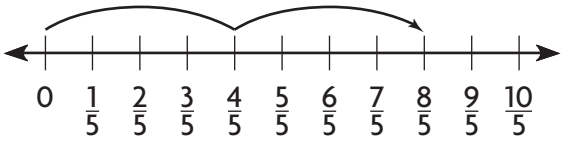
List the next four multiples of the fraction.

1. $\frac{3}{5}$, ____, ____, ____, ____

2. $\frac{2}{6}$, ____, ____, ____, ____

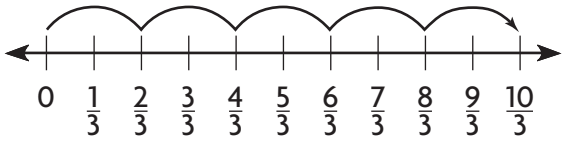
Write the product as the product of a whole number and a unit fraction.

3.



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

4.



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

Problem Solving Real World

5. Jessica is making 2 loaves of banana bread. She needs $\frac{3}{4}$ cup of sugar for each loaf. Her measuring cup can only hold $\frac{1}{4}$ cup of sugar. How many times will Jessica need to fill the measuring cup in order to get enough sugar for both loaves of bread?

_____

6. A group of four students is performing an experiment with salt. Each student must add $\frac{3}{8}$ teaspoon of salt to a solution. The group only has a $\frac{1}{8}$-teaspoon measuring spoon. How many times will the group need to fill the measuring spoon in order to perform the experiment?

_____

7. WRITE Math Explain how to write $3 \times \frac{3}{8}$ as the product of a whole number and a unit fraction.

_____

_____

_____

Lesson Check (4.NF.B.4b)

1. Eloise made a list of some multiples of $\frac{8}{5}$. Write 5 fractions that could be in Eloise's list.

2. David is filling five $\frac{3}{4}$-quart bottles with a sports drink. His measuring cup only holds $\frac{1}{4}$ quart. How many times will David need to fill the measuring cup in order to fill the 5 bottles?

Spiral Review (4.NBT.B.6, 4.OA.A.3, 4.NF.B.3c, 4.NF.A.2)

3. Ira has 128 stamps in his stamp album. He has the same number of stamps on each of the 8 pages. How many stamps are on each page?

4. Ryan is saving up for a bike that costs $198. So far, he has saved $15 per week for the last 12 weeks. How much more money does Ryan need in order to be able to buy the bike?

5. Tina buys $3\frac{7}{8}$ yards of material at the fabric store. She uses it to make a skirt. Afterward, she has $1\frac{3}{8}$ yards of the fabric leftover. How many yards of material did Tina use?

6. Order these fractions from **least** to **greatest:** $\frac{2}{3}$, $\frac{7}{12}$, $\frac{3}{4}$

FOR MORE PRACTICE GO TO THE Personal Math Trainer