The National Orthodox School Shmaisani

Worksheet Sheet (3)

Sequences and linear graphs Ch. 14

Objectives:

1. To learn that an equation of a straight line is written in the form $\boldsymbol{y = mx + c}$.
2. To learn about the gradient "m" and the y-intercept "c".

Equation of a straight line:

Equations of diagonal lines are usually written in the form:

$$\boldsymbol{Y = mx + c}$$

- $\boldsymbol{m}$: ***Gradient***
- $\boldsymbol{c}$: ***y-intercept (intersection on the y-axis***

Example: for the equations below, decide what is the gradient and what is the y-intercept

i. $y = 2x + 3$

m = 2 and c = 3

ii. $y = -3x - 4$

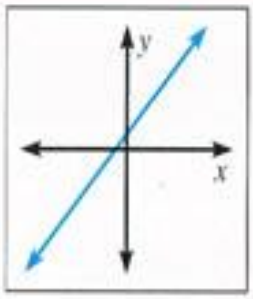
m = -3 and c = -4

Types of slopes:

You can tell by looking at the graph if the gradient is negative, positive, zero or undefined.

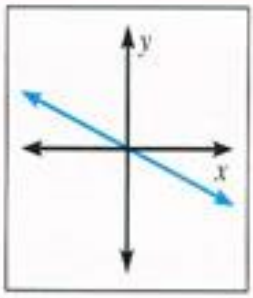
Look at the examples below:

- A line with a *positive* slope *rises* from left to right. ($m > 0$)
- A line with a *negative* slope *falls* from left to right. ($m < 0$)
- A line with a slope of *zero* is *horizontal*. ($m = 0$)
- A line with an *undefined* slope is *vertical*. (m is undefined.)



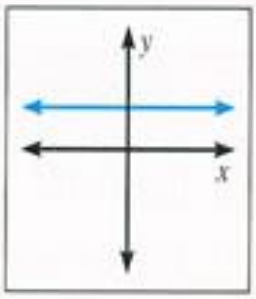
Positive slope

(positive gradient)
Diagonal line sloping upwards



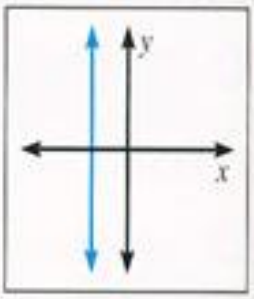
Negative slope

(Negative gradient)
Diagonal line sloping downwards



Zero slope

(Zero gradient)
Equation is always Y = any number
Ex. $Y = 4$
The line is horizontal, it crosses the y-axis



Undefined slope

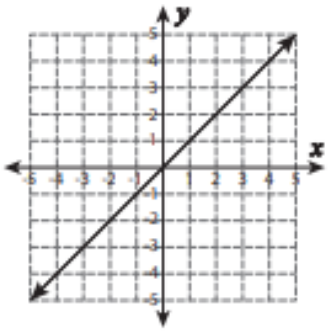
Equation is always x = any number
Ex. $x = 4$
The line is vertical it crosses the x-axis

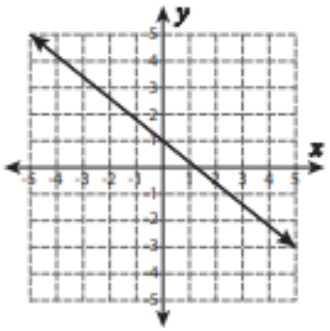
Answer the questions below:

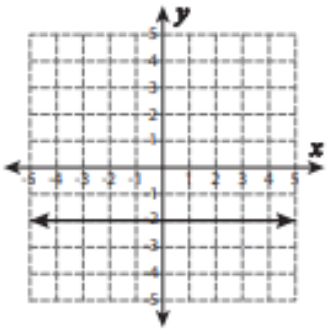
Q1. For the equations below, write down the value of the gradient "m" and y-intercept "c":

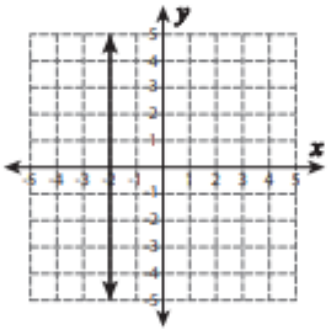
$y = 3x + 1$ $m =$ $c =$	$y = -x + 4$ $m =$ $c =$	$y = 2x - 5$ $m =$ $c =$
$y = -3x + 2$ $m =$ $c =$	$y = 5x - 3$ $m =$ $c =$	$y = -6x$ $m =$ $c =$
$y = 4$ $m =$ $c =$	$y = 0.3x + 4$ $m =$ $c =$	$y = -0.2x - 0.5$ $m =$ $c =$
$y = 7x + 2$ $m =$ $c =$	$y = -6x - 8$ $m =$ $c =$	$y = -9x - \frac{1}{5}$ $m =$ $c =$
$y = x - 1$ $m =$ $c =$	$y = \frac{2}{3}x + 8$ $m =$ $c =$	$y = -7$ $m =$ $c =$

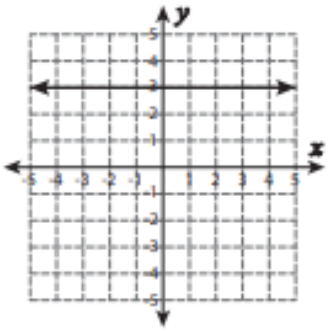
Q2. Identify the slope of each line as **positive**, **negative**, **zero** or **undefined:**

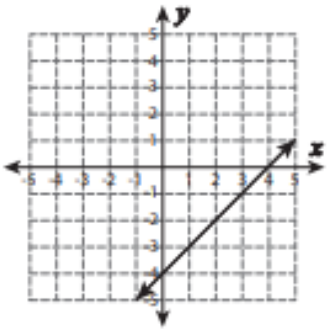
1) 

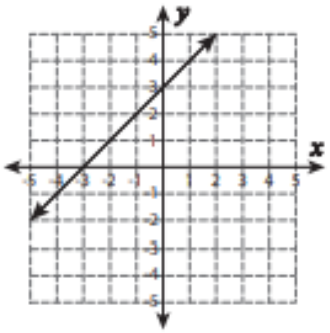
2) 

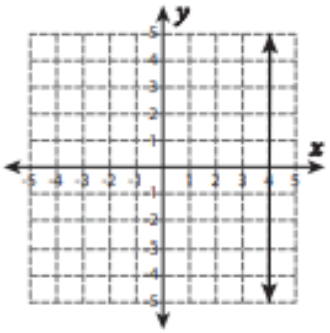
3) 

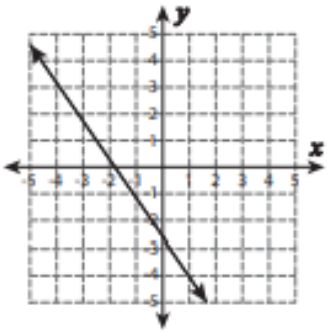
4) 

5) 

6) 

7) 

8) 

9) 

Q3. Which of these equations are straight lines**:**

$y = 4x - 7$	$x = 7$	$y = x^2$	$y = \frac{1}{x}$
$y = 8 - x$	$y = x^2 - 3x + 4$	$y = 7 - x^3$	$y = -3$

Q4. Sort these lines into the two groups below**:**

$y = x$ $y = -4x$ $y = 7x$ $y = -x + 9$

$y = 6x - 2$ $y = 5x + 5$ $y = 11 - 6x$ $y = -x$

Line sloping upwards	**Line sloping downwards**

- Answer the assigned questions on your copybook:
  - From **student** book:

    Ex. 14E: Q2, Q3

  - From **homework** book:
    P.92 Q8, Q9