

SOLVING INEQUALITIES PRACTICE

LEARNING GOAL

1. I can solve inequalities where a variable appears more than once.

EXAMPLE 1

$$\text{Solve } -x < -\underline{x} + 7(\underline{x} - 2)$$

Check $x=5$

$$-5 < -5 + 7(5-2)$$

$$-5 < -5 + 7 \cdot 3$$

$$-5 < -5 + 21$$

$$-5 < 16 \checkmark$$

$$-x < -1x + 7x - 14$$

$$-1x < 6x - 14$$

$$-6x < -6x$$

$$\frac{-7x}{-7} > \frac{-14}{-7}$$

$$x > 2$$

HOW TO SOLVE IT

1. Notice where you see the variable.
2. Use the appropriate solution strategy from the table.

If you notice that the variable ...

... then your solution strategy will include

... appears in more than one place on **one** side of the inequality

... **distribute** and **combine like terms**

... is on **both** sides of the inequality

... eliminating the variable from one side using a **zero pair**

SOLUTIONS

When you solve an inequality, your answer will be a simple inequality with the variable by itself. Here are the answers to today's exercises.

To receive credit, make sure you show all of the steps that you used to get to the solution.

$$x \geq -3$$

$$x < -1$$

$$x \geq 5$$

$$x \geq -5$$

$$x < 2$$

$$x < -3$$

$$x < 3$$

$$x > 2$$

$$x < -1$$

EXAMPLE 2

Solve $3 < -5\underline{x} + 2\underline{x}$

Check
 $x = -2$

$$3 < -5(-2) + 2(-2)$$

$$3 < 10 + -4$$

$$3 < 6$$

$$\frac{3}{-3} < \frac{-3x}{-3}$$

$$-1 > x$$

$$x < -1$$

EXAMPLE 3

Solve $6\underline{x} + 2 + 6\underline{x} < 14$

Check $x = 0$

$$\cancel{6 \cdot 0} + 2 + \cancel{6 \cdot 0} < 14$$

$$2 < 14 \quad \checkmark$$

$$\begin{array}{rcl} 12x + 2 & < & 14 \\ -2 & & -2 \end{array}$$

$$\begin{array}{rcl} \cancel{12}x & < & \cancel{12} \\ \hline \cancel{12} & & \cancel{12} \\ x & < & 1 \end{array}$$

EXERCISE 1

Solve $-x - 4x < -10$

EXERCISE 2

Solve $9 \geq -2x + 2 - 3$

EXERCISE 3

Solve $-3 - 6(4x + 6) > -111$

EXERCISE 4

Solve $x - 6 \leq 15 + 8x$

EXERCISE 5

Solve $-138 \geq -6(6x - 7)$

EXERCISE 6

Solve $167 < 6 + 7(2 - 7x)$