

6-7 Solving Equations and Inequalities

(Pages 308–311)

You can use what you already know about solving equations and inequalities with integers to solve equations and inequalities with rational numbers.

EXAMPLES

Solve each equation or inequality.

A $5.12y = 12.8$

$$\frac{5.12y}{5.12} = \frac{12.8}{5.12} \quad \text{Divide each side by 5.12.}$$

$$y = 2.5$$

B $6.4b \leq 9.6$

$$\frac{6.4b}{6.4} \leq \frac{9.6}{6.4} \quad \text{Divide each side by 6.4.}$$

$$b \leq 1.5$$

C $-1\frac{1}{3}x = \frac{3}{8}$

$$-\frac{4}{3}x = \frac{3}{8} \quad \text{Rename } -1\frac{1}{3} \text{ as an improper fraction.}$$

$$-\frac{4}{3}x \cdot \left(-\frac{3}{4}\right) = \frac{3}{8} \cdot \left(-\frac{3}{4}\right) \quad \text{Multiply both sides by the multiplicative inverse of } -\frac{4}{3}, \text{ or } -\frac{3}{4}.$$

$$x = -\frac{9}{32}$$

D $-\frac{3}{8}b > \frac{1}{6}$

$$-\frac{3}{8}b > \frac{1}{6}$$

$$-\frac{3}{8}b \cdot \left(-\frac{8}{3}\right) < \frac{1}{6} \cdot \left(-\frac{8}{3}\right) \quad \text{Multiply both sides by the multiplicative inverse of } -\frac{3}{8}, \text{ or } -\frac{8}{3}, \text{ and reverse the inequality symbol.}$$

$$b < -\frac{8}{18} \text{ or } -\frac{4}{9}$$

PRACTICE

Solve each equation or inequality. Check your solution.

1. $3.5 < 4m$

2. $-0.16d = 4$

3. $0.06m < 18$

4. $\frac{5}{6} > 4a$

5. $\frac{1}{2}n = -5.4$

6. $-9 < \frac{2}{3}h$

7. $\frac{3}{4}p = 6$

8. $4.6 < 3w$

9. $7r = -\frac{6}{9}$

10. $2k = 0.32$

11. $6s > -\frac{8}{15}$

12. $7\frac{1}{2} = 3\frac{2}{3}b$



13. Standardized Test Practice Solve $7.5z > 15$.

A $z > 7.5$

B $z > \frac{1}{7.5}$

C $z > 15$

D $z > 2$

Answers: 1. $m < 0.875$ 2. -25 3. $m < 300$ 4. $a < \frac{24}{5}$ 5. -10.8 6. $h \geq -13\frac{2}{1}$ 7. 8 8. $w \geq 1.53$ 9. $-\frac{21}{2}$ 10. 0.16 11. $s \geq -\frac{4}{15}$ 12. $2\frac{1}{3}$ 13. D