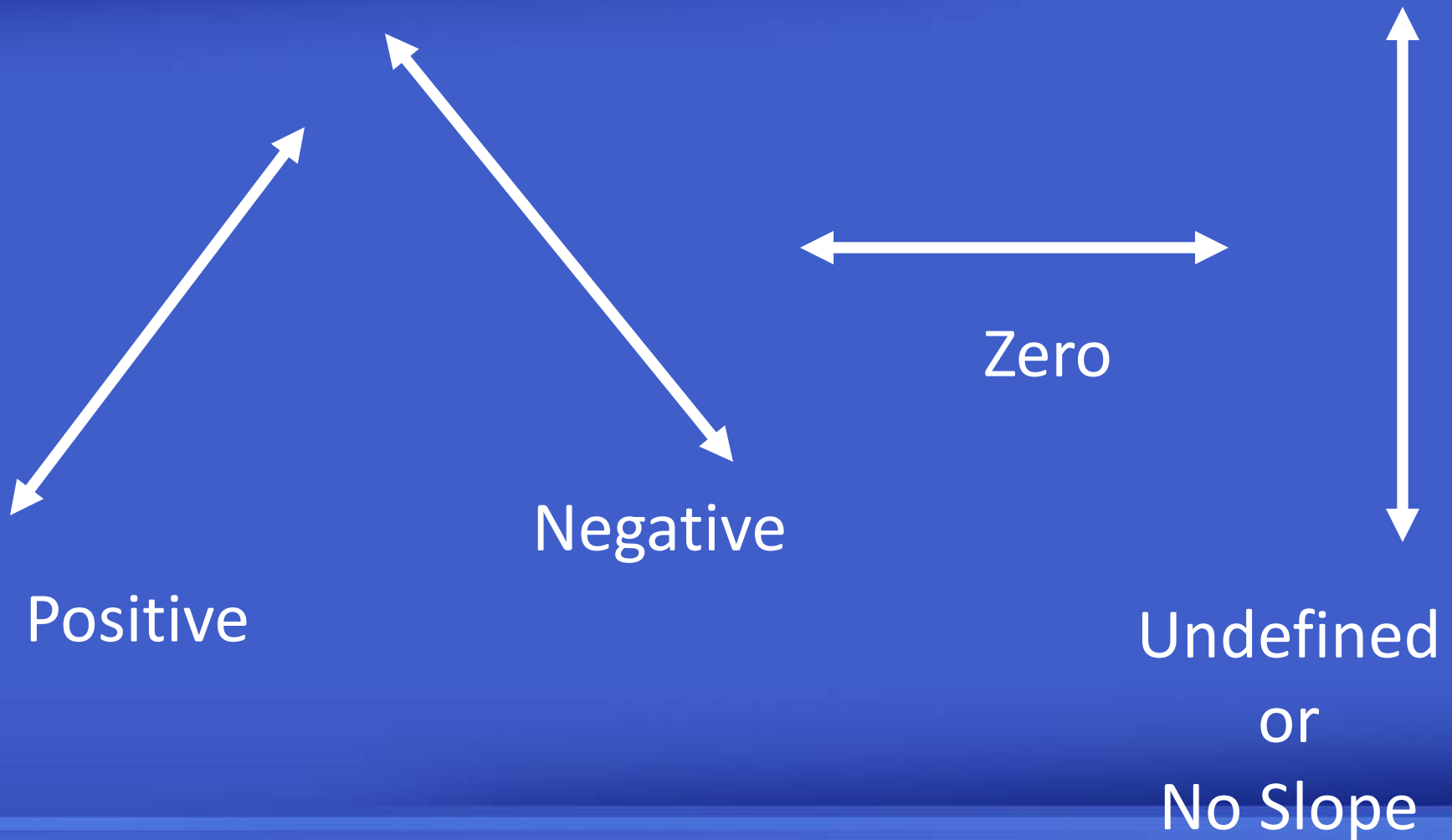


Introduction To Slope

Slope is a
measure of
Steepness.

Types of Slope



- Slope is sometimes referred to as the “rate of change” between 2 points.
- The letter “m” is always used to represent slope.

A. FORMULA

If given 2 points on
a line, you may find
the slope using the
Formula... $m = \frac{y_2 - y_1}{x_2 - x_1}$

NOTE:

The formula may
sometimes be written

$$\text{as } m = \frac{\Delta y}{\Delta x} .$$

Slope can be expressed in some other different ways:

$$m = \frac{(y_2 - y_1)}{(x_2 - x_1)} = \frac{\textit{rise}}{\textit{run}} = \frac{\text{vertical change}}{\text{horizontal change}}$$

1.) Find the slope of the line through the points (3,7) and (5, 19).

$$\begin{matrix} x_1 & y_1 & & x_2 & y_2 \\ 3 & 7 & & 5 & 19 \end{matrix}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} \rightarrow m = \frac{19 - 7}{5 - 3} \rightarrow m = \frac{12}{2} \rightarrow \boxed{m = 6}$$

2) Find the slope of the line that passes through the points $(-2, -2)$ and $(4, 1)$.

When given points, it is easier to use the formula!

$$m = \frac{(y_2 - y_1)}{(x_2 - x_1)}$$

$$m = \frac{(1 - (-2))}{(4 - (-2))} = \frac{(1 + 2)}{(4 + 2)} = \frac{3}{6} = \frac{1}{2}$$

3) Find the slope of the line that goes through the points $(-5, 3)$ and $(2, 1)$.

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{1 - 3}{2 - (-5)}$$

$$m = \frac{-2}{7}$$

4) Find the slope of the line that passes through $(3, 5)$ and $(-1, 4)$.

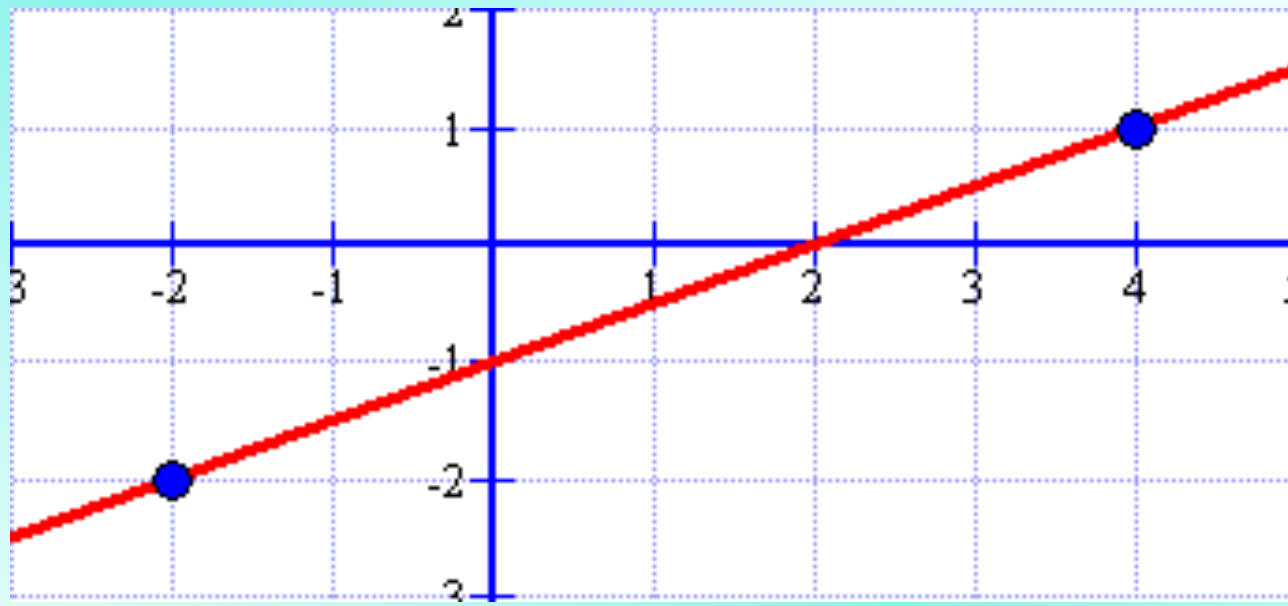
1. 4

2. -4

 3. $\frac{1}{4}$

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

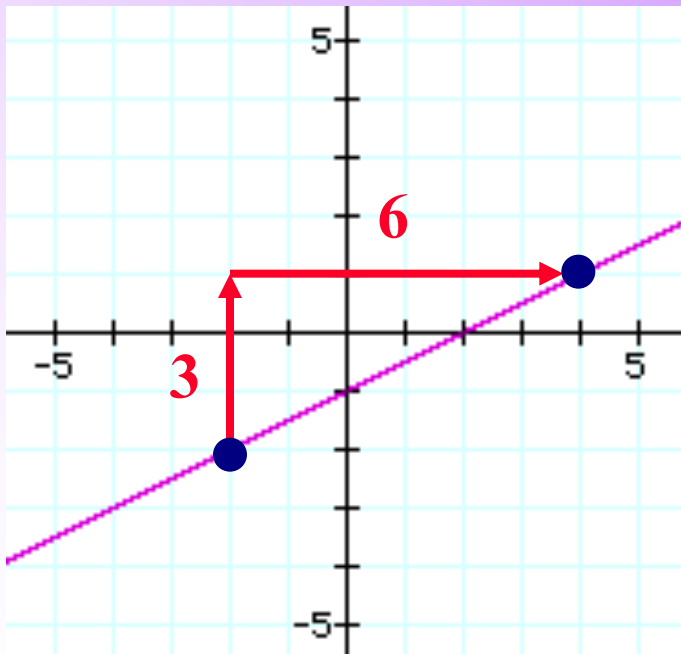
**B. Determine the slope
of a line with a graph**



When given the graph, it is easier to apply
“**rise over run**”.

Determine the slope of the line.

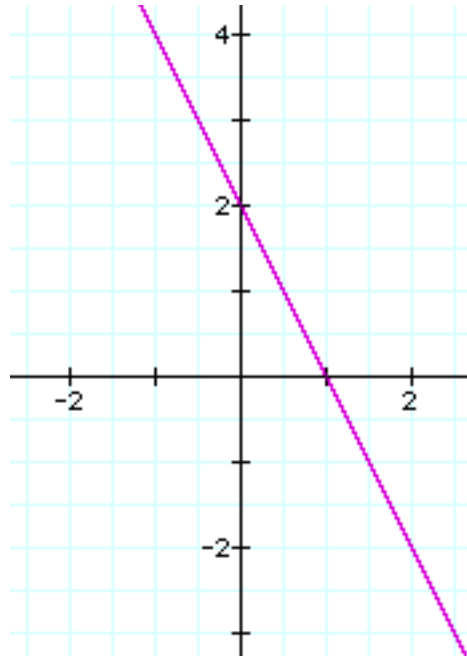
Start with the lower point and count how much you rise and then how much you run to get to the other point!



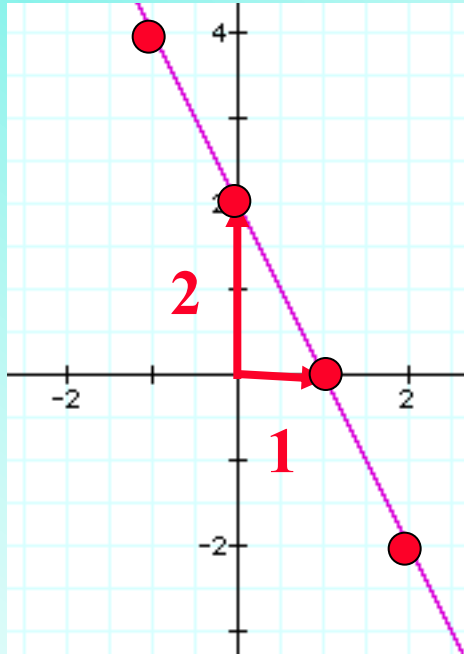
$$\frac{\text{rise}}{\text{run}} = \frac{3}{6} = \frac{1}{2}$$

- This is called the Triangle Method
- The slope is positive since the line is increasing

Determine the slope of the line shown.



Determine the slope of the line.

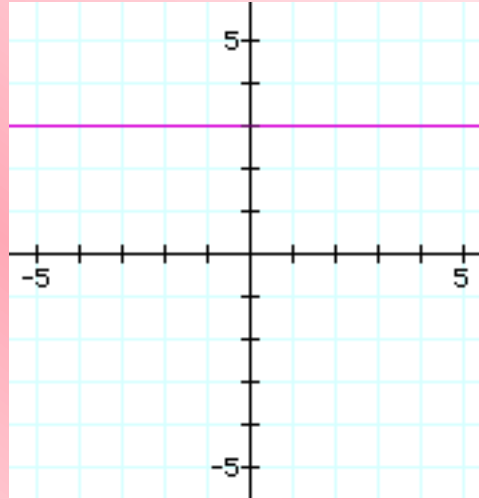


Find points on the graph.
Use two of them and
apply rise over run.

$$\frac{\text{rise}}{\text{run}} = \frac{2}{-1} = -2$$

The line is decreasing (slope is negative).

What is the slope of a horizontal line?

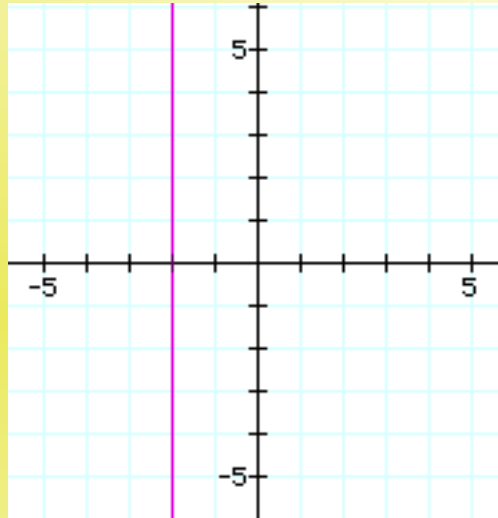


The line doesn't rise!

$$m = \frac{0}{\text{number}} = 0$$

All horizontal lines have a slope of 0.

What is the slope of a vertical line?



The line doesn't run!

$$m = \frac{\textit{number}}{0} = \textit{undefined}$$

All vertical lines have an undefined slope.

Remember the word
“VUXHOY”

Vertical lines

Undefined slope

X = number; This is the equation of the line.

Horizontal lines

O - zero is the slope

Y = number; This is the equation of the line.

The
End

