

Name \_\_\_\_\_

## Generate Equivalent Fractions

**Essential Question** How can you use multiplication to find equivalent fractions?

**Common Core** Number and Operations—  
Fractions—4.NF.A.1  
**MATHEMATICAL PRACTICES**  
MP4, MP7, MP8

### Unlock the Problem

Sara needs  $\frac{3}{4}$  cup of dish soap to make homemade bubble solution. Her measuring cup is divided into eighths. What fraction of the measuring cup should Sara fill with dish soap?

 Find how many eighths are in  $\frac{3}{4}$ .

**STEP 1** Compare fourths and eighths.

Shade to model  $\frac{1}{4}$ .  
Use fourth-size parts.



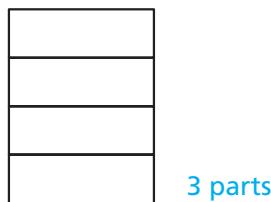
Shade to model  $\frac{1}{4}$ .  
Use eighth-size parts.



You need \_\_\_\_\_ eighth-size parts to make 1 fourth-size part.

**STEP 2** Find how many eighths you need to make 3 fourths.

Shade to model  $\frac{3}{4}$ .  
Use fourth-size parts.



Shade to model  $\frac{3}{4}$ .  
Use eighth-size parts.



You needed 2 eighth-size parts to make 1 fourth-size part.

So, you need \_\_\_\_\_ eighth-size parts to make 3 fourth-size parts.

So, Sara should fill  $\frac{\text{blue square}}{8}$  of the measuring cup with dish soap.

• Is an eighth-size part of a measuring cup bigger or smaller than a fourth-size part?  
\_\_\_\_\_



**Math Talk**

**MATHEMATICAL PRACTICES 4**

**Interpret a Result** Explain how you knew the number of eighth-size parts you needed to make 1 fourth-size part?

1. Explain why 6 eighth-size parts is the same amount as 3 fourth-size parts.

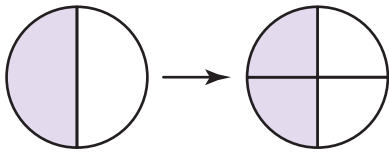


**Example** Write four fractions that are equivalent to  $\frac{1}{2}$ .

**MODEL**

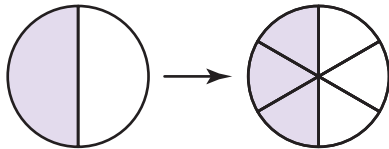
**WRITE EQUIVALENT FRACTIONS**

**RELATE EQUIVALENT FRACTIONS**



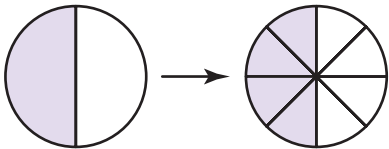
$$\frac{1}{2} = \frac{2}{4}$$

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



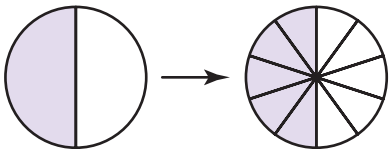
$$\frac{1}{2} = \frac{\square}{6}$$

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



$$\frac{1}{2} = \frac{\square}{\square}$$

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



$$\frac{1}{2} = \frac{\square}{\square}$$

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

So,  $\frac{1}{2} = \frac{2}{4} = \frac{\square}{6} = \frac{\square}{\square} = \frac{\square}{\square}$ .

2. Look at the model that shows  $\frac{1}{2} = \frac{3}{6}$ . How does the number of parts in the whole affect the number of parts that are shaded? Explain.

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3. Explain how you can use multiplication to write a fraction that is equivalent to  $\frac{3}{5}$ .

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4. Are  $\frac{2}{3}$  and  $\frac{6}{8}$  equivalent? Explain.

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# Share and Show



1. Complete the table below.

MODEL	WRITE EQUIVALENT FRACTIONS	RELATE EQUIVALENT FRACTIONS
	$\frac{2}{3} = \frac{4}{6}$	$\frac{2}{3} \times \frac{\square}{\square} = \frac{\square}{\square}$
	$\frac{3}{5} = \frac{6}{10}$	$\frac{3}{5} \times \frac{\square}{\square} = \frac{\square}{\square}$
	$\frac{1}{3} = \frac{4}{12}$	$\frac{1}{3} \times \frac{\square}{\square} = \frac{\square}{\square}$



## MATHEMATICAL PRACTICES 2

**Reason Abstractly** Can you multiply the numerator and denominator of a fraction by 0? Explain.

Write two equivalent fractions.

2.  $\frac{4}{5}$

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

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

$$\frac{4}{5} = \frac{\square}{\square} = \frac{\square}{\square}$$

3.  $\frac{2}{4}$

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

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

$$\frac{2}{4} = \frac{\square}{\square} = \frac{\square}{\square}$$

## On Your Own

Write two equivalent fractions.

4.  $\frac{3}{6}$

$$\frac{3}{6} = \frac{\square}{\square} = \frac{\square}{\square}$$

5.  $\frac{3}{10}$

$$\frac{3}{10} = \frac{\square}{\square} = \frac{\square}{\square}$$

6.  $\frac{2}{5}$

$$\frac{2}{5} = \frac{\square}{\square} = \frac{\square}{\square}$$

Tell whether the fractions are equivalent. Write = or  $\neq$ .

7.  $\frac{5}{6} \bigcirc \frac{10}{18}$

8.  $\frac{4}{5} \bigcirc \frac{8}{10}$

9.  $\frac{1}{5} \bigcirc \frac{4}{10}$

10.  $\frac{1}{4} \bigcirc \frac{2}{8}$

# Problem Solving • Applications



Use the recipe for 11–12.

11. **THINK SMARTER** Kim says the amount of flour in the recipe can be expressed as a fraction. Is she correct? Explain.

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## Face Paint Recipe

- $\frac{2}{8}$  cup cornstarch
- 1 tablespoon flour
- $\frac{9}{12}$  cup light corn syrup
- $\frac{1}{4}$  cup water
- $\frac{1}{2}$  teaspoon food coloring

12. **GO DEEPER** How could you use a  $\frac{1}{8}$ -cup measuring cup to measure the light corn syrup?

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13. **MATHEMATICAL PRACTICE 5 Communicate** Explain using words how you know a fraction is equivalent to another fraction.

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**WRITE** *Math*  
Show Your Work

14. **THINK SMARTER** Kyle drank  $\frac{2}{3}$  cup of apple juice. Fill in each box with a number from the list to generate equivalent fractions for  $\frac{2}{3}$ . Not all numbers will be used.

$$\frac{2}{3} = \frac{\boxed{\phantom{000}}}{6} = \frac{12}{\boxed{\phantom{000}}} = \frac{\boxed{\phantom{000}}}{\boxed{\phantom{000}}}$$

2	4	6	8
12	15	16	18

Name \_\_\_\_\_

## Generate Equivalent Fractions



**COMMON CORE STANDARD—4.NF.A.1**  
Extend understanding of fraction equivalence and ordering.

Write two equivalent fractions for each.

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

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

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

2.  $\frac{2}{3}$

\_\_\_\_\_

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

\_\_\_\_\_

4.  $\frac{4}{5}$

\_\_\_\_\_

Tell whether the fractions are equivalent.

Write = or  $\neq$ .

5.  $\frac{1}{4} \bigcirc \frac{3}{12}$

6.  $\frac{4}{5} \bigcirc \frac{5}{10}$

7.  $\frac{3}{8} \bigcirc \frac{2}{6}$

8.  $\frac{3}{4} \bigcirc \frac{6}{8}$

9.  $\frac{5}{6} \bigcirc \frac{10}{12}$

10.  $\frac{6}{12} \bigcirc \frac{5}{8}$

11.  $\frac{2}{5} \bigcirc \frac{4}{10}$

12.  $\frac{2}{4} \bigcirc \frac{3}{12}$

## Problem Solving



13. Jan has a 12-ounce milkshake. Four ounces in the milkshake are vanilla, and the rest is chocolate. What are two equivalent fractions that represent the fraction of the milkshake that is vanilla?

\_\_\_\_\_

14. Kareem lives  $\frac{4}{10}$  of a mile from the mall. Write two equivalent fractions that show what fraction of a mile Kareem lives from the mall.

\_\_\_\_\_

15. **WRITE** *Math* Explain how you can determine if  $\frac{1}{3}$  and  $\frac{4}{12}$  are equivalent fractions.

\_\_\_\_\_

\_\_\_\_\_

## Lesson Check (4.NF.A.1)

1. Jessie colored a poster. She colored  $\frac{2}{5}$  of the poster red. Write a fraction that is equivalent to  $\frac{2}{5}$ .
2. Marcus makes a punch that is  $\frac{1}{4}$  cranberry juice. Write two fractions that are equivalent to  $\frac{1}{4}$ .

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## Spiral Review (4.OA.A.3, 4.OA.C.5, 4.NBT.B.5)

3. An electronics store sells a large flat screen television for \$1,699. Last month, the store sold 8 of these television sets. About how much money did the televisions sell for?
4. Matthew has 18 sets of baseball cards. Each set has 12 cards. About how many baseball cards does Matthew have?

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5. Diana had 41 stickers. She put them in 7 equal groups. She put as many as possible in each group. She gave the leftover stickers to her sister. How many stickers did Diana give to her sister?
6. Christopher wrote the number pattern below. The first term is 8.  
8, 6, 9, 7, 10, ...  
What is a rule for the pattern?

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