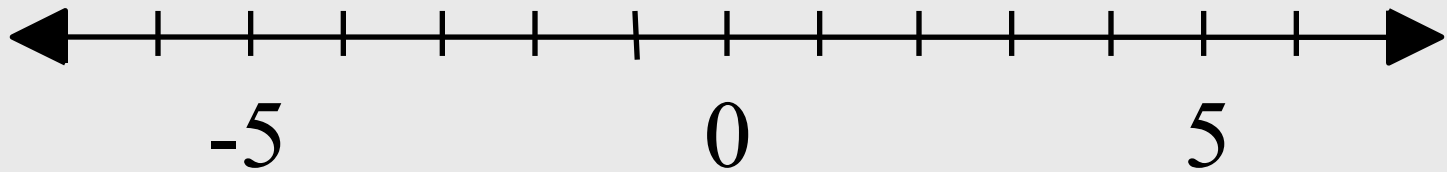# Objectives

The student will be able to:

1. State the coordinate of a point on a number line.

2. Graph integers on a number line.

3. Add and subtract integers.

SOL: none

The Number Line

Integers = {…, -2, -1, 0, 1, 2, …}
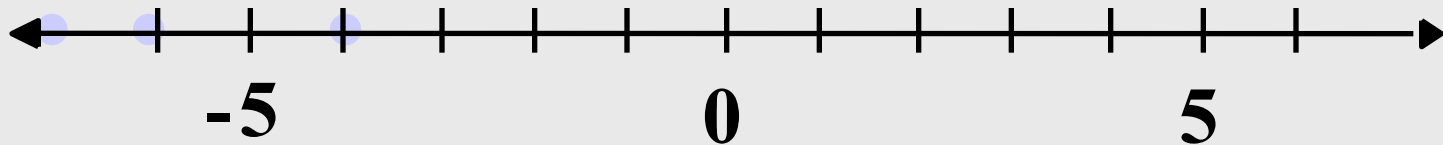
Whole Numbers = {0, 1, 2, …}

Natural Numbers = {1, 2, 3, …}

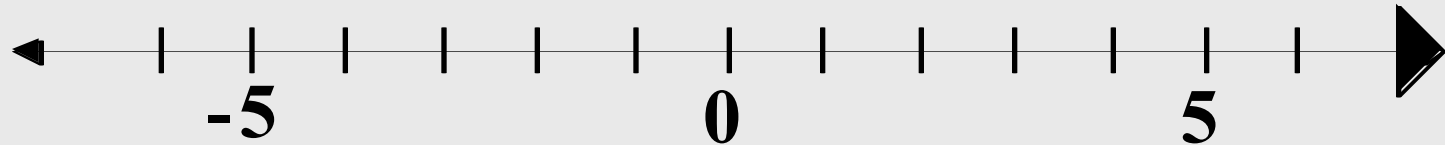To GRAPH

a set of numbers means to locate and mark the points on the number line.

Graph {-1, 0, 2}.

-5   0   5

Be sure to put the dots on the line - not above or below.

Name the set of numbers graphed.

$\{-2, -1, 0, \ldots\}$

The darkened arrow means that the graph keeps on going. When you see this, put 3 dots in your set.

Examples: Use the number line if necessary.

```
◄——|——|——|——|——|——|——|——|——|——|——|——|——►
     -5              0              5
```

1) (-4) + 8 =

4

2) (-1) + (-3) =

-4

3) 5 + (-7) =

-2

Addition Rule

1) When the signs are the same,

ADD and keep the sign.

(-2) + (-4) = -6

2) When the signs are different,

SUBTRACT and use the sign of the

larger number.

(-2) + 4 = 2

2 + (-4) = -2

<u>Karaoke Time!</u>

Addition Rule: Sung to the tune of "Row, row, row, your boat"

Same signs add and keep,
different signs subtract,
keep the sign of the higher number,
then it will be exact!

Can your class do different rounds?

-1 + 3 = ?

- -4
- -2
- ✔ 2
- 4

Answer Now

$$-6 + (-3) = ?$$

✓ • -9

• -3

• 3

• 9

Answer Now

The **additive inverses** (or **opposites**) of two numbers add to equal zero.

Example: The additive inverse of 3 is

-3

Proof: 3 + (-3) = 0

We will use the additive inverses for subtraction problems.

What's the difference between
7 - 3   and   7 + (-3) ?
7 - 3 = 4   and 7 + (-3) = 4

The only difference is that 7 - 3 is a subtraction problem and 7 + (-3) is an addition problem.

"SUBTRACTING IS THE SAME AS ADDING THE OPPOSITE."

(Keep-change-change)

When subtracting, change the subtraction to adding the opposite (keep-change-change) and then follow your addition rule.

Example #1:   - 4 - (-7)

                    - 4 + (+7)

          Diff. Signs --> Subtract and use larger sign.

                              3

Example #2:   - 3 - 7

                    - 3 + (-7)

          Same Signs --> Add and keep the sign.

                          -10

Okay, here's one with a variable!
Example #3: 11b - (-2b)

$$11b + (+2b)$$

Same Signs --> Add and keep the sign.

$$13b$$

Which is equivalent to -12 – (-3)?

- 12 + 3
✓ - -12 + 3
- -12 - 3
- 12 - 3

Answer Now

$$7 - (-2) = ?$$

- -9
- -5
- 5
✔ - 9

Answer Now

<u>Review</u>

1) If the problem is addition, follow your addition rule.

2) If the problem is subtraction, change subtraction to adding the opposite (<u>keep-change-change</u>) and then follow the addition rule.

Absolute Value

of a number is the distance from zero.
Distance can NEVER be negative! The symbol is |a|, where a is any number.

Examples

$$|7| = 7$$

$$|10| = 10$$

$$|-100| = 100$$

$$|5 - 8| = |-3| = 3$$

$$|7| - |\text{-}2| = ?$$

- -9
- -5
- ✓ 5
- 9

Answer Now

$|-4 - (-3)| = ?$

- -1
- ✓ 1
- 7
- Purple

Answer Now