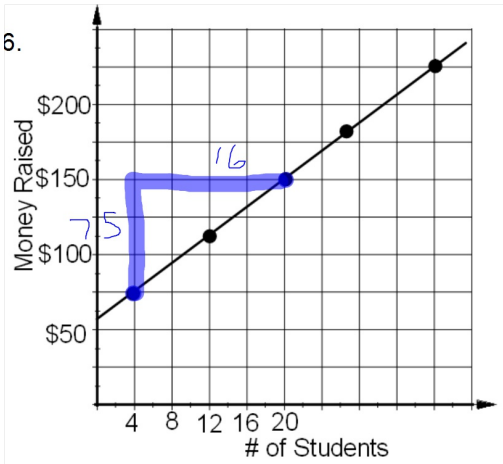
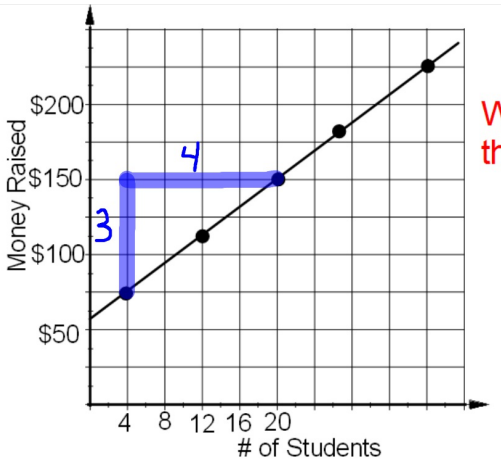
6.



The Rate of Change = $\frac{\$75}{16 \text{ students}}$

= \$4.69 per student

This is on average how much each student contributes to increase the amount of money raised.



What would have to be true for the Rate of Change to be

$\frac{3}{4}$

The scale on the two axes MUST BE THE SAME

Given a line passes through each pair of Is each line horizontal, vertical, or neither?

1. (-7, 8) and (8, 1) Neither
2. (3, 6) and (3, -6) Vertical
3. (-11, 23) and (-11, 7) Vertical

A line has a slope of $\frac{2}{3}$. If the line passes through the two points below what is the value of x?

(x , 1) and (-2 , 7)

$\text{Slope} = \frac{7-1}{-2-x} = \frac{6}{-2-x} = \frac{2}{3}$

This is a proportion. Solve by cross multiplying

$3 \cdot 6 = 2(-2-x)$

$18 = -4 - 2x$

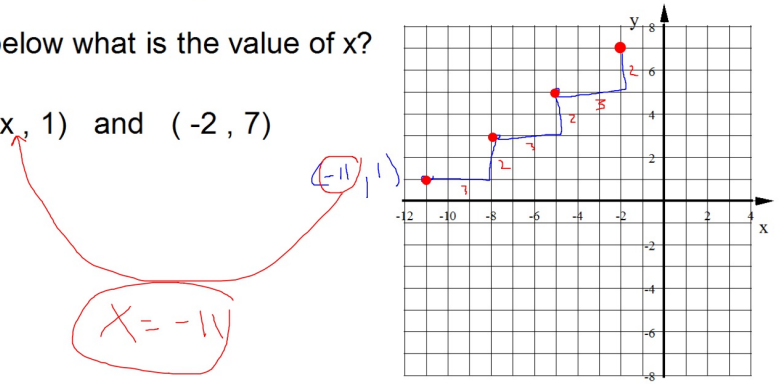
$+4 \quad +4$

$\frac{22}{-2} = \frac{-2x}{-2}$

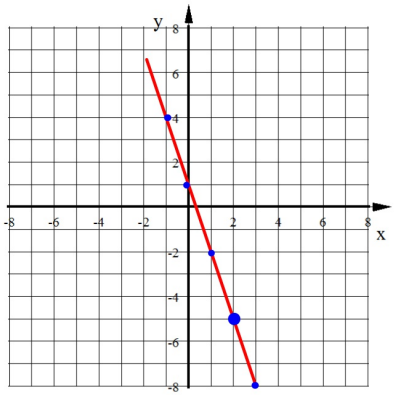
$x = -11$

A line has a slope of $\frac{2}{3}$. If the line passes through the two points below what is the value of x?

(x , 1) and (-2 , 7)



Graph a line that has a slope of -3 and contains the point (2, -5)



First

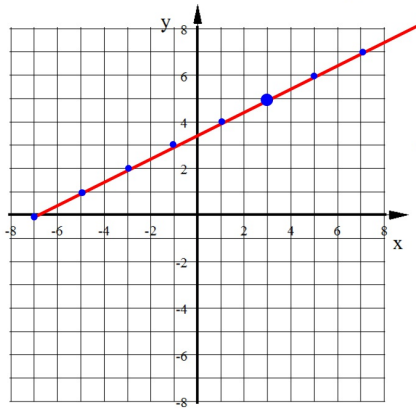
Plot the point (2,-5)

Second

Then use the slope to find other points

$$\text{slope} = -3 = \frac{-3}{1} = \frac{\text{Rise of } -3}{\text{Run of } 1} = \frac{3 \text{ down}}{1 \text{ right}} \text{ or } \frac{3 \text{ up}}{1 \text{ left}}$$

Graph a line that has a slope of $\frac{1}{2}$ and contains the point (3, 5)



First

Plot the point (3, 5)

Second

Then use the slope to find other points

$$\text{slope} = \frac{1}{2} = \frac{\text{Rise of } 1}{\text{Run of } 2} = \frac{1 \text{ up}}{2 \text{ right}} \text{ or } \frac{1 \text{ down}}{2 \text{ left}}$$

To graph a line the minimum information you need is

- A point on the line and the slope
  OR
- Two points on the line.

Equations for a Line

Sec 6-4 Point-Slope Form for the equation of a line.

A line has a slope of m and passes through the point (x_1 , y_1)

The equation of this line in Point-Slope Form is:

$$y - y_1 = m(x - x_1)$$

The y-coord of any point on the line

Slope of the line

The x-coord from the same point as the y-coord

A line has a slope of 5 and passes through the point (-1, 4)

Write the equation of this line in Point-Slope Form.

$$y - y_1 = m(x - x_1)$$

4 5 -1

$$y - 4 = 5(x - -1)$$

$$y - 4 = 5(x+1)$$

A line passes through the following two points:
(3, -10) and (-1, -1)

$$m = \frac{-1 - -10}{-1 - 3} = \frac{9}{-4}$$

Write the equation of this line in Point-Slope Form.

$y + 10 = -\frac{9}{4}(x - 3)$ Using (3, -10)

OR

$y + 1 = -\frac{9}{4}(x + 1)$ Using (-1,-1)

A line passes through the following two points:
(0, 7) and (-2,0)

Write the equation of this line in Point-Slope Form.

Find slope first.

$m = \frac{7-0}{0-(-2)} = \frac{7}{2}$

Use (0,7) $y - 7 = \frac{7}{2}(x - 0)$ $\longrightarrow$ $y - 7 = \frac{7}{2}x$

Both equations are acceptable for an answer

Use (-2,0) $y - 0 = \frac{7}{2}(x + 2)$ $\longrightarrow$ $y = \frac{7}{2}(x + 2)$

A line passes through the following two points:
(-5, 8) and (2, 8)

Write the equation of this line in Point-Slope Form.

$m = \frac{8-8}{2-(-5)} = \frac{0}{7}$

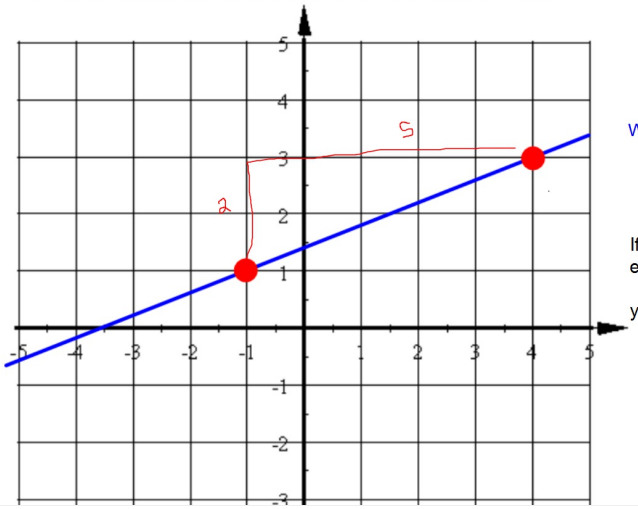
$m = 0$

$y - 8 = 0(x - 2)$ Use one of the points: (2,8)

$y - 8 = 0$

$y = 8$

Write the equation of this line in Point-Slope Form



First Find the slope

$m = 2/5$

Pick a point on the line: (4, 3)

Write the equation in Point-Slope Form

y - 3 = 2/5(x - 4)

If you used the point (-1, 1) the equation would be:

y - 1 = 2/5(x+1)