Name _____

Generate Equivalent Fractions

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

Unlock the Problem Real World

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.

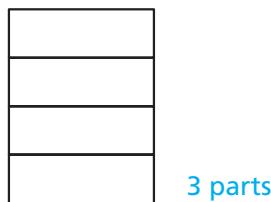Shade to model $\frac{1}{4}$.
Use fourth-size parts.

1 part

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

2 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.

3 parts

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

6 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 $\frac{}{8}$ 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?

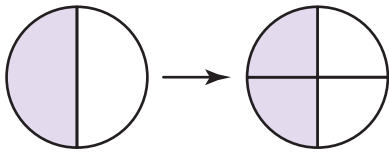**1.** Explain why 6 eighth-size parts is the same amount as 3 fourth-size parts.

_____

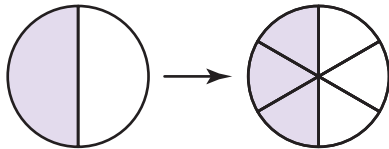## Example Write four fractions that are equivalent to $\frac{1}{2}$.

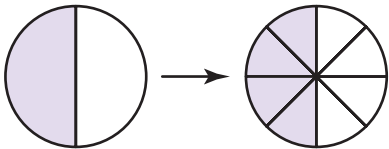| MODEL	WRITE EQUIVALENT FRACTIONS	RELATE EQUIVALENT FRACTIONS
	$\dfrac{1}{2} = \dfrac{2}{4}$	$\dfrac{1 \times 2}{2 \times 2} = \dfrac{2}{4}$
	$\dfrac{1}{2} = \dfrac{}{6}$	$\dfrac{1 \times }{2 \times 3} = \dfrac{}{6}$
	$\dfrac{1}{2} = \dfrac{}{}$	$\dfrac{1 \times }{2 \times } = \dfrac{}{}$
	$\dfrac{1}{2} = \dfrac{}{}$	$\dfrac{1 \times }{2 \times } = \dfrac{}{}$
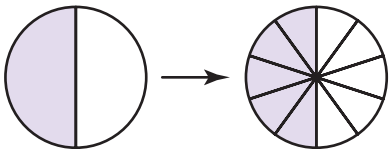
So, $\dfrac{1}{2} = \dfrac{2}{4} = \dfrac{}{6} = \dfrac{}{} = \dfrac{}{}$.

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.

_____

_____

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

_____

_____

_____

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

_____

_____

Name _____
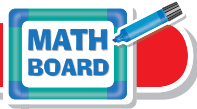
1. Complete the table below.

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

Math Talk MATHEMATICAL PRACTICES ②

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

Write two equivalent fractions.

✓ **2.** $\dfrac{4}{5}$

$\dfrac{4}{5} = \dfrac{4 \times }{5 \times } = \dfrac{}{}$

$\dfrac{4}{5} = \dfrac{4 \times }{5 \times } = \dfrac{}{}$

$\dfrac{4}{5} = \dfrac{}{} = \dfrac{}{}$

✓ **3.** $\dfrac{2}{4}$

$\dfrac{2}{4} = \dfrac{2 \times }{4 \times } = \dfrac{}{}$

$\dfrac{2}{4} = \dfrac{2 \times }{4 \times } = \dfrac{}{}$

$\dfrac{2}{4} = \dfrac{}{} = \dfrac{}{}$

Write two equivalent fractions.

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

$\dfrac{3}{6} = \dfrac{}{} = \dfrac{}{}$

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

$\dfrac{3}{10} = \dfrac{}{} = \dfrac{}{}$

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

$\dfrac{2}{5} = \dfrac{}{} = \dfrac{}{}$

Tell whether the fractions are equivalent. Write = or ≠.

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

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

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

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

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Problem Solving • Applications Real World

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.

_____

_____

_____

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?

_____

_____

_____

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

_____

_____

_____

_____

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.

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

2	4	6	8
12	15	16	18

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 ≠.

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 Real World

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

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 $\frac{1}{4}$.

_____

Spiral Review

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?

_____

_____

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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GO TO THE
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