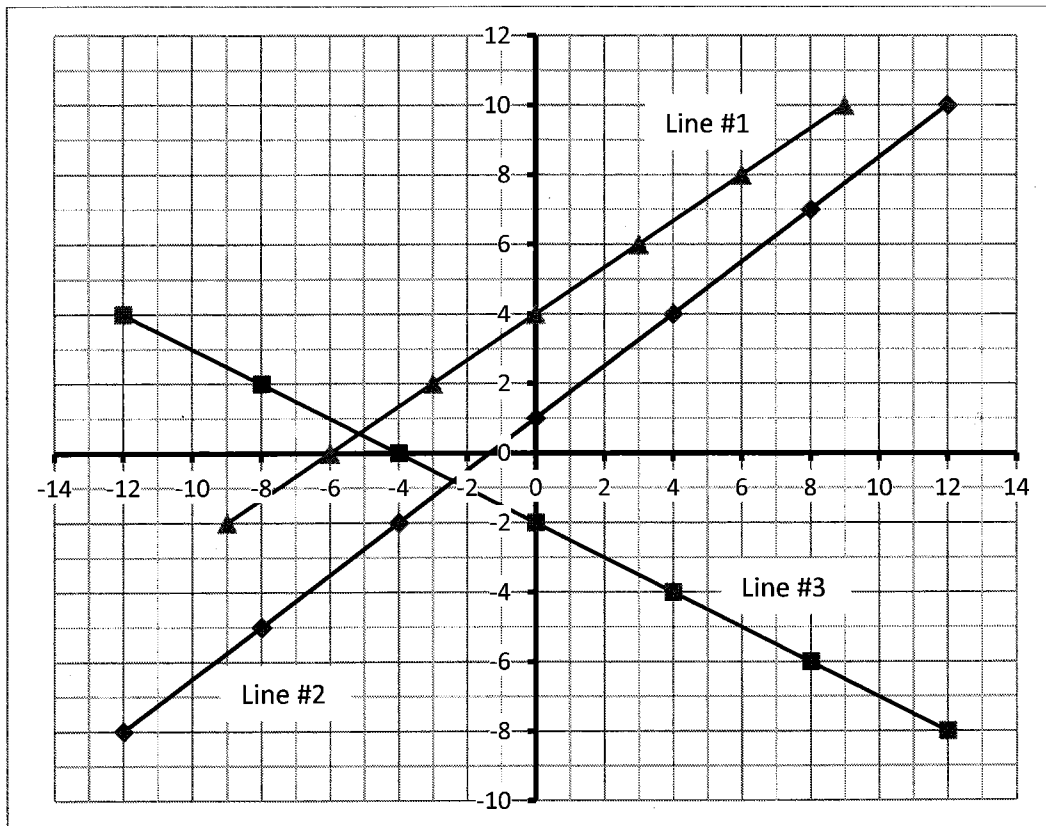


Linear Relations Worksheet

Part I - Using the graphs below, determine the equation that describes each line.

Graph #1



Answer the following questions **FIRST**:

a) What does the m stand for in the equation $y = mx + b$? How do we find m ?

$$m = \text{Slope} = \frac{\text{rise} \uparrow}{\text{run} \leftarrow}$$

b) What does the b stand for in the equation $y = mx + b$? How do we find b ?

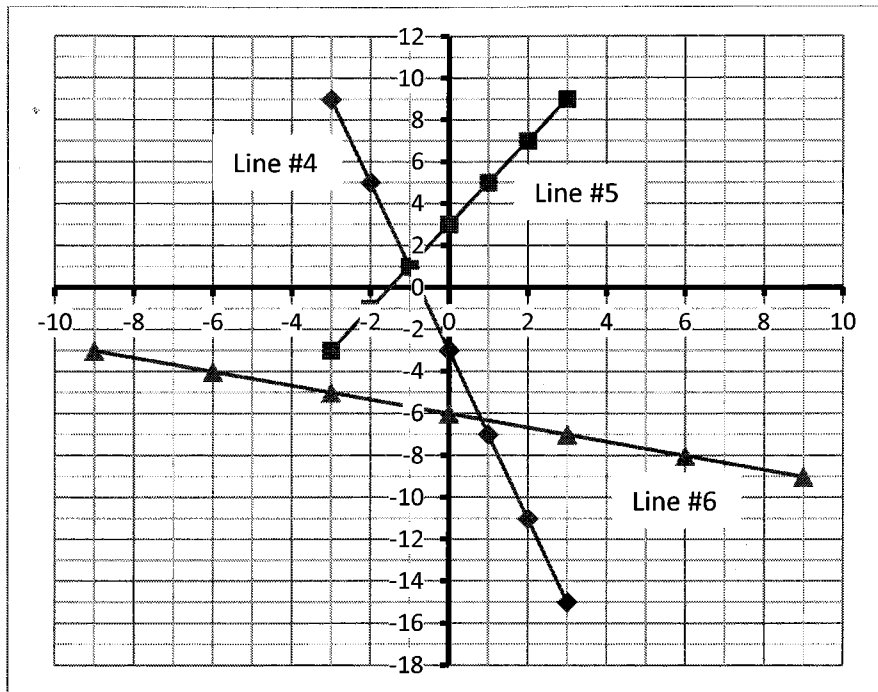
$$b = \text{Y-INTERCEPT}$$

Line #1
 $m = \frac{2}{3}$ $b = 4$ Full equation $\rightarrow y = \frac{2}{3}x + 4$

Line #2
 $m = \frac{3}{4}$ $b = 1$ Full equation $\rightarrow y = \frac{3}{4}x + 1$

Line #3
 $m = \frac{-2}{4} = \frac{-1}{2}$ $b = -2$ Full equation $\rightarrow y = \frac{-1}{2}x - 2$

Graph #2

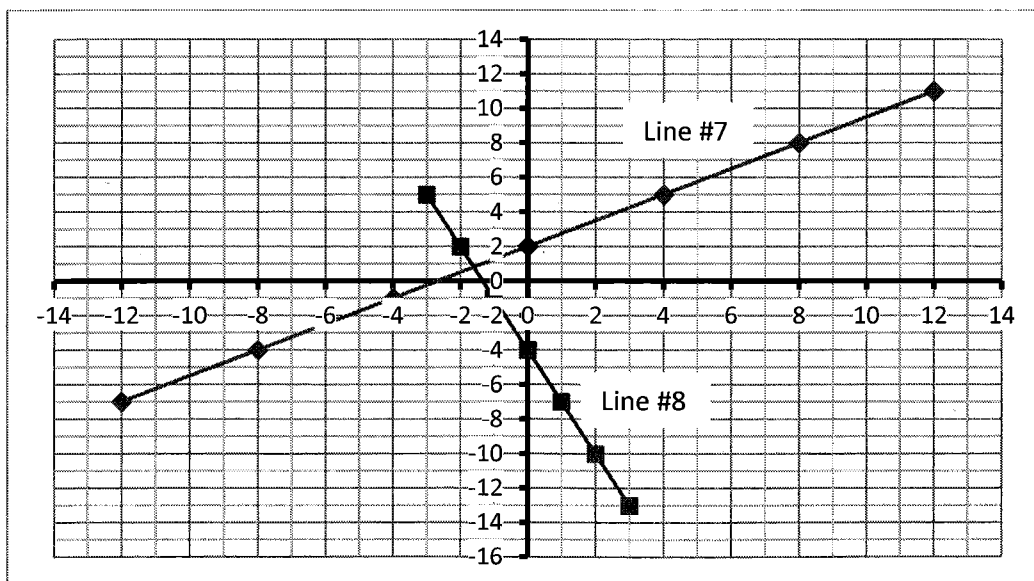


Line #4
 $m = -4$ $b = -3$ Full equation $\rightarrow y = -4x - 3$

Line #5
 $m = 2$ $b = 3$ Full equation $\rightarrow y = 2x + 3$

Line #6
 $m = -\frac{1}{3}$ $b = -6$ Full equation $\rightarrow y = -\frac{1}{3}x - 6$

Graph #3

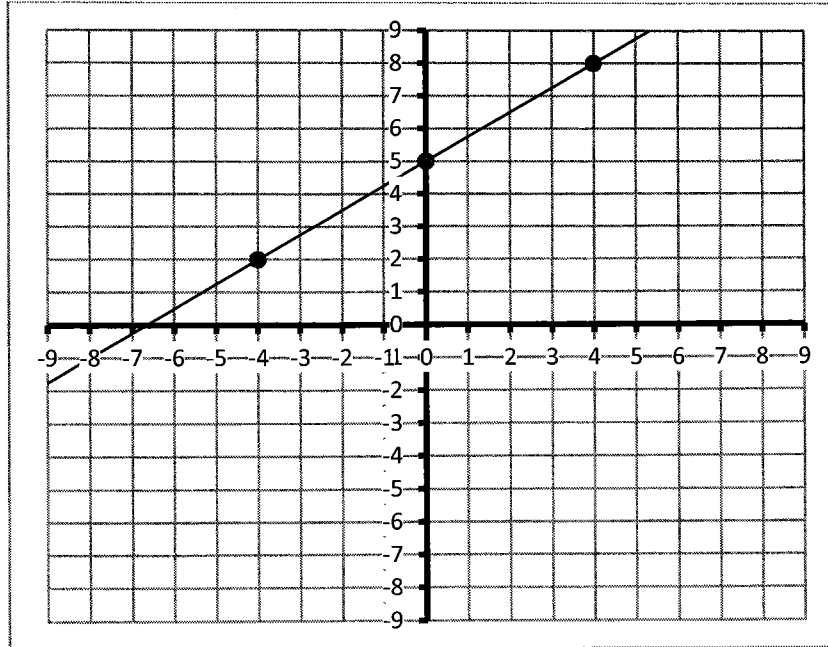


Line #7: Full Equation $\rightarrow y = \frac{3}{4}x + 2$

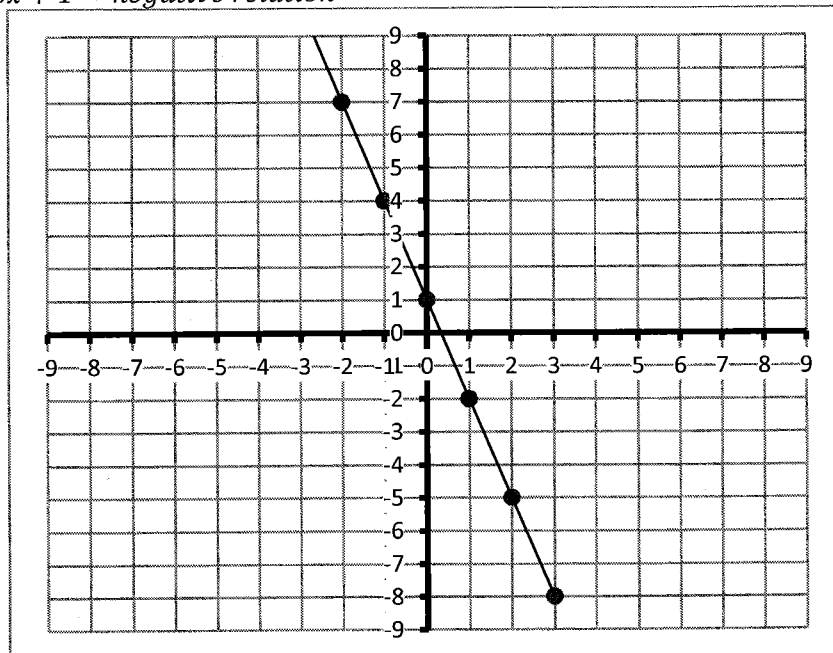
Line #8: Full Equation $\rightarrow y = -3x - 4$

Part II - Using the grid paper provided, use the equations below to draw the appropriate lines.

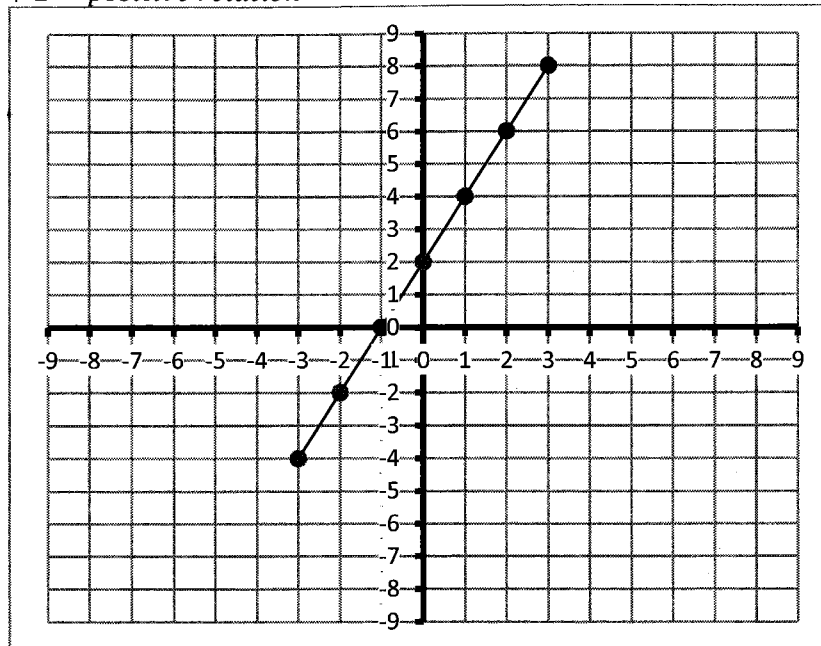
a) $y = \frac{3}{4}x + 5 \rightarrow$ positive relation



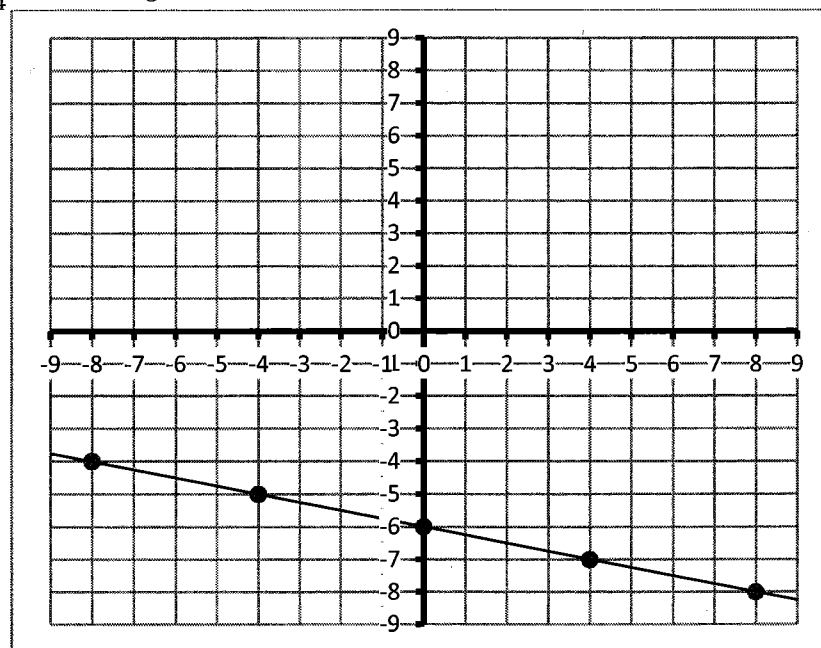
b) $y = -3x + 1 \rightarrow$ negative relation



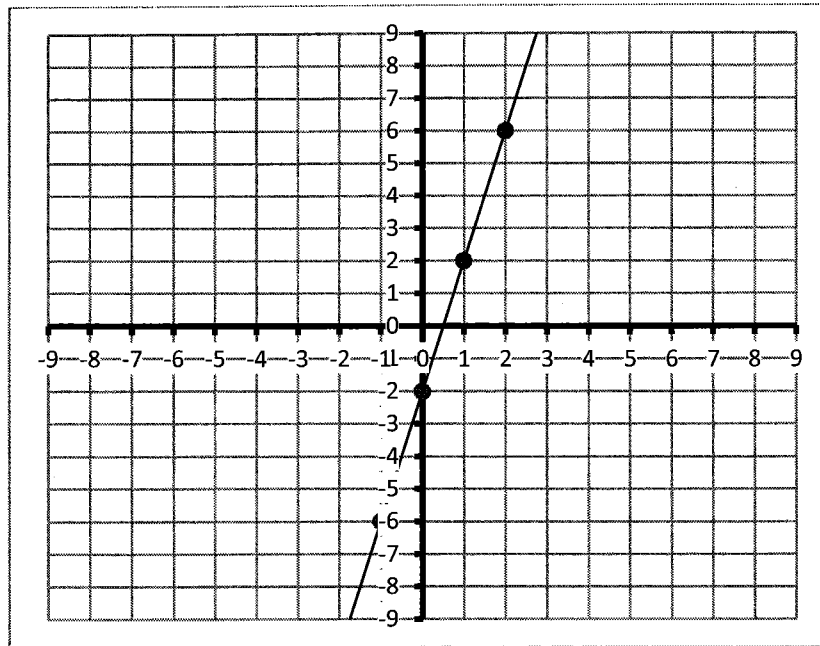
c) $y = 2x + 2 \rightarrow$ positive relation



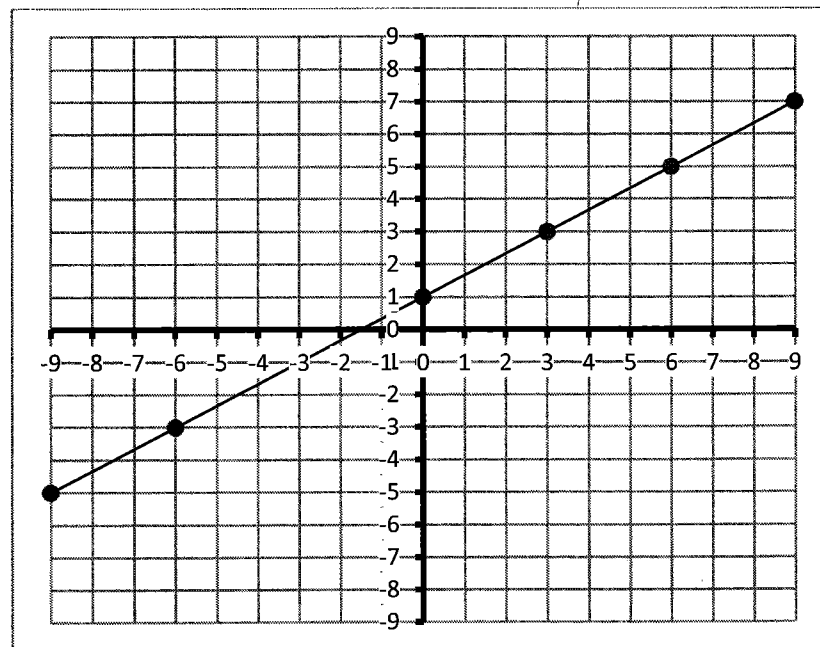
d) $y = -\frac{1}{4}x - 6 \rightarrow$ negative relation



e) $y = 4x - 2 \rightarrow$ positive relation

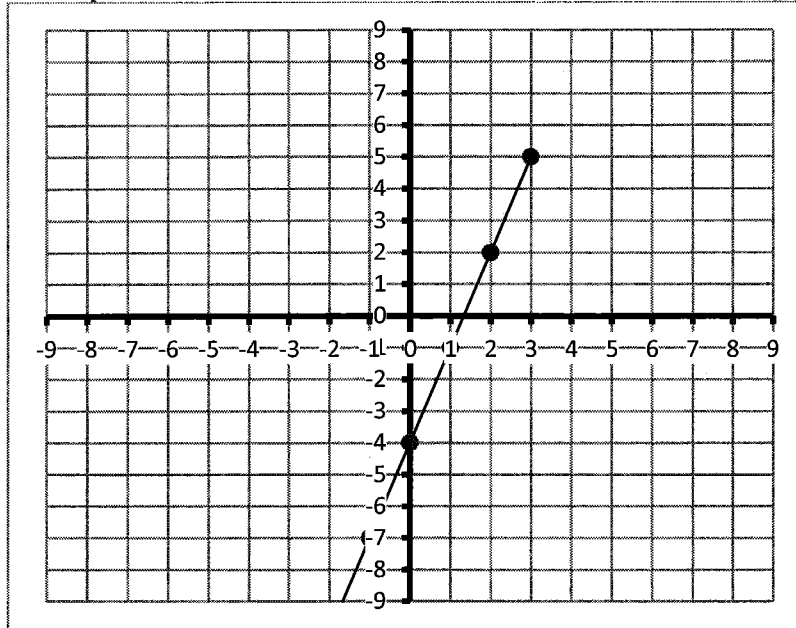


f) $y = \frac{2}{3}x + 1$

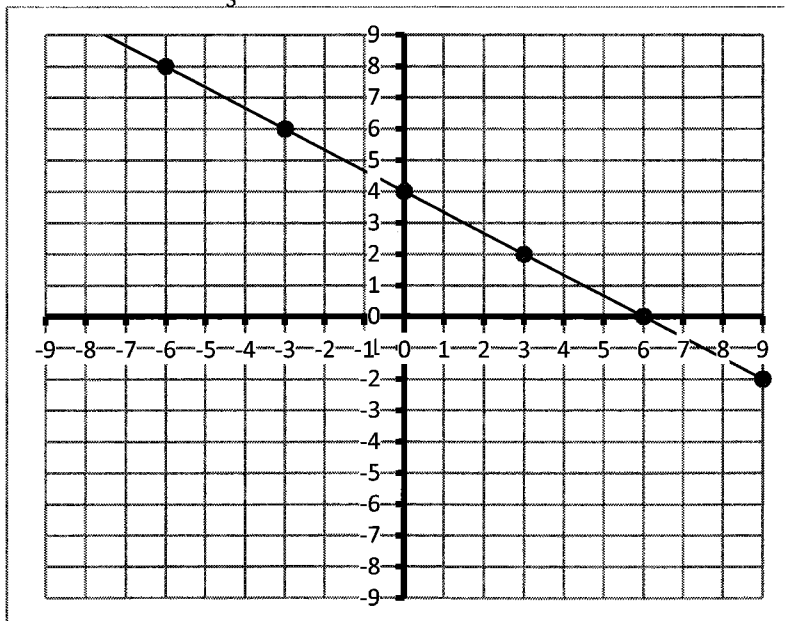


Part III - Using the table of values provided, first plot the points onto a grid that was provided, and then determine the equation that describes the line.

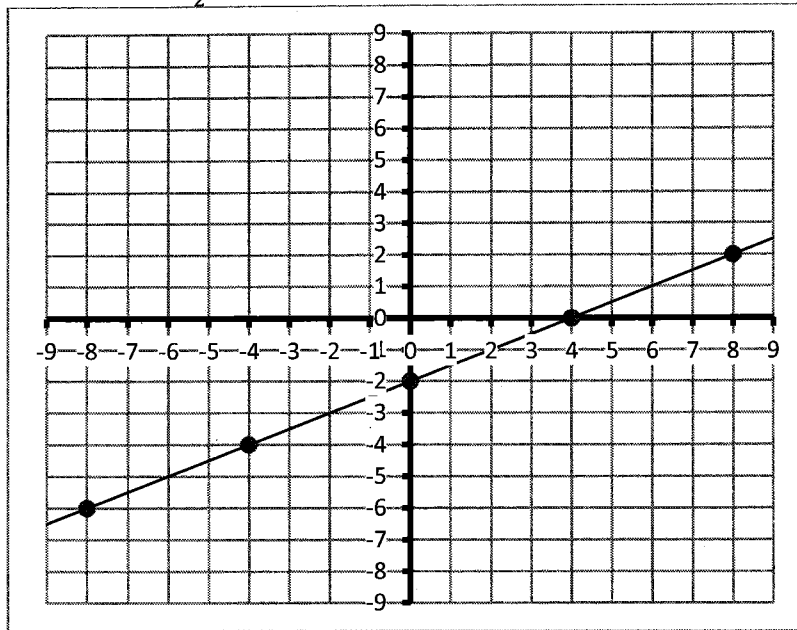
a) $y = 3x - 4 \rightarrow$ positive relation



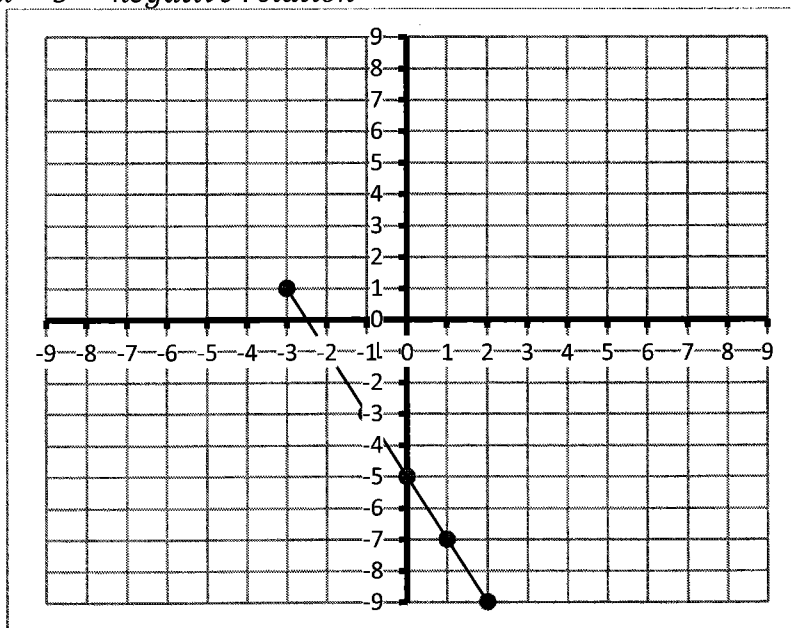
b) $y = -\frac{2}{3}x + 4$ or $y = -\frac{2}{3}x + 4 \rightarrow$ negative relation



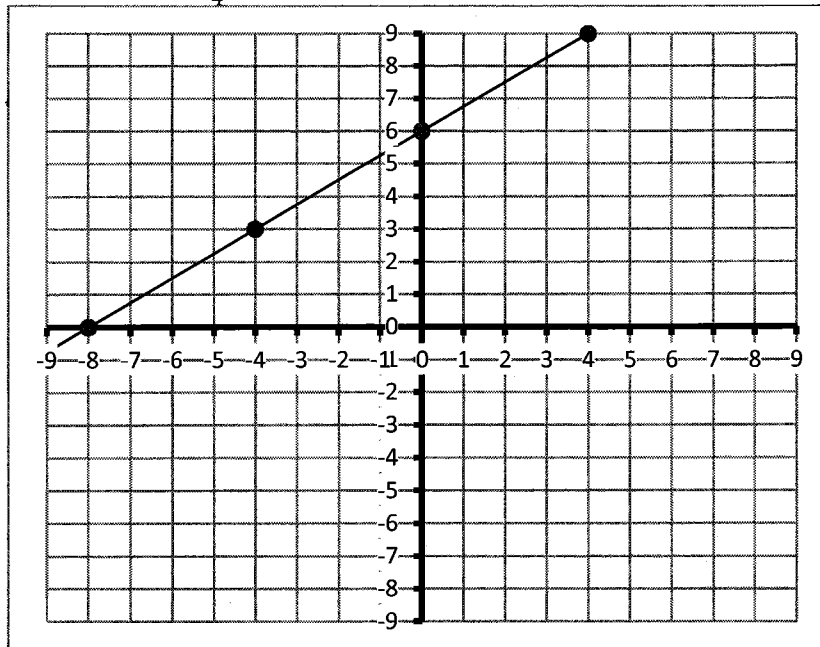
c) $y = \frac{1}{2}x - 2$ or $y = \frac{1x}{2} - 2 \rightarrow$ positive relation



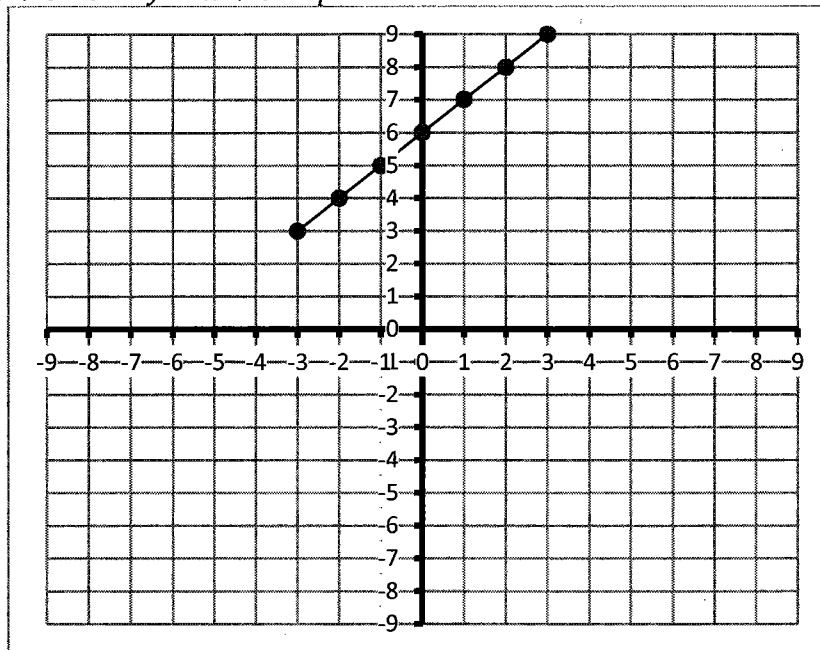
d) $y = -2x - 5 \rightarrow$ negative relation



e) $y = \frac{3}{4}x + 6$ or $y = \frac{3x}{4} + 6 \rightarrow$ positive relation



f) $y = 1x + 6$ or $y = x + 6 \rightarrow$ positive relation



Part IV - Looking at the situations below, determine the dependent and independent variables.

- a) A person uses a thermometer to take the temperature of several different liquids. The level of mercury in the thermometer will change from liquid to liquid.

Independent variable → *temperature of the liquids*
Dependent variable → *how high the mercury will rise*

- b) Suzy works for Tim Horton's and she can choose how many hours she wants to work. The more hours she works, the more money she will make.

Independent variable → *number of hours worked*
Dependent variable → *how much money she makes*

- c) The height of different plants in a group is recorded at fixed time intervals.

Independent variable → *length of time interval*
Dependent variable → *height of plants*

- d) An artist is adding blue paint to yellow paint in a desire to make a green. When more blue paint is added to the yellow paint, a darker green will result.

Independent variable → *amount of blue paint added*
Dependent variable → *darkness of green paint*

- e) A person is driving across the country. The further they drive, the more gas they will use.

Independent variable → *how far the person drives*
Dependent variable → *how much gas is used*