

Algebra 3-10: Solving  $ax + b < c$ 

## Warm-Up

Solve and check.

1.  $-7x + 6x = 16$

$$\frac{-1x}{-1} = \frac{16}{-1}$$

$$x = -16,$$

2.  $-2(x + 5) = 4$

$$\begin{array}{r} -2x - 10 = 4 \\ +10 \quad +10 \end{array}$$

$$\begin{array}{r} -2x = 14 \\ \hline \frac{-2x}{-2} = \frac{14}{-2} \end{array}$$

$$x = -7$$

Reminders

- When multiplying or dividing by a negative number, we have to flip the sign.
- On a number line > and < use an open circle and ≤ and ≥ use a closed circle or filled in circle.

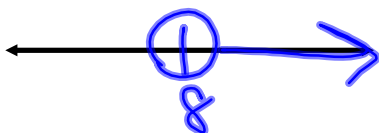
## Examples

Solve and graph.

1.  $-4x + 6x > 16$

$$\frac{2x}{2} > \frac{16}{2}$$

$$x > 8$$

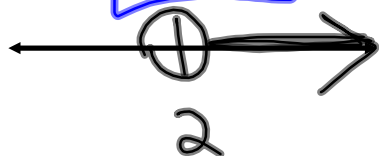


3.  $-4h + 9 < 1$

$$\frac{-4h - 9 - 9}{-4} < \frac{1 - 9 - 9}{-4}$$

$$-4h < -8$$

$$h > 2$$



2.  $-11n + (-16) < 17$

$$\frac{-11n + 16 + 16}{-11} < \frac{17 + 16 + 16}{-11}$$

$$-11n < 33$$

$$n > -3$$

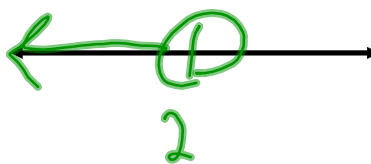


4.  $4r + 2 < 10$

$$\frac{4r - 2 - 2}{4} < \frac{10 - 2 - 2}{4}$$

$$4r < 8$$

$$r < 2$$



$$5. -2(x+5) > 4$$

$$\begin{array}{r} -2x - 10 > 4 \\ +10 \quad +10 \\ \hline -2x > 14 \\ \frac{-2x}{-2} > \frac{14}{-2} \end{array} \quad \boxed{x < -7}$$



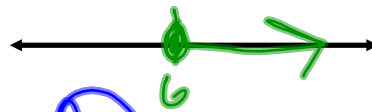
$$7. 3 < (2/3)x + (-3)$$

$$\begin{array}{r} +3 \quad +3 \\ \hline 3 \cdot 6 < \frac{2}{3}x \cdot \frac{3}{2} \\ \frac{18}{2} < x \\ 9 < x \end{array} \quad \boxed{x > 9}$$



$$6. 5 + 2f \geq 20 + (-3)$$

$$\begin{array}{r} 5 + 2f \geq 17 \\ -5 \quad -5 \\ \hline 2f \geq 12 \\ \frac{2f}{2} \geq \frac{12}{2} \end{array} \quad \boxed{f \geq 6}$$



$$8. 5(2y+4) > -10$$

$$\begin{array}{r} 10y + 20 > -10 \\ -20 \quad -20 \\ \hline 10y > -30 \\ \frac{10y}{10} > \frac{-30}{10} \end{array} \quad \boxed{y > -3}$$

