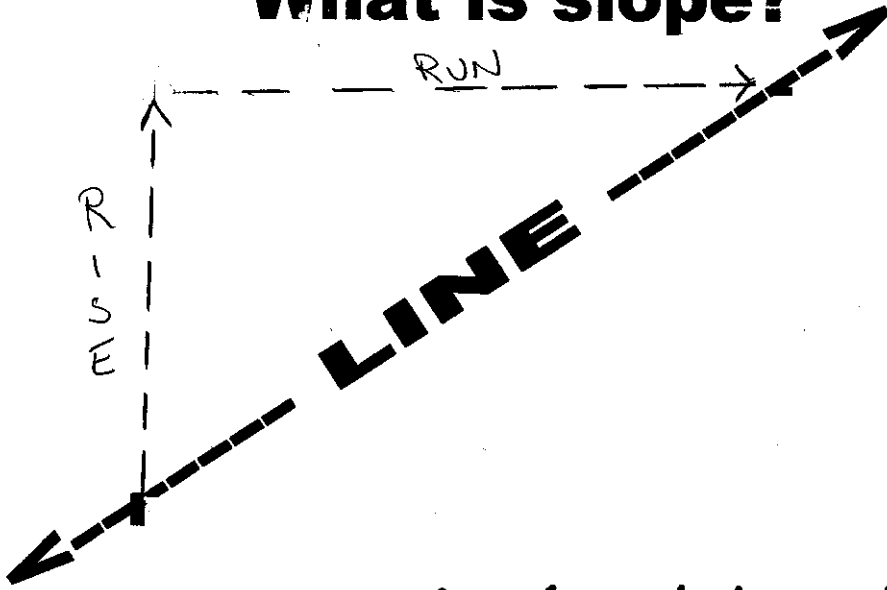


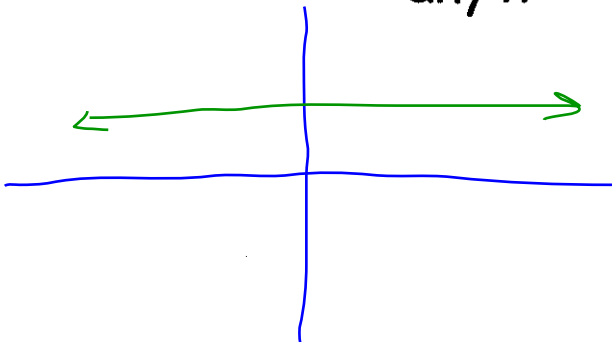
What is slope?



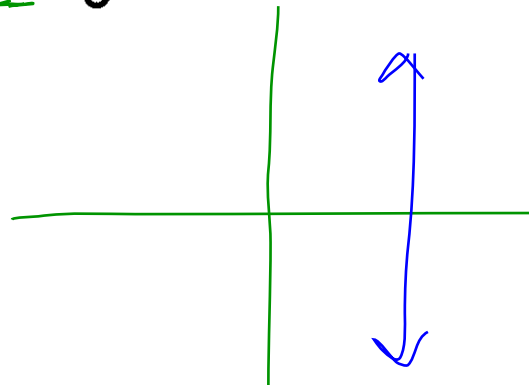
$$\text{slope} = \frac{\text{rise (up / down)}}{\text{run (right)}}$$

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

*Remember: $\frac{0}{\text{any \#}} = 0$



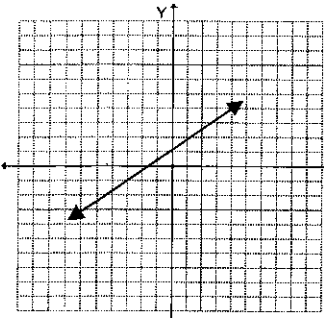
$\frac{\text{any \#}}{0} = \text{undefined}$



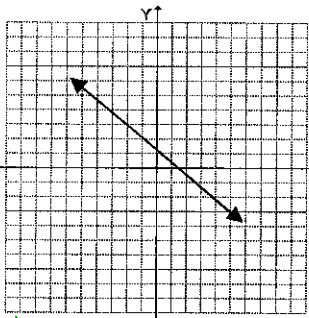
Rate of Change/Slope

Find the slope of a line and rate of change.

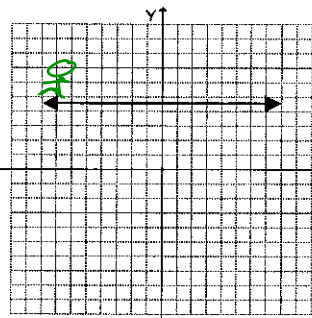
Slope - is the steepness of the line



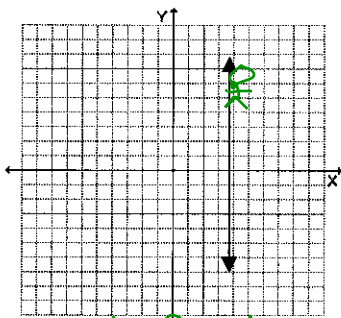
Positive Slope



Negative Slope



0 Slope

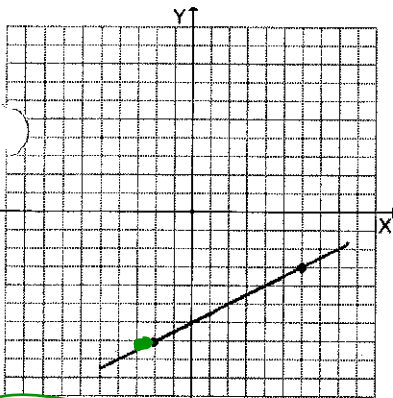


Undefined Slope

Find the slope using the graph: $m = \frac{\text{rise}}{\text{run}}$

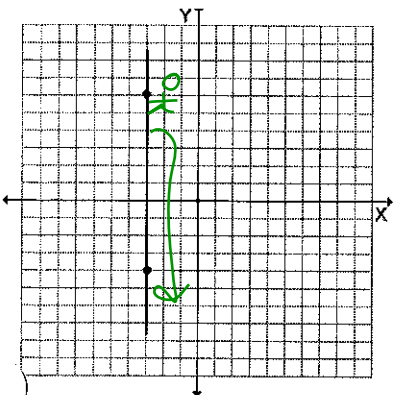
$y = mx + b$

1.



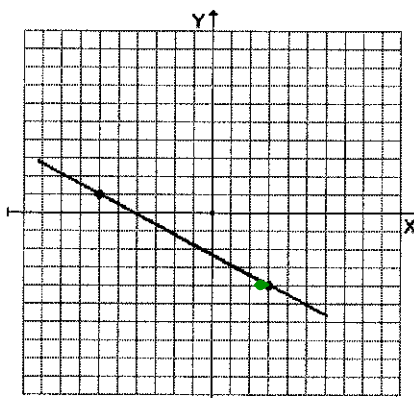
$m = \frac{1}{2}$

4.



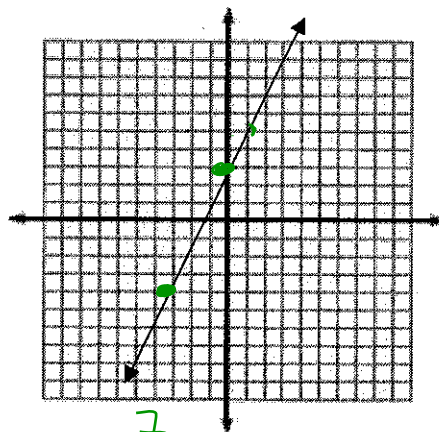
$m = \frac{10}{0} = \text{undefined}$

2.



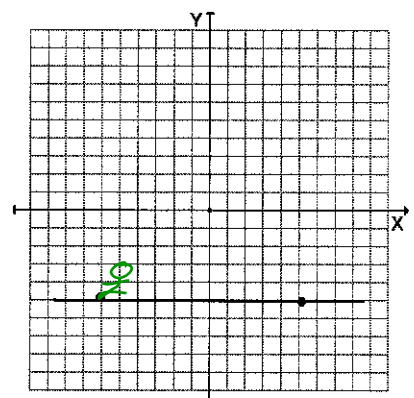
$m = \frac{5}{9}$

5.



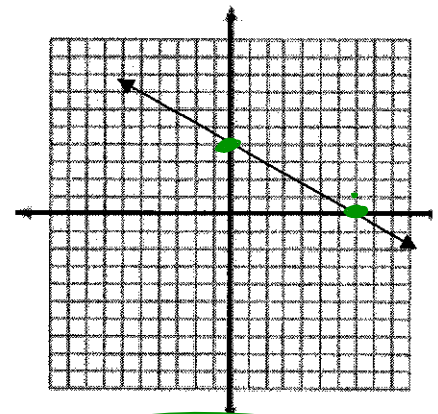
$m = \frac{7}{3}$

3.



$m = \frac{0}{11} = 0$

6.

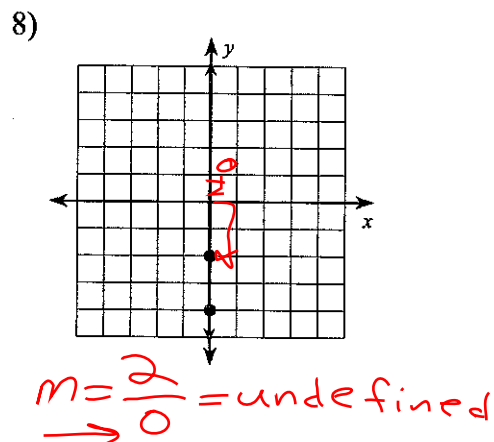
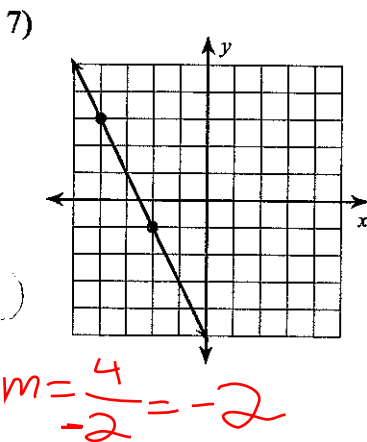
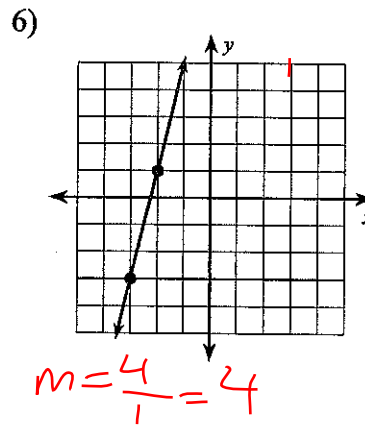
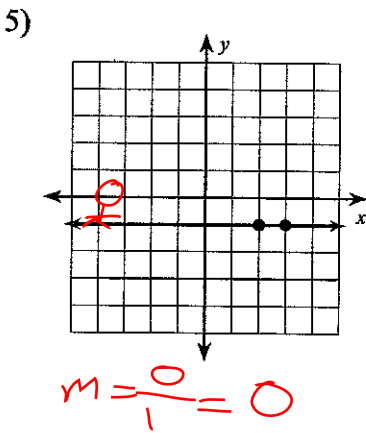
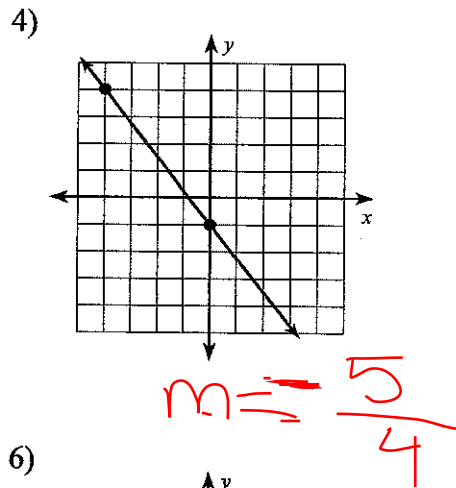
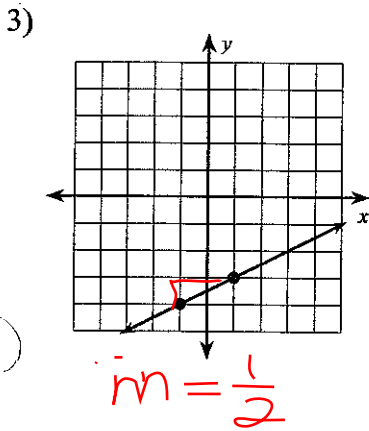
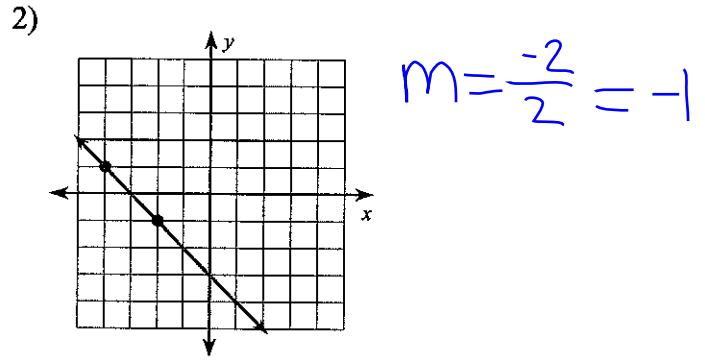
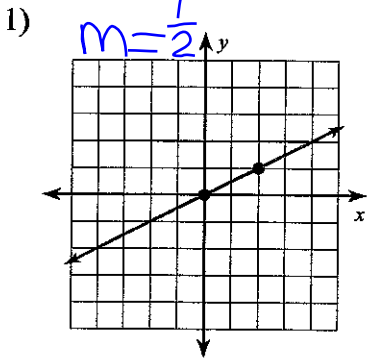


$m = \frac{4}{-7} = -\frac{4}{7}$

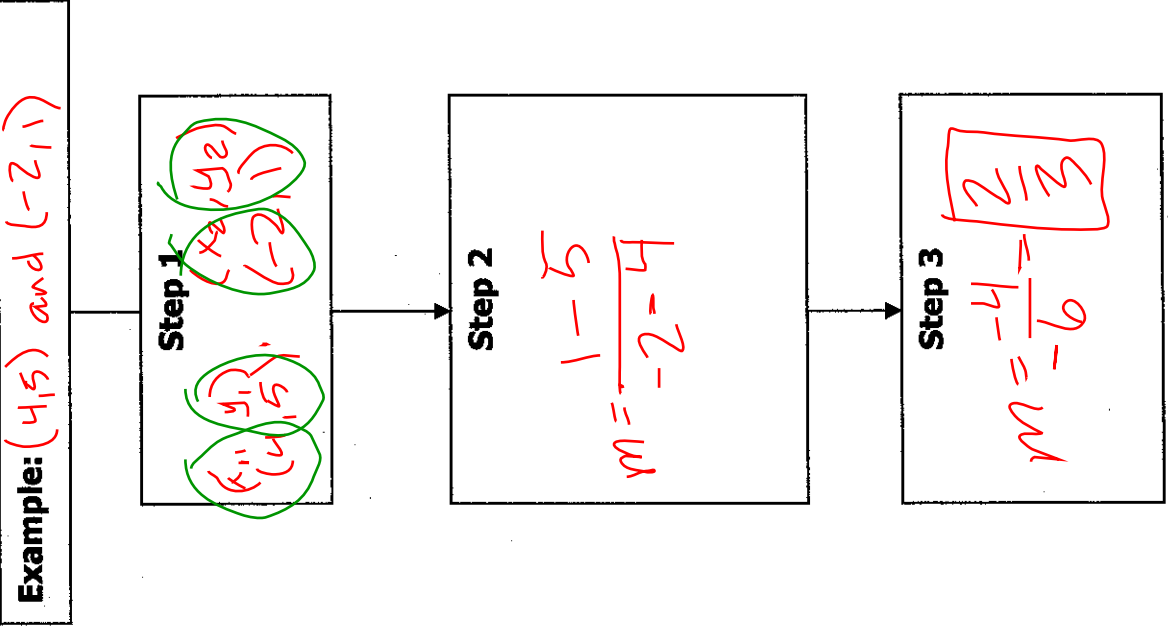
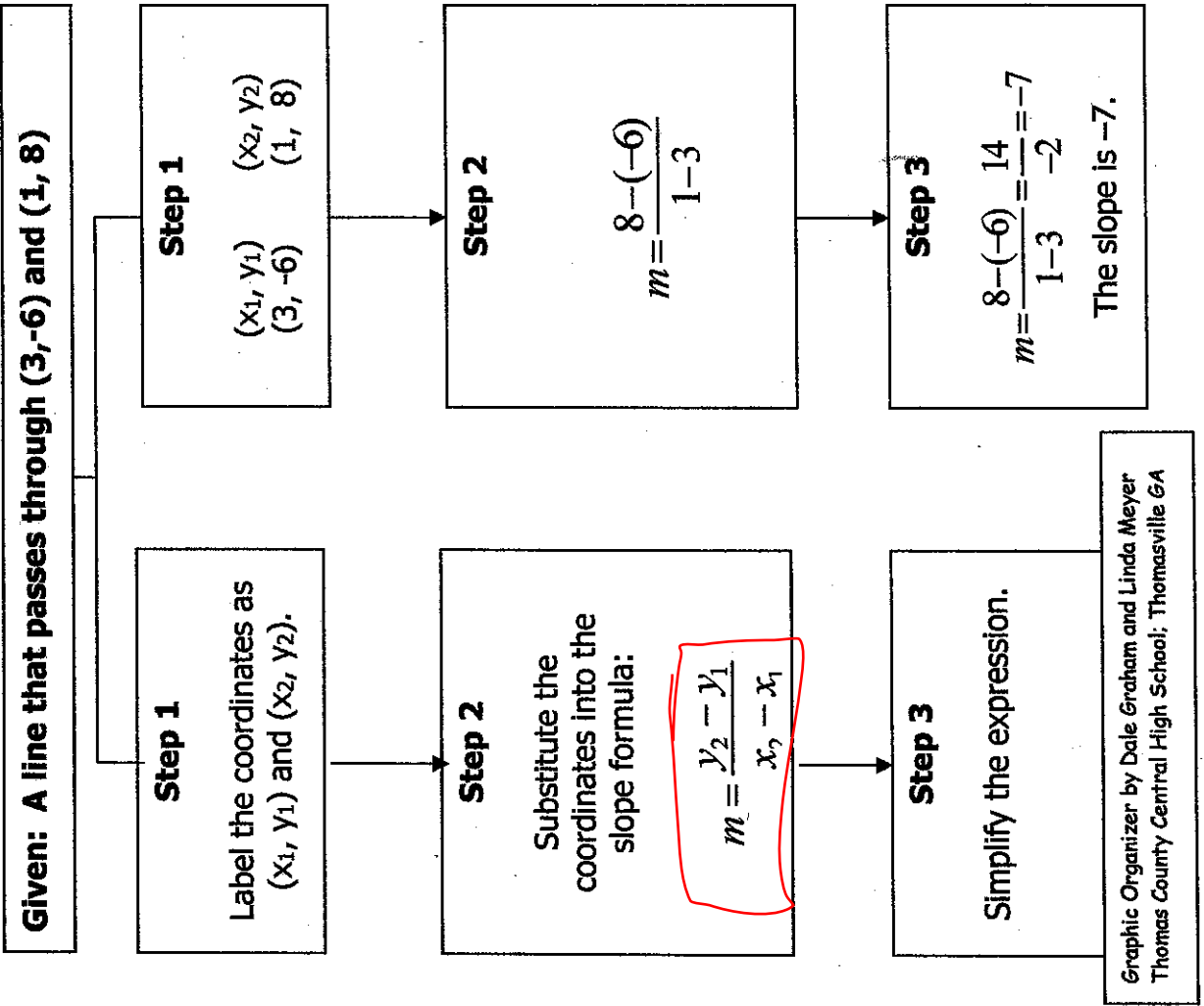
(2)

Finding Slope From a Graph

Find the slope of each line.



How do you find the slope of a line given two points on the line?



Finding Slope From Two Points

Find the slope of the line through each pair of points.

1) $(19, -16), (-7, -15)$

$(x_1, y_1) (x_2, y_2)$

$$m = \frac{-15 - (-16)}{-7 - 19}$$

$$m = \frac{-1}{26}$$

2) $(1, -19), (-2, -7)$

$(x_1, y_1) (x_2, y_2)$

$$m = \frac{-7 - (-19)}{-2 - 1}$$

$$m = -4$$

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

3) $(-4, 7), (-6, -4)$

$(x_1, y_1) (x_2, y_2)$

$$m = \frac{-4 - 7}{-6 - (-4)}$$

$$m = \frac{11}{2}$$

4) $(20, 8), (9, 16)$

$(x_1, y_1) (x_2, y_2)$

$$m = \frac{16 - 8}{9 - 20}$$

$$m = \frac{-8}{11}$$

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

5) $(17, -13), (17, 8)$

$(x_1, y_1) (x_2, y_2)$

$$m = \frac{8 - (-13)}{17 - 17} = \frac{21}{0} \leftarrow \text{Undefined!}$$

6) $(19, 3), (20, 3)$

$(x_1, y_1) (x_2, y_2)$

$$m = \frac{3 - 3}{20 - 19} = 0$$

7) $(3, 0), (-11, -15)$

$(x_1, y_1) (x_2, y_2)$

$$m = \frac{-15 - 0}{-11 - 3} = \frac{15}{14}$$

8) $(19, -2), (-11, 10)$

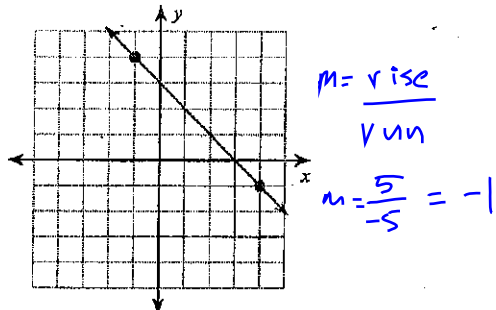
x_1, y_1, x_2, y_2

$$m = \frac{10 - (-2)}{-11 - 19} = \frac{-2}{5}$$

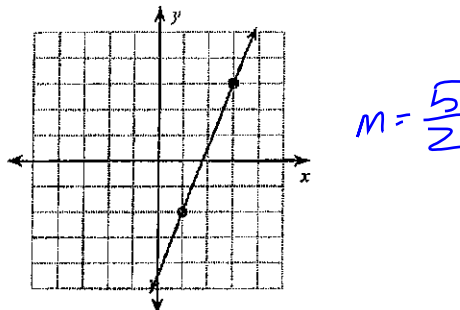
Linear Functions Homework

Find the slope of each line.

1)



2)



Find the slope of the line through each pair of points.

3) $(18, -4), (13, 3)$

$x_1 \ y_1 \ x_2 \ y_2$
 $m = \frac{3 - (-4)}{13 - 18} = -\frac{7}{5}$

4) $(9, -17), (18, -2)$

$x_1 \ y_1 \ x_2 \ y_2$
 $m = \frac{-2 - (-17)}{18 - 9} = \frac{15}{9}$

5) $(10, 8), (19, -16)$

$x_1 \ y_1 \ x_2 \ y_2$
 $m = \frac{-16 - 8}{19 - 10} = -\frac{24}{9}$

6) $(11, -20), (3, -2)$

$x_1 \ y_1 \ x_2 \ y_2$
 $m = \frac{-2 - (-20)}{3 - 11} = \frac{18}{-8} = -\frac{9}{4}$

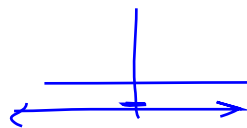
Find the slope of each line.

7) $y = -\frac{7}{5}x + 4$

$m = -\frac{7}{5}$

8) $y = -1$

$y = 0x - 1$
 Slope = 0



Write the slope-intercept form of the equation of each line given the slope and y-intercept.

9) Slope = 4, y-intercept = -3

$y = 4x - 3$

10) Slope = 10, y-intercept = 5

$y = 10x + 5$

Write the slope-intercept form of the equation of each line. (HINT: Rearrange and solve for y)

11) $5x - 2y = -10$

$\frac{-2y}{-2} = \frac{-5x - 10}{-2}$
 $y = \frac{5}{2}x + 5$

12) $2x - y = -7$

$\frac{-y}{-1} = \frac{-2x - 7}{-1}$
 $y = 2x + 7$