

## Lesson 3 : Writing Equations of Lines

Ex. 1. Write the equation of the line that

a) has slope  $-\frac{3}{2}$  and passes through  $(-1, 2)$

$$y = mx + b$$

$$2 = -\frac{3}{2}(-1) + b$$

$$2 = \frac{3}{2} + b$$

$$2(2) = \left(\frac{3}{2}\right)2 + 2(b)$$

$$4 = 3 + 2b$$

$$4 - 3 = 2b$$

$$\frac{1}{2} = \frac{2b}{2}$$

$$\frac{1}{2} = b$$

$$\therefore y = -\frac{3}{2}x + \frac{1}{2}$$



b)  $x$ -intercept of 4, and is perpendicular to  $y = x + 7$

$\uparrow$   
 $(4, 0)$

$$y = mx + b$$

$$0 = -1(4) + b$$

$$0 = -4 + b$$

$$4 = b$$

$$\therefore y = -1x + 4$$

$\uparrow$   
 $m = -\frac{1}{1}$

c) Passes through  $(-6, 24)$  and  $(4, 4)$   
 $x_1, y_1$   $x_2, y_2$

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

$$= \frac{4 - 24}{4 - (-6)}$$

$$= \frac{-20}{10}$$

$$= -2$$

$$y = mx + b$$

$$4 = -2(4) + b$$

$$4 = -8 + b$$

$$12 = b$$

$$\therefore y = -2x + 12$$

Ex. 2 The cost of a pizza with 3 toppings is \$9.  
If each topping is \$0.75, find:  
 $\uparrow m = 0.75$   $\sqrt{(3, 9)}$

a) An equation for the cost of a pizza if  $x$  is the number of toppings

$$y = mx + b$$

$$9 = 0.75(3) + b$$

$$6.75 = b$$

$$\therefore y = 0.75x + 6.75$$

b) If a pizza is \$12, how many toppings are on it?

$$12 = 0.75x + 6.75$$

$$12 - 6.75 = 0.75x$$

$$7 = x$$