

## 6.3 Compound Inequalities.

When two inequalities are combined into one Statement, the result is called a compound inequality.

Here's an example:  $-8 \leq x \leq 5$

We would read this as "-8 is less than or equal to x, which is less than or equal to 5"

or

"x is between -8 and 5"

Real life: Let's say a post voting poll shows a candidate getting 48% of the vote with an error of  $\pm 8\%$ . What does that mean?

It means the actual percent of votes could be anywhere from:

$$48\% - 8\% = 40\%$$

$$48\% + 8\% = 56\%$$

So the inequality which expresses this is,

$$40\% \leq x \leq 56\%$$

★ Compound inequalities can be expressed as two separate inequalities or two together.

Same thing  $\begin{cases} x > 1 \\ 1 < x < 6 \end{cases}$  And  $x < 6$

When graphing on number line:

How to solve:

Example:  $5 \leq x - 8 < 7$

$$x - 8 \geq 5$$

$$x - 8 < 7$$

$$x \geq 13 \text{ and } x < 15$$

$$13 \leq x < 15$$



AND = conjunction or intersection

The shaded regions overlap.

OR = disjunction or union

The shaded regions go apart.

You must know the difference between "and" and "or" statements!!!