

Student Guide

Find Equivalent Fractions (SG pp. 64–67)  
Questions 1–9

1. \*Yes; Possible response: If you multiply both the numerator and denominator for  $\frac{1}{3}$  by 10, the new fraction will be  $\frac{10}{30}$ . So  $\frac{1}{3}$  is equivalent to  $\frac{10}{30}$ .
2. A.  $\frac{4}{12}$       B.  $\frac{12}{36}$       C.  $\frac{3}{3}$   
D. \*When you multiply both the numerator and denominator by the same number it is like multiplying it by one. That means the fraction has the same value, but it is divided into a different number of pieces.
3. A. \* true      B. \* false      C. \* true  
D. \* Possible response: I used the Equivalent Fraction Chart to see that  $\frac{3}{12}$  is equal to  $\frac{1}{4}$ . I then multiplied both the numerator and denominator for  $\frac{1}{4}$  by 5 and the fraction is  $\frac{5}{20}$ . That means that  $\frac{1}{4} = \frac{3}{12} = \frac{5}{20}$ .
4. A.  $\frac{3}{5}$       B.  $\frac{4}{5}$       C.  $\frac{9}{9}$   
D. When you divide both the numerator and denominator by the same number it is like dividing by one. That means the fraction has the same value, but it is just divided into a different number of pieces.

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## Find Equivalent Fractions

Discuss

For Questions 1–9, use the fraction circle pieces and the *Equivalent Fractions Chart* in your *Student Activity Book*. The red circle is the unit whole.

1. Frank looked at his *Equivalent Fractions Chart*. He made a list of all the fractions that are equivalent to  $\frac{1}{3}$ .
 

$$\frac{1}{3} = \frac{2}{6} = \frac{4}{12}$$

Frank knew that **equivalent fractions** have the same value. He decided to find other fractions equivalent to  $\frac{1}{3}$ . He wrote  $\frac{10}{30} = \frac{10}{30}$ . Do you agree with Frank? Explain.
  
2. Jessie showed the strategy she used to decide  $\frac{2}{6} = \frac{10}{30}$ .
 

I used a multiplication strategy. I multiplied both the numerator and denominator by 5 and got  $\frac{10}{30}$ , so  $\frac{2}{6} = \frac{10}{30}$ .

Use Jessie's multiplication strategy to find other fractions that are equivalent to  $\frac{2}{6}$ .

A.  $\frac{2}{6} = \frac{2 \times 2}{6 \times 2} = \frac{\square}{\square}$ 
B.  $\frac{2}{6} = \frac{2 \times 6}{6 \times 6} = \frac{\square}{\square}$ 
C.  $\frac{2}{6} = \frac{2 \times \square}{6 \times \square} = \frac{6}{18}$

D. Explain why multiplying both the numerator and denominator by the same number will result in an equivalent fraction.

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3. John showed the multiplication strategy he used to decide that  $\frac{2}{6} = \frac{5}{15}$ . I know that  $\frac{2}{6} = \frac{1}{3}$ . Does  $\frac{5}{15} = \frac{1}{3}$ ? Is there a number I can multiply both the numerator and the denominator by to make the fraction  $\frac{1}{3}$ ?
 

$\frac{1}{3} = \frac{1 \times 5}{3 \times 5} = \frac{5}{15}$   
 If  $\frac{1}{3} = \frac{2}{6}$  and  $\frac{1}{3} = \frac{5}{15}$ , then  $\frac{2}{6} = \frac{5}{15}$ .

Use John's multiplication strategy to decide if the following number sentences are true.

A.  $\frac{2}{6} = \frac{7}{21}$ 
B.  $\frac{4}{6} = \frac{9}{15}$ 
C.  $\frac{3}{12} = \frac{5}{20}$

D. Show or tell how you decided your answer for Question 3C.
  
4. Maya used a division strategy to find a fraction that is equivalent to  $\frac{18}{24}$ .
 

I know that 6 is a factor of 18. It is also a factor of 24.

$\frac{18}{24} \div \frac{6}{6} = \frac{3}{4}$

Use Maya's division strategy to solve each number sentence and find an equivalent fraction.

A.  $\frac{9}{15} \div \frac{3}{3} = \frac{\square}{\square}$ 
B.  $\frac{32}{40} \div \frac{8}{8} = \frac{\square}{\square}$ 
C.  $\frac{45}{54} \div \frac{\square}{\square} = \frac{5}{6}$

D. Explain why dividing both the numerator and denominator by the same number will result in an equivalent fraction.

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



Use the fraction circle pieces and multiplication or division strategies to solve the problems.

5. Ming wrote number sentences to show equivalent fractions. He forgot to write in some of the numerators and denominators. Complete Ming's number sentences by filling in the missing numbers to make each sentence true.

A.  $\frac{1}{2} = \frac{15}{?}$       B.  $\frac{2}{5} = \frac{?}{25}$       C.  $\frac{24}{30} = \frac{?}{5}$

D.  $\frac{14}{16} = \frac{7}{?}$       E.  $\frac{5}{12} = \frac{?}{24}$       F.  $\frac{8}{10} = \frac{16}{?}$

G. Explain how you solved Question 5F.

6. Write 5 fractions that are equivalent to  $\frac{5}{6}$ .

7. Luis said  $\frac{9}{12}$  is equivalent to  $\frac{15}{16}$ . Do you agree with Luis? Explain why or why not.

8. Jacob has a board that is 1 yard, or 36 inches, long. He needs  $\frac{2}{3}$  of the board for a project.

A. Complete the number sentence to help Jacob decide how many inches long his board needs to be.  $\frac{2}{3} = \frac{?}{36}$

B. How many inches long should his board be?

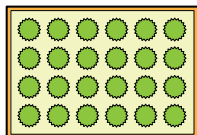
C. How many inches will be left?

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**Check-In: Question 9**

9. Ana bought a box of candy with 24 pieces in it. She will share the candy but first each person must figure out how many pieces of candy they will receive from the box.



A. Roberto will get  $\frac{1}{4}$  of the candy. How many pieces of candy will Ana give Roberto? Solve  $\frac{1}{4} = \frac{?}{24}$ .

B. Cindy will get  $\frac{1}{6}$  of the candy. How many pieces of candy will Ana give Cindy? Write a number sentence.

C. Ana's brother will get  $\frac{3}{9}$  of the candy. Ana gave him 8 pieces of candy because  $\frac{3}{9} = \frac{8}{24}$ .

What other fractions make this sentence true?

$$\frac{\square}{\square} = \frac{3}{9} = \frac{8}{24}$$

D. Ana decided to keep the candy that was left.



I get to keep  $\frac{3}{12}$  of the candy.

Do you agree with Ana? Explain why or why not.

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5. A. 30      B. 10      C. 4  
D. 8      E. 10      F. 20

G. Possible response: I know that if you multiply the numerator 8 by 2 you will get a numerator of 16. So if you also multiply the denominator 10 by 2, you will get a denominator of 20. So the equivalent fraction is  $\frac{16}{20}$ .

6. Answers will vary but could include:

$$\frac{10}{12}, \frac{15}{18}, \frac{20}{24}, \frac{25}{30}, \frac{30}{36}$$

7. Yes; Possible response: If you divide both the numerator and denominator of  $\frac{9}{12}$  by 3 the equivalent fraction is  $\frac{3}{4}$ . If you divide both the numerator and denominator of  $\frac{12}{16}$  by 4 the equivalent fraction is also  $\frac{3}{4}$ . That means that  $\frac{9}{12} = \frac{12}{16}$ .

8. A.  $\frac{2}{3} = \frac{24}{36}$

B. 24 inches long

C. 12 inches

9. A. 6 pieces;  $\frac{1}{4} = \frac{6}{24}$

B. 4 pieces;  $\frac{1}{6} = \frac{4}{24}$

C. Possible response:  $\frac{1}{3} = \frac{3}{9} = \frac{8}{24}$


D. Yes, Ana will get the last 6 pieces. She gave away  $6 + 4 + 8 = 18$  pieces.  
 $24 - 18 = 6$  pieces left.  $\frac{6}{24} \div \frac{2}{2} = \frac{3}{12}$ .

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Homework (SG p. 68)  
Questions 1–4

1. A. Answers will vary but can include:  $\frac{4}{6}$ ,  $\frac{6}{9}$   
 B. Answers will vary but can include:  $\frac{2}{5}$ ,  $\frac{6}{15}$   
 C. Answers will vary but can include:  $\frac{8}{10}$ ,  $\frac{12}{15}$   
 D. Answers will vary but can include:  $\frac{1}{5}$ ,  $\frac{2}{10}$   
 E. Possible response: If you divide both the numerator and denominator by 3, you will get  $\frac{1}{5}$  as an equivalent fraction.
2. A.  $\frac{3}{4} = \frac{6}{8} = \frac{9}{12}$   
 B. Answers will vary but can include:  $\frac{12}{16}$ ,  $\frac{15}{20}$
3. A.  $\frac{4}{16}$   
 B.  $\frac{25}{40}$   
 C.  $\frac{7}{7}$   
 D.  $\frac{2}{3}$   
 E.  $\frac{4}{4}$   
 F.  $\frac{8}{8}$   
 G. Possible response: I thought about multiplication. I know  $3 \times 4 = 12$  and  $4 \times 4 = 16$ .
4. A. 14  
 B. 2  
 C. 18  
 D. 6  
 E. 24  
 F. 3  
 G. Possible response: First I thought about what times 4 is equal to 36. The answer is 9. I know that  $3 \times 9 = 27$  so the numerator is 3.



Use the *Fraction Circle Pieces* from the *Student Activity Book Reference* section or number sentences to solve the problems.

1. Write two other equivalent fractions for each fraction below.

A.  $\frac{2}{3}$       B.  $\frac{4}{10}$       C.  $\frac{4}{5}$       D.  $\frac{3}{15}$

E. Show or tell how you found the answer for Question 1D.

2. Luis is looking for three fractions equivalent to  $\frac{3}{4}$ .

A. Complete Luis' number sentence:  $\frac{3}{4} = \frac{?}{8} = \frac{9}{?}$

B. Find 2 more fractions that are equivalent to  $\frac{3}{4}$ .

3. Use a multiplication or division strategy to find an equivalent fraction.

A.  $\frac{1 \times 4}{4 \times 4} = \frac{\square}{\square}$       B.  $\frac{5 \times 5}{8 \times 5} = \frac{\square}{\square}$       C.  $\frac{3 \times \square}{7 \times \square} = \frac{21}{49}$

D.  $\frac{6 + 3}{9 + 3} = \frac{\square}{\square}$       E.  $\frac{12 + \square}{16 + \square} = \frac{3}{4}$       F.  $\frac{8 + \square}{24 + \square} = \frac{1}{3}$

G. Explain how you solved Question 3E.

4. Shannon wrote number sentences to show equivalent fractions but she forgot some of the numerators and denominators. Fill in the missing numbers to make each number sentence true.

A.  $\frac{7}{12} = \frac{?}{24}$       B.  $\frac{1}{?} = \frac{8}{16}$       C.  $\frac{3}{5} = \frac{?}{30}$

D.  $\frac{2}{?} = \frac{6}{18}$       E.  $\frac{1}{3} = \frac{8}{?}$       F.  $\frac{27}{36} = \frac{?}{4}$

G. Explain how you solved Question 4F.

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