2.1 Writing and Graphing Inequalities *(pp. 53–60)*

a. A number *x* plus 36 is no more than 40. Write this sentence as an inequality.

A $\underbrace{\text{number } x \text{ plus } 36}$ $\underbrace{\text{is no more than}}$ 40.

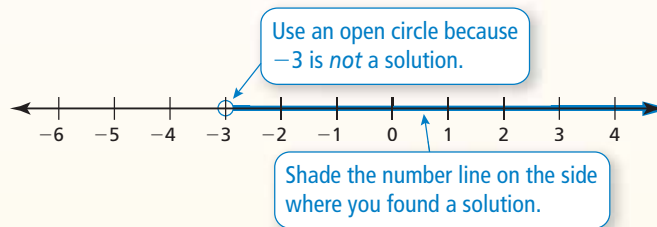$x + 36$ $\leq$ 40

▶ An inequality is $x + 36 \leq 40$.

b. Graph $w > -3$.

Test a number to the left of -3. *$w = -4$ is not a solution.*

Test a number to the right of -3. *$w = 0$ is a solution.*

Use an open circle because -3 is *not* a solution.

Shade the number line on the side where you found a solution.

Write the sentence as an inequality.

1. A number *d* minus 2 is less than -1.

2. Ten is at least the product of a number *h* and 5.

Graph the inequality.

3. $x > 4$ **4.** $y \leq 2$ **5.** $-1 \geq z$

2.2 Solving Inequalities Using Addition or Subtraction *(pp. 61–66)*

Solve $x + 2.5 \leq -6$. Graph the solution.

$x + 2.5 \leq -6$ Write the inequality.
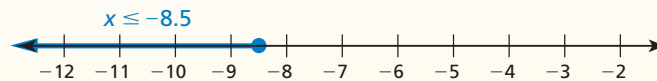
Subtraction Property of Inequality → $\underline{-\ 2.5\quad -\ 2.5}$ Subtract 2.5 from each side.

$x \leq -8.5$ Simplify.

▶ The solution is $x \leq -8.5$.

$x \leq -8.5$

Solve the inequality. Graph the solution.

6. $p + 4 < 10$ **7.** $r - 4 < -6$ **8.** $2.1 \geq m - 6.7$

Solving Inequalities Using Multiplication or Division *(pp. 67–72)*

Solve $\dfrac{n}{-10} > 5$. Graph the solution.

$$\dfrac{n}{-10} > 5 \qquad \text{Write the inequality.}$$

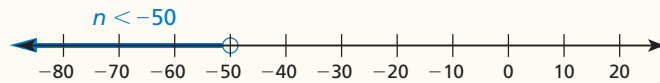Multiplication Property of Inequality $\longrightarrow$ $-10 \cdot \dfrac{n}{-10} < -10 \cdot 5 \qquad$ Multiply each side by -10. Reverse the inequality symbol.

$$n < -50 \qquad \text{Simplify.}$$

▶ The solution is $n < -50$.

$$n < -50$$

-80	-70	-60	-50	-40	-30	-20	-10	0	10	20

Solve the inequality. Graph the solution.

9. $3x > -21$

10. $-4 \le \dfrac{g}{5}$

11. $-\dfrac{3}{4}n \le 3$

12. $\dfrac{s}{-8} \ge 11$

13. $36 < 2q$

14. $-1.2k > 6$

Solving Multi-Step Inequalities *(pp. 73–78)*

Solve $22 + 3y \ge 4$. Graph the solution.

$$22 + 3y \ge \quad 4 \qquad \text{Write the inequality.}$$

$$\underline{-22 \qquad\quad -22} \qquad \text{Subtract 22 from each side.}$$

$$3y \ge -18 \qquad \text{Simplify.}$$

$$\dfrac{3y}{3} \ge \dfrac{-18}{3} \qquad \text{Divide each side by 3.}$$

$$y \ge -6 \qquad \text{Simplify.}$$

▶ The solution is $y \ge -6$.

$$y \ge -6$$

-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1
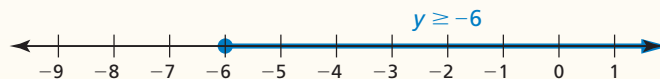
Solve the inequality. Graph the solution, if possible.

15. $3x - 4 > 11$

16. $-4 < \dfrac{b}{2} + 9$

17. $7 - 3n \le n + 3$

18. $2(-4s + 2) \ge -5s - 10$

19. $6(2t + 9) \le 12t - 1$

20. $3r - 8 > 3(r - 6)$