6.4 Solve Compound Inequalities

EXAMPLE

Solve $-1 < -2x + 7 < 9$. **Graph your solution.**
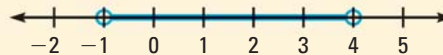
$-1 < -2x + 7 < 9$ **Write original inequality.**

$-8 < -2x < 2$ **Subtract 7 from each expression.**

$4 > x > -1$ **Divide each side by −2. Reverse both inequality symbols.**

$-1 < x < 4$ **Rewrite in the form** $a < x < b$.

▶ The solutions are all real numbers greater than −1 *and* less than 4.

EXERCISES

EXAMPLES
3, 4, and 5
on pp. 381–382
for Exs. 20–23

Solve the inequality. Graph your solution.

20. $-6 \le 2t - 5 \le -3$

21. $-3 < -3x + 8 < 11$

22. $9s - 6 < 12 \ or \ 3s + 1 > 13$

23. $-4w + 12 \ge 10 \ or \ 5w - 14 > -4$

6.5 Solve Absolute Value Equations

EXAMPLE

Solve $4|5x - 3| + 6 = 30$.

First, rewrite the equation in the form $|ax + b| = c$.

$4|5x - 3| + 6 = 30$ **Write original equation.**

$4|5x - 3| = 24$ **Subtract 6 from each side.**

$|5x - 3| = 6$ **Divide each side by 4.**

Next, solve the absolute value equation.

$5x - 3 = 6 \quad or \quad 5x - 3 = -6$ **Rewrite as two equations.**

$5x = 9 \quad or \quad 5x = -3$ **Add 3 to each side.**

$x = 1.8 \ or \quad x = -0.6$ **Divide each side by 5.**

▶ The solutions are −0.6 and 1.8.

EXERCISES

EXAMPLES
1, 2, 3, 4, and 5
on pp. 390–392
for Exs. 24–30

Solve the equation, if possible.

24. $|r| = 7$

25. $|a + 6| = 2$

26. $|2c + 5| = 21$

27. $2|x - 3| + 1 = 5$

28. $3|2q + 1| - 5 = 1$

29. $4|3p - 2| + 5 = 11$

30. BOWLING In tenpin bowling, the height of each bowling pin must be 15 inches with an absolute deviation of 0.03125 inch. Find the minimum and maximum possible heights of a bowling pin.