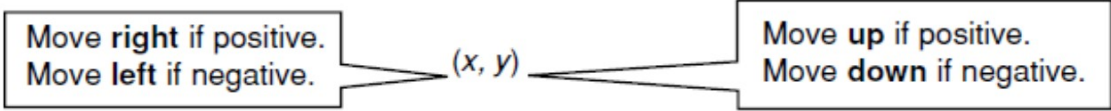


Graphing Ordered Pairs

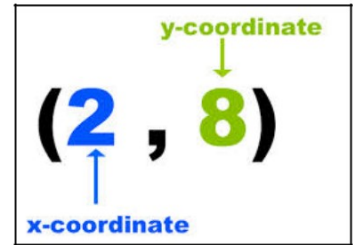
Return To
Start

An ordered pair of numbers indicates where a point is on a coordinate plane. When graphing a point, the signs of the numbers indicate which directions to move along the x - and y -axes, starting from the origin.



Tell how to graph each point.

- $(3, -5)$ Move 3 right on the x -axis and 5 down on the y -axis.
- $(-4, 2)$ Move 4 left on the x -axis and 2 up on the y -axis.



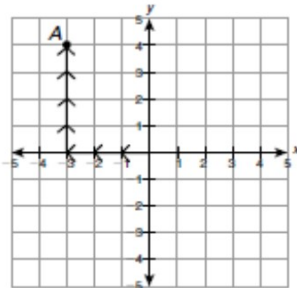
Graph $A(-3, 4)$.

Start at the origin $(0, 0)$.

Move 3 spaces to the left.

Move 4 spaces up.

Plot the point.



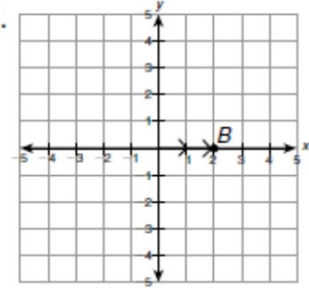
Graph $B(2, 0)$.

Start at the origin $(0, 0)$.

Move 2 spaces to the right.

Move 0 spaces up or down.

Plot the point.

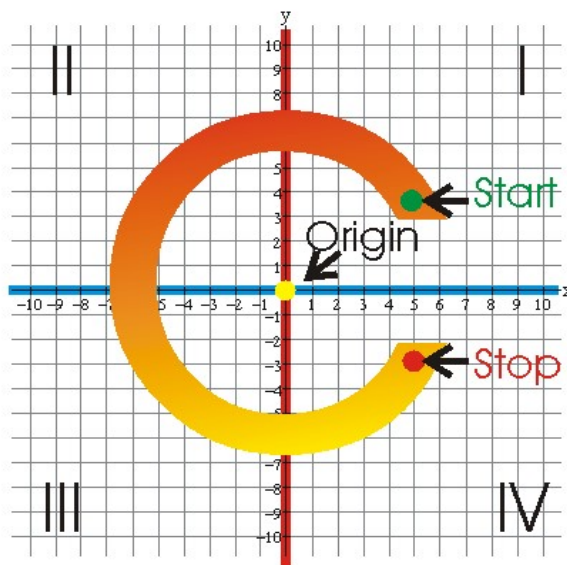


- Lattice Point: integer coordinate (where the gridlines intersect)**

Quadrants of The Coordinate Plane

Quadrant 2
all x values are negative
all y values are positive

Quadrant 3
all x values are negative
all y values are negative



Quadrant 1
all x values are positive
all y values are positive

Quadrant 4
all x values are positive
all y values are negative

Slope

Slope: the constant rate of change of the rise (vertical change) to the run (horizontal change).

*Variable is m.

* Put a whole number over 1 to make it into a fraction.

$$\frac{4}{-1}$$

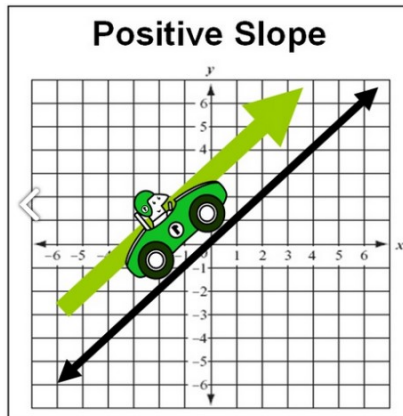
4 Types of Slope:

Positive Slope: Rises from left to right

- Examples:

$$\frac{3}{2}$$

- Going up a hill

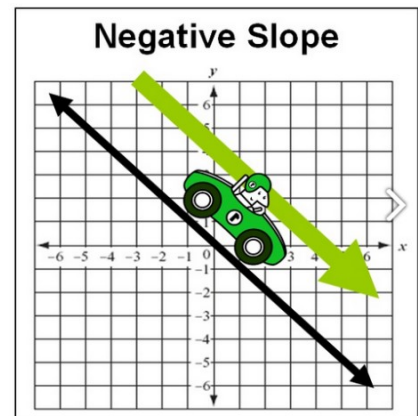


Negative Slope: Falls from left to right

- Examples:

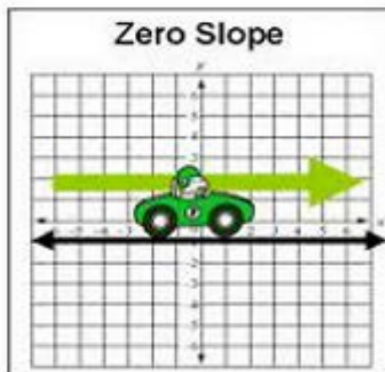
$$\frac{1}{-2}$$

- Going down a hill



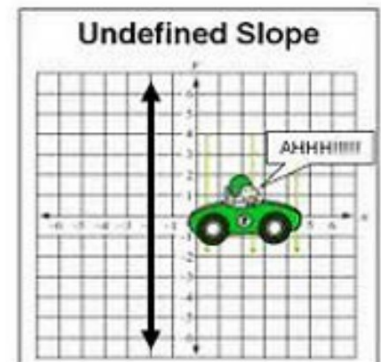
Zero Slope: Horizontal Line

- Y-values are the same
- Going in a straight line (No Vertical Change)



Undefined Slope: Vertical Line

- X-values are the same
- Falling off a cliff (No Horizontal Change)



Slope of a Line

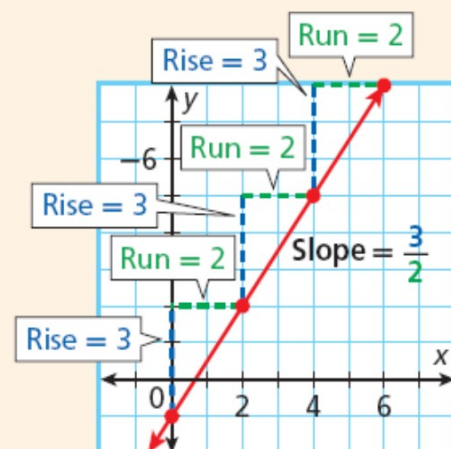
The **rise** is the difference in the **y-values** of two points on a line.

The **run** is the difference in the **x-values** of two points on a line.

The **slope** of a line is the ratio of rise to run for any two points on the line.

$$\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{\text{change in } y}{\text{change in } x}$$

(Remember that **y** is the **dependent variable** and **x** is the **independent variable**.)



Finding Slope: By Graphing

Finding Slope Given a Graph: * Choose any two points on the line.

Step 1: Begin at one of the points and count vertically until you are even with the 2nd point.

*This is the rise.

- If you go down the rise will be negative.
- If you go up the rise will be positive.

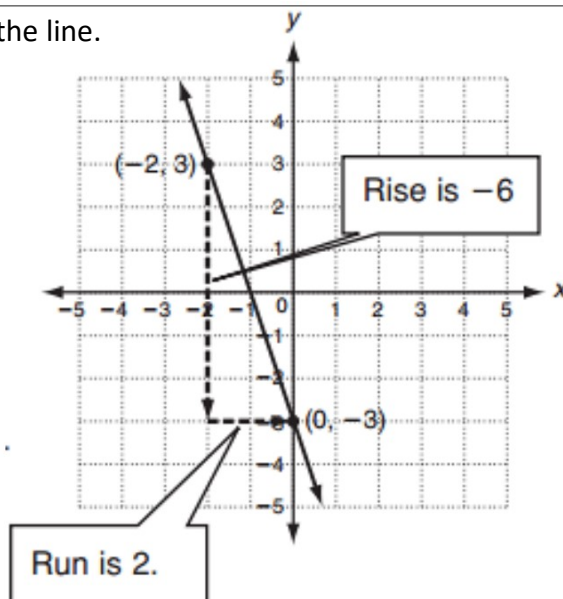
Step 2: Count over until you are at the second point.

*This is the run.

- If you go left the run will be negative.
- If you go right the run will be positive.

Step 3: Divide or simplify the fraction to find slope.

$$\text{slope} = \frac{\text{rise}}{\text{run}} = -\frac{6}{2} = -3$$



Given 2 Points:

Find the slope of the line that contains (0, -3) and (5, -5).

Step 1: Begin at one point. Count vertically until you are even with the 2nd point.

*This is the rise.

- If you go down the rise will be negative.
- If you go up the rise will be positive.

Step 2: Count horizontally to the 2nd point to find the run.

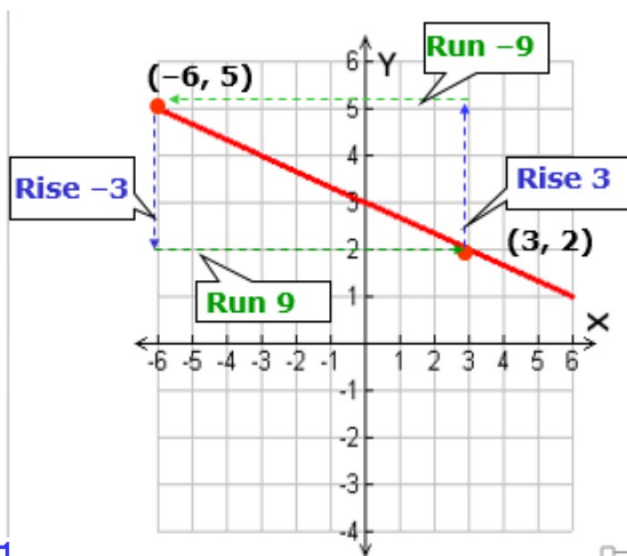
*This is the run.

- If you go left the run will be negative.
- If you go right the run will be positive.

Step 3: Divide or simplify the fraction to find slope.

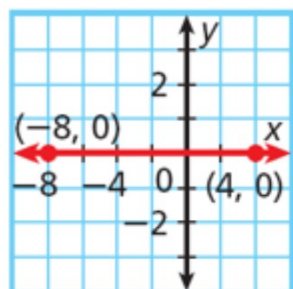
$$\text{Slope} = \frac{-3}{9} = -\frac{1}{3} \quad \text{or} \quad \text{Slope} = \frac{3}{-9} = -\frac{1}{3}$$

(It does not matter which point you start with. The slope is the same.)



Horizontal and Vertical Lines

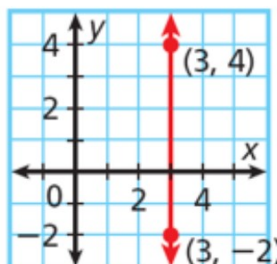
Horizontal Line



$$\frac{\text{rise}}{\text{run}} = \frac{0}{12} = 0$$

The slope is 0.

Vertical Line:



$$\frac{\text{rise}}{\text{run}} = \frac{6}{0}$$

You cannot divide by 0

The slope is undefined.