

Warm-Up:

1) Graph $x < 8$



Solve.

2) $-3x + 7 \geq -2$

$$\begin{array}{r} 7 - 7 \\ \hline -3x \geq -9 \\ \hline x \leq -3 \end{array}$$

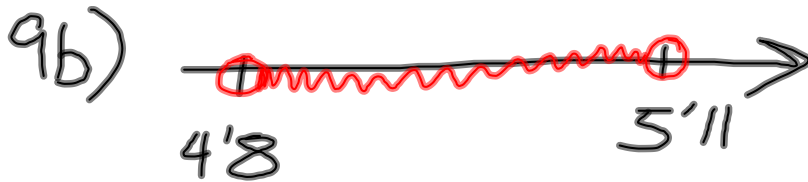
3) $3(4x + 5) > 12x - 12$

$$\begin{array}{r} 12x + 15 > 12x - 12 \\ -12x \quad \quad -12x \\ \hline \quad \quad \quad \quad \quad 0 \end{array}$$

$$15 > -12$$

all real

$$15 > -12$$



Section 6-4: Solving Compound Inequalities

When two inequalities are put together containing the word "*and*" or "*or*", it is called a **compound inequality**.

The graph of an inequality containing "and" is the **intersection** of the two inequalities.

An intersection is all the numbers that are true for both inequalities.

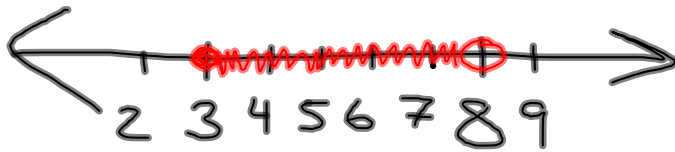
Section 6-4: Solving Compound Inequalities

The graph of an inequality containing "or" is the **union** of the two inequalities.

An union is all the numbers that are true for either inequality.

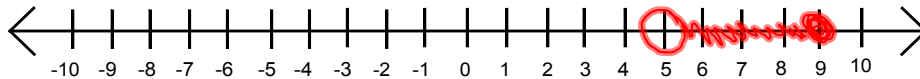
Examples:

1) Graph the solution set of $y \geq 3$ and $y < 8$.



2) Solve $7 < z + 2 \leq 11$. Then graph.

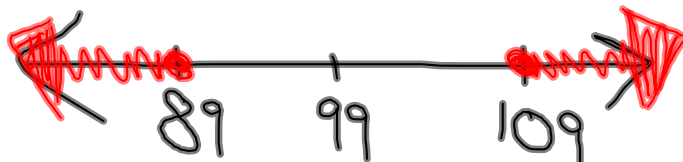
$$\begin{array}{r} -2 \quad -2 \quad -2 \quad \leftarrow \text{and} \\ \hline 5 < z \leq 9 \end{array}$$



Examples:

3) A ski resort has several types of hotel rooms and cabins. The hotel rooms cost at most \$89 per night, and the cabins cost at least \$109 per night. Write and graph a compound inequality that describes the amount a guest would pay per night at the resort.

$$n = \text{cost/night}$$
$$n \leq 89 \quad \text{or} \quad n \geq 109$$

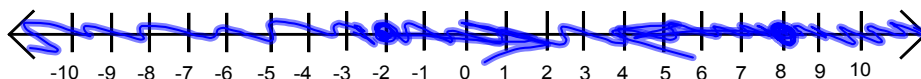


Examples:

4) Solve $4k - 7 \leq 25$ or $12 - 9k \leq 30$. Then graph.

$$\begin{array}{r} +7 +7 \\ \hline 4k \leq 32 \\ \hline \frac{4k}{4} \leq \frac{32}{4} \\ k \leq 8 \end{array} \quad \begin{array}{r} -12 -12 \\ \hline -9k \leq 18 \\ \hline \frac{-9k}{-9} \geq \frac{18}{-9} \\ k \geq -2 \end{array}$$

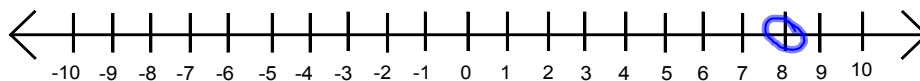
All Real #s



Examples:

5) Solve $12x - 15 > 81$ and $-4x + 30 > -2$

$$\begin{array}{r} +15 +15 \\ \hline 12x > 96 \\ \hline \frac{12x}{12} > \frac{96}{12} \\ x > 8 \end{array} \quad \begin{array}{r} -30 -30 \\ \hline -4x > -32 \\ \hline \frac{-4x}{-4} > \frac{-32}{-4} \\ x < 8 \end{array}$$



No Solution

Homework: pg. 318-320 #8-40 even, 51-53 all

Section 6-4 Vocab