

Absolute Value Equations

absolute value: the distance between 0 and that number on a number line

$$|4| = 4 \quad |-4| = 4$$

↑ positive ↑

$$-|-4| = -4$$

↑ only time the result is negative

EVALUATE AN EXPRESSION:

1. Substitute the value for the variable.
2. Simplify the absolute values.
3. Simplify the expression.

$$2|3 - x| + |x| \text{ if } x = -2$$

$$2|3 - (-2)| + |-2|$$

$$2|3 + 2| + 2$$

$$2|5| + 2$$

$$2 \cdot 5 + 2$$

$$10 + 2$$

$$12$$

SOLVE AN EQUATION:

1. Isolate the absolute value expression.
2. Create 2 equations: one set for the positive value and one for the negative value.
3. Solve both equations and graph the solutions.

$$|x - 5| - 3 = 7$$

$$+3 \quad +3$$

$$|x - 5| = 10$$



$$x - 5 = 10$$

$$+5 \quad +5$$

$$x = 15$$

$$x - 5 = -10$$

$$+5 \quad +5$$

$$x = -5$$

$$x = \{15, -5\}$$

