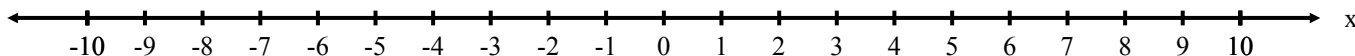**Comparing Absolute Value**
**And Opposite**

Name _____

You will be using your graphing calculator will help you see a pattern so you will be able to explain "<u>absolute value</u>".  Select APPS.  Choose NUMLINE ENTER.  Select *Number Line* ENTER Press WINDOW Set window as follows:
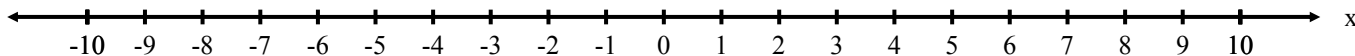
```
WINDOW
 Min=-10
 Max=10
 Scale=1
 Start=0
 LabelOff LabelOn
```

Push 2nd MODE to exit window.  Select DRAW and choose <u>DrawLabel</u> .

1.  Type –2 and push ENTER Type 2, and push ENTER.  Label 0 on the number line below, and then sketch the graph.

```
<-------+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+----> x
     -10 -9  -8  -7  -6  -5  -4  -3  -2  -1   0   1   2   3   4   5   6   7   8   9  10
```

2.  Push 2nd MODE DRAW.  Select Cleardraw. Push DRAW again. Select DrawLabel ENTER.  Type –6 and ENTER.  Type 6 and ENTER.  Label 0 on the number line below, and then sketch the graph.

```
<-------+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+----> x
     -10 -9  -8  -7  -6  -5  -4  -3  -2  -1   0   1   2   3   4   5   6   7   8   9  10
```

3.  How does the distance any number is from 0 compare to the distance its opposite is from 0?

4.  Circle the number that is furthest from 0 in each of the following pairs? You may use your graphing calculator to check.

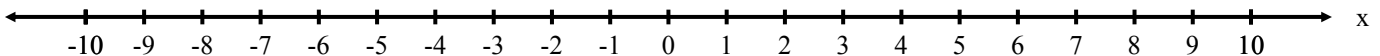a)  2  or – 4          b)  6  or –5          c)  –9  or  7    d)  4  or  –1

5.  In your calculator "abs(" means "absolute value".  In a text book, | | means absolute value.

Use your calculator to draw and label each of the following absolute values.  Put 0 on the number line below, then sketch and label each of these absolute values.

a.   | -8 |        b.  | 1 |         c.   | -4 |          d.   | 6 |          e.   | -9 |



6.  Will an absolute value be graphed on the positive or negative side of the number line?  Why do you think this is true?
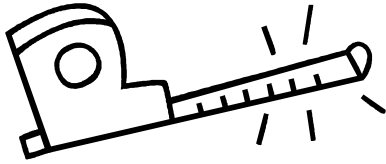
7.   *Absolute value,* or | | means the <u>distance a number is from 0</u> . Since there is no such thing as a negative distance, so the *absolute value* of any number will always be _____.

8.   In your own words, explain the difference between opposite numbers and absolute value numbers.
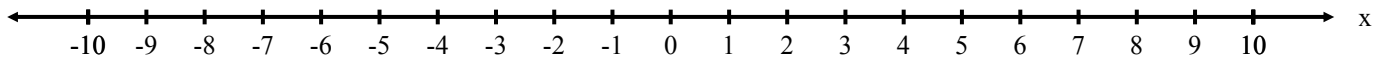
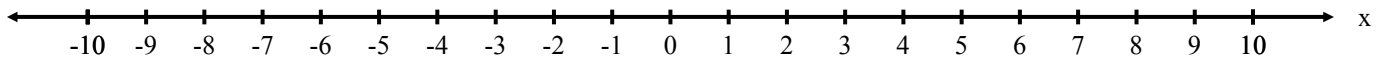**Try These Absolute Value Problems**     Name _____

Date_____

Fill in the blank.  Then graph the answer.  Show your reasoning.

9.  $|4|$ = _____     10.  $|-1|$ = _____     11.  $|-9|$ = _____

X

-10  -9  -8  -7  -6  -5  -4  -3  -2  -1  0  1  2  3  4  5  6  7  8  9  10

12.  $|1/2|$ = _____     13.  $|-0.6|$ = _____     14.  $|9|$ = _____

X

-10  -9  -8  -7  -6  -5  -4  -3  -2  -1  0  1  2  3  4  5  6  7  8  9  10

**Fill in the ☐ with  <,  >,  or  =**

15.  $|-7.5|$  ☐  $|7|$          16.  $|-2|$  ☐  $|2|$

17.  $|-3/4|$  ☐  $|1/2|$          18.  $|4|$  ☐  $|-6|$

**If $n = -2$, evaluate each expression**

19.  $|n| + |7|$          20.  $|n-4| - 9$

21.  $4 \cdot |n|$          22.  $-2 + |n|$