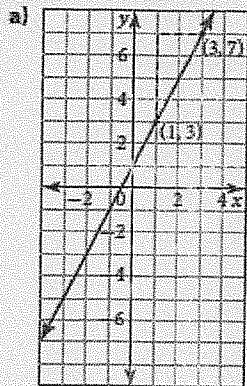# DAY 5 - Find Equations of Lines from Graphs

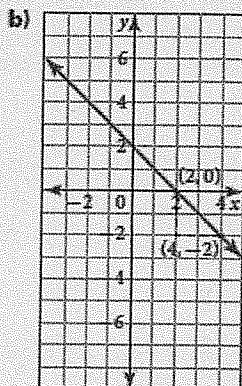1. Write the equation for each line by first determining the slope and the y-intercept.

a)

b)

c)

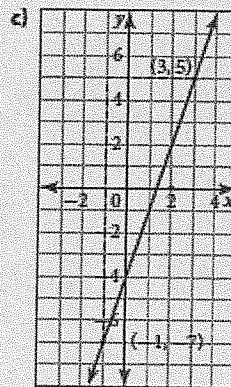d)

$m = \dfrac{7-3}{3-1} = \dfrac{4}{2} = \dfrac{2}{1}$

$b = 1$

$\therefore y = \dfrac{2}{1}x + 1$

$m = \dfrac{0--2}{2-4}$

$= \dfrac{2}{-2}$

$= -1$ $b = 2$

$\therefore y = \dfrac{-1}{1}x + 2$

$m = \dfrac{5--7}{3-1}$

$= \dfrac{12}{4}$

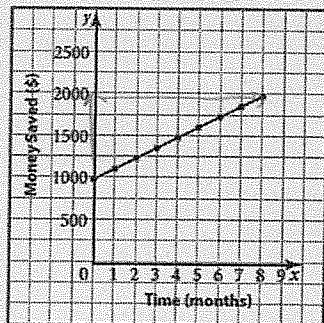$= \dfrac{3}{1}$ $b = -4$

$\therefore y = \dfrac{3}{1}x - 4$

$m = \dfrac{3--3}{-2-2}$

$= \dfrac{6}{-4}$

$= -3/2$ $b = 0$

$\therefore y = \dfrac{-3}{2}x + 0$

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2. A graph of Marina's college fund is shown.

a) What is the slope of this line?
b) What does the slope represent?
c) What is the y-intercept?
d) What does this number represent?
e) Write an equation that represents the amount in Marina's college fund.

3. When Jim travels long distances, his average speed is approximately 90 km/h. On a return trip from Thunder Bay, 1500 km from home, Jim uses the equation $y = 1500 - 90x$ to determine his distance from home after x hours of driving.
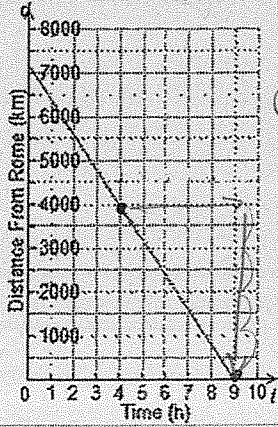
a) What is the y-intercept of this equation? What does this number represent?
b) What is the slope of this equation? What does this number represent?

ⓐ $m = \dfrac{1000}{8}$

$= \dfrac{125}{1}$

ⓑ represents 125 $/month saved.

ⓒ $b = 1000$

ⓓ represents initial savings.

ⓔ $y = \dfrac{125}{1}x + 1000$

let y be $ saved.
let x be # of months

ⓐ $b = 1500$
represents initial distance

ⓑ $m = \dfrac{-90}{1}$ km/h
represents speed

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4. Find the equations from the graphs then state what the y-intercept and slope represent
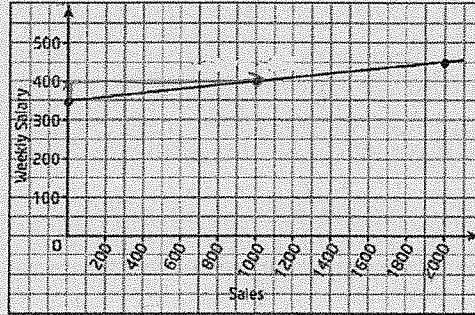
a. A flight from Toronto to Rome can be modelled by the following graph. Find the equation of the line, then use d as the distance, in kilometers, from Rome and t as the time, in hours, that the plane has been flying. Then state what the y-intercept and slope represent

b. Mario sells electronics at Big Box Electronics Store. He is paid a salary of $350 a week plus 5% commission on his sales. Find the equation of the line, then use E as the earnings and p as price of items he sells. Then state what the y-intercept and slope represent
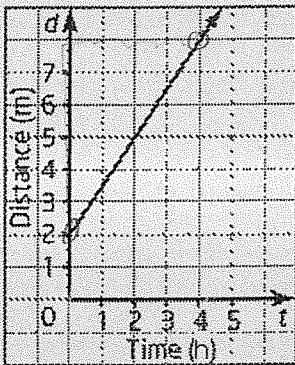
$$y = -800x + 7200$$
$$d = -800t + 7200$$

$$slope = \frac{-4000}{5}$$
$$= -800 \, km/h$$
rep. speed.

$$y\text{-}int = 7200$$
rep. initial distance

$$slope = \frac{50}{1000}$$
$$= 0.05 \frac{salary}{sales}$$

rep. rate of 50% earnings commission

$$y\text{-}int = 350$$
rep. initial earnings even if no sale

$$y = 0.05x + 350$$
$$E = 0.05p + 350$$

5. Find the initial value and rate of change for each graph then write down an equation.

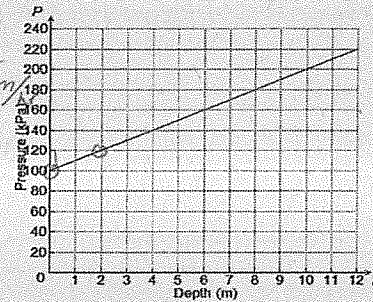a. The distance-time graph illustrates Sarah's walk in front of a motion sensor:

Sarah's Walk

$$slope = \frac{6}{4} = \frac{3}{2} = 1.5 \, m$$

$$y\text{-}int = 2$$

$$d = 1.5t + 2$$

b. For safety reasons, divers need to be aware of the pressure as they dive. At a depth of 4 m, the pressure is 140 kPa (kilopascals) and at 9 m it is 190 kPa.

$$slope = \frac{20}{2} = 10 \, kPa/m$$

$$y\text{-}int = 100$$

$$P = 10d + 100$$