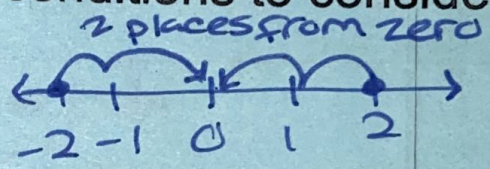
SOLVING ABSOLUTE VALUE EQUATIONS

Absolute Value means "distance from zero". When you solve an equation with absolute value, there are two conditions to consider.

$|x| = 2$



$x = -2$ and 2

Steps to Solving:

1) Isolate the absolute value expression. (the part inside the | |)

2) Set the absolute value expression equal to the positive and negative value of the number shown.

set up 2 equations.

3) Solve each equation $|?| = +\#$ $|?| = -\#$

You almost always have 2 answers!

$|x| = 6$

$+$ $x = 6$

$-$ $x = -6$

$|4x| = 12$

$+$ $\frac{4x}{4} = \frac{12}{4}$

$-$ $\frac{4x}{4} = \frac{-12}{4}$

$x = 3$ and $x = -3$

$|x + 2| = 8$

$+$ $x + 2 = 8$
$-2 \quad -2$

$-$ $x + 2 = -8$
$-2 \quad -2$

$x = 6$ and $x = -10$

$|x-7| + 2 = 10$

Isolate abs. value 1st!

$-2 \quad -2$

$|x-7| = 8$

$+$ $x - 7 = 8$
$+7 \quad +7$

$x = 15$

$-$ $x - 7 = -8$
$+7 \quad +7$

$x = -1$

$2|x-3| = 18$

$\frac{2}{2} \quad \frac{18}{2}$

$|x-3| = 9$

$x - 3 = 9$
$+3 \quad +3$

$x = 12$

$x - 3 = -9$
$+3 \quad +3$

$x = -6$

☆ absolute value $\neq$ $-$ #

ex: $|x+2| = -4$ No Solution

$x + 2 = -4$
$x = -6$

$x + 2 = 4$
$x = 2$