Notes 2-5 Solving Absolute Value Equations **Name**_____

Period _____

The absolute value of a number is _____.

Distance is always _____, therefore the _____

_____.

Ex: $|-7| =$ $|5 - 6.5| =$ $|(-9)(-5)| =$

Evaluating expressions with absolute values:

Ex: Evaluate: $8 - |2n - 5|$ if n = -7.5

1) Evaluate: $|4x + 3| - 3$ if x = -2

Solving Absolute Value Equations:

When we move 'x' number of units on a number line, we can move in the _____

direction, so there are often _____ to absolute value equations.

Solving absolute value equations:
Step 1: isolate the absolute value bars
Step 2: remove the bars and write two equations – one positive and one negative
Step 3: solve each equation.
Step 4: check your solutions.

Ex: $|x - 12| = 9$

2) $|y + 5| = 8$

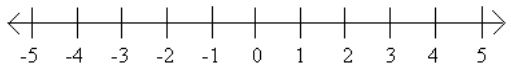
Ex: $3|2x - 3| = 9$

3) $-5|x + 1| = -20$

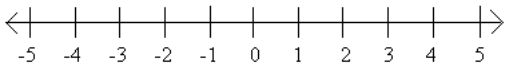
Writing Absolute Value Equations from a Number Line

To help understand how adding or subtracting to the x inside the absolute symbol affects the equation, we will look at the solutions set for 2 different examples.

$$|x - 1| = 3$$

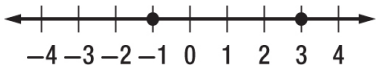


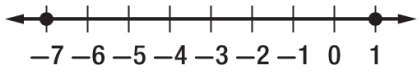
$$|x + 1| = 3$$



When writing an absolute value equation from a given solution set, look for the center point, then write the equation as 'x minus that value' inside the absolute bars.

Example: Write an equation involving absolute value for each graph. Check your work.





Writing Absolute Value Equations from Word problems:

Most freshwater tropical fish thrive if the water is within 2 degrees of 78 degrees Fahrenheit. Write an equation to determine the least and greatest optimal temperatures.