

Name \_\_\_\_\_

### Multiples of Unit Fractions

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



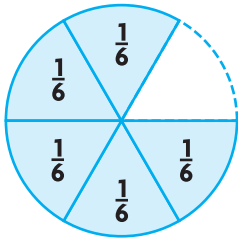
Numbers and Operations—  
Fractions—4.NF.B.4a

**MATHEMATICAL PRACTICES**  
MP2, MP5

## Unlock the Problem

At a pizza party, each pizza was cut into 6 equal slices. At the end of the party, there was  $\frac{5}{6}$  of a pizza left. Roberta put each of the leftover slices in its own freezer bag. How many bags did she use? What part of a pizza did she put in each bag?

**Example** Write  $\frac{5}{6}$  as the product of a whole number and a unit fraction.



The picture shows  $\frac{5}{6}$  or \_\_\_\_\_ sixth-size parts.

Each sixth-size part of the pizza can be shown by the unit fraction \_\_\_\_\_.

You can use unit fractions to show  $\frac{5}{6}$  in two ways.

$$\frac{5}{6} = \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad}$$

$$\frac{5}{6} = \underline{\quad} \times \frac{1}{6}$$

The number of addends, or the multiplier, represents the number of bags used.

The unit fractions represent the part of a pizza in each bag.

So, Roberta used \_\_\_\_\_ bags. She put \_\_\_\_\_ of a pizza in each bag.

- How many slices of pizza were eaten?

- What fraction of the pizza is 1 slice?

### Remember

You can use multiplication to show repeated addition.

$$3 \times 4 \text{ means } 4 + 4 + 4.$$

$$4 \times 2 \text{ means } 2 + 2 + 2 + 2.$$

### Math Talk

#### MATHEMATICAL PRACTICES 7

**Look for Structure** Give an example of how you would write a fraction greater than 1 as a mixed number.

- Explain how you can write  $\frac{3}{2}$  as the product of a whole number and a unit fraction.

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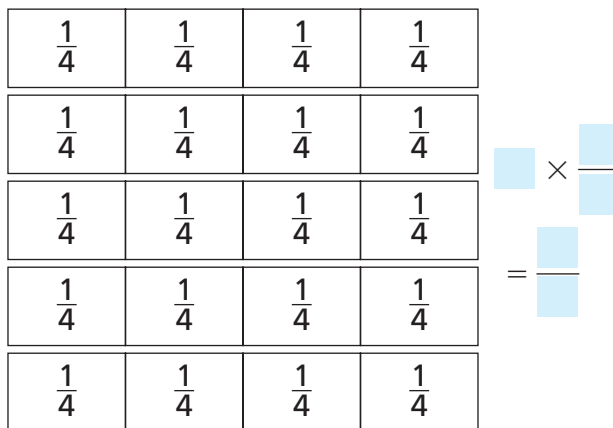
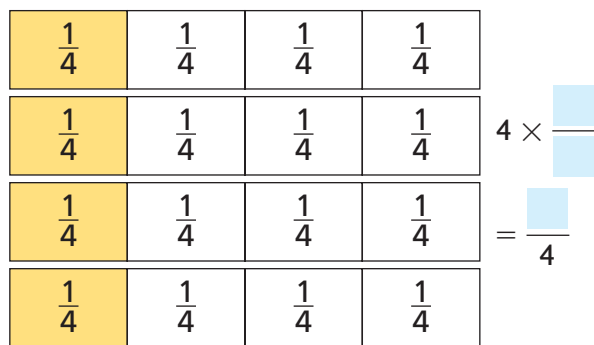
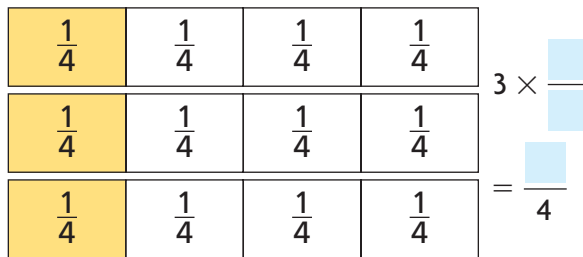
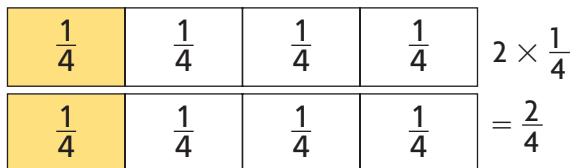
**Multiples** The product of a number and a counting number is a multiple of the number. You have learned about multiples of whole numbers.

The products  $1 \times 4$ ,  $2 \times 4$ ,  $3 \times 4$ , and so on are multiples of 4.

The numbers 4, 8, 12, and so on are multiples of 4.

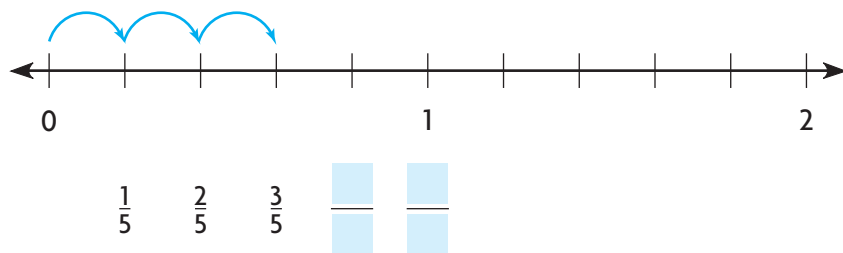
You can also find multiples of unit fractions.

**1**  $1 \times \frac{1}{4}$  is  $\frac{1}{4}$ . Use models to write the next four multiples of  $\frac{1}{4}$ . Complete the last model.



Multiples of  $\frac{1}{4}$  are  $\frac{1}{4}$ ,  $\square$ ,  $\square$ ,  $\square$ , and  $\square$ .

**1** Use a number line to write multiples of  $\frac{1}{5}$ .



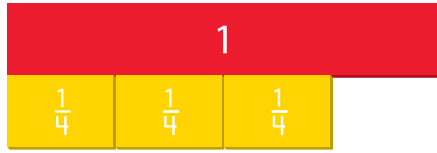
Multiples of  $\frac{1}{5}$  are  $\frac{1}{5}$ ,  $\square$ ,  $\square$ ,  $\square$ , and  $\square$ .

Name \_\_\_\_\_

## Share and Show



1. Use the picture to complete the equations.



$$\frac{3}{4} = \underline{\quad} + \underline{\quad} + \underline{\quad}$$

$$\frac{3}{4} = \underline{\quad} \times \frac{1}{4}$$

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

2.  $\frac{4}{5} = \underline{\quad}$

3.  $\frac{3}{10} = \underline{\quad}$

4.  $\frac{8}{3} = \underline{\quad}$

List the next four multiples of the unit fraction.

5.  $\frac{1}{6}$ , , , ,

6.  $\frac{1}{3}$ , , , ,

## On Your Own

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

7.  $\frac{5}{6} = \underline{\quad}$

8.  $\frac{9}{4} = \underline{\quad}$

9.  $\frac{3}{100} = \underline{\quad}$

List the next four multiples of the unit fraction.

10.  $\frac{1}{10}$ , , , ,

11.  $\frac{1}{8}$ , , , ,

**Math Talk**

### MATHEMATICAL PRACTICES 6

#### Attend to Precision

Explain why  $\frac{8}{5}$  is a multiple of  $\frac{1}{5}$ .

## Problem Solving • Applications



12. **MATHEMATICAL PRACTICE 6** Robyn uses  $\frac{1}{2}$  cup of blueberries to make each loaf of blueberry bread. **Explain** how many loaves of blueberry bread she can make with  $2\frac{1}{2}$  cups of blueberries.

13. **GO DEEPER** Nigel cut a loaf of bread into 12 equal slices. His family ate some of the bread and now  $\frac{5}{12}$  of the loaf is left. Nigel wants to put each of the leftover slices in its own bag. How many bags does Nigel need?

14. **THINK SMARTER** Which fraction is a multiple of  $\frac{1}{5}$ ? Mark all that apply.

$\frac{4}{5}$

$\frac{5}{9}$

$\frac{5}{7}$

$\frac{3}{5}$

## Sense or Nonsense?

15. **THINK SMARTER** Whose statement makes sense? Whose statement is nonsense? Explain your reasoning.



There is no multiple of  $\frac{1}{6}$  between  $\frac{3}{6}$  and  $\frac{4}{6}$ .



**Gavin**

$\frac{4}{5}$  is a multiple of  $\frac{1}{4}$ .



**Abigail**

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- For the statement that is nonsense, write a new statement that makes sense.

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Name \_\_\_\_\_

## Multiples of Unit Fractions



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

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

1.  $\frac{5}{6} =$   $5 \times \frac{1}{6}$  \_\_\_\_\_

2.  $\frac{7}{8} =$  \_\_\_\_\_

3.  $\frac{5}{3} =$  \_\_\_\_\_

4.  $\frac{9}{10} =$  \_\_\_\_\_

5.  $\frac{3}{4} =$  \_\_\_\_\_

6.  $\frac{11}{12} =$  \_\_\_\_\_

List the next four multiples of the unit fraction.

7.  $\frac{1}{5}$ , \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

8.  $\frac{1}{8}$ , \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

### Problem Solving



9. So far, Monica has read  $\frac{5}{6}$  of a book. She has read the same number of pages each day for 5 days. What fraction of the book does Monica read each day?

\_\_\_\_\_

10. Nicholas buys  $\frac{3}{8}$  pound of cheese. He puts the same amount of cheese on 3 sandwiches. How much cheese does Nicholas put on each sandwich?

\_\_\_\_\_

11. **WRITE** *Math* Explain how to write  $\frac{5}{3}$  as a product of a whole number and a unit fraction.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Lesson Check (4.NF.B.4a)

1. Selena walks from home to school each morning and back home each afternoon. Altogether, she walks  $\frac{2}{3}$  mile each day. How far does Selena live from school?
2. Will uses  $\frac{3}{4}$  cup of olive oil to make 3 batches of salad dressing. How much oil does Will use for one batch of salad dressing?

## Spiral Review (4.OA.B.4, 4.NF.A.1, 4.NF.B.3b, 4.NF.B.3d)

3. Liza bought  $\frac{5}{8}$  pound of trail mix. She gives  $\frac{2}{8}$  pound of trail mix to Michael. How much trail mix does Liza have left?
4. Leigh has a piece of rope that is  $6\frac{2}{3}$  feet long. How do you write  $6\frac{2}{3}$  as a fraction greater than 1?
5. A group of students have the following house numbers : 29, 39, 59, and 79. Randy's house number is a composite number. What is Randy's house number?
6. Mindy buys 12 cupcakes. Nine of the cupcakes have chocolate frosting and the rest have vanilla frosting. What fraction of the cupcakes have vanilla frosting?

