3 Chapter Review

Check It Out
Vocabulary Help
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Review Key Vocabulary

inequality, *p. 106*
solution of an inequality, *p. 106*
solution set, *p. 106*
graph of an inequality, *p. 107*
compound inequality, *p. 132*
absolute value inequality, *p. 134*
linear inequality in two variables, *p. 138*
solution of a linear inequality, *p. 138*
graph of a linear inequality, *p. 138*
half-planes, *p. 138*

Review Examples and Exercises

3.1 Writing and Graphing Inequalities *(pp. 104–109)*

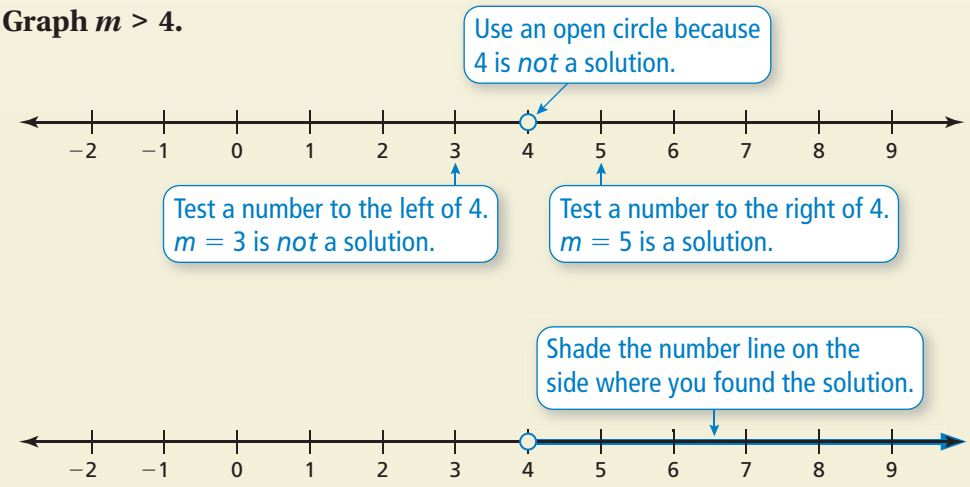
a. Four plus a number w is at least $-\frac{1}{2}$. Write this sentence as an inequality.

Four plus a number w | is at least | $-\frac{1}{2}$.

$4 + w$ | $\geq$ | $-\frac{1}{2}$

∴ An inequality is $4 + w \geq -\frac{1}{2}$.

b. Graph $m > 4$.



Exercises

Write the word sentence as an inequality.

1. A number v is less than -2.

2. A number x minus $\frac{1}{4}$ is no more than $-\frac{3}{4}$.

Tell whether the given value is a solution of the inequality.

3. $10 - q < 3;\ q = 6$

4. $12 \div m \geq -4;\ m = -3$

Graph the inequality on a number line.

5. $p < 1.2$

6. $n > 10\frac{1}{4}$

3.2 Solving Inequalities Using Addition or Subtraction *(pp. 110–115)*

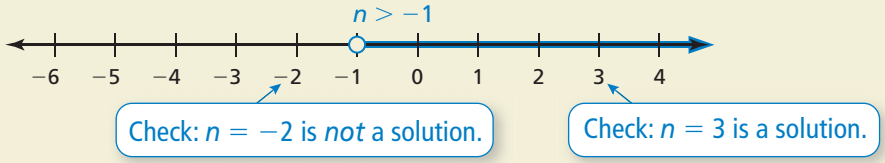
Solve $-4 < n - 3$. Graph the solution.

$-4 < n - 3$ Write the inequality.

Undo the subtraction. → $+3 \quad +3$ Add 3 to each side.

$-1 < n$ Simplify.

∴ The solution is $n > -1$.



Exercises

Solve the inequality. Graph the solution.

7. $b + 13 < 18$ **8.** $x - 3 \leq 10$ **9.** $y + 1 \geq -2$

3.3 Solving Inequalities Using Multiplication or Division *(pp. 116–123)*

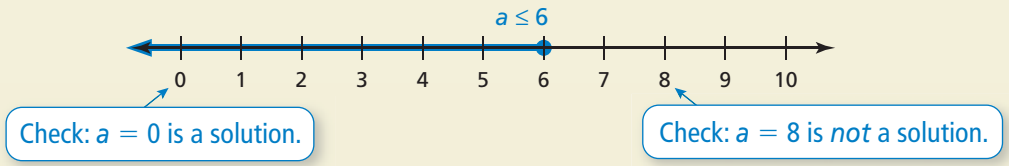
Solve $-8a \geq -48$. Graph the solution.

$-8a \geq -48$ Write the inequality.

Undo the multiplication. → $\frac{-8a}{-8} \leq \frac{-48}{-8}$ Divide each side by -8. Reverse the inequality symbol.

$a \leq 6$ Simplify.

∴ The solution is $a \leq 6$.



Exercises

Solve the inequality. Graph the solution.

10. $\frac{x}{2} \geq 4$ **11.** $4z < -44$ **12.** $-2q \geq -18$

3.4 Solving Multi-Step Inequalities *(pp. 126–135)*

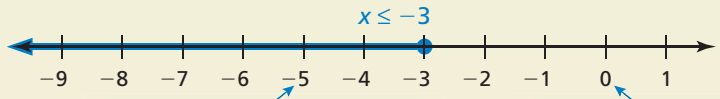
Solve $2x - 3 \leq -9$. Graph the solution.

$2x - 3 \leq -9$	Write the inequality.
$+3 \quad +3$	Add 3 to each side.
$2x \leq -6$	Simplify.
$\frac{2x}{2} \leq \frac{-6}{2}$	Divide each side by 2.
$x \leq -3$	Simplify.

Step 1: Undo the subtraction.

Step 2: Undo the multiplication.

∴ The solution is $x \leq -3$.



Check: $x = -5$ is a solution.

Check: $x = 0$ is *not* a solution.

Exercises

Solve the inequality. Graph the solution.

13. $4x + 3 < 11$

14. $\frac{z}{-4} - 3 \leq 1$

15. $-3w - 4 > 8$

16. $4 > x - 7 > -6$

17. $2x + 2 \leq 4$ *or* $x + 2 \geq 5$

18. $|x - 3| > 1$

3.5 Graphing Linear Inequalities in Two Variables *(pp. 136–143)*

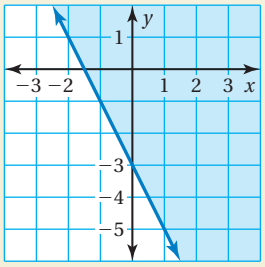
Graph $4x + 2y \geq -6$ in a coordinate plane.

Step 1: Graph $4x + 2y = -6$, or $y = -2x - 3$. Use a solid line because the inequality symbol is $\geq$.

Step 2: Test (0, 0).

$4x + 2y \geq -6$	Write the inequality.
$4(0) + 2(0) \stackrel{?}{\geq} -6$	Substitute.
$0 \geq -6$ ✓	Simplify.

Step 3: Because (0, 0) is a solution, shade the half-plane that contains (0, 0).



Exercises

Graph the inequality in a coordinate plane.

19. $-9x + 3y > 3$

20. $-2x + 2y \leq 4$

21. $5x + 10y < 40$