

## Module 4.B : Graphing

### SECTION 1 : Given a table of points, evaluate a function.

#### EXERCISE 4

Use the table below to answer the question below.

$x$	1	-2	2	3	-1
$f(x)$	2	-1	1	-2	3

a) If  $x = -2$ ,  $f(x) = ?$

b) If  $f(x) = -2$ ,  $x = ?$

#### SOLUTION

a) - 1

b) 3

#### Four.5 Determine if the given point is on the line.

#### EXERCISE 5

Which of the points  $A = (3, -1)$ ,  $B = (-3, 1)$  and  $C = \left(\frac{1}{2}, 3\right)$  lie on the line whose equation is  $3x + 2y = 7$ ?

#### SOLUTION

To test to see if a point lies on the line, substitute the  $x$  coordinate and the  $y$  coordinate into the equation for  $x$  and  $y$ , respectively. We have:

$A = (3, -1)$ :  $3x + 2y = 7 \Rightarrow 3(3) + 2(-1) = 7 \Rightarrow 9 - 2 = 7$  is TRUE, therefore, YES.

$B = (-3, 1)$ :  $3x + 2y = 7 \Rightarrow 3(-3) + 2 \cdot 1 = 7 \Rightarrow -9 + 2 = 7$  is FALSE, NO.

$C = \left(\frac{1}{2}, 3\right)$ :  $3x + 2y = 7 \Rightarrow 3\left(\frac{1}{2}\right) + 2 \cdot 3 = 7 \Rightarrow 1.5 + 6 = 7$  is FALSE, therefore, NO.

**SECTION 2 : Find the intercepts for the graph of a line equation.**

**EXERCISE 6**

Find the  $x$  and  $y$  intercepts.

a)  $3x + 2y = -6$

b)  $x = 2$

c)  $y = 1$

**SOLUTION**

To find the  $x$  intercept, set  $y = 0$ . To find the  $y$  intercept, set  $x = 0$ .

a)  $3x + 2y = -6$ :  $x$  intercept  $3x = -6 \Rightarrow x = -2$  so  $(-2, 0)$ .  
 $y$  intercept  $2y = -6 \Rightarrow y = -3$  so  $(0, -3)$ .

b)  $x = 2$   $x$  intercept  $(2, 0)$ ,  $y$  intercept none

c)  $y = 1$   $x$  intercept none,  $y$  intercept 1

**SECTION 3 : Evaluate a linear function, given two points on the graph of the line.**

**EXERCISE 7**

If  $f(x)$  is a line, and the points  $(3, 1)$  and  $(5, 15)$  are points on the graph, find  $f(25)$ .

**SOLUTION**

The slope is  $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{15 - 1}{5 - 3} = 7$ . The equation for the line is  $y - y_1 = m(x - x_1)$ .

Using point  $(3, 1)$ , we have  $y - 1 = 7(x - 3) \Rightarrow y - 1 = 7x - 21 \Rightarrow y = 7x - 20$ .

Thus  $f(25) = 7(25) - 20 = 155$ .

MODULE 4.B - ASSESSMENT

\_\_\_\_\_5. Use the table of  $f(x)$  below to find the  $x$  for which  $f(x) = -1$ .

$x$	1	-2	2	3	-1
$f(x)$	2	-1	1	-2	3

**A** 1      **B** 3      **C** -2      **D** none of these      **E** I do not know

\_\_\_\_\_6. Which of the points  $A = (1, 2)$ ,  $B = (2, 1)$  and  $C = (-2, 11)$ , lie on the line whose equation is  $5x + 2y = 12$ ?

**A** points A and B      **B** points A and C      **C** points B and C  
**D** only point A      **E** I do not know

\_\_\_\_\_7. Find the  $y$  intercept for line  $4x - 3y = 12$

**A** (3,0)      **B** (0,3)      **C** (-4,0)      **D** (0,-4)      **E** I do not know

\_\_\_\_\_8. If  $f(x)$  is a line, and the points  $(-2, 3)$  and  $(1, 12)$  are points on the graph, find  $f(30)$ .

**A** 360      **B** 99      **C** -93      **D** 7      **E** I do not know