Name _____ Class _____ Date _____

Reteaching 3-5

Compound Inequalities

OBJECTIVE: Solving compound inequalities and graphing the solutions on a number line

MATERIALS: Two highlighting markers in colors that combine to make a third color, for example, blue and yellow or pink and yellow

Before you graph, practice making overlapping lines with your two markers. Notice, for example, that marks from a yellow marker and a blue one overlap to make a green line. A pink line and a yellow line combine to make an orange line. (If you have trouble seeing some colors, ask a partner to help you.)

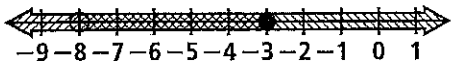
Example

Solve and graph $-3 < x + 5 \leq 2$.

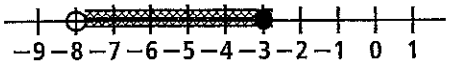
$-3 < x + 5$ and $x + 5 \leq 2$ ← **Rewrite the compound inequality as two inequalities joined by *and*.**

$-3 - 5 < x + 5 - 5$ and $x + 5 - 5 \leq 2 - 5$

$-8 < x$ and $x \leq -3$ ← **Solve each inequality.**



← **Graph the solutions separately on the same number line. Use a blue marker for one arrow (▨) and a yellow marker (▨) for the other. Notice that −8 is colored in only one of the graphs.**



← **Graph the solution set of all the green points (▨). Think: *The green points are blue AND yellow.* This graph shows the solution set for the compound inequality.**

$-8 < x \leq -3$ ← **Write the solution set.**

Exercises

Solve each inequality and graph the solution. Hint: The solution set for *or* statements is all points that are blue or yellow or green.

1. $-3 \leq x - 5$ or $x + 5 \leq 2$

2. $x + 5 \leq 4$ or $-2x < -6$

3. $x - 2 \geq -6$ and $5 + x < 7$

4. $x - 2 \leq -6$ or $5 + x > 7$

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

6. $3 \geq \frac{1}{2}x > -2$

7. $-5 \leq 2x - 1 < 7$

8. $3x < -6$ or $4x - 3 \geq 9$

9. $-5x < 15$ or $x \leq -5$

10. $-1 \leq \frac{1}{2}x + 1 < 0$

11. $1 - 2x \leq -5$ or $2x < -10$

12. $-9 < x - 7 \leq 1$