

5.1.5: Solving Compound Inequalities

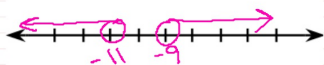
Name: _____

Solve the following inequalities and graph their solutions.

Example 1:

$$\begin{array}{rcl} x - 2 < -13 & \text{or} & 5x > -45 \\ +2 & +2 & \\ \hline x < -11 & & x > -9 \end{array}$$

$$x < -11 \text{ OR } x > -9$$



Example 2:

$$\begin{array}{rcl} -6 < -3 + x < -4 \\ +3 & +3 & +3 \\ \hline -3 < x < -1 \end{array}$$

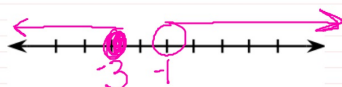
$$-3 < x < -1$$



Example 5:

$$\begin{array}{rcl} -4x + 2 < 6 & \text{or} & 3x \leq -9 \\ -2 & & \\ \hline -4x < 4 & & x \leq -3 \\ -4 & -4 & \\ \hline x > -1 & & \end{array}$$

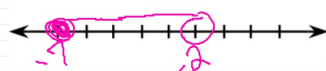
$$\begin{array}{l} x > -1 \text{ OR } x \leq -3 \\ \hline x \leq -3 \text{ OR } x > -1 \end{array}$$



Example 6:

$$\begin{array}{rcl} 4 < -5k - 6 \leq 29 \\ +6 & +6 & +6 \\ \hline 10 < -5k \leq 35 \\ -5 & -5 & -5 \\ \hline -2 > k \geq -7 \end{array}$$

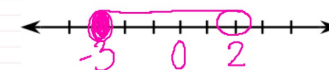
$$\begin{array}{l} -2 > k \geq -7 \\ \hline -7 \leq k < -2 \end{array}$$



Example 3:

$$\begin{array}{rcl} -4 \leq 3n + 5 < 11 \\ -5 & -5 & -5 \\ \hline -9 \leq 3n < 6 \\ \frac{-9}{3} & \frac{3n}{3} & \frac{6}{3} \\ -3 \leq n < 2 \end{array}$$

$$-3 \leq n < 2$$



Example 4:

$$\begin{array}{rcl} 3c + 8 > 17 & \text{or} & 2c + 5 \leq 7 \\ -8 & -8 & -5 & -5 \\ \hline 3c > 9 & & 2c \leq 2 \\ \frac{3c}{3} & \frac{9}{3} & \frac{2c}{2} & \frac{2}{2} \\ c > 3 & & c \leq 1 \end{array}$$

$$\begin{array}{l} c > 3 \text{ OR } c \leq 1 \\ \hline c \leq 1 \text{ OR } c > 3 \end{array}$$

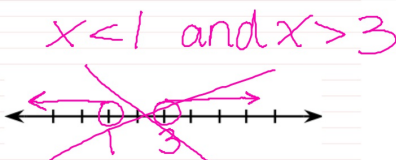


Example 7:

Graph the inequality:

$$3 < x < 1$$

AND
(in between)



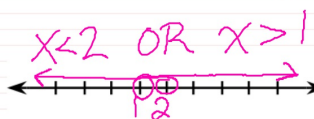
List some possible solutions for this inequality.

No solution

Example 8:

Graph the inequality:

$$x < 2 \text{ or } x > 1$$



List some possible solutions for this inequality.

All real #s 1.5, 5, 0