

Name _____

ABSOLUTE VALUE INEQUALITIES #4

Directions: Solving *absolute value inequalities* requires two different strategies. To solve absolute value inequalities with a “greater than” symbol, you should split the problem into two separate inequalities, like solving an absolute value equation. This strategy is demonstrated in Example 1. For inequalities with a “less than” symbol, you can solve the two inequalities at the same time, as shown in Example 2.

Example 1: $|x + 7| > 10$

$$\begin{array}{l} x + 7 < -10 \quad \text{or} \quad x + 7 > 10 \quad (\text{subtract 7 from both sides}) \\ \mathbf{x < -17} \quad \quad \text{or} \quad \quad \mathbf{x > 3} \end{array}$$

$$|x + 4| < 10$$

$$\begin{array}{l} -10 < x + 4 < 10 \quad (\text{subtract 4 from each part}) \\ \mathbf{-14 < x < 6} \end{array}$$

1) $|2x + -5| < 31$

2) $|4x + 4| > 20$

3) $|2x - 7| \leq 13$

4) $|15 + -5x| < 50$

5) $\left| \frac{x}{4} - 2 \right| \geq 6$

6) $|8x + 24| < 72$

7) $|-x + 1| \leq 8$

8) $|2x + -6| > 12$

9) $|9x - 27| < 18$
