Slope =

$$m = \frac{\Delta y}{\Delta x} = \frac{rise}{run} = \frac{y_2 - y_1}{x_2 - x_1}$$

"_____ y _____ change over _____ x _____ change"

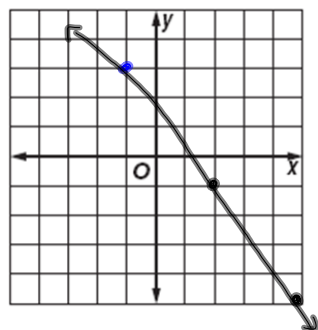"Undefined Slope"   "Positive Slope"   "Negative Slope"   "Zero Slope"
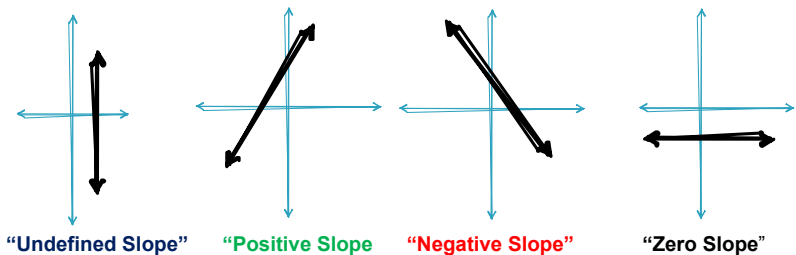
Example 1 ~ Find the Slope of each line by counng Rise/Run   (like #'s 1-3) $\frac{rise \uparrow + \downarrow -}{run \Rightarrow + \Leftarrow}$

$\frac{rise}{run} = \frac{4}{3}$

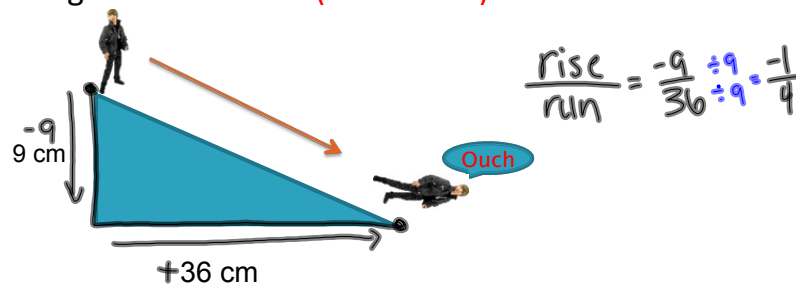$\frac{rise}{run} = \frac{-6}{2} \begin{array}{c}\div 2\\\div 2\end{array} = \frac{-3}{1}$
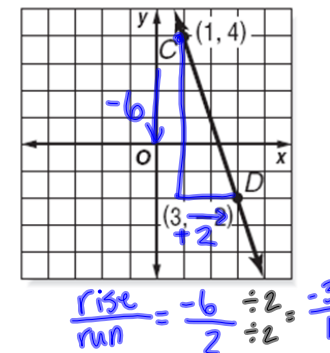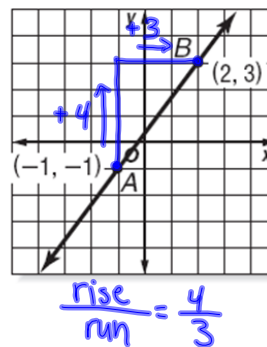
Example 2 ~ The points given in each table lie on a line. Find the slope of the line. Then graph the line. (like #'s 4-6)

(-1, 3)
(2, -1)
(5, -5)
(8, -9)

x	−1	2	5	8
y	3	−1	−5	−9

Slope = $\frac{\text{change in y}}{\text{change in x}}$

$\frac{-4}{3} \begin{array}{c}\downarrow\\\rightarrow\end{array}$

Example 3 ~ Find the slope of given pictures by using "rise over run".(like #'s 7-8)

-9
9 cm

+36 cm

Ouch

$\frac{rise}{run} = \frac{-9}{36} \begin{array}{c}\div 9\\\div 9\end{array} = \frac{-1}{4}$

Example 4 ~ Find the slope of each line by using the given formula.

(like #'s 9-14)
The Slope m of a line passing through points (x_1 , y_1) and (x_2 , y_2) is the ratio of the difference in the y-coordinates to the corresponding difference in the x-coordinates.

The slope equation is:

$\overset{x_1 \ y_1}{} \quad \overset{x_2 \ y_2}{} \ (x,y)$

1. $A(1, 3), B(4, 7)$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{7-3}{4-1} = \boxed{\frac{4}{3}}$$

Example 4 ~ Find the slope of each line by using the given formula.

(like #'s 9-14)
The Slope m of a line passing through points (x_1 , y_1) and (x_2 , y_2) is the ratio of the difference in the y-coordinates to the corresponding difference in the x-coordinates.

The slope equation is:

$\overset{x_1 \ y_1}{} \quad \overset{x_2 \ y_2}{}$

2. $C(9, -1), D(7, 6)$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{6 - -1}{7 - 9} = \frac{6+1}{7-9} = \boxed{\frac{7}{-2}}$$

Example 4 ~ Find the slope of each line by using the given formula.

(like #'s 9-14)
The Slope m of a line passing through points (x_1 , y_1) and (x_2 , y_2) is the ratio of the difference in the y-coordinates to the corresponding difference in the x-coordinates.

The slope equation is:

3. $O(4, 5), P(8, 5)$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{5-5}{8-4} = \frac{0}{4} = 0$$

Example 4 ~ Find the slope of each line by using the given formula.

(like #'s 9-14)
The Slope m of a line passing through points (x_1 , y_1) and (x_2 , y_2) is the ratio of the difference in the y-coordinates to the corresponding difference in the x-coordinates.

The slope equation is:

4. $R(6, -3), S(6, -4)$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-4 - -3}{6-6} = \frac{-4+3}{6-6} : \frac{-1}{0} = \text{undefined}$$