Name ANSWERS	Class

MATHS TEACHER HUB

www.MathsTeacherHub.com

Graphs - Linear

(9 – 1) Topic booklet

Foundation

These questions have been collated from previous years GCSE Mathematics papers.

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.	Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- You must **show all your working out.**
- If the question is a **1F** question you are not allowed to use a calculator.
- If the question is a **2F** or a **3F** question, you may use a calculator to help you answer.

Information

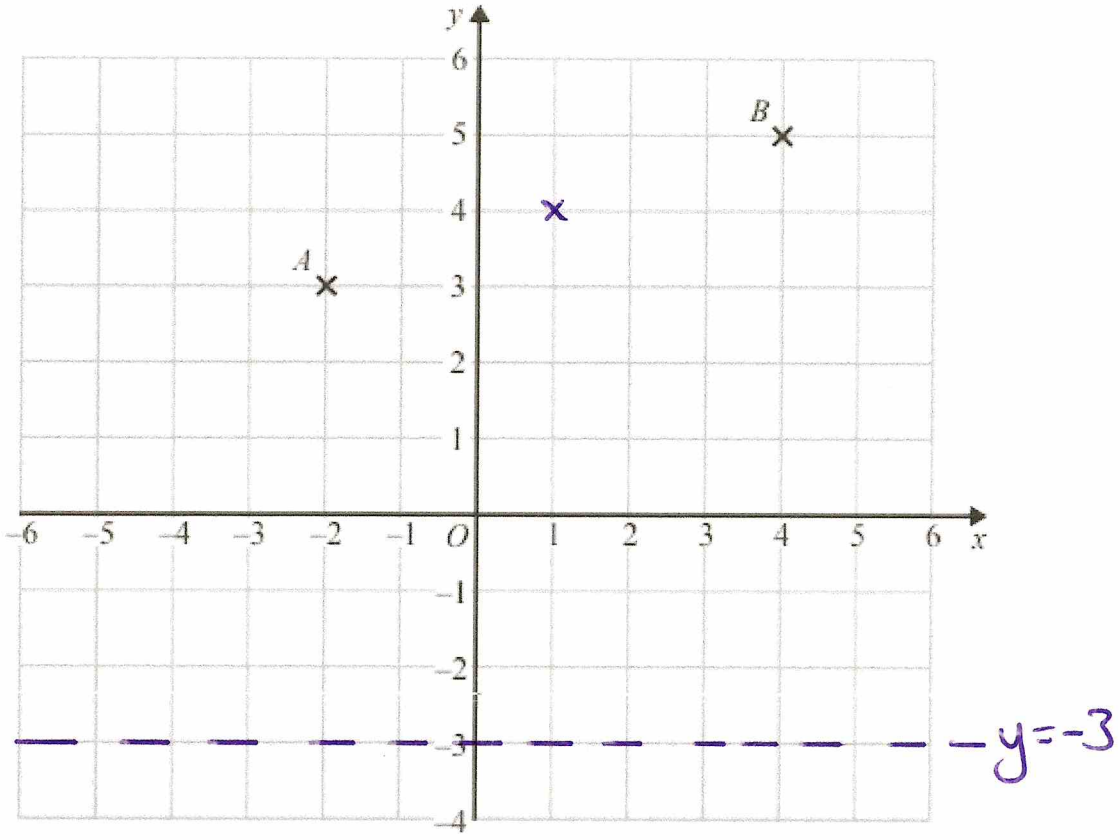
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Answer ALL questions
Write your answers in the space provided.
You must write down all the stages in your working.

5



(a) Write down the coordinates of point B.

(4 , 5)

(1)

(b) Find the coordinates of the midpoint of AB.

(1 , 4)

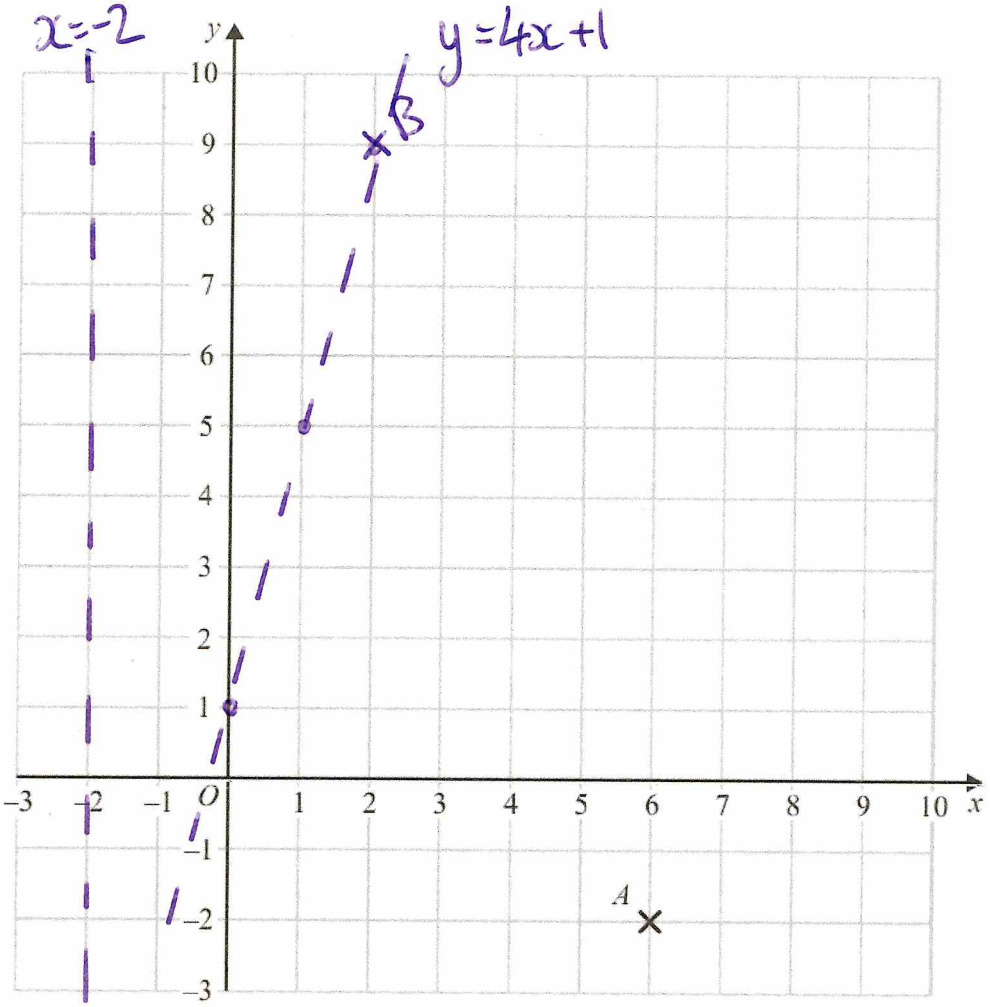
(1)

(c) On the grid, draw the line with equation $y = -3$

(1)

(Total for Question 5 is 3 marks)

7



(a) Write down the coordinates of the point A.

(6 , -2)

(1)

(b) (i) Plot the point with coordinates (2, 9).
Label this point B.

(1)

(ii) Does point B lie on the straight line with equation $y = 4x + 1$?
You must show how you get your answer.

Yes $4(2)+1 = 9$

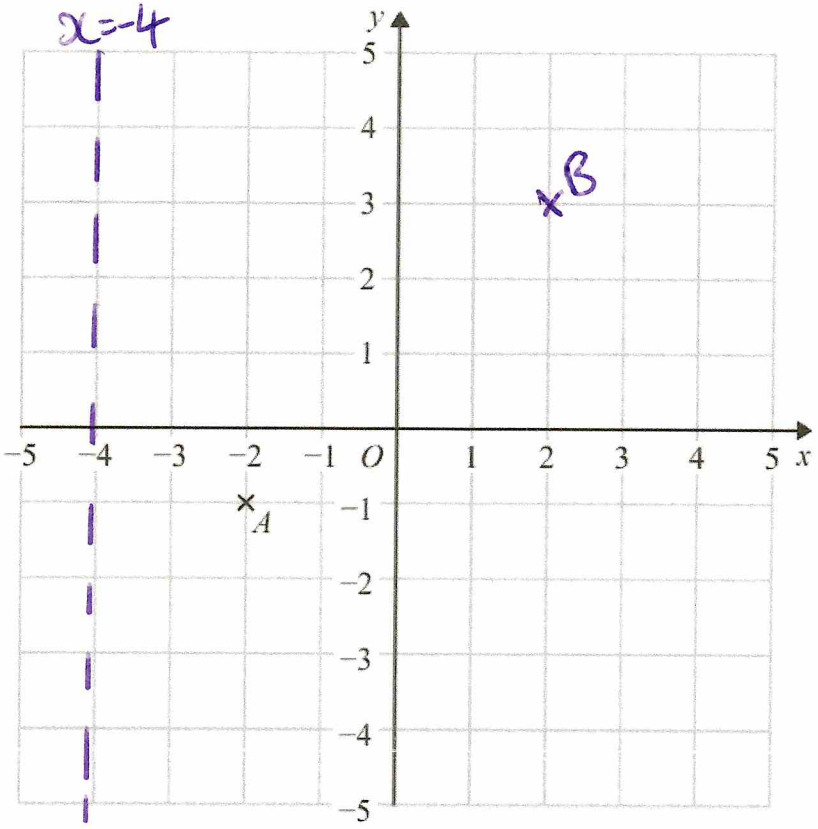
(1)

(c) On the grid, draw the line with equation $x = -2$

(1)

(Total for Question 7 is 4 marks)

8



(a) Write down the coordinates of point A.

(-2 , -1)

(1)

(b) On the grid, mark with a cross (×) the point (2, 3)
Label this point B.

(1)

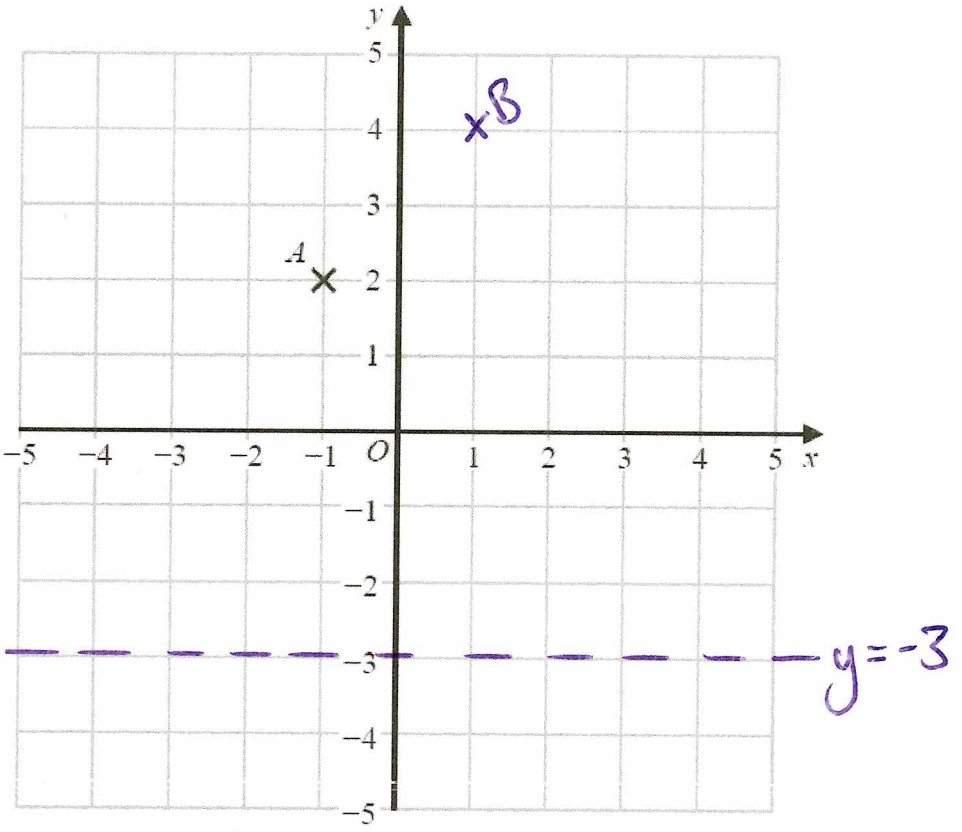
(c) On the grid, draw the line with equation $x = -4$

(1)

November 2018 – Paper 1F

(Total for Question 8 is 3 marks)

9



(a) Write down the coordinates of point A.

(-1 , 2)

(1)

(b) On the grid, mark with a cross (×) the point (1, 4)
Label this point B.

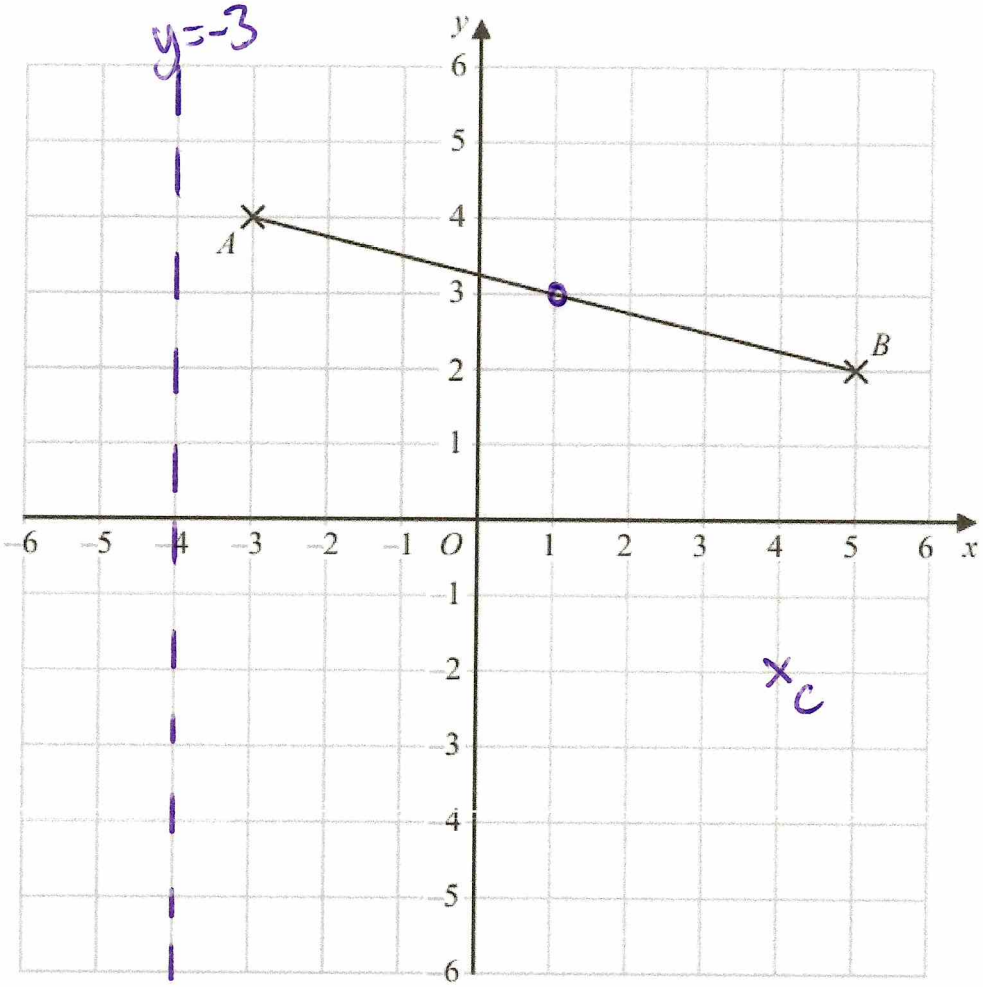
(1)

(c) On the grid, draw the line with equation $y = -3$

(1)

(Total for Question 9 is 3 marks)

9



(a) Write down the coordinates of point B.

(5 , 2)

(1)

(b) Plot the point with coordinates (4, –2)
Label this point C.

(1)

(c) Write down the coordinates of the midpoint of AB.

(1 , 3)

(1)

(d) Draw the line with equation $y = -4$

(1)

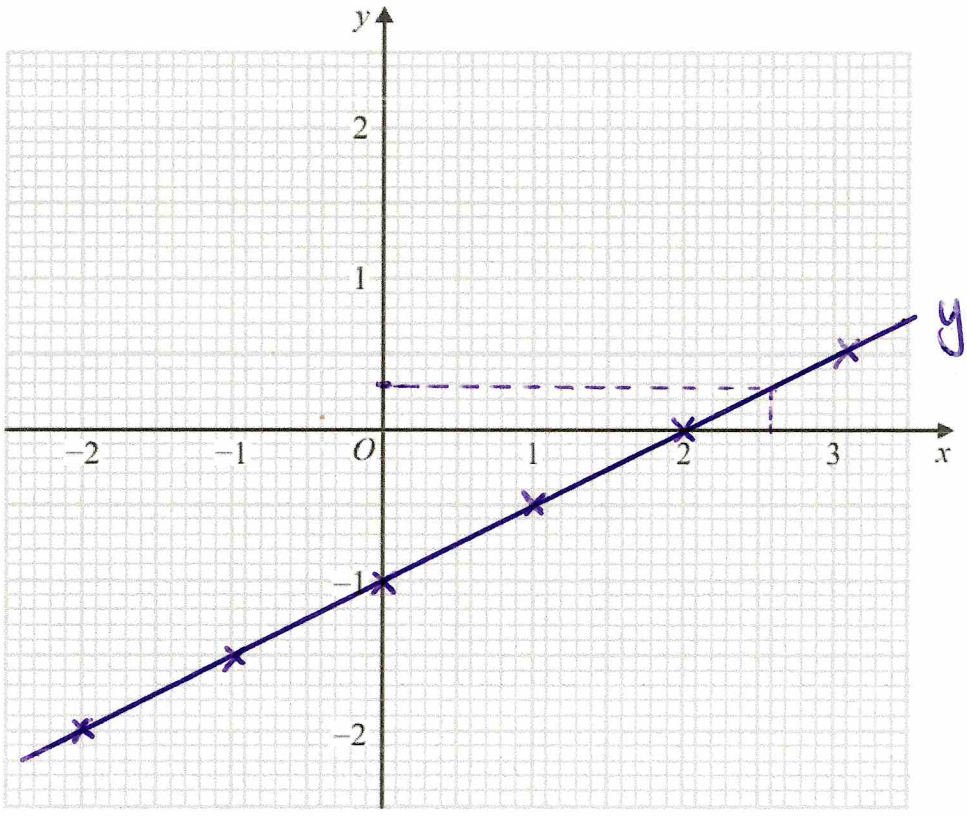
(Total for Question 9 is 4 marks)

13 (a) Complete the table of values for $y = \frac{1}{2}x - 1$

x	−2	−1	0	1	2	3
y	−2	−1.5	−1	−0.5	0	0.5

(2)

(b) On the grid, draw the graph of $y = \frac{1}{2}x - 1$ for values of x from −2 to 3



(2)

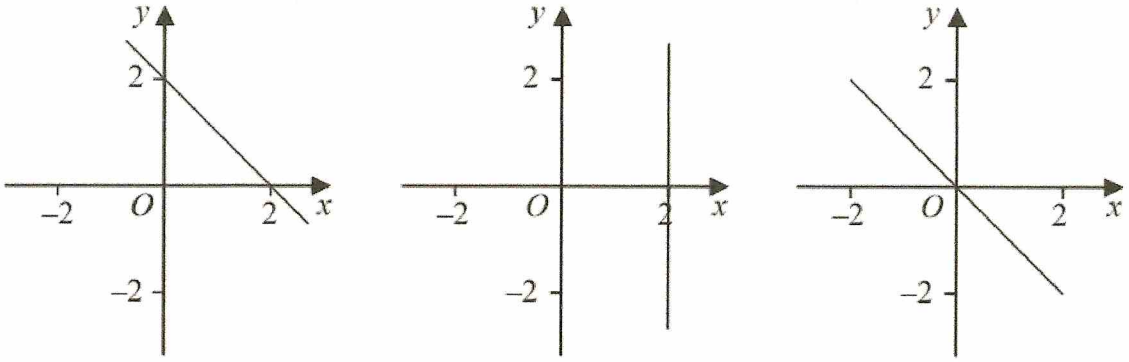
(c) Use your graph to find the value of x when $y = 0.3$

$x =$ 2.6

(1)

(Total for Question 13 is 5 marks)

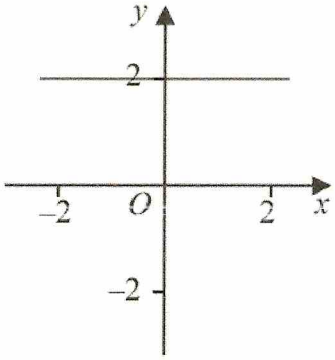
13 Here are six straight line graphs.



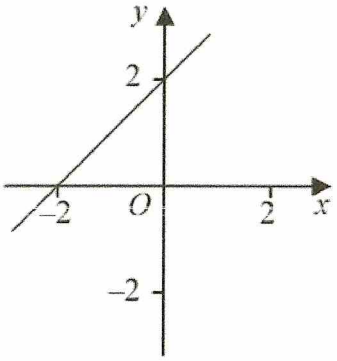
Graph **A**

Graph **B**

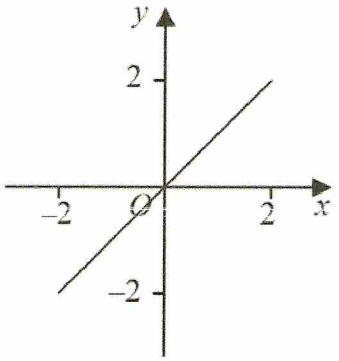
Graph **C**



Graph **D**



Graph **E**



Graph **F**

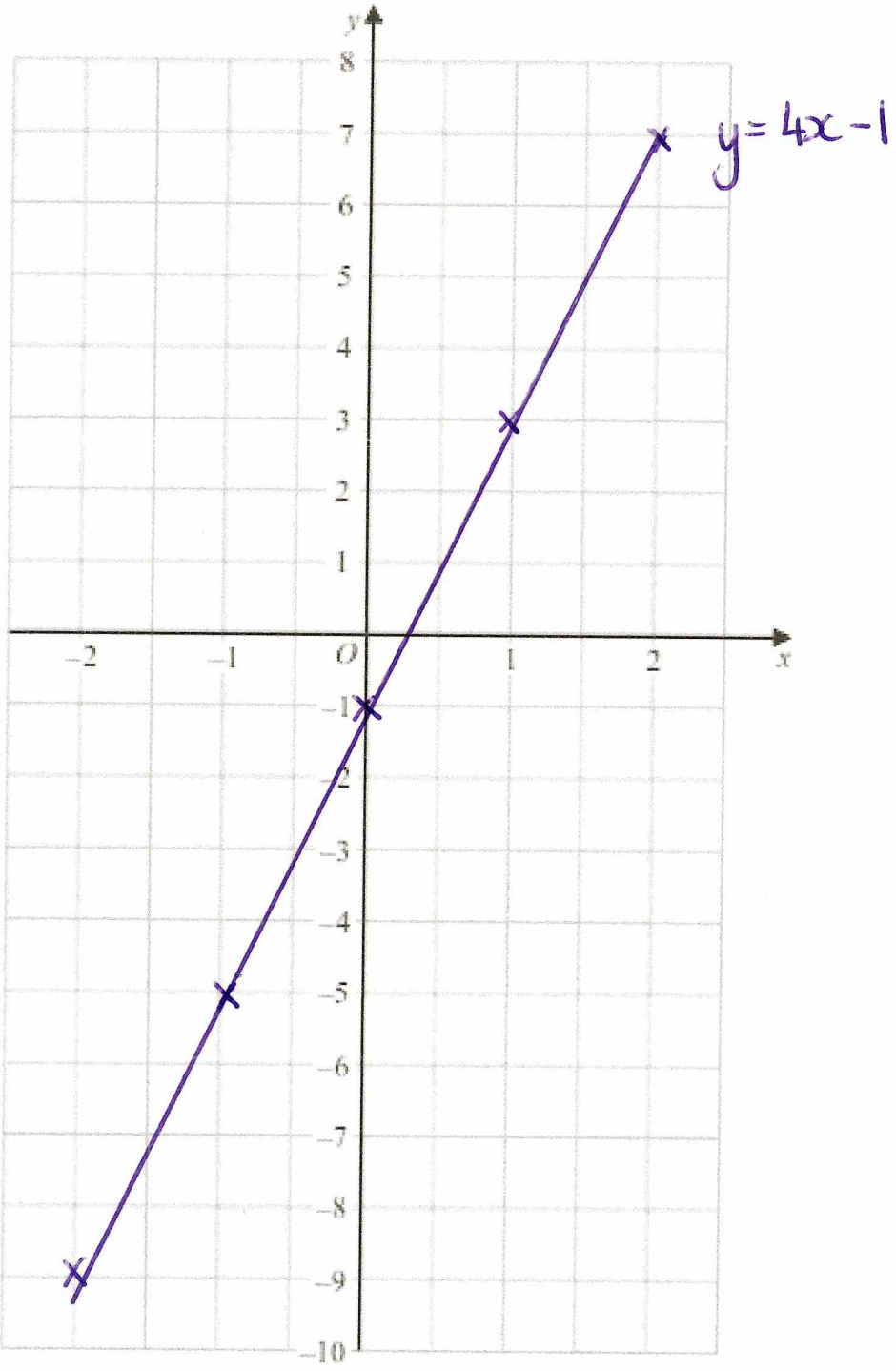
Match each equation in the table to the correct graph.
Write the letter of the graph in the table.

Equation	Graph
$y = 2$	D
$y = x$	F
$x + y = 2$	A

May 2018 – Paper 3F **(Total for Question 13 is 2 marks)**

14 On the grid, draw the graph of $y = 4x - 1$ for values of x from -2 to 2

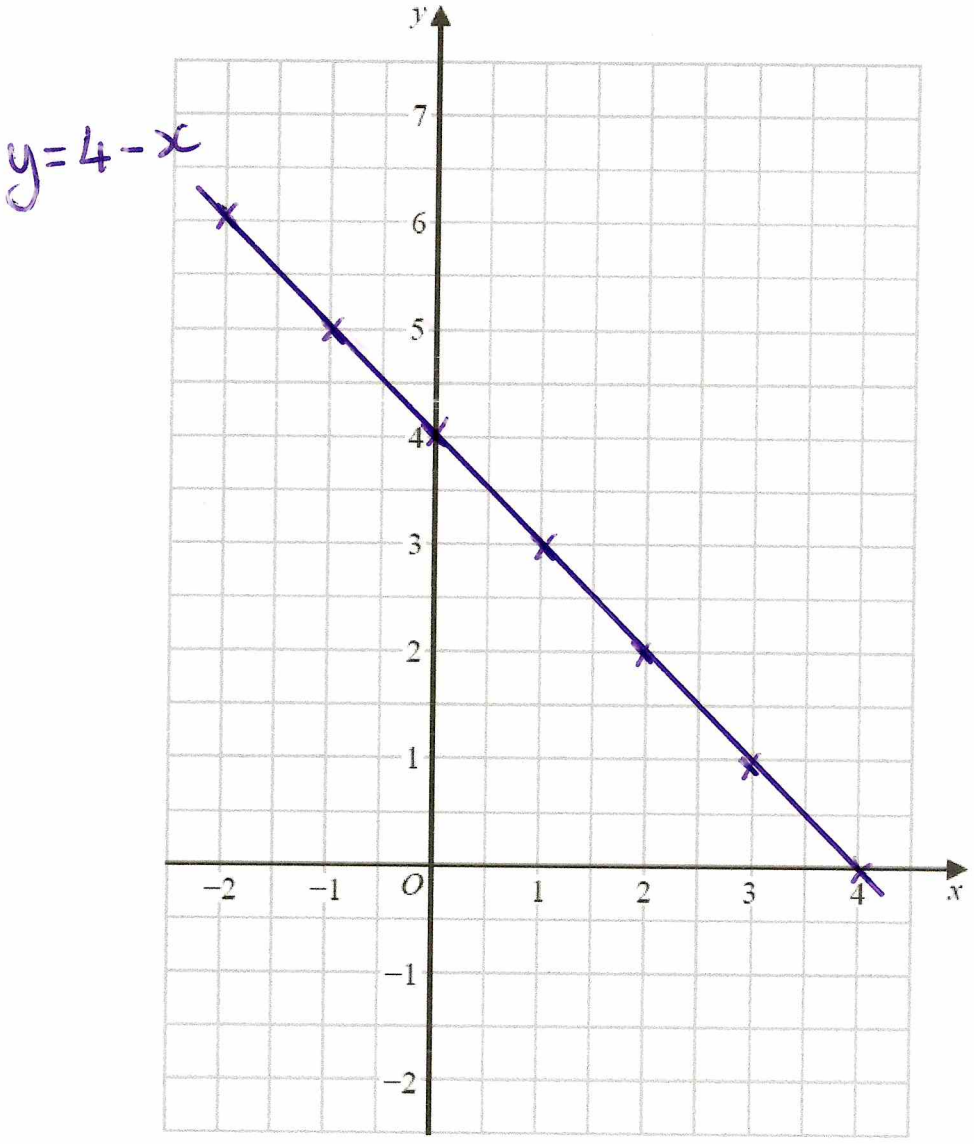
x	-2	-1	0	1	2
y	-9	-5	-1	3	7



(Total for Question 14 is 3 marks)

17 On the grid below, draw the graph of $y = 4 - x$ for values of x from -2 to 4

x	-2	-1	0	1	2	3	4
y	6	5	4	3	2	1	0



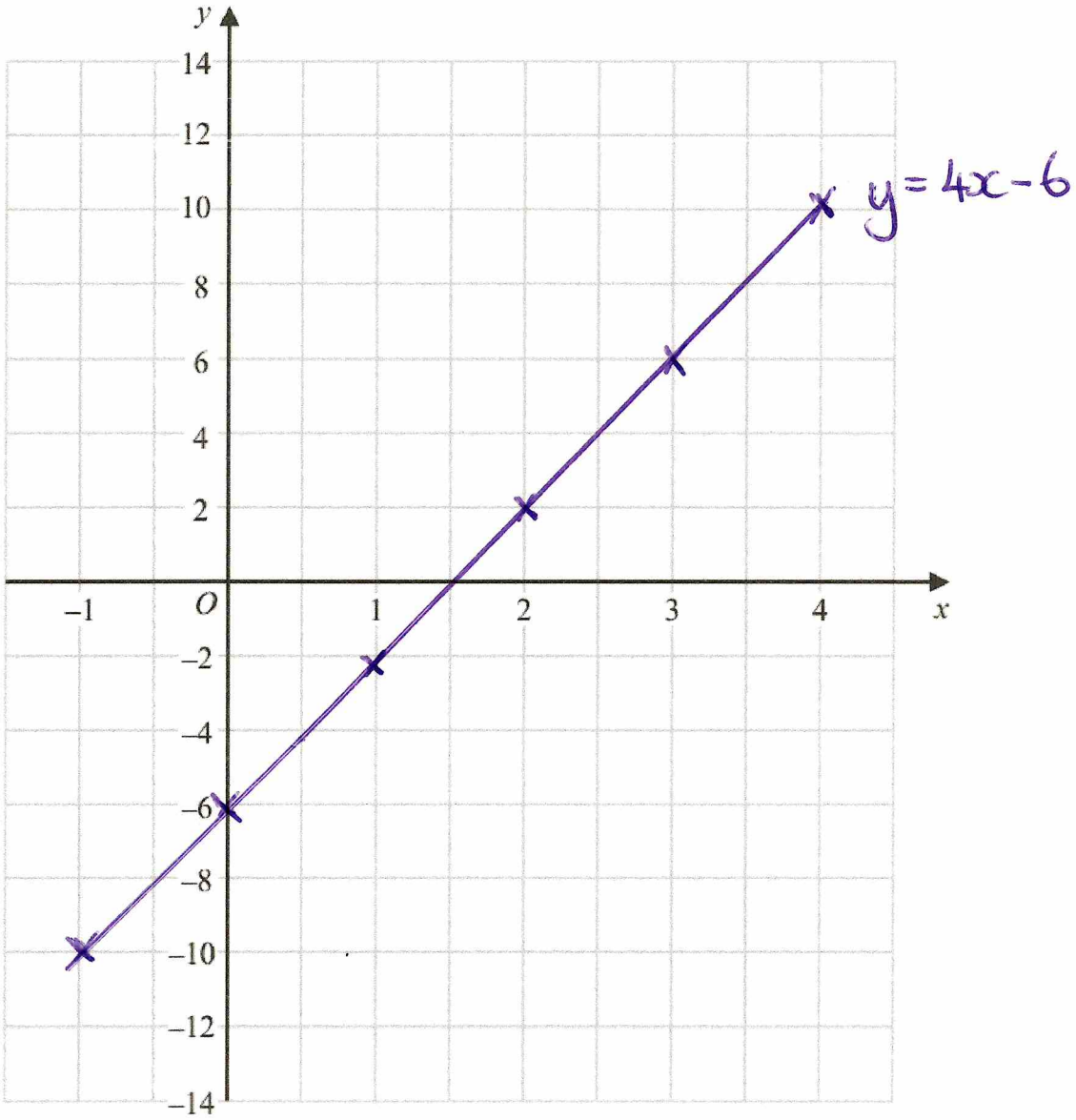
(Total for Question 17 is 3 marks)

17 (a) Complete the table of values for $y = 4x - 6$

x	−1	0	1	2	3	4
y	-10	-6	−2	2	6	10

(2)

(b) On the grid, draw the graph of $y = 4x - 6$ for values of x from −1 to 4

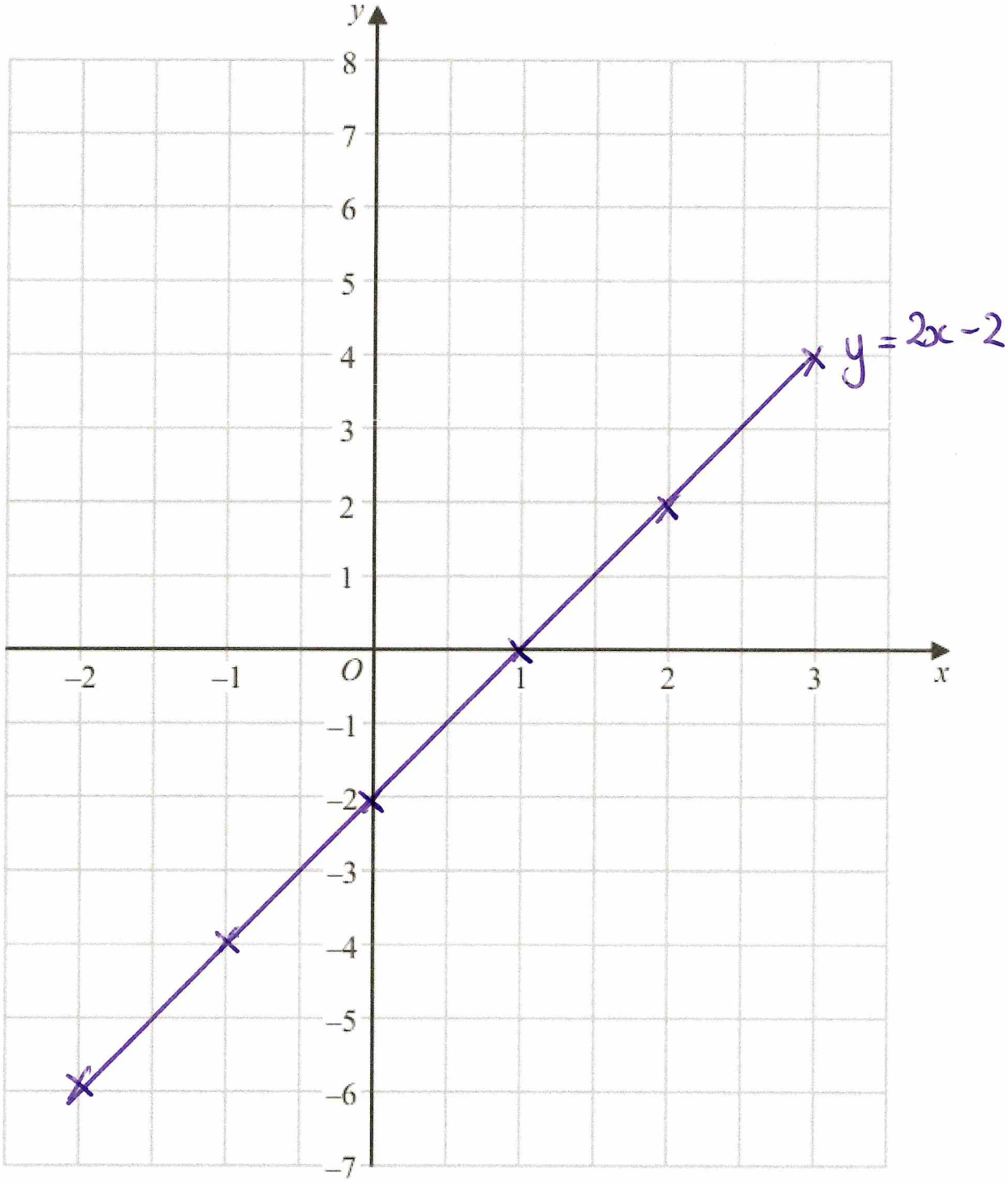


(2)

(Total for Question 17 is 4 marks)

18 On the grid below, draw the graph of $y = 2x - 2$ for values of x from -2 to 3

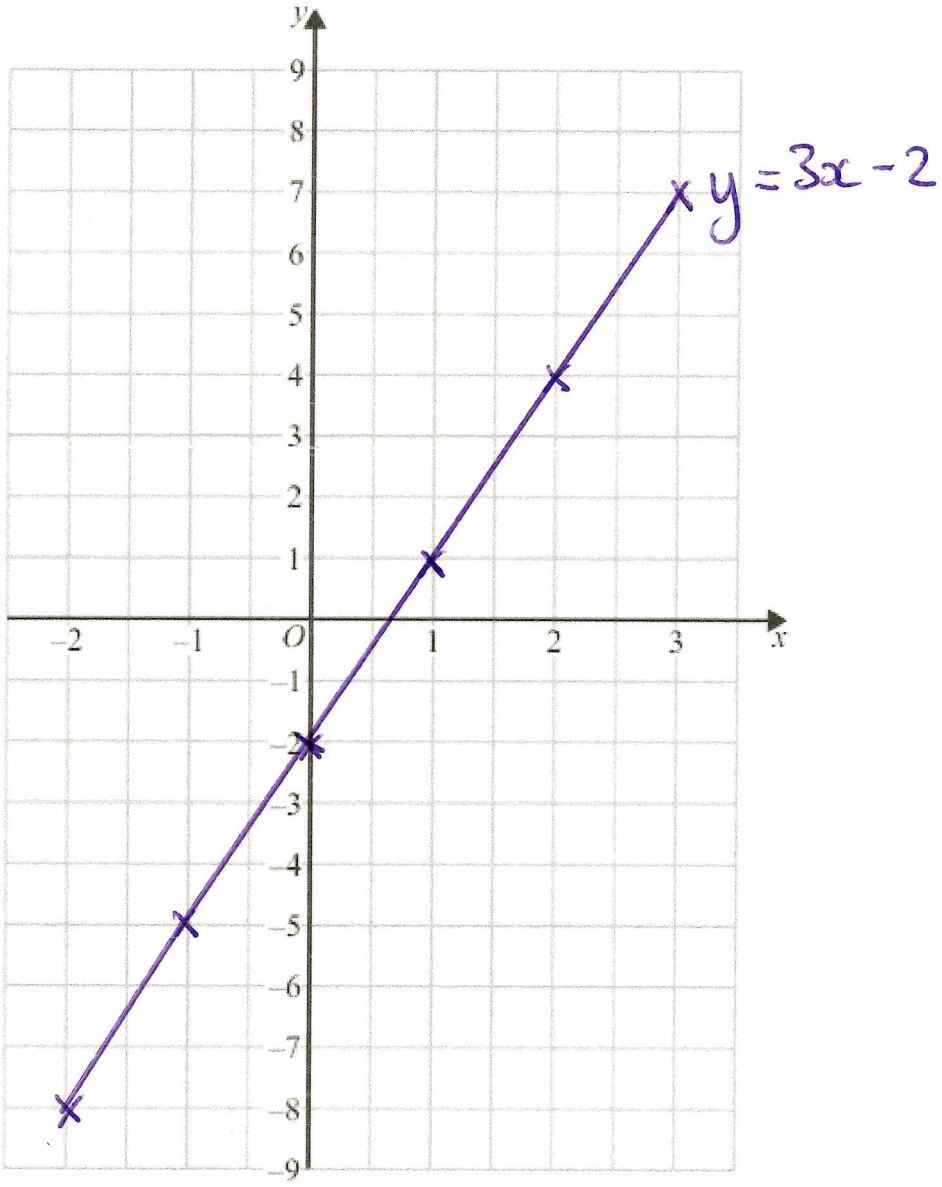
x	-2	-1	0	1	2	3
y	-6	-4	-2	0	2	4



(Total for Question 18 is 3 marks)

19 On the grid below, draw the graph of $y = 3x - 2$ for values of x from -2 to 3

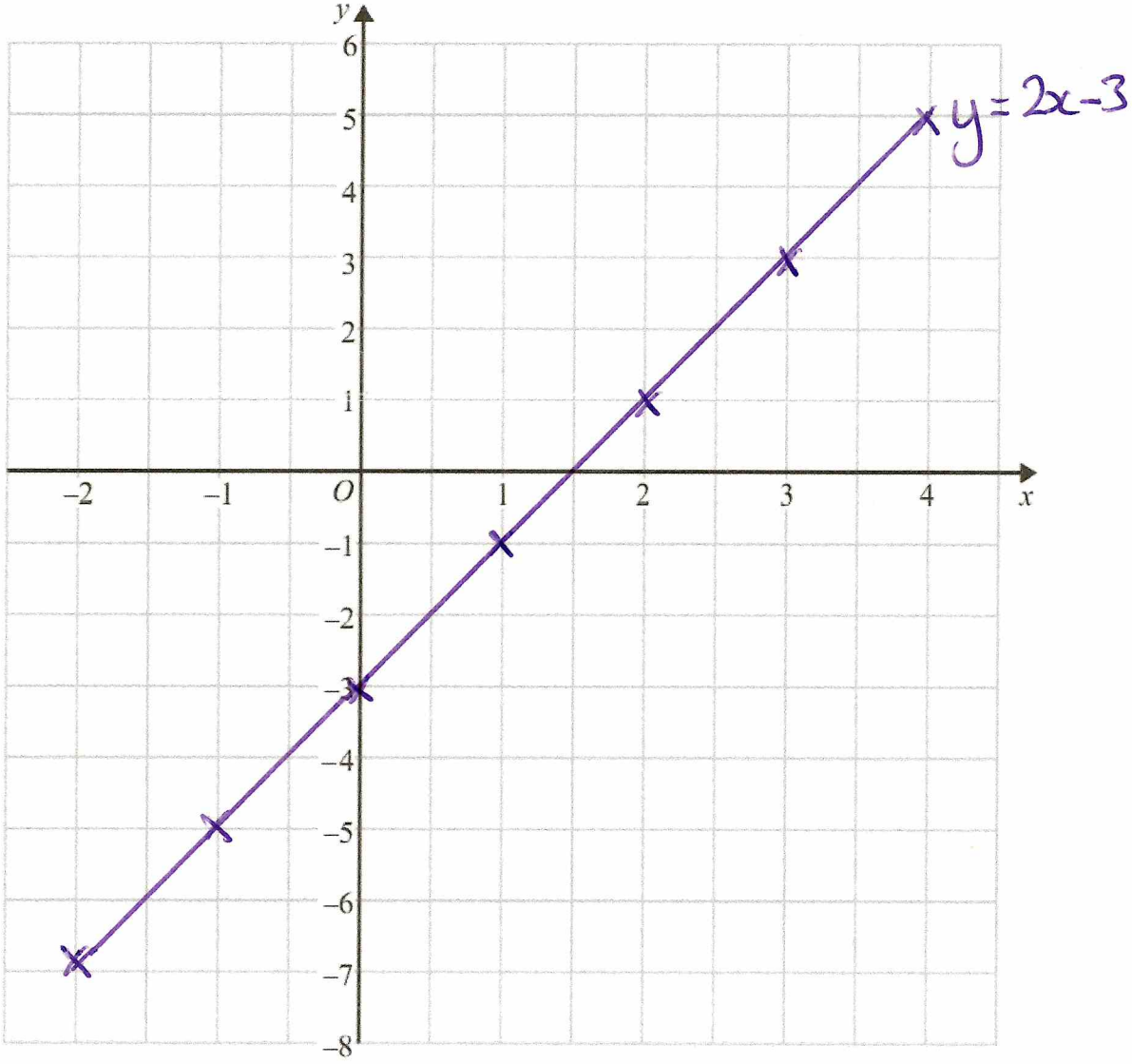
x	-2	-1	0	1	2	3
y	-8	-5	-2	1	4	7



(Total for Question 19 is 3 marks)

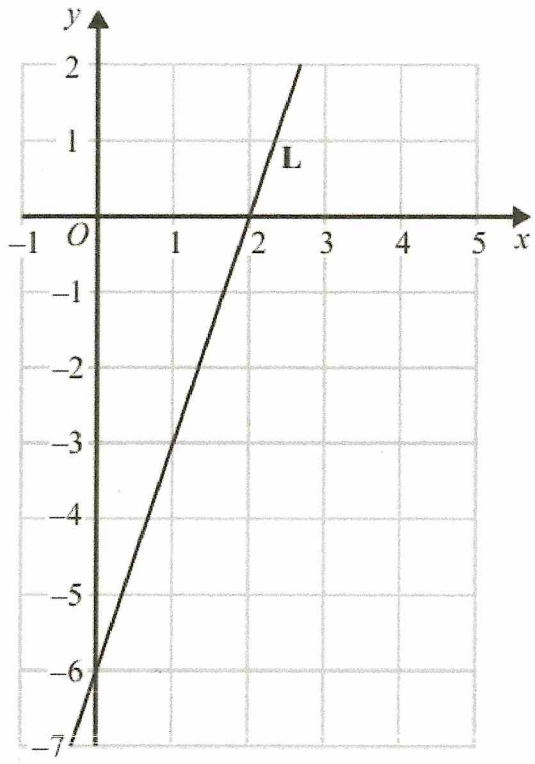
21 On the grid below, draw the graph of $y = 2x - 3$ for values of x from -2 to 4

x	-2	-1	0	1	2	3	4
y	-7	-5	-3	-1	1	3	5



(Total for Question 21 is 3 marks)

22 The line **L** is shown on the grid.

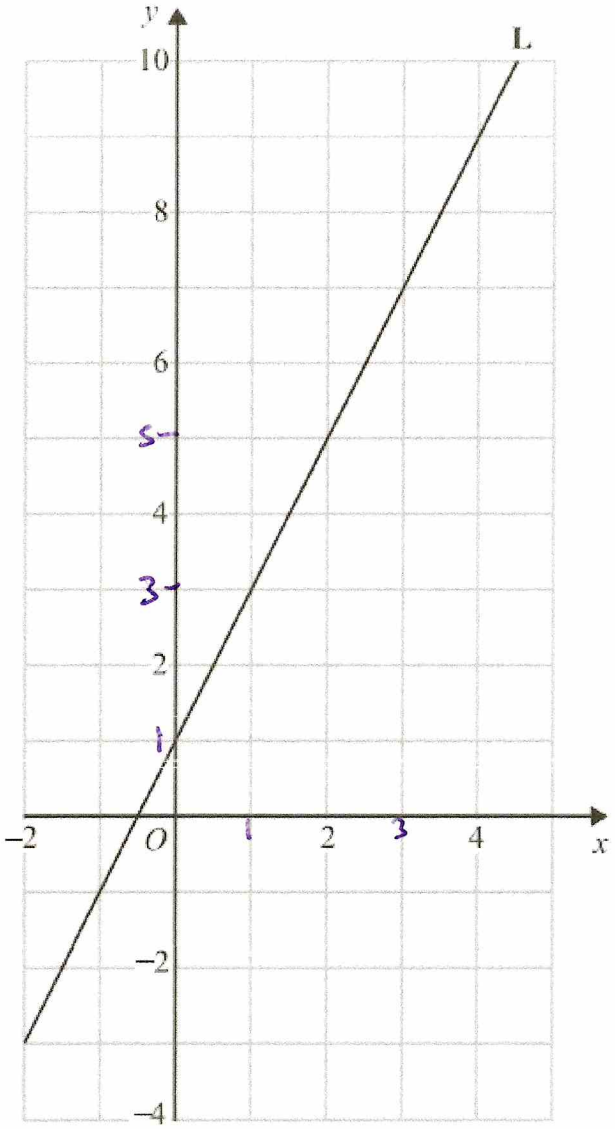


Find an equation for **L**.

$y = 3x - 6$

(Total for Question 22 is 3 marks)

23 Line **L** is drawn on the grid below.



Find an equation for the straight line **L**.
Give your answer in the form $y = mx + c$

$y = 2x + 1$

Specimen 1 – Paper 3F

(Total for Question 23 is 3 marks)

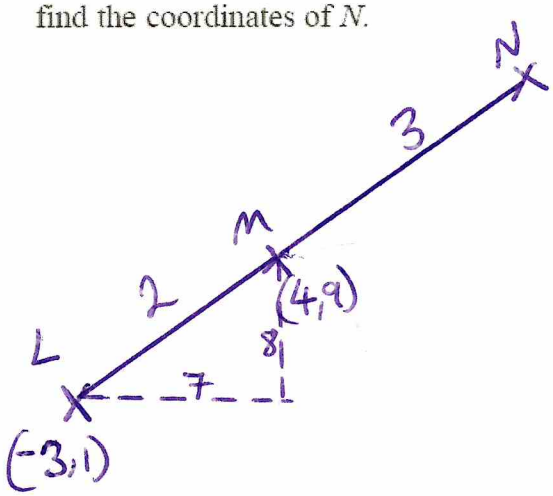
25 The points L, M and N are such that LMN is a straight line.

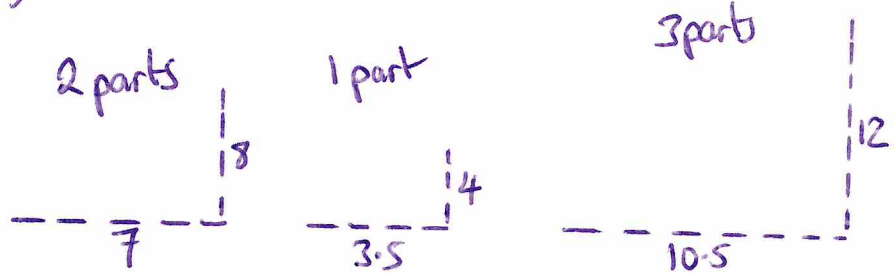
The coordinates of L are $(-3, 1)$

The coordinates of M are $(4, 9)$

Given that $LM : MN = 2 : 3$,

find the coordinates of N.



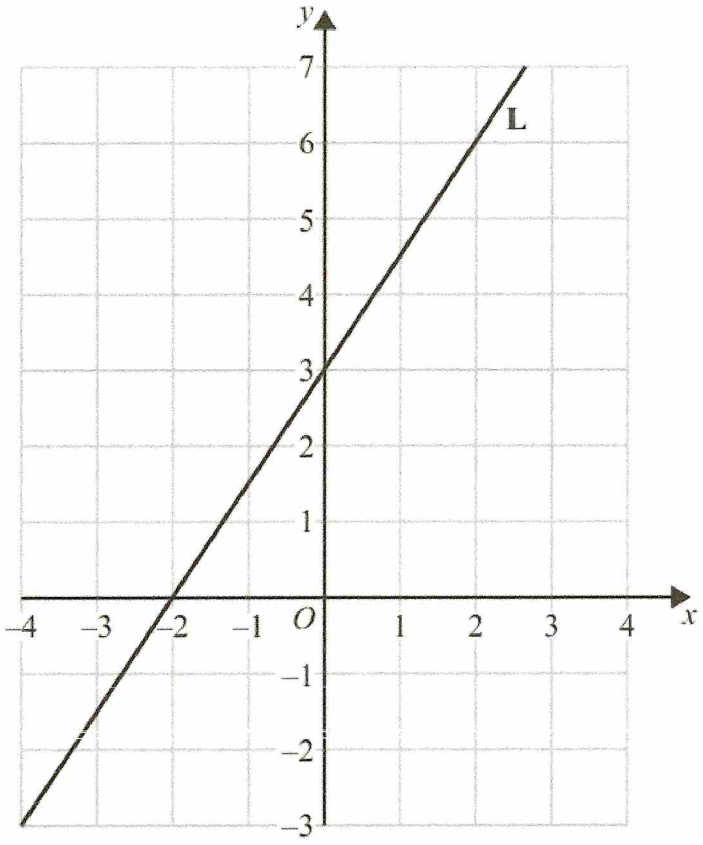


(14·5, 21)

June 2022 – Paper 2F

(Total for Question 25 is 4 marks)

25 Here is a straight line **L** drawn on a grid.



(a) Find an equation for **L**.

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

(3)

M is a different straight line with equation $y = 5x$

(b) Write down the equation of a straight line parallel to **M**.

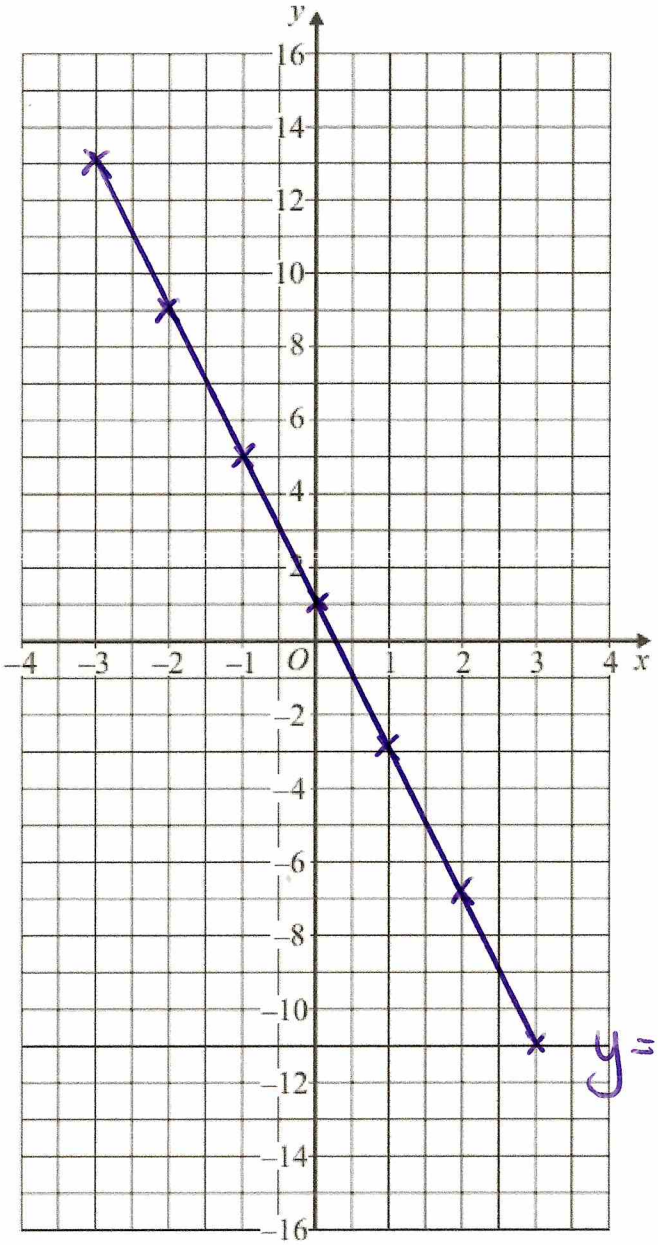
$y = 5x + 7$

(1)

(Total for Question 25 is 4 marks)

25 On the grid below, draw the graph of $y = 1 - 4x$ for values of x from -3 to 3

x	-3	-2	-1	0	1	2	3
y	13	9	5	1	-3	-7	-11



(Total for Question 25 is 3 marks)

25 A is the point with coordinates (5, 9)
B is the point with coordinates (d, 15)

The gradient of the line AB is 3

Work out the value of d.

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{15-9}{d-5} = \frac{6}{d-5} = 3$$

$$\frac{6}{d-5} = 3$$

$$6 = 3(d-5)$$

$$6 = 3d - 15$$

$$21 = 3d$$

$$7 = d$$

$d = 7$

(Total for Question 25 is 3 marks)

26 The equation of the line L_1 is $y = 3x - 2$
The equation of the line L_2 is $3y - 9x + 5 = 0$

Show that these two lines are parallel.

$L_2 = 3y - 9x = -5$

$= 3y = 9x - 5$

$= y = 3x - \frac{5}{3}$

Both lines have a gradient of 3 so they are parallel.

(Total for Question 26 is 2 marks)

27 Here are the equations of four straight lines.

Line A $y = 2x + 4$
Line B $2y = x + 4$
Line C $2x + 2y = 4$
Line D $2x - y = 4$

Two of these lines are parallel.
Write down the two parallel lines.

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

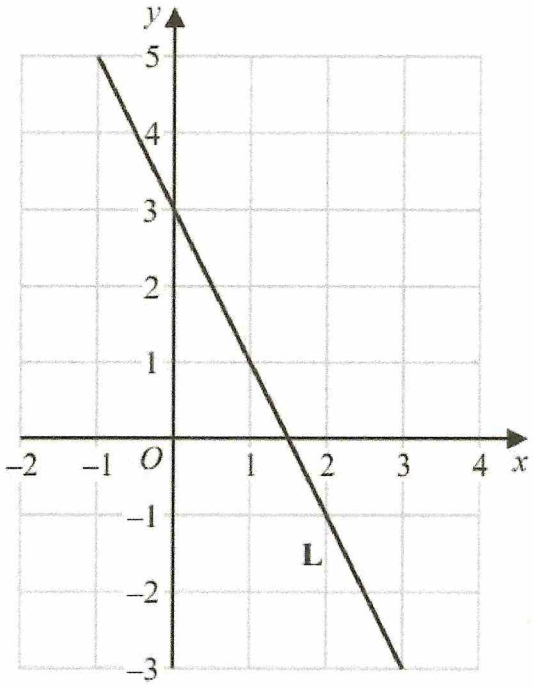
$2y = -2x + 4$
$y = -x + 2$

$2x = 4 + y$
$2x - 4 = y$

Line A and line D

(Total for Question 27 is 1 mark)

28 The line **L** is shown on the grid.



Find an equation for **L**.

$y = -2x + 3$

(Total for Question 28 is 3 marks)

28 The equation of a straight line **L** is $y = 3 - 4x$

(i) Write down the gradient of **L**.

-4

(1)

(ii) Write down the coordinates of the point where **L** crosses the y-axis.

$x = 0$

$y = 3 - 4(0)$

$y = 3 - 0$

$y = 3$

(0 , 3)

(1)

(Total for Question 28 is 2 marks)

29 Write down the gradient of the line with equation $y = 2x + 3$

2

May 2020 – Paper 2F **(Total for Question 29 is 1 mark)**