



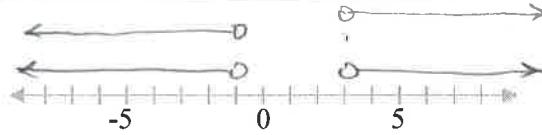
## Even More 3-6: Compounding Inequalities

**S**olve each compound inequality. Graph the solutions on the number line AND state 3 numbers in the solution set. Show all your work!

$$\textcircled{1} \quad 4m - 5 > 7 \quad \text{or} \quad 4m - 5 < -9$$

$$\begin{array}{rcl} +5 & +5 \\ \hline 4m & > 12 \\ \hline 4m & > 3 \end{array} \quad \begin{array}{rcl} +5 & +5 \\ \hline 4m & < -4 \\ \hline 4m & < -1 \end{array}$$

$$m > 3 \quad \text{or} \quad m < -1$$



Solution:  $m < -1 \text{ or } m > 3$

3 numbers in the solution set: (answers will vary)

$$\textcircled{2} \quad -1 \leq x + 2 \leq 4$$

$$\begin{array}{rcl} -2 & -2 & -2 \\ \hline -3 & \leq x & \leq 2 \end{array}$$

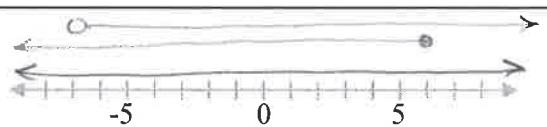


Solution:  $-3 \leq x \leq 2$

3 numbers in the solution set: (answers will vary)

$$\textcircled{3} \quad y + 6 > -1 \quad \text{or} \quad y - 2 \leq 4$$

$$\begin{array}{rcl} -6 & -6 \\ \hline y & > -7 \end{array} \quad \begin{array}{rcl} +2 & +2 \\ \hline y & \leq 6 \end{array}$$

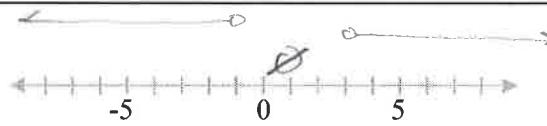


Solution:  $\mathbb{R}$

3 numbers in the solution set: (answers will vary)

$$\textcircled{4} \quad 2(5-x) > 12 \quad \text{and} \quad 7x > 4x + 9$$

$$\begin{array}{rcl} 10 - 2x > 12 & & -4x > -4x \\ \hline -2x > 2 & & \frac{3x}{3} > \frac{9}{3} \\ \hline x < -1 & \text{and} & x > 3 \end{array}$$

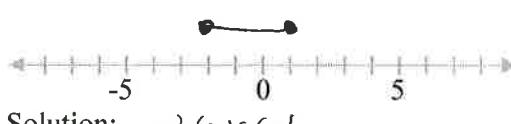


Solution:  $\emptyset$

3 numbers in the solution set: There are none!

$$\textcircled{5} \quad -6 \leq 2x - 2 \leq 0$$

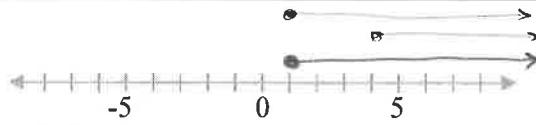
$$\begin{array}{rcl} +2 & +2 & +2 \\ \hline -4 \leq 2x \leq 2 \\ \hline -2 \leq x \leq 1 \end{array}$$



Solution:  $-2 \leq x \leq 1$

3 numbers in the solution set: (answers will vary)

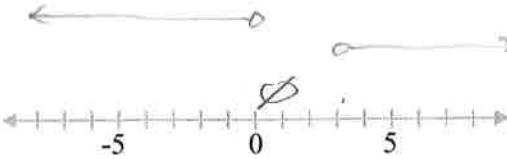
$$\textcircled{6} \quad 3y + 11 \geq 14 \quad \text{or} \quad 2y \leq 5y - 12$$



Solution:  $y \geq 1$

3 numbers in the solution set: (answers will vary)

7.  $3(c+4) < 12$  and  $c+2 > 5$

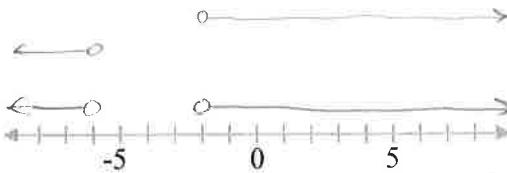


Solution:  $\emptyset$

3 numbers in the solution set: *There are none!*

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8.  $3 - 2k \leq 7$  or  $2k + 13 < 1$

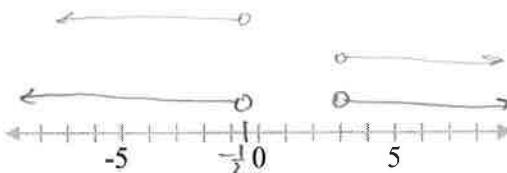


Solution:  $k < -6$  or  $k \geq -6$

3 numbers in the solution set: *(answers will vary)*

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9.  $2(3w+5) < 7$  or  $2w+8 < 5w-1$

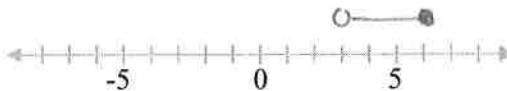


Solution:  $w < -\frac{1}{2}$  or  $w > 3$

3 numbers in the solution set: *(answers will vary)*

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10.  $8 < 2(x+3) - 4 \leq 14$



Solution:  $2 < x \leq 6$

3 numbers in the solution set: *(answers will vary)*

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## Practice 3-6

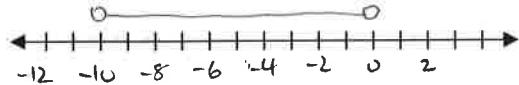
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**KEY**

Solve each compound inequality and graph the solution:

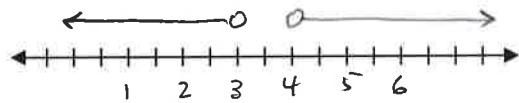
1.  $-5 < x + 5 < 5$

$-10 < x < 0$



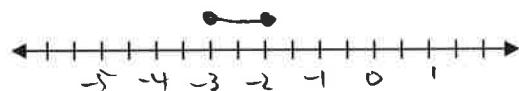
2.  $k - 3 > 1$  or  $k - 3 < -1$

$k > 4$  or  $k < 2$



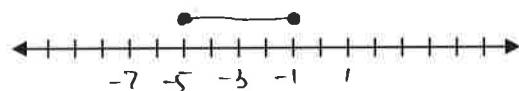
3.  $-4d \geq 8$  and  $2d \geq -6$

$-3 \leq d \leq -2$

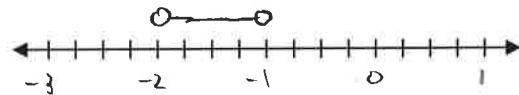


4.  $-6 \leq 9 + 3y \leq 6$

$-5 \leq y \leq -1$

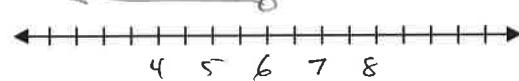


→ 5.  $4 - 2x > 6$  and  $2 - 3(x + 1) < 5$



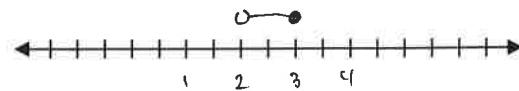
6.  $8(3x - 6) < -24$  or  $2(3b - 2) < 4b + 8$

$-2 < x < -1$



→ 7.  $6 - 2(\frac{3}{4}x + 1) \geq -10$  and  $5 - (x - \frac{8}{9}) < 2x + 7$

$x < 6$



$2 < x \leq 3$