

Solving Absolute Values + Inequalities

$$|x-3| = 1$$

$$x-3 = 1 \ ; \ x-3 = -1$$

$$x = 4 \ ; \ x = 2$$



$$|x-3| = -2$$

No solution. Absolute value is never negative.

$$|x-3| < -3 \quad \text{No solution.}$$

$$|x-3| > 5$$

$$x-3 > 5 \ ; \ x-3 < -5$$

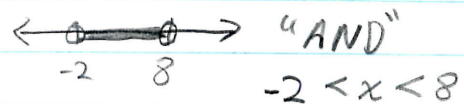
$$x > 8 \ ; \ x < -2$$



$$|x-3| < 5$$

$$x-3 < 5 \ ; \ x-3 > -5$$

$$x < 8 \ ; \ x > -2$$



$|x-3| \geq -1$ \mathbb{R} since absolute value is always positive so always ≥ -1 .

Solve: $x - 4 > 3$

$$+4 \qquad +4$$

$$x > 7 \quad \leftarrow \text{open circle at } 7 \rightarrow$$

$<$ or $>$ empty dot $\leftarrow \text{open circle} \rightarrow$

\leq or \geq solid dot $\leftarrow \text{solid circle} \rightarrow$

Solve:

$$(x+2)(x-3) \geq 0$$

$$x = -2 \quad x = 3$$



Test each area.
If true, then shade.