

Name: Key

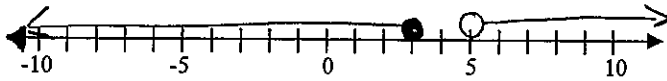
Date: _____

MORE WORK WITH COMPOUND INEQUALITIES COMMON CORE ALGEBRA I HOMEWORK

FLUENCY

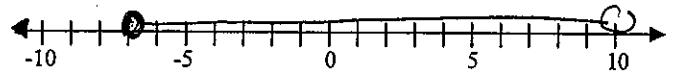
1. Graph each of the following compound inequalities on the number lines provided. If its an AND statement write the inequalities as a single statement.

(a) $x > 5$ or $x \leq 3$

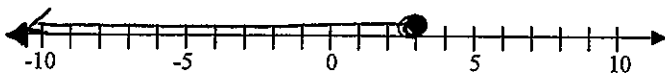


(b) $x \geq -7$ and $x < 10$

$-7 \leq x < 10$

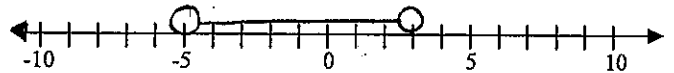


(c) $x \leq 3$ or $x < -6$ → graph this one b/c it covers more



(d) $x < 3$ and $x > -5$

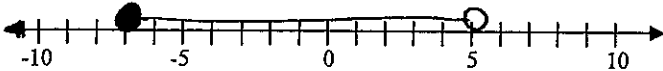
$-5 < x < 3$



2. Graph each of the following. First, rewrite as two inequalities involving the AND connector.

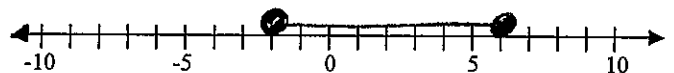
(a) $-7 \leq x < 5$

Two Inequalities: $x \geq -7$ and $x < 5$



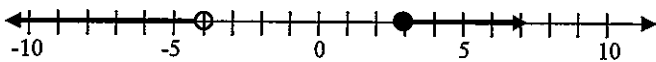
(b) $-2 \leq x \leq 6$

Two Inequalities: $x \geq -2$ and $x \leq 6$

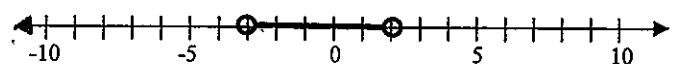


3. For each of the following graphs, write a compound inequality that describes all of the numbers shown on the graph.

(a) Compound Inequality: $x < -4$ or $x \geq 3$



(b) Compound Inequality: $-3 < x < 2$



REASONING

4. Consider the compound inequality given by:

$$-2 \leq \frac{1}{2}x + 2 \text{ and } \frac{1}{2}x + 2 < 3$$

Solve this compound inequality and graph the solution on the number line. Write the solution set as a single algebraic statement.

$$\begin{array}{l}
 -2 \leq \frac{1}{2}x + 2 \quad \text{and} \quad \frac{1}{2}x + 2 < 3 \\
 \frac{-2}{-2} \leq \frac{\frac{1}{2}x + 2}{-2} \quad \frac{\frac{1}{2}x + 2}{-2} < \frac{3}{-2} \\
 \frac{2}{1}(-4) \leq \left(\frac{1}{2}x\right) \frac{2}{1} \quad \frac{2}{1}\left(\frac{1}{2}x\right) < (1)3 \\
 -8 \leq x \quad x < 2 \\
 \underline{x \geq -8 \quad \text{and} \quad x < 2}
 \end{array}$$

$-8 \leq x < 2$ IN: $[-8, 2)$

5. Consider the compound inequality: $-7 \leq 2x - 5 < 7$

(a) ~~Using the skills you have learned today, rewrite the following inequality using the AND connector?~~

(b) Solve the compound inequality you found in part (a) and graph the solution on the number line. ~~Rewrite your answer as a single statement.~~

$$\begin{array}{l}
 -7 \leq 2x - 5 < 7 \\
 +5 \quad +5 \quad +5 \\
 \hline
 -2 \leq 2x < 12 \\
 \frac{-2}{2} \leq \frac{2x}{2} < \frac{12}{2} \\
 \underline{-1 \leq x < 6}
 \end{array}$$

$-1 \leq x < 6$ IN: $[-1, 6)$

(c) Using the skills above, try and simplify the following inequality. Graph the solution on the number line and rewrite your answer as a single statement.

$$\begin{array}{l}
 -3 \leq 3x + 3 \quad \text{and} \quad 3x + 3 < 2x + 10 \quad -3 \leq 3x + 3 < 2x + 10 \\
 \frac{-3}{-3} \leq \frac{3x + 3}{-3} \quad \frac{3x + 3}{-2x} < \frac{2x + 10}{-2x} \\
 \frac{-6}{3} \leq \frac{3x}{3} \quad \frac{x + 3}{-3} < \frac{2x + 10}{-3} \\
 -2 \leq x \quad x < 7 \\
 \underline{x \geq -2 \quad \text{and} \quad x < 7}
 \end{array}$$

$-2 \leq x < 7$ IN: $[-2, 7)$