

Compound Inequalities Cue Card

“And” Compound Inequalities

Compound inequalities using AND require you to find solutions so that two inequalities will be satisfied at the same time.

Ex: Follow steps for solving inequalities except you need to undo to all parts of the inequality.

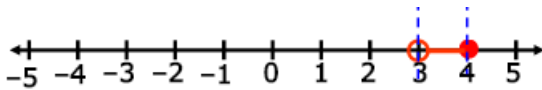
$$8 < 3x - 1 \leq 11$$

$$\begin{array}{ccc} 8 < 3x - 1 \leq 11 \\ \underline{+1} & \underline{+1} & \underline{+1} \\ 9 < 3x \leq 12 \end{array}$$

Since 1 is subtracted from $3x$, add 1 to each part of the inequality.

$$\begin{array}{ccc} \frac{9}{3} < \frac{3x}{3} \leq \frac{12}{3} \\ 3 < x \leq 4 \end{array}$$

Since x is multiplied by 3, divide each part of the inequality by 3 to undo the multiplication.



Graph the intersection by finding where the two graphs overlap.

“Or” Compound Inequalities

Compound inequalities using OR require you to find solutions that satisfy either inequality.

Solve $4x > 12$ OR $3x \leq -15$ and graph the solutions.

The two inequalities are: $4x > 12$ OR $3x \leq -15$.

Solve $4x > 12$.

$$\frac{4x}{4} > \frac{12}{4}$$

Divide both sides by 4.

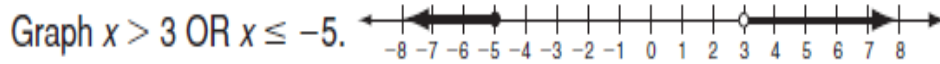
$$x > 3.$$

Solve $3x \leq -15$.

$$\frac{3x}{3} \leq \frac{-15}{3}$$

Divide both sides by 3.

$$x \leq -5$$



Use **both** regions for compound inequalities with **OR**.