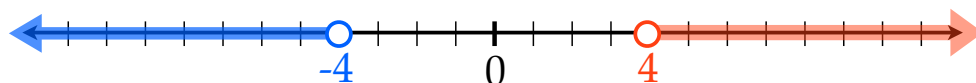


Solving Absolute Value Inequalities

Absolute Value Inequality

The distance from x to 0 is greater than 4.

$$|x| > 4$$



$$x < -4 \quad \text{or} \quad x > 4$$

Absolute Value Inequality

The distance from x to 0 is less than 4.

$$|x| < 4$$



$$x > -4 \quad \text{and} \quad x < 4$$

$$-4 < x < 4$$

Solving Absolute Value Inequalities

1. Isolate absolute value expression (left side)

2. Create compound inequality

$$|x| \leq a$$
$$x \leq a \quad \text{and} \quad x \geq -a$$

"less than" $\Rightarrow$ and

$$|x| \geq a$$
$$x \geq a \quad \text{or} \quad x \leq -a$$

"greater than" $\Rightarrow$ or

3. Solve and graph both inequalities

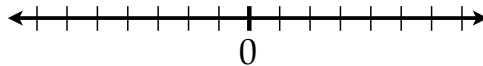
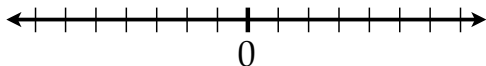
Solve the following absolute value inequalities:

"less than" $\Rightarrow$ and

"greater than" $\Rightarrow$ or

$$|3x| \geq 18$$

$$4|x| < 20$$



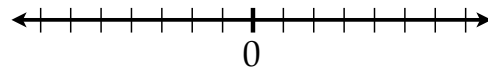
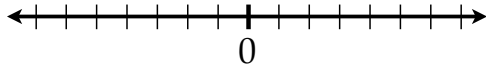
Solve the following absolute value inequalities:

"less than" $\Rightarrow$ *and*

"greater than" $\Rightarrow$ *or*

$$|x - 3| \leq 1$$

$$|2x + 6| > 4$$



Solve the following absolute value inequalities:

"less than" $\Rightarrow$ *and*

"greater than" $\Rightarrow$ *or*

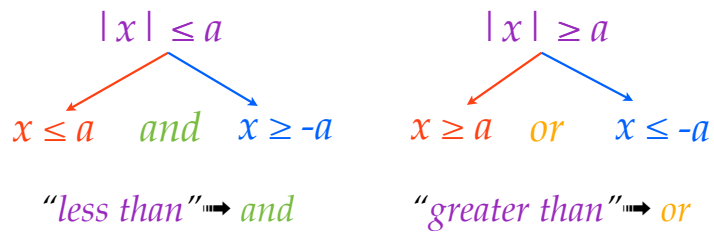
$$|2x + 1| < -10$$

$$|2x + 1| > -2$$

Solving Absolute Value Inequalities

1. Isolate absolute value expression (left side)

2. Create compound inequality



3. Solve and graph both inequalities