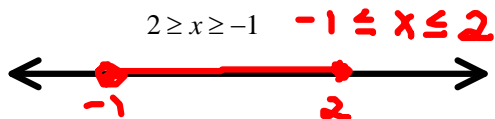
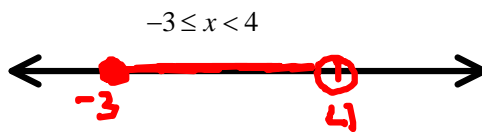
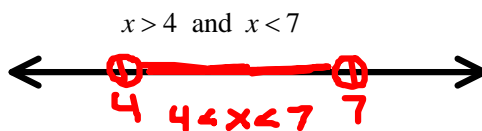


Solving Compound Inequalities

Intersection

Conjunction

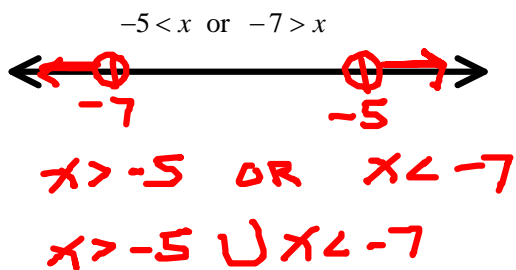
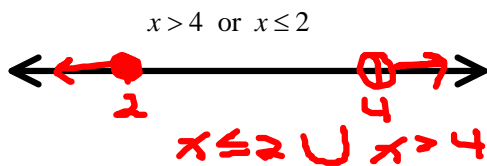
"And"



Union

Disjunction

"Or"



Directions: Solve and graph each compound inequality.

1. $-7 < 3x + 5 \leq 8$

$$\begin{array}{ccc} -5 & -5 & -5 \\ -12 & < & 3x + 5 \leq 8 \end{array}$$

$$\frac{-12}{3} < \frac{3x}{3} \leq \frac{3}{3}$$

$$\boxed{-4 < x \leq 1}$$



2. $6 \leq 8 - 3x \leq 7$

$$\begin{array}{ccc} 6 & \leq & 8 - 3x \leq 7 \\ -8 & & -8 \end{array}$$

$$\frac{-2}{-3} \leq \frac{-3x}{-3} \leq \frac{-1}{-3}$$

$$\frac{2}{3} \geq x \geq \frac{1}{3}$$

$$\boxed{\frac{1}{3} \leq x \leq \frac{2}{3}}$$



3. $-3x + 8 < 4$ or $-2x - 1 \geq 0$

$$\begin{array}{ccc} -3x + 8 & < & 4 \\ -8 & -8 & \end{array}$$

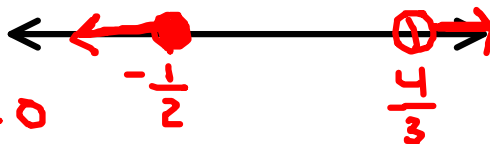
$$\frac{-3x}{-3} < \frac{-4}{-3}$$

$$x > \frac{4}{3}$$

$$\begin{array}{ccc} -2x - 1 & \geq & 0 \\ +1 & +1 & \end{array}$$

$$\frac{-2x}{-2} \geq \frac{1}{-2}$$

$$x \leq -\frac{1}{2}$$



$$\boxed{x \leq -\frac{1}{2} \text{ OR } x > \frac{4}{3}}$$
$$\boxed{x \leq -\frac{1}{2} \cup x > \frac{4}{3}}$$

4. $3y+2 \geq -2$ or $-4y+1 \geq -3$

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$$\begin{array}{r} 3y+2 \geq -2 \\ -2 \quad -2 \end{array}$$

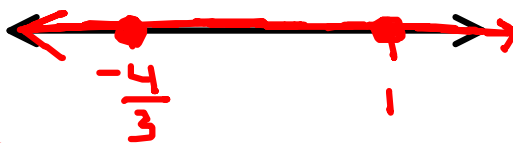
$$\begin{array}{r} -4y+1 \geq -3 \\ -1 \quad -1 \end{array}$$

$$\frac{3y}{3} \geq \frac{-4}{3}$$

$$\frac{-4y}{-4} \geq \frac{-4}{-4}$$

$$y \geq -\frac{4}{3}$$

$$y \leq 1$$



All real numbers