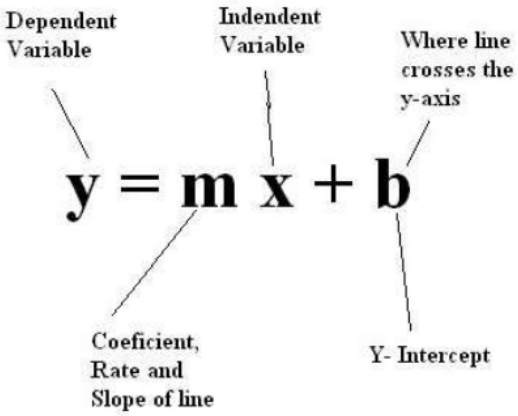
$$y = m\,x + b$$

I hope you remember this formula!

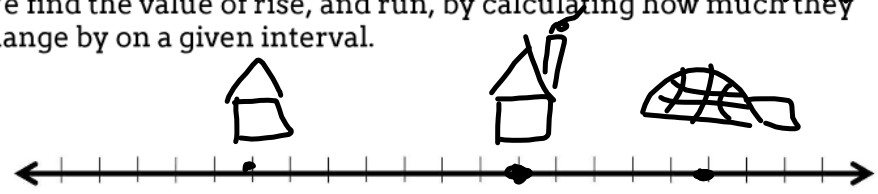
You should have gotten good practice graphing lines in Grade 10. We're going to review that for a little bit before moving on.



They symbol for slope is "m". This is defined as the rate of change of the line $m = \left(\frac{\text{rise}}{\text{run}}\right)$

$$\frac{\Delta y}{\Delta x} = \frac{y_2 - y}{x_2 - x_1}$$

We find the value of rise, and run, by calculating how much they change by on a given interval.



$\Delta y = y_2 - y_1$

$\Delta x = x_2 - x_1$

x_1 5

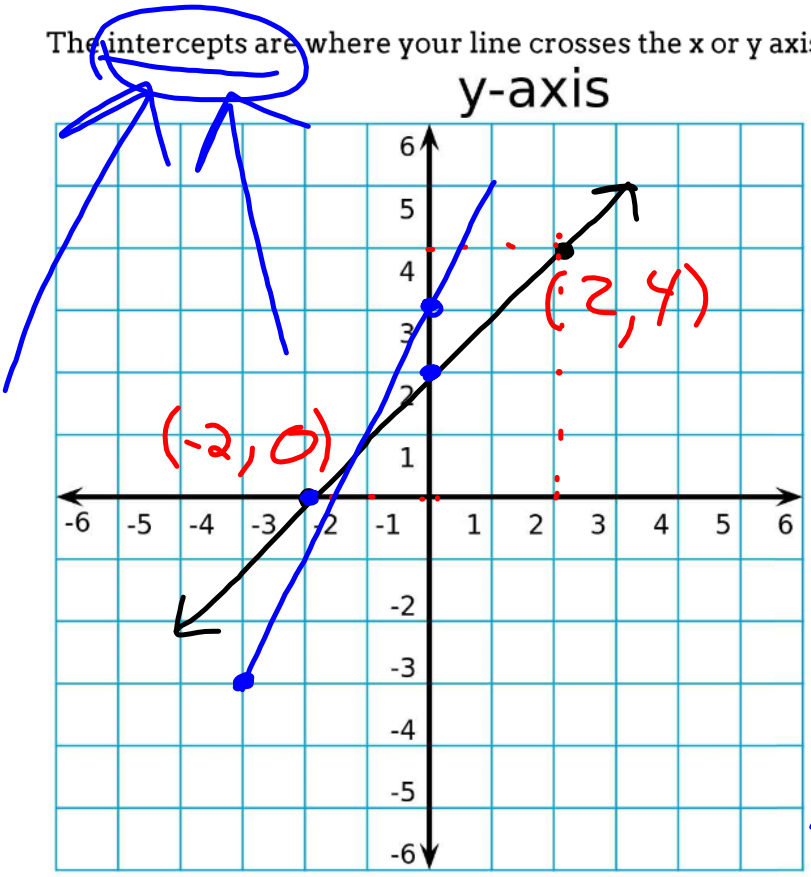
x_2 9

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

Find the slope for the points;

(-3,6) & (1,4) $m = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$ $m = \frac{4-6}{1-(-3)}$ $= \frac{-2}{4} = -\frac{1}{2}$	(2.5, -1) & (0,0) $m = \frac{y_2 - y_1}{x_2 - x_1}$ $= \frac{0-(-1)}{0-2.5}$ $= \frac{1}{-2.5}$ $\frac{2}{10} = \frac{5}{2}$ $-\frac{1}{\frac{5}{2}} = -\frac{2}{5}$
(3, 4) & (5, 6) $m = \frac{6-4}{5-3}$ $= \frac{2}{2} = 1$	(0, -1) & (-2, -3) $m = \frac{-3-(-1)}{-2-0}$ $= \frac{-2}{-2} = 1$

The intercepts are where your line crosses the x or y axis.



$m = \frac{4-0}{2-(-2)} = \frac{4}{4} = 1$

y-int = 2

$y = mx + b$

$y = 1x + 2$

$y = 2x + 3$

So, if we set x = 0, the y intercept is...

y-int = 2

We can also set y = 0, to find the x intercept.

x-int = -2

Once you have 2 points. A line is uniquely defined.

Either find both intercepts

Or, find 1 intercept and use the slope to find another point.

Connect your 2 dots. That's the line.

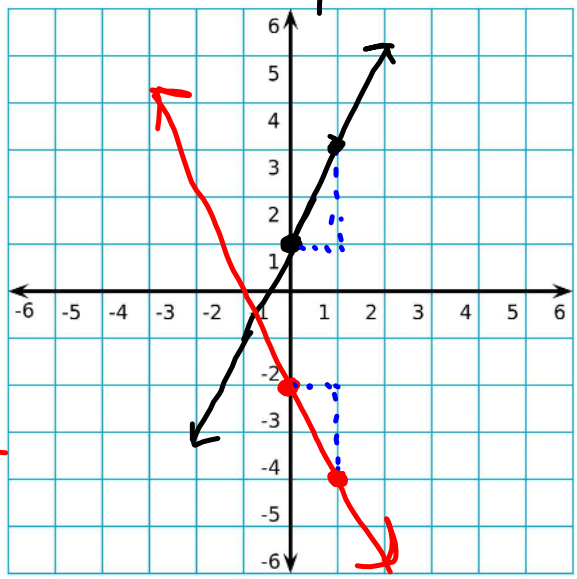
$m = \frac{2}{1} = \frac{rise}{run}$

Write the equation in slope - intercept form, and graph it:

m = 2

b = 1

$y = 2x + 1$



$y = -2x - 2$

m = -2

b = -2

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

$y - 4x = 3$

$y = 4x + 3$

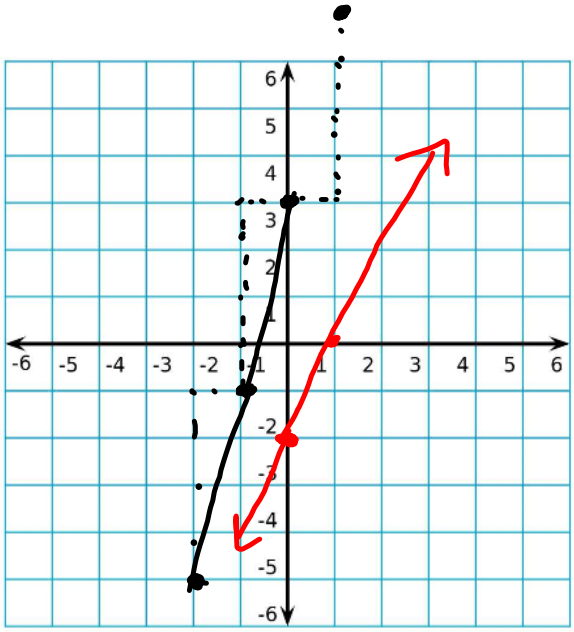
$m = 4$

$b = 3$

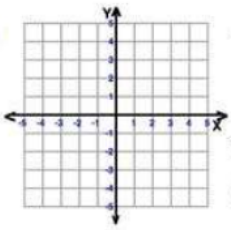
$-y + 2x - 2 = 0$

$-y = -2x + 2$

$y = 2x - 2$



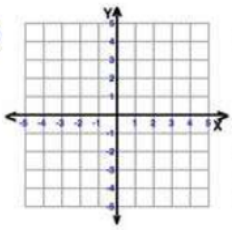
Sketch the Graph of Each Line

1) 

-7x + 3y = 15

slope = _____

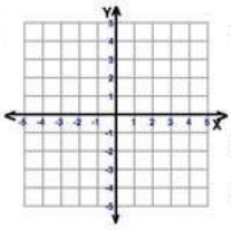
y-intercept = _____

2) 

4x + 3y = 3

slope = _____

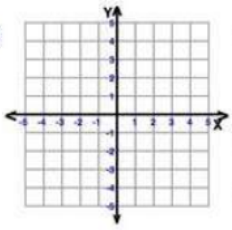
y-intercept = _____

3) 

-5x + 4y = -16

slope = _____

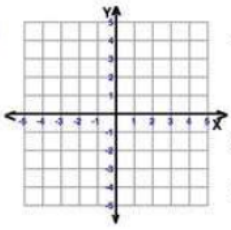
y-intercept = _____

4) 

5x + 2y = -8

slope = _____

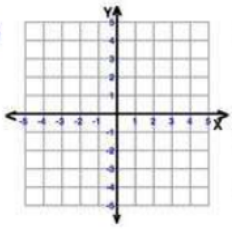
y-intercept = _____

5) 

-x + 2y = 6

slope = _____

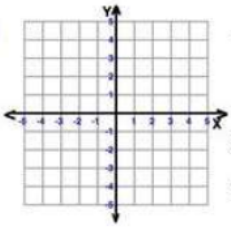
y-intercept = _____

6) 

x + y = 3

slope = _____

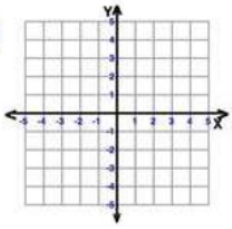
y-intercept = _____

7) 

-6x + 5y = -10

slope = _____

y-intercept = _____

8) 

-4x + 3y = -6

slope = _____

y-intercept = _____