

**Chapter 4 - lines and linear equations**

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

1. Determine the slope between each pair of points below:

a) (3, 5) and (6, 9)

$$\frac{9-5}{6-3} = \boxed{\frac{4}{3}}$$

b) (-2, 4) and (7, -4)

$$\frac{-4-4}{7-(-2)} = \boxed{\frac{-8}{9}}$$

c) (0, 3) and (-4, -3)

$$\frac{-3-3}{-4-0} = \frac{-6}{-4} = \boxed{\frac{+3}{2}}$$

2. Write an equation of a line given the slope and y-intercept:

a) Slope = -1  
 y-int = 4

$$\boxed{y = -x + 4}$$

b) Slope = 6  
 y-int = -2

$$\boxed{y = 6x - 2}$$

c) Slope =  $\frac{1}{2}$   
 y-int = 0

$$\boxed{y = \frac{1}{2}x}$$

3. Determine the slope and y-intercept of each of the following linear equations:

a)  $y = -x - 1$

Slope =  $\underline{-1}$   
 Y-int =  $\underline{-1}$

b)  $2x + 2y = 8$   
 $\frac{-2x}{-2x} \quad \frac{-2y}{-2x}$

$$\frac{2y}{2} = \frac{-2x + 8}{2}$$

$$y = -x + 4$$

Slope =  $\underline{-1}$   
 Y-int =  $\underline{4}$

c)  $6x + 4y = 16$   
 $\frac{-6x}{-6x} \quad \frac{-4y}{-6x}$

$$4y = \frac{-6x + 16}{4}$$

$$y = \frac{-3}{4}x + 4$$

Slope =  $\underline{-\frac{3}{4}}$  or  $\underline{-\frac{3}{4}}$   
 Y-int =  $\underline{4}$

d)  $3y - 7x = 9$   
 $\frac{+7x}{+7x} \quad \frac{+7x}{+7x}$

$$\frac{8y}{3} = \frac{7x + 9}{3}$$

$$y = \frac{7}{3}x + 3$$

Slope =  $\underline{\frac{7}{3}}$   
 Y-int =  $\underline{3}$

e)  $2x + y = -7$   
 $\frac{-2x}{-2x} \quad \frac{-2x}{-2x}$

$$y = -2x - 7$$

Slope =  $\underline{-2}$   
 Y-int =  $\underline{-7}$

f)  $2y - x = -4$   
 $\frac{+x}{+x} \quad \frac{+x}{+x}$

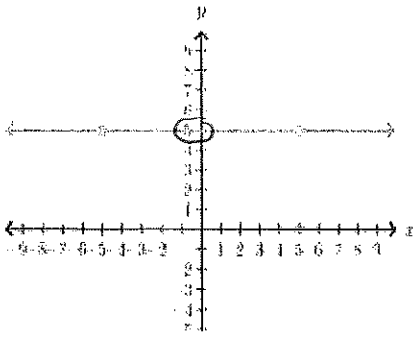
$$\frac{2y}{2} = \frac{x - 4}{2}$$

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

Slope =  $\underline{\frac{1}{2}}$   
 Y-int =  $\underline{-2}$

4. Write the slope of each line below then write the equation of the line:

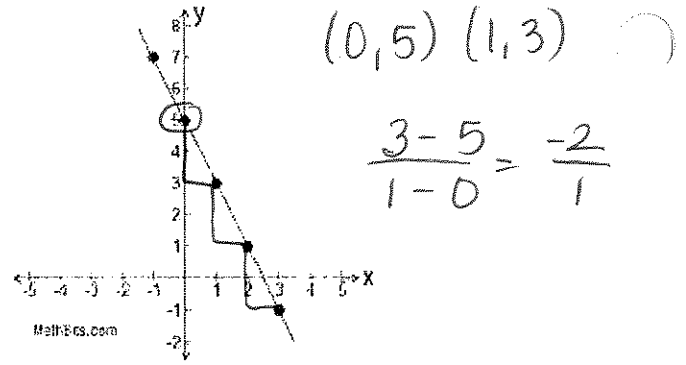
a)



Slope: 0

Equation:  $y = 5$

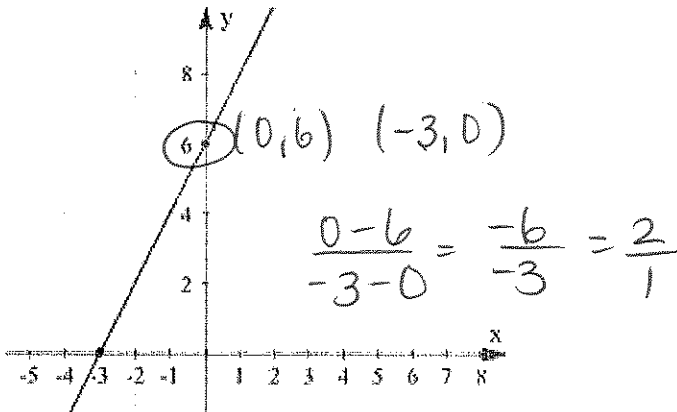
b)



Slope: -2

Equation:  $y = -2x + 5$

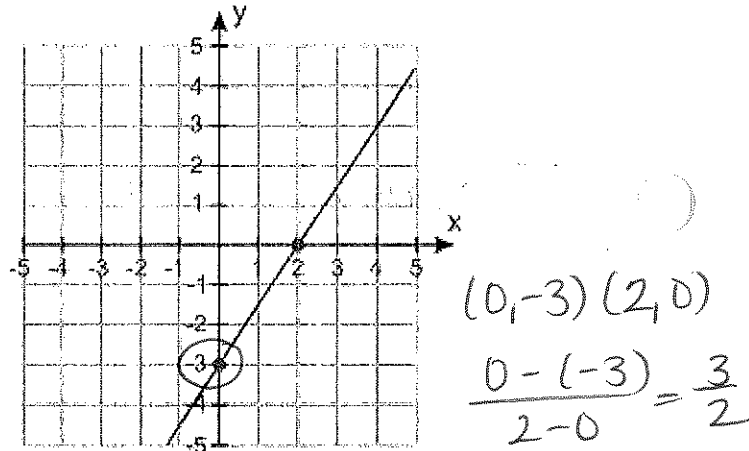
c)



Slope: 2

Equation:  $y = 2x + 6$

d)



Slope:  $\frac{3}{2}$

Equation:  $y = \frac{3}{2}x - 3$

**Chapter 5 - systems of equations**

You buy 3 packs of markers and 2 packs of pencils for \$42.50. Your friend buys 5 packs of markers and 3 packs of pencils for \$67.50. Set up a system of equation to model the situation, then determine the cost of one pack of markers and one pack of pencils.

Let  $m$  = cost of one pack of markers = \$7.50  
 Let  $p$  = cost of one pack of pencils = \$10

$$\begin{aligned} -5(3m + 2p &= 42.50) \\ 3(5m + 3p &= 67.50) \end{aligned}$$

$$\begin{aligned} -15m - 10p &= -212.50 \\ 15m + 9p &= 202.50 \end{aligned}$$

$$\begin{aligned} 5m + 3(10) &= 67.50 \\ 5m + 30 &= 67.50 \end{aligned}$$

$$\begin{aligned} \frac{5m}{5} &= \frac{37.5}{5} & \frac{-1p}{-1} &= \frac{-10}{-1} \\ m &= 7.5 & p &= 10 \end{aligned}$$

$p = 10$