

Algebra I

Lesson 6-3

- I can solve linear inequalities involving more than one operation.
- I can solve linear inequalities involving the Distributive Property.



When solving inequalities that require two steps, follow the Addition, Subtraction, Multiplication, and Division Properties of Inequalities.

Solve. Then check your solution.

$$-7b + 19 < -16$$

$$\checkmark b = 5$$

$$-7(5) + 19 < -16$$

$$-35 + 19 < -16$$

$$-16 < -16$$

$$\checkmark b = 6$$

$$-7(6) + 19 < -16$$

$$-42 + 19 < -16$$

$$-23 < -16$$

$$\checkmark b = 0$$

$$-7(0) + 19 < -16$$

$$19 < -16$$

$$\begin{array}{r} -19 \quad -19 \\ \underline{-7b} < \underline{-35} \\ -7 \quad -7 \end{array}$$

$$b > 5$$

$$\{b \mid b > 5\}$$

Write an inequality for the sentence. Then solve the inequality.

Three times a number minus eighteen is at least five times the number plus twenty-one.

$$\begin{aligned}
 3n - 18 &\geq 5n + 21 \\
 \underline{+18} & \qquad \qquad \underline{+18} \\
 3n &\geq 5n + 39 \\
 \underline{-5n} & \qquad \underline{-5n} \\
 -2n &\geq 39 \\
 \underline{-2} & \qquad \underline{-2} \\
 n &\leq -\frac{39}{2} \text{ or } -19\frac{1}{2} \\
 \{n \mid n &\leq -19\frac{1}{2}\}
 \end{aligned}$$

When solving inequalities that contain grouping symbols, first use the Distributive Property to remove the grouping symbols.

$$\begin{aligned}
 3d + 2(8d + 9) &> 3 + 1(2d + 7) \\
 3d + 16d + 18 &> 3 + 2d + 7 \\
 -13d + 18 &> 2d + 10 \\
 \underline{+2d} & \qquad \underline{+2d} \\
 -11d + 18 &> 10 \\
 \underline{-18} & \qquad \underline{-18} \\
 -11d &> -8 \\
 \underline{-11} & \qquad \underline{-11} \\
 d &< \frac{8}{11} \\
 \{d \mid d &< \frac{8}{11}\}
 \end{aligned}$$

$$2(3t - 3) \geq -3(2 - 2t)$$

$$2(3t + -3) \geq -3(2 + -2t)$$

$$6t + -6 \geq -6 + 6t$$

$$6t + -6 \geq 6t + -6$$

{ all real numbers }

If solving an inequality results in a statement that is

always true, the solution
is all real numbers.

$$8(t + 2) - 3(t - 4) < 5(t - 7) + 8$$

$$8(t + 2) + -3(t + -4) < 5(t + -7) + 8$$

$$8t + 16 + -3t + 12 < 5t + -35 + 8$$

$$5t + 28 < 5t + -27$$

$$\underline{-5t} \quad \underline{-5t}$$

$$28 < -27 \quad \text{⊘}$$

If solving an inequality results in a statement that is

never true, the solution is
the empty set
which has no members.

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Assignment:

Pgs. 335-336 #16-38 even; 39-42

