

# Lesson 11-8

Objective- To solve and graph multi-step inequalities.

Solve and graph.

$$\begin{array}{r} 2x - 5 < 11 \\ +5 \quad +5 \\ \hline \end{array}$$

$$\frac{2x < 16}{2 \quad 2}$$

$$x < 8$$

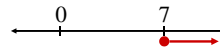


Solve and graph.

$$\begin{array}{r} 1) \quad 3x - 4 \geq 17 \\ +4 \quad +4 \\ \hline \end{array}$$

$$\frac{3x \geq 21}{3 \quad 3}$$

$$x \geq 7$$



$$\begin{array}{r} 2) \quad \frac{x}{2} - 5 < 3 \\ +5 \quad +5 \\ \hline \end{array}$$

$$\frac{x}{2} < 8$$

$$\cancel{(2)} \frac{x}{\cancel{2}} < 8(\cancel{2})$$

$$x < 16$$



Solve and graph.

$$\begin{array}{r} 3) \quad 7 - x > 4 \\ -7 \quad -7 \\ \hline \end{array}$$

$$-x > -3$$

$$(-1)(-x) < (-3)(-1)$$

$$x < 3$$



$$4) \quad 3(x - 5) \leq 12$$

$$\begin{array}{r} 3x - 15 \leq 12 \\ +15 \quad +15 \\ \hline \end{array}$$

$$\frac{3x \leq 27}{3 \quad 3}$$

$$x \leq 9$$



Solve and graph.

$$5) \quad -3(x - 4) > -9$$

$$\begin{array}{r} -3x + 12 > -9 \\ -12 \quad -12 \\ \hline \end{array}$$

$$-3x > -21$$

$$\frac{-3x < -21}{-3 \quad -3}$$

$$x < 7$$

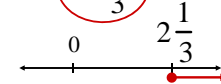


$$6) \quad 4x - 3 \geq -2x + 11$$

$$\begin{array}{r} +2x \quad +2x \\ \hline 6x - 3 \geq 11 \\ +3 \quad +3 \\ \hline \end{array}$$

$$\frac{6x \geq 14}{6 \quad 6}$$

$$x \geq \frac{7}{3}$$



Joe is saving for a new \$500 bike. He currently has \$125. If he saves \$15 per week, how long must he wait to save at least \$600 to cover tax and extras.

Let  $x$  = # of weeks

$$\begin{array}{r} 125 + 15x \geq 600 \\ -125 \quad -125 \\ \hline \end{array}$$

$$\frac{15x \geq 475}{15 \quad 15}$$

$$x \geq 31 \frac{2}{3}$$

At least 32 weeks

A water tank contains 500 gallons of water and begins leaking at a rate of 4 gallons per minute. Because the tank must be repaired from the inside, it can retain at most 60 gallons of water. How long must the repairman wait to fix the tank?

Let  $x$  = # of minutes tank leaks

$$\begin{array}{r} 500 - 4x \leq 60 \\ -500 \quad -500 \\ \hline \end{array}$$

$$-4x \leq -440$$

$$\frac{-4x \geq -440}{-4 \quad -4}$$

$$x \geq 110$$

At least 110 min.