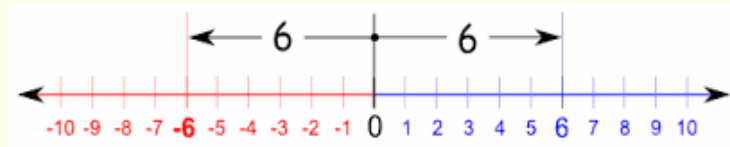## 9.3 Compare and Order Integers

As an example, look at the number line below where 6 & -6 are. They are different numbers, but they are the same distance from zero. This means they have the same absolute value.

ABSOLUTE VALUE: The distance the number is from the zero point on the number line

What is the symbol for absolute value??

| | parallel vertical
                lines

Examples: Simplify each absolute value.

1.) $|-8| = 8$

2.) $|-3| + |2|$
$3 + 2 = 5$

3.) $|15| - |-3|$
$15 - 3$
12

4.) $|-20| + |-19|$
$20 + 19$
39

5.) $|-5| - |2|$
$5 - 2 = 3$

6.) $|-31| + |-18|$
$31 + 18 = 49$

7.) $|-8| - |8|$
$8 - 8 = 0$

On a number line, values increase as you move to the right. This makes it easy to determine which of two numbers is greater.

You can compare two integers using inequality signs, such as < (less than) or > (greater than).

EXAMPLES: Compare the two integers.

5 __>__ -8   6 __>__ 4   -7 __<__ 6

-3 __<__ 2   -10 __<__ 9   -16 __>__ -40

0 __>__ -12   -3 __<__ 3 |-1| __=__ 1
                                           1

EXAMPLES: Use the numbers in each sentence to write an inequality. Use < or >.

1.) -3 is less than 10   2.) 8 is greater than 7
$-3 < 10$ $8 > 7$

3.) 65 mph is faster than 55 mph
$65 > 55$

4.) Chris spent $40 and gained $70
$-40 < 70$

5.) Stacey made 10 foul shots. She missed 4 in the same game.
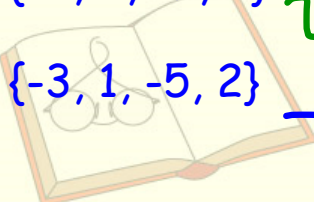$10 > -4$

EXAMPLES: Order the numbers in each set from least to greatest.

{7, 0, 4} $\{0, 4, 7\}$

{-4, -6, 0, -2} $\{-6, -4, -2, 0\}$

{3, -6, 6, -3} $\{-6, -3, 3, 6\}$

{-4, 3, 0, -2} $\{-4, -2, 0, 3\}$

{-7, 5, -9, 4} $\{-9, -7, 4, 5\}$

{-3, 1, -5, 2} $\{-5, -3, 1, 2\}$

EXAMPLES: Write *always*, *sometimes*, or *never* to make a true statement.

1.) A positive number is __ALWAYS__ greater than a negative number.

2.) A negative number is __SOMETIMES__ greater than another negative number.