

**Warm up**

1.  $\frac{2}{3}x + 3 \geq 11$

2.  $-x + 4 < 2(x - 8)$

3.  $12 > -2x - 6$

4.  $3x + 2 > x - 8$

**Warm Up**

Read Between the Lines wkst  
(on the table)

## Homework Questions?

4)

$$-5x - 10 \geq -10$$

$$\quad \quad \quad +10 \quad \quad +10$$

$$\frac{-5x}{-5} \geq \frac{0}{-5}$$

$$x \leq 0$$

$\frac{0}{x} = 0$   
 $\frac{0}{0} = \text{undefined}$

## Self Scoring Scale

**4-** I can *summarize* the concepts and explain it to others.

**3-** I can *apply* the concepts to answer questions correctly.

**2-** I can *apply* the concepts but with some *mistakes*.

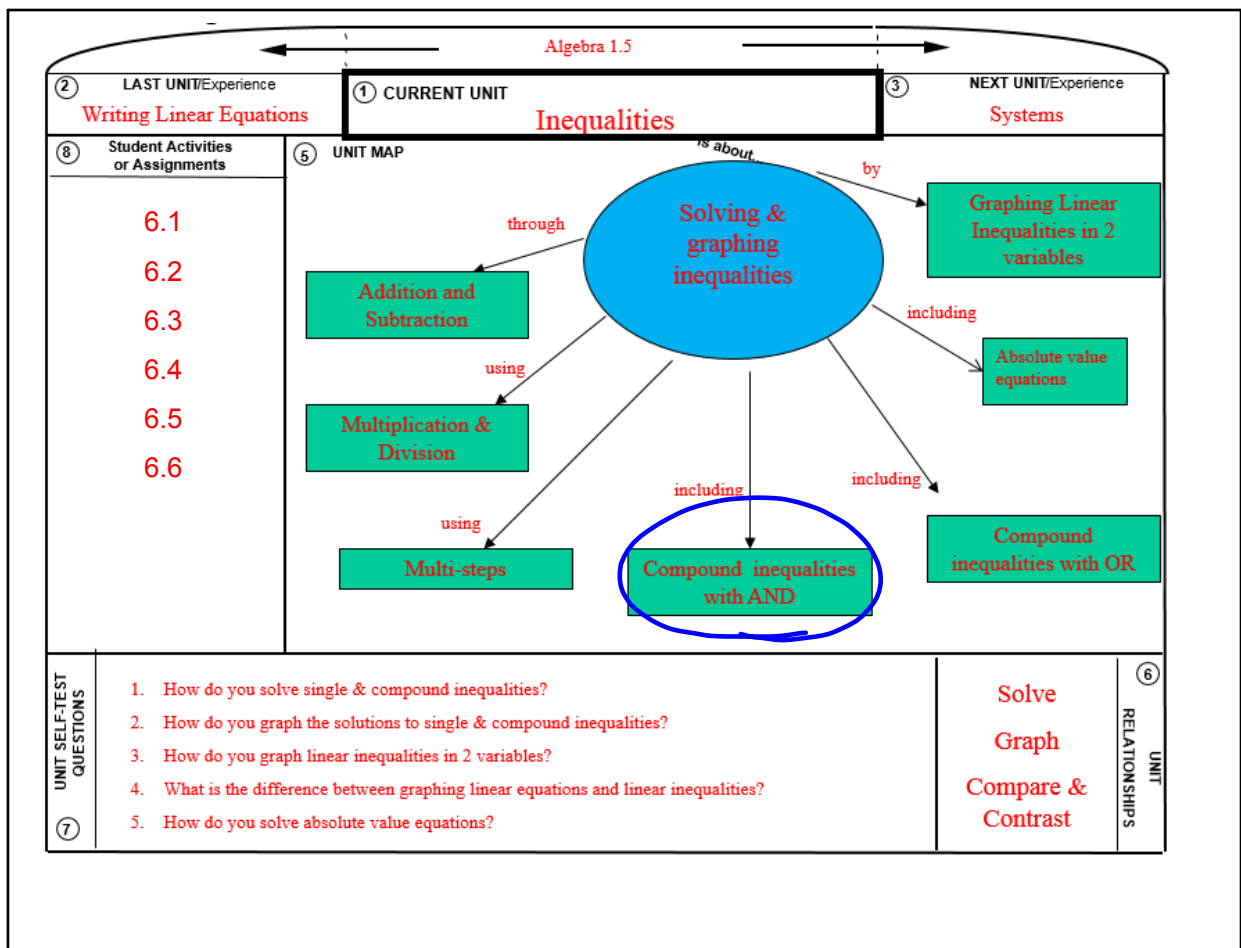
**1-** I *need help* to know how to apply the concepts.

**0-** I *can't* apply the concepts even with help.

# 6.4 Solving Compound Inequalities Involving "And"

**Goals:** • Solve and graph compound inequalities involving *and*.

**EQ:** Write & Graph an example of an "AND" inequality.



## Vocabulary

**Compound inequality:**

2 inequalities connected by "AND"  
(it must meet both conditions)

$$\underset{\#}{Lo} < \underset{x}{\text{Letter}} \leq \underset{\#}{Hi}$$

### **Example 1: Write Compound Inequalities with And**

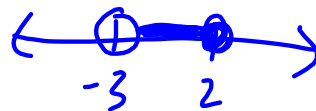
Write a compound inequality that represents the set of all real numbers greater than -3 and less than or equal to 2. Then graph the inequality.

The set can be represented by two inequalities.

$$x > -3 \quad \text{AND} \quad x \leq 2$$

The two inequalities can then be combined in a single inequality.

$$-3 < x \leq 2$$



The graph of this compound inequality is shown below.

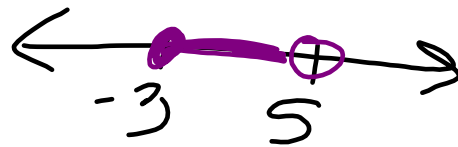


**Example 2: Solve Compound Inequalities with And**Solve  $-7 \leq x - 4 < 1$ . Then graph the solution.

$$\begin{array}{ccc} +4 & & +4 \\ | & & | \\ \hline -3 \leq x < 5 \end{array}$$

$$-3 \leq x < 5$$

$x \geq 3$

**Try It** Solve the inequality. Then graph the solution.

1.  $-4 < x + 6 \leq 1$

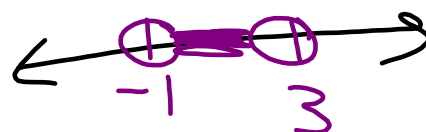
$$\begin{array}{ccc} -6 & & -6 \\ | & & | \\ \hline -10 < x \leq -5 \end{array}$$



2.  $1 < 3x + 4 < 13$

$$\begin{array}{ccc} -4 & & -4 \\ | & & | \\ \hline -3 < 3x < 9 \\ \frac{-3}{3} & & \frac{9}{3} \end{array}$$

$$-1 < x < 3$$

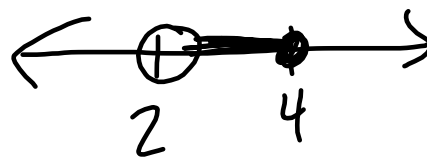


**Example 3: Reverse Both Inequalities**Solve  $-7 \leq -2x + 1 < -3$ . Then graph the solution.

$$\begin{array}{r} -1 \quad -1 \quad -1 \\ -8 \leq -2x < -4 \\ \hline -2 \quad -2 \quad -2 \end{array}$$

$$4 \geq x > 2$$

$$2 < x \leq 4$$

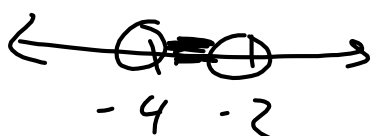
**Try It** Solve the inequality. Then graph the solution.

3.  $-1 < -2y - 5 < 3$

$$\begin{array}{r} +5 \quad +5 \quad +5 \\ 4 < -2y < 8 \\ \hline -2 \quad -2 \quad -2 \end{array}$$

$$-2 > y > -4$$

$$-4 < y < -2$$



4.  $2 \leq 6 - 4x < 22$

$$\begin{array}{r} -6 \quad -6 \quad -6 \\ -4 \leq -4x < 16 \\ \hline -4 \quad -4 \quad -4 \end{array}$$

$$1 \geq x > -4$$

$$-4 < x \leq 1$$



# Summary

**EQ:** Write & Graph an example of an "AND" inequality.

## 6.4 Homework

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#12-20even, 30-46even