

# Solving Multiplication and Division Equations

(Pages 160–164)

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  $\frac{5}{2}x = \frac{7}{4}$ .

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

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

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

$$7y = -63$$

$$\frac{7y}{7} = \frac{-63}{7} \quad \text{Divide each side by } 7.$$

$$y = -9$$

### 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.  $-22b = 66$

6.  $2.4f = 12$

7.  $3.6g = 18$

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.  $-\frac{7}{3}q = 21$

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

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

15. If  $6a = 36$ , then  $3a = \underline{\quad?}$ .

16. If  $2d = 7$ , then  $10d = \underline{\quad?}$ .

Write an equation and solve.

17. Two-thirds of a number  $y$  is 14. What is the number?

18. Negative fourteen times a number  $x$  is 84. What is the number?



**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. -3 6. 5 7. 5 8. 48 9.  $-\frac{2}{5}$  or  $-\frac{2}{5}$  10.  $-\frac{2}{1}$  or  $-2$  11.  $-\frac{2}{7}$  or  $-\frac{2}{7}$  12.  $-\frac{2}{1}$  or  $-2$  13.  $\frac{13}{2}$  14. 144 15. 18 16. 35 17. 21 18. -6 19. B