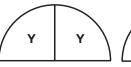
#### Student Guide

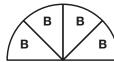
#### **Equivalent Fractions**

## Questions 1-18 (SG pp. 334-339)

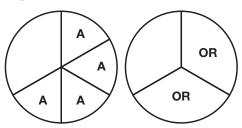
- 1.\*  $\sin \frac{1}{8}$  -cup measures. Possible explanation:  $\frac{6}{8}$  matches  $\frac{3}{4}$  on the fraction chart.
- **2.\*** Responses will vary. Maya and Ming both used area models. Irma found the number of  $\frac{1}{8}$ -cup measures that are in one  $\frac{1}{4}$ -cup measure and how many  $\frac{1}{4}$ -cups are in a  $\frac{3}{4}$ -cup measure.
- **3. A.**  $\frac{1}{4} = \frac{2}{8}$
- **B.**  $\frac{3}{4} = \frac{6}{8}$
- **C.**  $\frac{2}{4} = \frac{4}{8}$
- **D.**  $\frac{4}{4} = \frac{8}{8}$





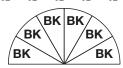


- **4.** A. Two  $\frac{1}{3}$ -cup measures  $=\frac{2}{3}$  of a cup;  $\frac{2}{3}=\frac{2}{3}$ 
  - **B.** Four  $\frac{1}{6}$ -cup measures  $=\frac{2}{3}$  of a cup;  $\frac{4}{6}=\frac{2}{3}$
  - **C.** Eight  $\frac{1}{12}$  -cup measures  $=\frac{2}{3}$  of a cup;  $\frac{8}{12}=\frac{2}{3}$
  - **D.** Responses may vary. Possible response: two sixths are equal to one-third, so four sixths is equal to two-thirds.



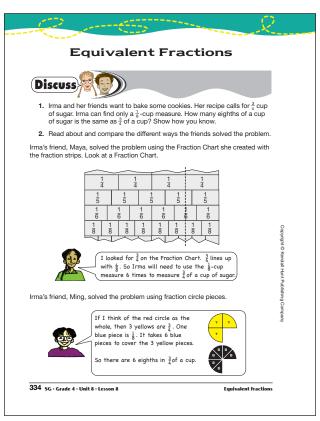
**E.**  $\frac{8}{12} = \frac{2}{3}$  or  $8 \times \frac{1}{12} = \frac{2}{3}$  or  $\frac{1}{12} + \frac{1}{12} = \frac{2}{3}$ 

5. A.



I kept putting down  $\frac{1}{12}$ , or a black piece, until I got  $\frac{1}{2}$  of a whole, or pink, piece.

- **B.**  $\frac{1}{2} = \frac{6}{12}$
- **C.** 6 keychains will pack in a box.
- **6.** No,  $\frac{1}{2}$  does not equal  $\frac{4}{10}$ . Explanations will vary. Possible response: 4 purples do not cover 1 pink, or  $\frac{4}{10}$  does not line up with  $\frac{1}{2}$  on the Fraction Chart.



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- Complete the number sentences to show equivalent fractions. Equivalent fractions are fractions that have the same value. Use the Fraction Chart or fraction circle pieces to find the equivalent fractions. Remember: the red circle is the unit whole.
  - **A.**  $\frac{1}{4} = \frac{?}{8}$ **C.**  $\frac{2}{4} = \frac{?}{8}$
- **B.**  $\frac{3}{4} = \frac{?}{8}$  **D.**  $\frac{4}{4} = \frac{?}{8}$
- E. Draw the fraction circle pieces to show how you answered Question 3C.



Use the fraction circle pieces or the Fraction Chart to solve the following problems. When using the circle pieces, think of the red circle as one whole.

- 4. Frank is making bread and needs  $\frac{2}{3}$  of a cup of flour. He has a few different measuring cups.
  - **A.** How many  $\frac{1}{3}$ -cup measures equal  $\frac{2}{3}$  of a cup?
  - **B.** How many  $\frac{1}{8}$ -cup measures equal  $\frac{2}{3}$  of a cup?
  - **C.** How many  $\frac{1}{12}$ -cup measures equal  $\frac{2}{3}$  of a cup?
  - **D.** Show how you solved Question 4B with the circle pieces.
  - E. Write a number sentence for Question 4C.
- 5. Romesh is helping his father pack a box of key chains for a fundraiser. The box holds  $\frac{1}{2}$  pound of merchandise. Each key chain weighs  $\frac{1}{12}$  of a pound. Romesh must decide how many key chains he can pack in the box.
  - A. Show how you solved the problem with fraction circle pieces.
  - **B.** Help Romesh by completing this number sentence:  $\frac{1}{2} = \frac{?}{12}$
- **C.** How many key chains can Romesh pack in a box? **6.** Maya wrote:  $\frac{1}{2} = \frac{4}{10}$
- $\mathbf{Maya wrote: } \frac{\cdot}{2} = \frac{\cdot}{10}$

Do you agree with Maya? Explain how you know

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<sup>\*</sup>Answers and/or discussion are included in the lesson.

## **Answer Key • Lesson 8: Equivalent Fractions**

7. Nicholas and his friends are trying to collect money to help take care of their class pet. The Parent Teacher Group donated ½ of the money needed. The class needed to collect the other ½ of the money. Below is a list of other money they have collected.

John's Pet Shop donated  $\frac{1}{4}$  of the money needed. Ms. Adams donated  $\frac{1}{8}$  of the money needed. The Grocery donated  $\frac{1}{8}$  of the money needed.

- A. Did they collect all the money needed to take care of the class pet?
- B. Show how to solve the problem using circle pieces.
- C. Nicholas started to write a number sentence for this problem. Help him complete it.

$$\frac{1}{2} = \frac{1}{4} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$$

#### Finding Equivalent Fractions

For Questions 8-18, think of the red circle as one whole

- 8. Use the fraction circle pieces to find fractions equal to  $\frac{1}{2}$ .
- 9. Jerome wrote:  $\frac{1}{2} = \frac{50}{100}$ . Do you agree with Jerome? Explain.
- 10. A. Nila showed how she decided that  $\frac{1}{2} = \frac{10}{20}$ . In your own words, what did Nila do?



 $\frac{1}{2} = \frac{1}{2} \times \frac{10}{10} = \frac{10}{20}$  I multiplied the top and bottom by 10 and go

B. Help Nila find another fraction equal to ½.

$$\frac{1}{2} = \frac{1 \times 20}{2 \times 20} = \boxed{\phantom{0}}$$

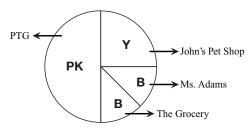
- 11. A. Use the fraction circle pieces to show two fractions equal to  $\frac{3}{4}$ .
  - **B.** Use Nila's method to find two other fractions equal to  $\frac{3}{4}$ .

Equivalent Fractions

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- 7. A. Yes.
  - **B.** Possible response: I used the circle pieces to cover a red piece. This is all the money they needed to collect.

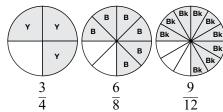


**C.** 
$$\frac{1}{2} = \frac{1}{4} + \frac{1}{8} + \frac{1}{8}$$

- **8.\*** See lesson, Figure 1.
- **9.\*** Yes,  $\frac{1}{2}$  is equal to  $\frac{50}{100}$ . Possible explanation: I know a half-dollar is  $50\phi$ . I know 50 + 50 = 100. So 50 is half of 100.
- **10. A.** She multiplied the top and the bottom by the same number to find an equal fraction.

**B.** 
$$\frac{20}{40} = \frac{1}{2} = \frac{1 \times 20}{2 \times 20} = \frac{20}{40}$$

11. A.\*



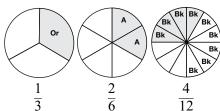
**B.\*** Possible response:

$$\frac{3}{4} = \frac{3 \times 10}{4 \times 10} = \frac{30}{40};$$

## **Answer Key • Lesson 8: Equivalent Fractions**



12. A.

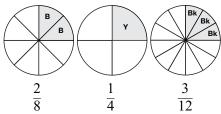


**B.** Possible response:

$$\frac{1}{3} = \frac{1 \times 7}{3 \times 7} = \frac{7}{21};$$

$$\frac{1}{3} = \frac{1 \times 20}{3 \times 20} = \frac{20}{60}$$

13. A.



**B.** Possible response:

$$\frac{2}{8} = \frac{2 \times 10}{8 \times 10} = \frac{20}{80};$$

$$\frac{2}{8} = \frac{2 \times 5}{8 \times 5} = \frac{10}{40}$$

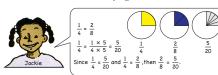
- **14.** A.\* Yes,  $\frac{2}{8}$  is equal to  $\frac{5}{20}$ . They both cover  $\frac{1}{4}$  of a whole circle.
  - **B.\*** Possible response:  $\frac{1}{4} = \frac{1 \times 25}{4 \times 25} = \frac{25}{100}$
- **15. A.** Yes,  $\frac{24}{48} = \frac{1}{2}$ . 24 + 24 = 48. So, 24 is half of 48.
  - **B.** Yes, 24 is half 48. Roberto divided 48 into two equal parts of 24.
- **16.** No,  $\frac{15}{28}$  is not equal to  $\frac{1}{2}$ . Possible explanation:

$$28$$
  $\div$   $2$  = 14, not 15.

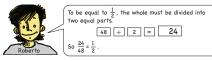
- 17. A. True
- B. False
- C. False
- D. True
- E. True
- F. False
- **18.** A.  $\frac{3}{4} = \frac{6}{8}$
- **B.**  $\frac{1}{2} = \frac{5}{10}$
- **C.**  $\frac{2}{3} = \frac{4}{6}$
- **D.**  $\frac{2}{5} = \frac{4}{10}$
- **E.**  $\frac{1}{2} = \frac{4}{8}$
- **F.**  $\frac{6}{10} = \frac{3}{5}$
- **G.**  $\frac{8}{12} = \frac{2}{3}$

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- 12. A. Use the fraction circle pieces to show two fractions equal to  $\frac{1}{3}$ 
  - **B.** Use Nila's method to find two other fractions equal to  $\frac{1}{3}$ .
- 13. A. Use the fraction circle pieces to show two fractions equal to 2.
  - **B.** Use Nila's method to find two other fractions equal to  $\frac{2}{8}$ .
- 14. A. Jackie showed how she decided that  $\frac{2}{5} = \frac{5}{5}$ . Do you agree with Jackie that  $\frac{2}{8} = \frac{5}{20}$ ? Explain.



- **B.** Use Jackie's strategy to find another fraction equivalent to  $\frac{2}{8}$ .
- **15. A.** Is  $\frac{24}{48} = \frac{1}{2}$ ? How do you know?
  - B. Look at Roberto's explanation. Do you agree with Roberto's explanation? Why or why not?



- **16.** Is  $\frac{15}{20} = \frac{1}{2}$ ? How do you know?
- 17. Use your Fraction Chart, fraction circle pieces, Jackie's strategy, or Roberto's strategy to decide which number sentences are true
- **B.**  $\frac{5}{9} = \frac{1}{9}$

- E.  $\frac{3}{8} = \frac{6}{16}$
- **F.**  $\frac{15}{12} = \frac{1}{2}$

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- 18. Complete the number sentences below. Use your Fraction Chart or the
  - **A.**  $\frac{3}{4} = \frac{?}{8}$

**E.**  $\frac{1}{2} = \frac{4}{?}$ 

- **D.**  $\frac{2}{5} = \frac{?}{10}$ 
  - **H.**  $\frac{3}{12} = \frac{?}{8}$

# ( Momework )

Use the Fraction Circle Pieces from the Reference section, the Fraction Chart, or number sentences to solve the problems.

- 1. For each fraction below, write two other equivalent fractions
  - A.  $\frac{2}{4}$
- **B.**  $\frac{5}{10}$
- **C.**  $\frac{2}{6}$
- **D**.  $\frac{6}{8}$
- E.  $\frac{5}{5}$
- F.  $\frac{2}{2}$
- G. Show how to use the Fraction Chart to answer Question 1C.
- H. Show how to use fraction circle pieces to answer Question 1D.
- A. Maria is looking for three fractions equivalent to <sup>1</sup>/<sub>4</sub>. Complete Maria's number sentences.



B. To find a third equivalent fraction, Maria wrote the following. Complete the number sentence Maria started.

$$\frac{1 \times \boxed{}}{4 \times \boxed{}} = \frac{4}{16}$$

Equivalent Fractions

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<sup>\*</sup>Answers and/or discussion are included in the lesson.

- E.  $\frac{1}{2} = \frac{4}{2}$
- **B.**  $\frac{1}{2} = \frac{?}{10}$

## ( Momework )

Use the Fraction Circle Pieces from the Reference section, the Fraction Chart, or number sentences to solve the problems.

- 1. For each fraction below, write two other equivalent fractions
- **B.**  $\frac{5}{10}$
- C.  $\frac{2}{6}$
- **D.**  $\frac{6}{8}$
- **E.**  $\frac{5}{5}$
- F.  $\frac{2}{3}$
- G. Show how to use the Fraction Chart to answer Question 1C.
- H. Show how to use fraction circle pieces to answer Question 1D.
- 2. A. Maria is looking for three fractions equivalent to \( \frac{1}{4} \). Complete Maria's number sentences







B. To find a third equivalent fraction, Maria wrote the following. Complete the number sentence Maria started.

$$\frac{1 \times \boxed{}}{4 \times \boxed{}} = \frac{4}{16}$$

Equivalent Fractions

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- Maya wrote number sentences to show fractions that are equivalent to ½. She
  forgot to write in some of the numerators and denominators. Complete Maya's
  number sentences by filling in the missing numbers to make each sentence a true sentence.
  - **A.**  $\frac{1}{2} = \frac{3}{2}$
- **B.**  $\frac{1}{2} = \frac{?}{18}$
- C.  $\frac{1}{2} = \frac{12}{2}$
- **D.**  $\frac{1}{2} = \frac{?}{20}$
- Write 5 fractions equivalent to <sup>2</sup>/<sub>3</sub>.
- 5. Romesh is packing a box filled with plastic cars for his father. The box holds  $\frac{3}{4}$  pound of merchandise. Each plastic car weighs  $\frac{1}{16}$  of a pound.
  - A. Complete this number sentence to help Romesh decide how many sixteenths of a pound is equivalent to  $\frac{3}{4}$  of a pound.  $\frac{3}{4} = \frac{?}{16}$ .
  - B. How many plastic cars can Romesh pack in the box?
- **C.** What is another name for  $\frac{1}{16}$  of a pound?
- 6. Write 5 fractions equivalent to 2/5.
- 7. Shannon wants to purchase  $\frac{1}{3}$  yard of ribbon. There are 36 inches in a yard. **A.** Complete the following number sentence to help the clerk decide how many inches of ribbon she must cut:  $\frac{1}{3}=\frac{?}{36}$ .
  - B. How many inches of ribbon should she cut?
  - C. What is another name for  $\frac{12}{50}$  of a vard?



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**Equivalent Fractions** 

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#### Student Guide

#### **Homework**

## Questions 1-12 (SG pp. 339-341)

- I. Possible responses include:

  - **A.**  $\frac{2}{4} = \frac{4}{8} = \frac{8}{16}$  **B.**  $\frac{5}{10} = \frac{1}{2} = \frac{50}{100}$
  - **C.**  $\frac{2}{6} = \frac{1}{3} = \frac{4}{12}$  **D.**  $\frac{6}{8} = \frac{3}{4} = \frac{9}{12}$
  - **E.**  $\frac{5}{5} = \frac{99}{99} = \frac{4}{4}$  **F.**  $\frac{2}{3} = \frac{4}{6} = \frac{12}{18}$
  - **G.** Responses will vary. Possible response: I looked at the chart and  $\frac{2}{6}$  lined up with  $\frac{1}{3}$
  - **H.** Possible response: 6 purple pieces equal 3 yellow pieces and 6 purple pieces equal 9 black pieces.
- **2. A.**  $\frac{1}{4} = \frac{2}{8} = \frac{3}{12}$ 
  - $\mathbf{B.} \quad \frac{1 \times \boxed{4}}{4 \times \boxed{4}} = \frac{4}{16}$
- **3. A.**  $\frac{1}{2} = \frac{3}{6}$
- **B.**  $\frac{1}{2} = \frac{9}{18}$
- **C.**  $\frac{1}{2} = \frac{12}{24}$  **D.**  $\frac{1}{2} = \frac{10}{20}$
- **E.**  $\frac{1}{2} = \frac{25}{50}$  **F.**  $\frac{1}{2} = \frac{7}{14}$
- **4.** Possible response:

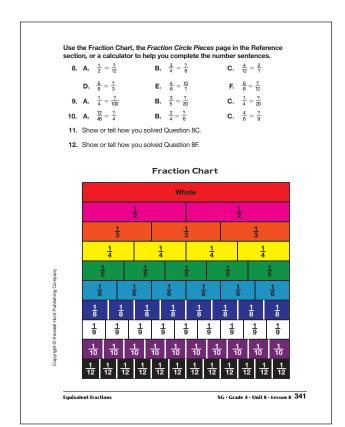
$$\frac{2}{3} = \frac{4}{6} = \frac{8}{12} = \frac{20}{30} = \frac{10}{15} = \frac{50}{75}$$
**5. A.**  $\frac{3}{4} = \frac{12}{16}$ 

- - **B.** 12 plastic cars
  - C. an ounce
- **6.** Possible response:

$$\frac{2}{5} = \frac{4}{10} = \frac{6}{15} = \frac{8}{20} = \frac{200}{500} = \frac{16}{40}$$

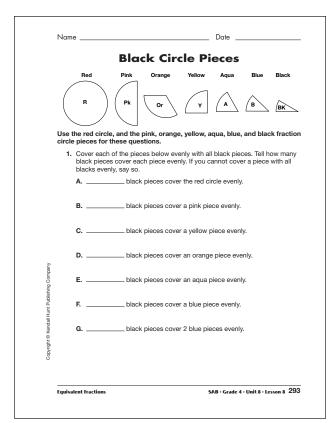
- 7. A.  $\frac{1}{3} = \frac{12}{36}$ 
  - **B.** 12 inches
  - C. foot

- **8.** A.  $\frac{1}{2} = \frac{6}{12}$ ;  $\frac{1}{2} = \frac{1 \times 6}{2 \times 6} = \frac{6}{12}$ 
  - **B.**  $\frac{3}{4} = \frac{6}{8}$ ;  $\frac{3}{4} = \frac{3 \times 2}{4 \times 2} = \frac{6}{8}$
  - **C.**  $\frac{4}{12} = \frac{2}{6}$ ;  $\frac{4}{12} = \frac{4 \div 2}{12 \div 2} = \frac{2}{6}$
  - **D.**  $\frac{6}{9} = \frac{2}{3}$ ;  $\frac{6}{9} = \frac{6 \div \boxed{3}}{9 \div \boxed{3}} = \boxed{\frac{2}{3}}$
  - **E.**  $\frac{4}{6} = \frac{10}{15}$ ;  $\frac{4}{6} = \frac{4 \div 2}{6 \div 2} = \frac{2 \times \boxed{5}}{3 \times \boxed{5}} = \frac{10}{\boxed{15}}$
  - **F.**  $\frac{6}{8} = \frac{9}{12}$ ;  $\frac{6}{8} = \frac{6 \div 2}{8 \div 2} = \frac{3 \times \boxed{3}}{4 \times \boxed{3}} = \boxed{\frac{9}{12}}$
- **9.** A.  $\frac{1}{4} = \frac{25}{100}$ ;  $\frac{1}{4} = \frac{1 \times 25}{4 \times 25} = \frac{25}{100}$ 
  - **B.**  $\frac{3}{5} = \frac{12}{20}$ ;  $\frac{3}{5} = \frac{3 \times \boxed{4}}{5 \times \boxed{4}} = \boxed{\frac{12}{20}}$
  - **C.**  $\frac{1}{4} = \frac{5}{20}$ ;  $\frac{1}{4} = \frac{1 \times \boxed{5}}{4 \times \boxed{5}} = \frac{\boxed{5}}{20}$
- **10. A.**  $\frac{12}{48} = \frac{1}{4}$ ;  $\frac{12}{48} = \frac{12 \div \boxed{12}}{48 \div \boxed{12}} = \boxed{\frac{1}{4}}$ 
  - **B.**  $\frac{2}{4} = \frac{3}{6}$ ;  $\frac{2}{4} = \frac{1}{2} = \frac{1 \times \boxed{3}}{2 \times \boxed{3}} = \boxed{\frac{3}{6}}$
  - **C.**  $\frac{4}{6} = \frac{6}{9}$ ;  $\frac{4}{6} = \frac{4 \div 2}{6 \div 2} = \frac{2 \times \boxed{3}}{3 \times \boxed{3}} = \boxed{\frac{6}{9}}$
- 11. Possible response: 4 black pieces are the same as 2 aqua pieces. Also see answer to 8C.
- 12. Possible response: 6 blue pieces are equal to 4 yellow pieces. 1 yellow piece is 3 black pieces. So 3 yellow pieces is 9 black pieces, or <sup>9</sup>/<sub>12</sub>. Also see answer to 8F.



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## **Answer Key • Lesson 8: Equivalent Fractions**



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Vame		Date	
	, a black piece or a blue piec pieces or 7 blue pieces?	ce? Which covers more	of the red
3. A. A black pie	ce is $\frac{1}{4}$ of what other piece?		
B. A black pie	ce is $\frac{1}{3}$ of what other piece?		
C. A black pie	ce is $\frac{1}{2}$ of what other piece?	·	
D. 3 black pier	ces cover $\frac{1}{2}$ of what other pi	iece?	
4. If the red circle	is one whole, write a fraction	on for the following piece	es.
A. 1 black pier	ce		
B. 6 black pier	ces		
C. 4 black pier	ces		
D. 11 black pie	eces		

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#### **Student Activity Book**

#### **Black Circle Pieces**

#### Questions 1-6 (SAB pp. 293-296)

- I. A. 12 black pieces
  - B. 6 black pieces
  - C. 3 black pieces
  - **D.** 4 black pieces
  - E. 2 black pieces
  - **F.** No amount of black pieces cover a blue piece evenly.
  - **G.** 3 black pieces
- **2.** A blue piece is larger. 11 black pieces will cover more of the red circle than 7 blue pieces.
- 3. A. An orange piece
  - **B.** A yellow piece
  - C. An aqua piece
  - D. A pink piece
- **4. A.**  $\frac{1}{12}$ 
  - **B.**  $\frac{6}{12}$
  - C.  $\frac{4}{12}$
  - **D.**  $\frac{11}{12}$

- **5. A.** Possible response: orange; 2 blacks and 1 orange;  $\frac{1}{2} = \frac{2}{12} + \frac{1}{3}$
- BK OR
- **B.** Possible response: yellow; 3 blacks and 1 yellow;  $\frac{1}{4} + \frac{3}{12} = \frac{1}{2}$



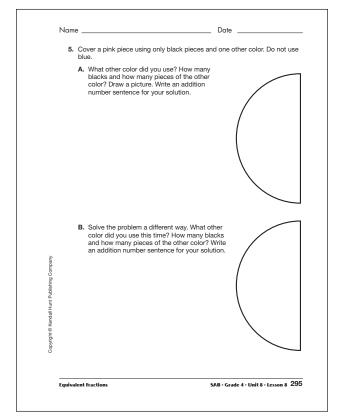
**6. A.** Possible response: aqua and yellow; 5 blacks, 2 aquas, and 1 yellow



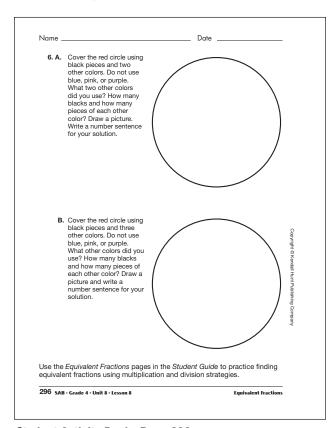
- $\frac{5}{12} + \frac{2}{6} + \frac{1}{4} = 1$
- **B.** Possible response: orange, aqua, and yellow; 3 blacks, 1 yellow, 1 aqua, and one orange

 $\frac{3}{12} + \frac{1}{6} + \frac{1}{4} + \frac{1}{3} = 1$ 





## Student Activity Book - Page 295



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## Teacher Guide - Page 1

## Teacher Guide - Page 2

### **Equivalent Fractions Quiz**

#### Questions 1-5 (TG pp. 1-2)

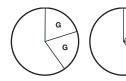
- 1. The following sentences should be circled:
  - **B.**  $\frac{3}{4} = \frac{6}{8}$
  - **C.**  $\frac{8}{10} = \frac{4}{5}$
  - **E.**  $\frac{2}{4} = \frac{20}{40}$
  - **F.**  $\frac{7}{8} = \frac{14}{16}$
- 2. Answers will vary. Possible responses:
  - **A.**  $\frac{7 \times 2}{8 \times 2} = \frac{14}{16}$
  - **B.** I lined up the end of  $\frac{3}{4}$  of a strip with the eighths strip and it was the same as  $\frac{6}{8}$ .
- **3.** Answers will vary.

 $\frac{4}{6} = \frac{6}{9} = \frac{40}{60}$ ;  $\frac{9}{12}$  of a yard is not equal to the other lengths.

I lined up  $\frac{4}{6}$  with  $\frac{6}{9}$  on the Fraction Chart, so they are the same.

 $\frac{4}{6}$  does not line up with  $\frac{9}{12}$  on the Fraction Chart.  $\frac{4 \times 10}{6 \times 10} = \frac{40}{60}$ , so  $\frac{4}{6} = \frac{40}{60}$ 

- **4. A.**  $\frac{1}{2} = \frac{3}{6}$
- **B.**  $\frac{3}{5} = \frac{\boxed{12}}{20}$
- **C.**  $\frac{2}{3} = \frac{8}{12}$
- **D.**  $\frac{4}{10} = \frac{2}{5}$
- **E.** 4 purples cover the same area as 2 greens.



- **F.** Possible explanation:  $\frac{3 \times 4}{5 \times 4} = \frac{12}{20}$
- **5.**  $\frac{2}{8}$  inch; Possible explanation:  $\frac{1 \times 2}{4 \times 2} = \frac{2}{8}$