

Vocabulary

equivalent fractions,

Equivalent Fractions

BEFORE

You wrote fractions and mixed numbers.

Now

You'll write equivalent fractions.

WHY?

So you can compare the life stages of butterflies, as in Ex. 48.

Equivalent Fractions

Words To write equivalent fractions, multiply or divide the numerator and the denominator by the same nonzero number.

Algebra For all numbers a , b , and c , where $b \neq 0$ and $c \neq 0$,

$$\frac{a}{b} = \frac{a \cdot c}{b \cdot c} \text{ and } \frac{a}{b} = \frac{a \div c}{b \div c}$$

Numbers $\frac{1}{3} = \frac{1 \cdot 2}{3 \cdot 2} = \frac{2}{6}$ $\frac{2}{6} = \frac{2 \div 2}{6 \div 2} = \frac{1}{3}$

Simplest Form A fraction is in **simplest form** when its numerator and its denominator are relatively prime. To write a fraction in simplest form, divide the numerator and the denominator by their GCF.

Variable Expressions To simplify fractions that contain variables, factor the numerator and the denominator. Then divide out common factors. In this book, you should assume that any variable in the denominator of a fraction is not equal to zero.

LESSON

4.3

Name _____ Date _____

Practice A

For use with pages 184-188

Tell whether the fraction is in simplest form.

1. $\frac{7}{12}$

YES

2. $\frac{15}{35}$

3. $\frac{18}{21}$

NO

Write two fractions that are equivalent to the given fraction.

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

5. $\frac{3}{8}$

6. $\frac{6}{12}$

7. $\frac{7}{21}$

8. $\frac{2}{10}$

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

$\frac{3}{8} \cdot 2 = \frac{6}{16}$

$\frac{2}{10} \times 2 = \frac{4}{20}$

$\frac{3}{8} \cdot 4 = \frac{12}{32}$
 $\frac{2}{10} \cdot 5 = \frac{10}{50}$

$\frac{2}{10} \div 2 = \frac{1}{5}$

Write the fraction in simplest form.

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

13. $\frac{12}{18}$

11. $\frac{6}{8}$

14. $\frac{16}{20}$

12. $\frac{14}{16}$

15. $\frac{21}{27}$

$$\frac{6 \div 2}{8 \div 2} = \frac{3}{4}$$

$$\frac{21 \div 3}{27 \div 3} = \frac{7}{9}$$

- 16.** There are 18 students in a science class. One day, 8 students are absent.
What fraction of the students are absent? Give your answer in simplest form.

$$\frac{8}{18} \rightarrow \frac{4}{9}$$

- 17.** A company surveys 150 people, asking whether or not they would purchase a new product. Of the people surveyed, 90 people said they would purchase the new product and 60 people said they would not purchase the new product.
- What fraction of the people surveyed would purchase the new product? Give your answer in simplest form.
 - What fraction of the people surveyed would not purchase the new product? Give your answer in simplest form.

$$\begin{array}{l} \boxed{\frac{90}{150} \div 30} \\ \boxed{\frac{60}{150} \div 30} \end{array} = \begin{array}{l} \boxed{\frac{3}{5}} \\ \boxed{\frac{2}{5}} \end{array}$$

Write the fraction in simplest form.

18. $\frac{4x^2y^3}{12x}$

19. $\frac{8a^3b}{36b}$

20. $\frac{32s}{18s^3t}$

$$\begin{array}{r} 2 \quad 3 \\ \cancel{4} \cancel{A} \cancel{B} \\ \hline \cancel{3} \cancel{6} \cancel{B} \\ 9 \end{array}$$

$$\frac{2A^3}{9}$$

$$21. \frac{26v^2}{13v^3}$$

$$\frac{\cancel{26}^2 v^{\cancel{2}}}{\cancel{13} v^3} = \frac{2v^2}{13v^3}$$

$$\frac{\cancel{v}^2}{\cancel{v} v^3}$$

$$22. \frac{61gh}{4h^3}$$

$$= \frac{2}{v}$$

$$23. \frac{30mn^3}{21mn}$$

$$\frac{\cancel{30}^{10} m^{\cancel{1}} n^{\cancel{3}}}{\cancel{21}^7 m^{\cancel{1}} n^{\cancel{1}}} = \frac{10n^2}{7}$$

$$\frac{10n^2}{7}$$

Write the fractions in simplest form. Tell whether they are equivalent.

24. $\frac{30}{48}, \frac{56}{64}$

25. $\frac{15}{21}, \frac{20}{28}$

26. $\frac{35}{45}, \frac{56}{72}$

$$\frac{\cancel{30}^5}{\cancel{48}_6^8}, \frac{\cancel{56}^7}{\cancel{64}_8^8}$$

$$\frac{\cancel{15}^5}{\cancel{21}_3^7}, \frac{\cancel{20}^5}{\cancel{28}_4^7}$$

$$\frac{\cancel{35}^7}{\cancel{45}_5^9}, \frac{\cancel{56}^7}{\cancel{72}_8^9}$$