

Lesson 2-3 Solve Equations with Rational Coefficients

Multiplicative inverses, or **reciprocals**, are two numbers whose product is 1. To solve an equation in which the coefficient is a fraction, multiply each side of the equation by the reciprocal of the coefficient.

Example 1

Solve $15 = 0.5n$. Check the solution.

$$15 = 0.5n \quad \text{Write the equation.}$$

$$\frac{15}{0.5} = \frac{0.5n}{0.5} \quad \text{Division Property of Equality}$$

$$30 = n \quad \text{Simplify.}$$

Example 2

Solve $\frac{4}{5}x = 8$. Check your solution.

$$\frac{4}{5}x = 8 \quad \text{Write the equation.}$$

$$\left(\frac{5}{4}\right)\frac{4}{5}x = \left(\frac{5}{4}\right)8 \quad \text{Multiply each side by the reciprocal of } \frac{4}{5}, \frac{5}{4}.$$

$$x = 10 \quad \text{Simplify.}$$

The solution is 10.

Exercises

Solve each equation. Check your solution.

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|------------------------|------------------------------------|-----------------------------------|
| 1. $4.9 = 0.7m$ | 2. $-\frac{1}{2} = -\frac{6}{18}h$ | 3. $-2.8 = 4b$ |
| 4. $\frac{3}{5}x = 12$ | 5. $16 = \frac{10}{3}a$ | 6. $9 = 0.3n$ |
| 7. $\frac{15}{7}y = 3$ | 8. $21 = 0.75a$ | 9. $\frac{14}{3} = -\frac{7}{9}b$ |

Lesson 3 Skills Practice

Solve Equations with Rational Coefficients

Solve each equation. Check your solution.

1. $3.4a = 57.8$

2. $-2 = 0.8n$

3. $\frac{5}{6}k = -20$

7. $\frac{3}{5}y = 6$

8. $-15 = \frac{3}{7}b$

9. $\frac{6}{7}c = 18$

13. $\frac{m}{26} = -\frac{1}{2}$

14. $0.6 = \frac{n}{5}$

15. $1.5r = -5.07$

19. $-14 = \frac{7}{9}m$

20. $3.2 = \frac{t}{8}$

21. $\frac{m}{18} = -\frac{1}{9}$