

## 3-2

NAME \_\_\_\_\_ DATE \_\_\_\_\_

## Solving Equations with Multiplication and Division

(Pages 150–154)

You can solve a multiplication or division equation by using the multiplication and division properties of equality.

<b>Multiplication Property of Equality</b>	For any numbers $a$ , $b$ , and $c$ , if $a = b$ , then $ac = bc$ .
<b>Division Property of Equality</b>	For any numbers $a$ , $b$ , and $c$ , with $c \neq 0$ , if $a = b$ , then $\frac{a}{c} = \frac{b}{c}$ .

**EXAMPLES**

**A** Solve  $(2\frac{1}{2})x = 1\frac{3}{4}$ .

Rewrite the mixed numbers as improper fractions.

$$\frac{5}{2}x = \frac{7}{4} \quad \text{Multiply each side by } \frac{2}{5}, \text{ the reciprocal of the number that is multiplied by } x.$$

$$\left(\frac{2}{5}\right)\left(\frac{5}{2}\right)x = \left(\frac{7}{4}\right)\left(\frac{2}{5}\right) \text{ so } x = \frac{14}{20} \text{ or } \frac{7}{10}.$$

**B** Solve  $7y = -63$ .

Since  $y$  has been multiplied by 7, divide each side by 7 to isolate the variable.

$$\frac{7y}{7} = \frac{-63}{7}, \text{ so } y = -9.$$

**Try These Together**

1. Solve  $-5a = 55$ .

HINT: Divide each side by  $-5$  or multiply by  $\frac{1}{-5}$ .

2. Solve  $\frac{x}{-5} = 4$ .

HINT: Multiply each side by  $-5$ .

**PRACTICE**

Solve each equation. Check your solution.

3.  $6y = 54$

4.  $-7d = -84$

5.  $22b = 176$

6.  $2.4f = 21.6$

7.  $0.36g = 1.8$

8.  $\frac{1}{6}k = 8$

9.  $-\frac{4}{5}m = 2$

10.  $\frac{n}{8} = -4$

11.  $\frac{p}{-6} = \frac{7}{12}$

12.  $(-2\frac{1}{3})q = 21$

13.  $5x = \frac{10}{13}$

14.  $\frac{-r}{8} = -18$

Define a variable, write an equation and solve the problem.

15. Two-thirds of a number is  $9\frac{3}{5}$ .

16. Negative fourteen times a number is 84.

Complete.

17. If  $6a = 36$ , then  $3a = ?$ .

18. If  $2d = 7$ , then  $10d = ?$ .



**19. Standardized Test Practice** There are nine boys in a class. If the boys make up three-eighths of the entire class, how many students are in the class?

**A** 72

**B** 24

**C** 20

**D** 10

Answers: 1. -11 2. -20 3. 9 4. 12 5. 8 6. 9 7. 5 8. 48 9.  $-2\frac{2}{1}$  10.  $-32$  11.  $-3\frac{2}{1}$  12. -9 13.  $\frac{13}{2}$  14. 144 15.  $14\frac{5}{2}$  16. -6 17. 18 18. 35 19. B