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GCSE MATHS

Algebra

Edexcel 1MA1 | Subtopic collection Topic 23

Straight-line graphs

Foundation tier

Past paper question booklet

44	2012-2025	Foundation
question groups	available papers	tier

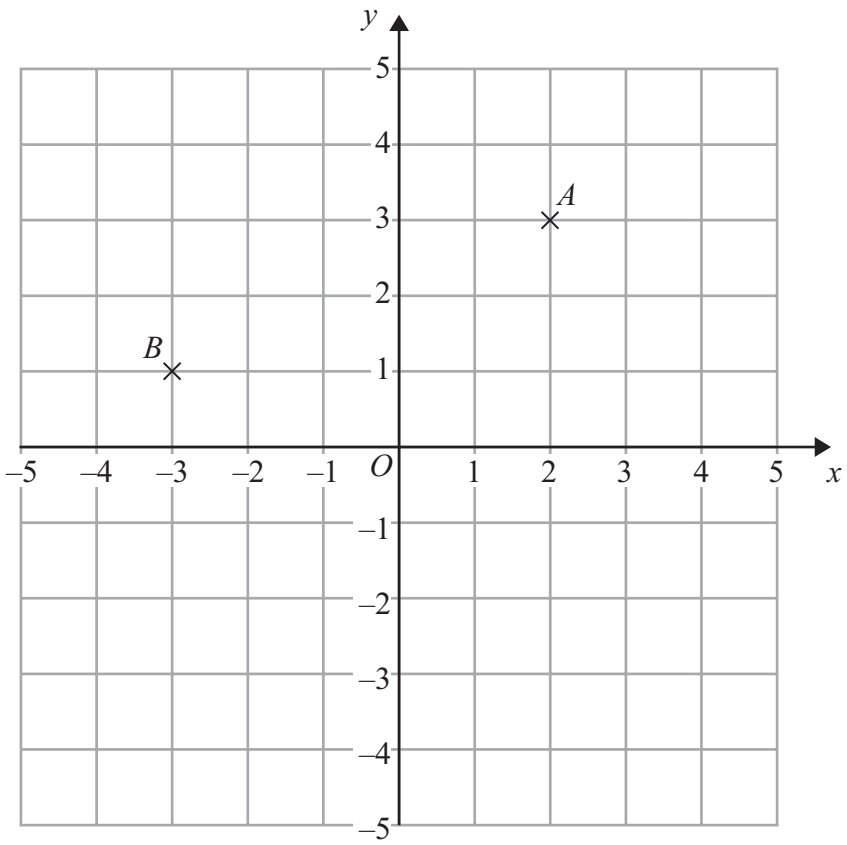
Before you begin

1. Show working and use units where appropriate.
2. Use extra paper if you need more space.
3. Print at actual size (100%) for measurement questions.

Name _____ **Date** _____

Whole questions are retained for context; some parts cover other points. Legacy sources are labelled.

5



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

(..... , ...)

(ii) Write down the coordinates of the point B.

(..... , ...)

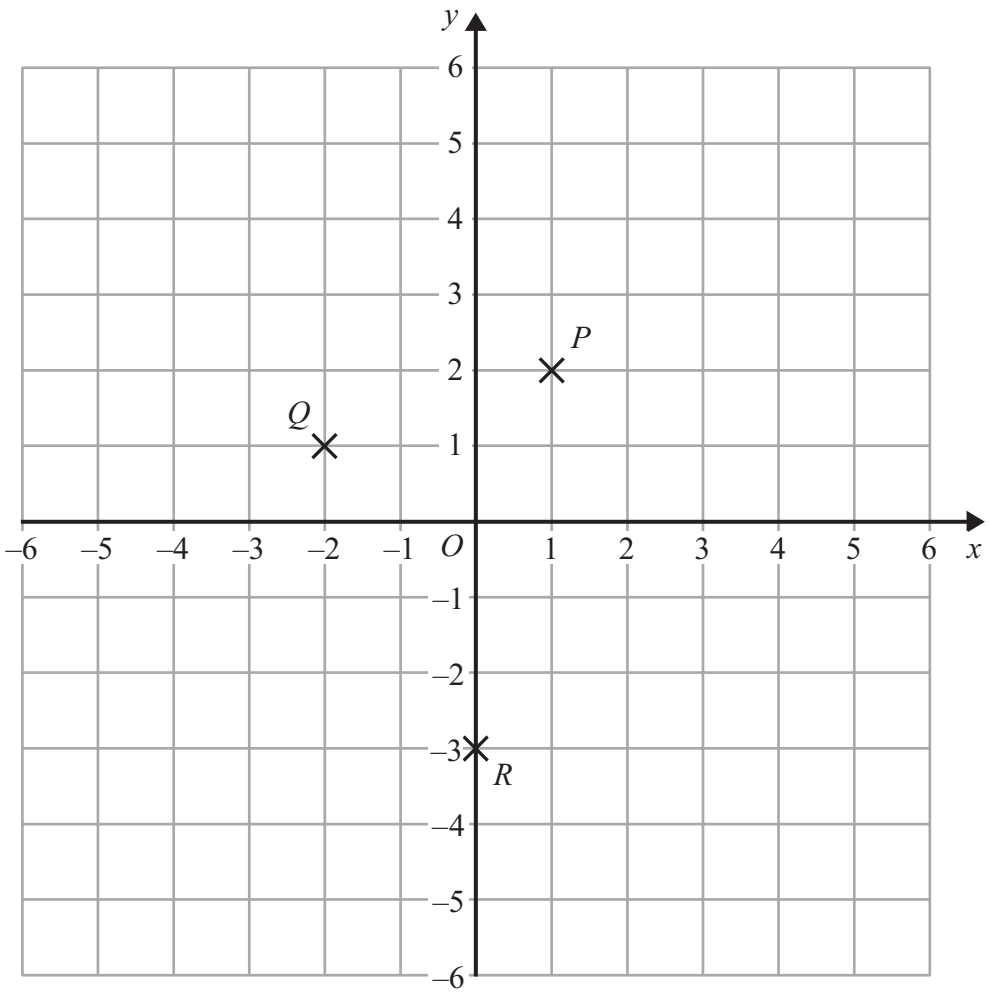
(2)

(b) On the grid, mark with a cross (×) the point (3, –4).
Label this point C.

(1)

(Total for Question 5 is 3 marks)

11



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

(.....,.....)

(1)

(b) Write down the coordinates of the point R.

(.....,.....)

(1)

P, Q and R are three vertices of a parallelogram.

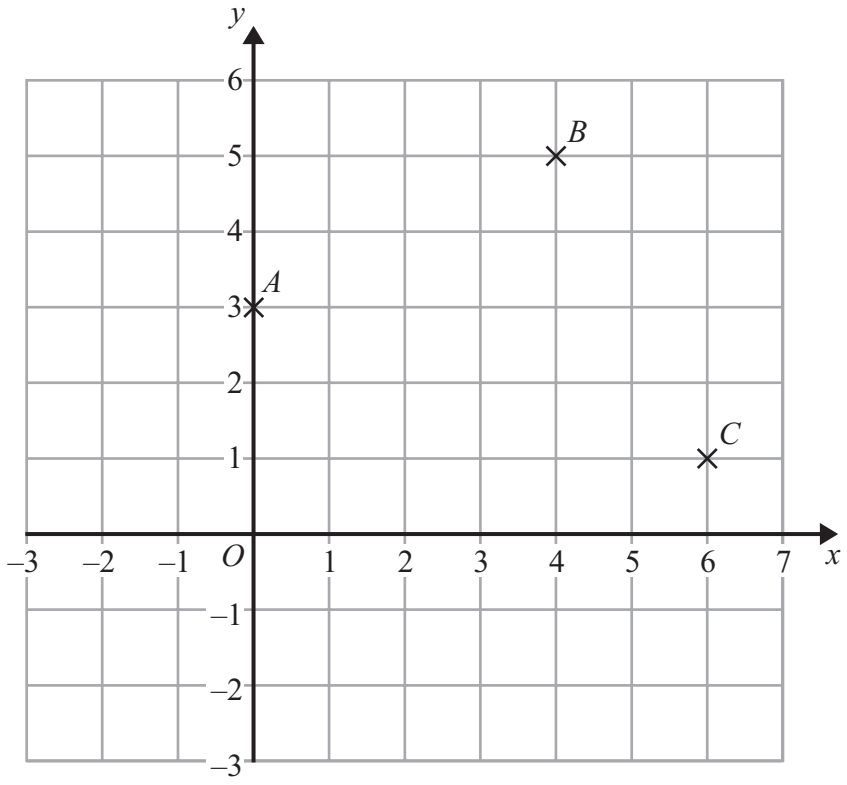
(c) Write down the coordinates of the fourth vertex of this parallelogram.

(.....,.....)

(1)

(Total for Question 11 is 3 marks)

7



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

(..... , ...)

(1)

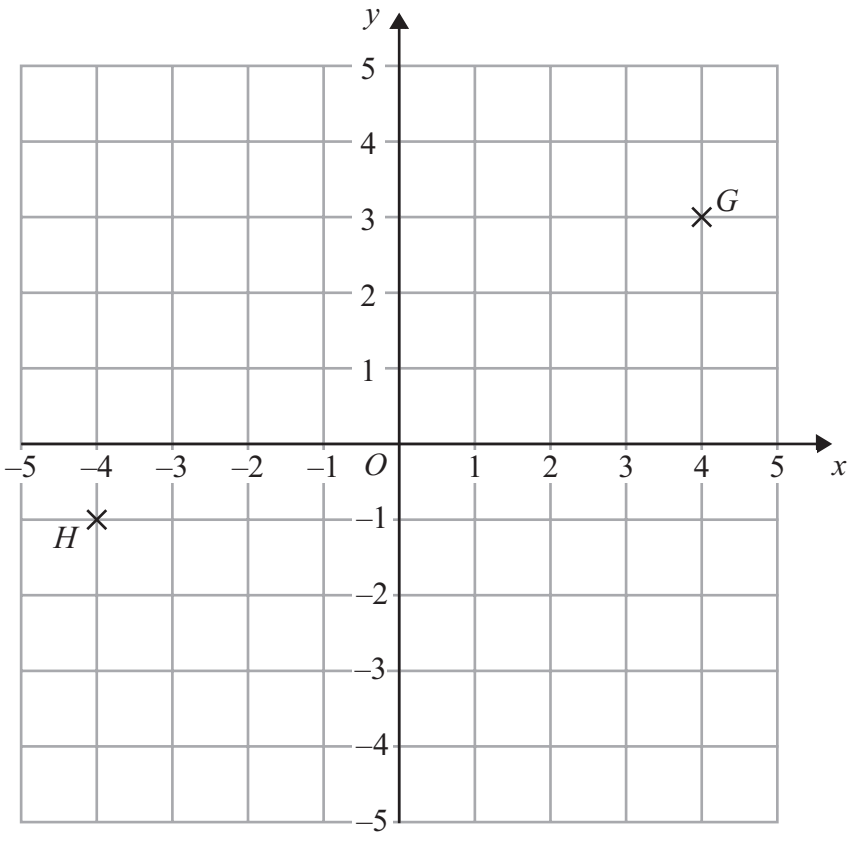
A, B and C are three corners of a square.

(b) On the grid, mark with a cross (×) the point D so that $ABCD$ is a square.

(1)

(Total for Question 7 is 2 marks)

11



(a) (i) Write down the coordinates of the point G.

(..... , ...)

(ii) Write down the coordinates of the point H.

(..... , ...)

(2)

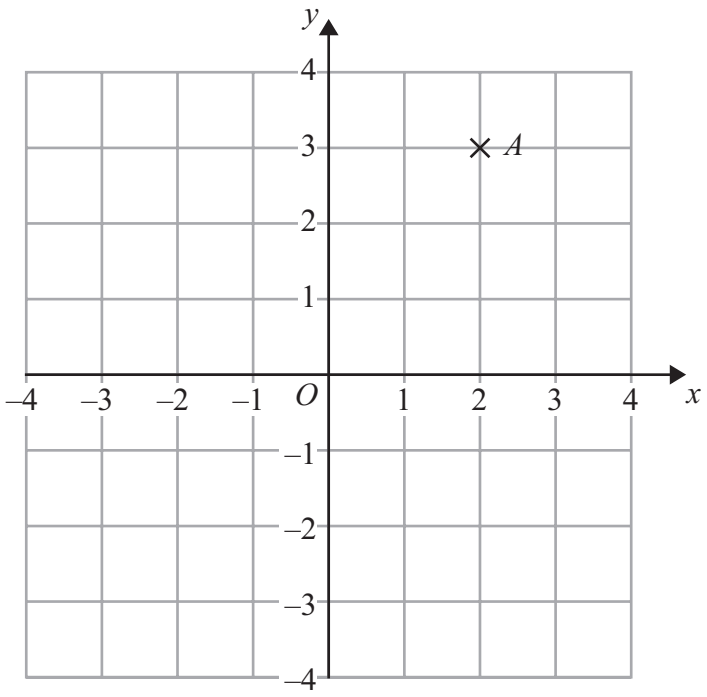
(b) Find the coordinates of the midpoint of GH.

(..... , ...)

(2)

(Total for Question 11 is 4 marks)

6 Here is a grid.



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

(..... , ...)

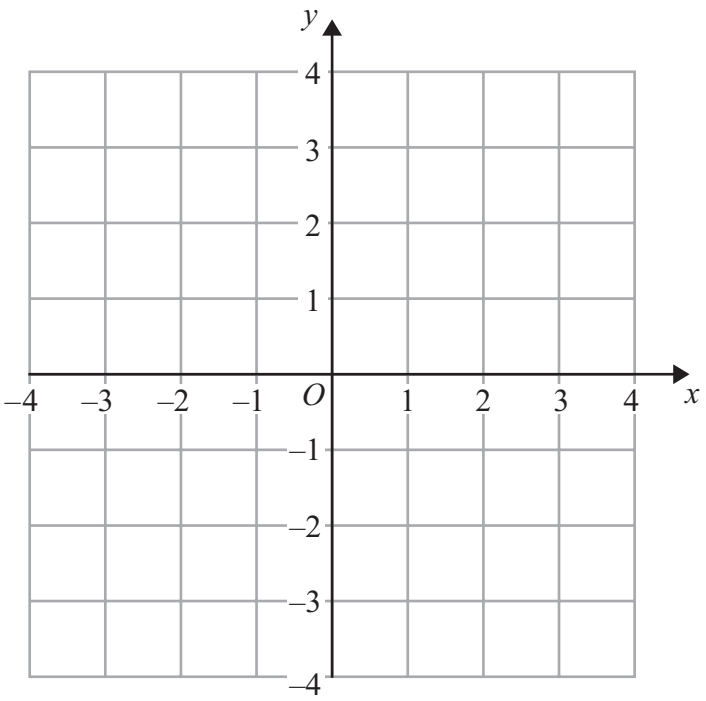
(1)

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

(1)

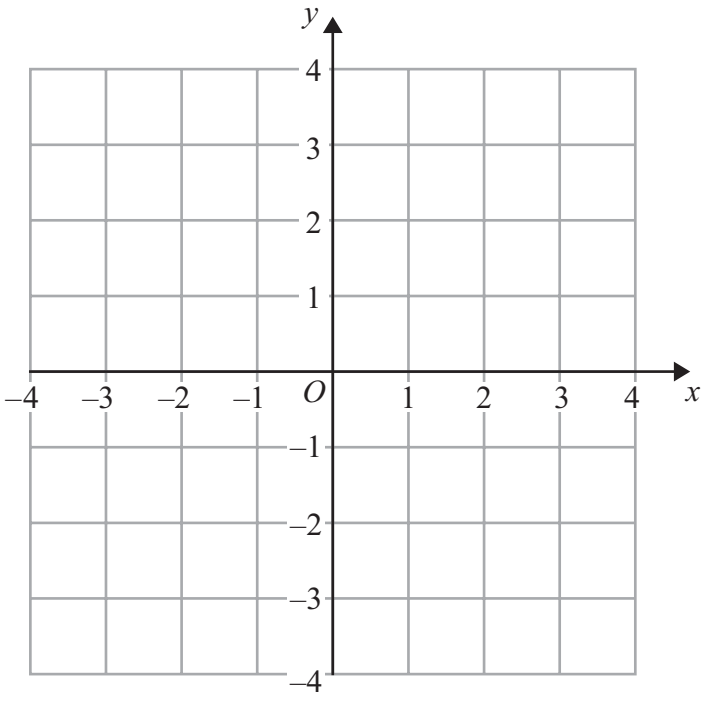
(Total for Question 6 is 2 marks)

22



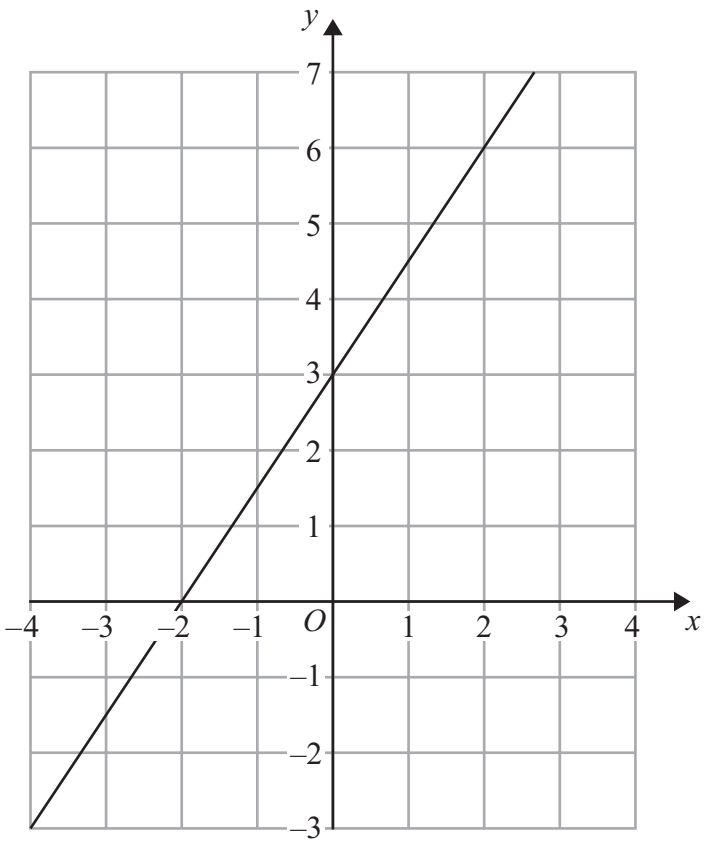
(a) On the grid above, draw the line $x = 3$

(1)



(b) On this grid, draw the line $y = x$

(1)



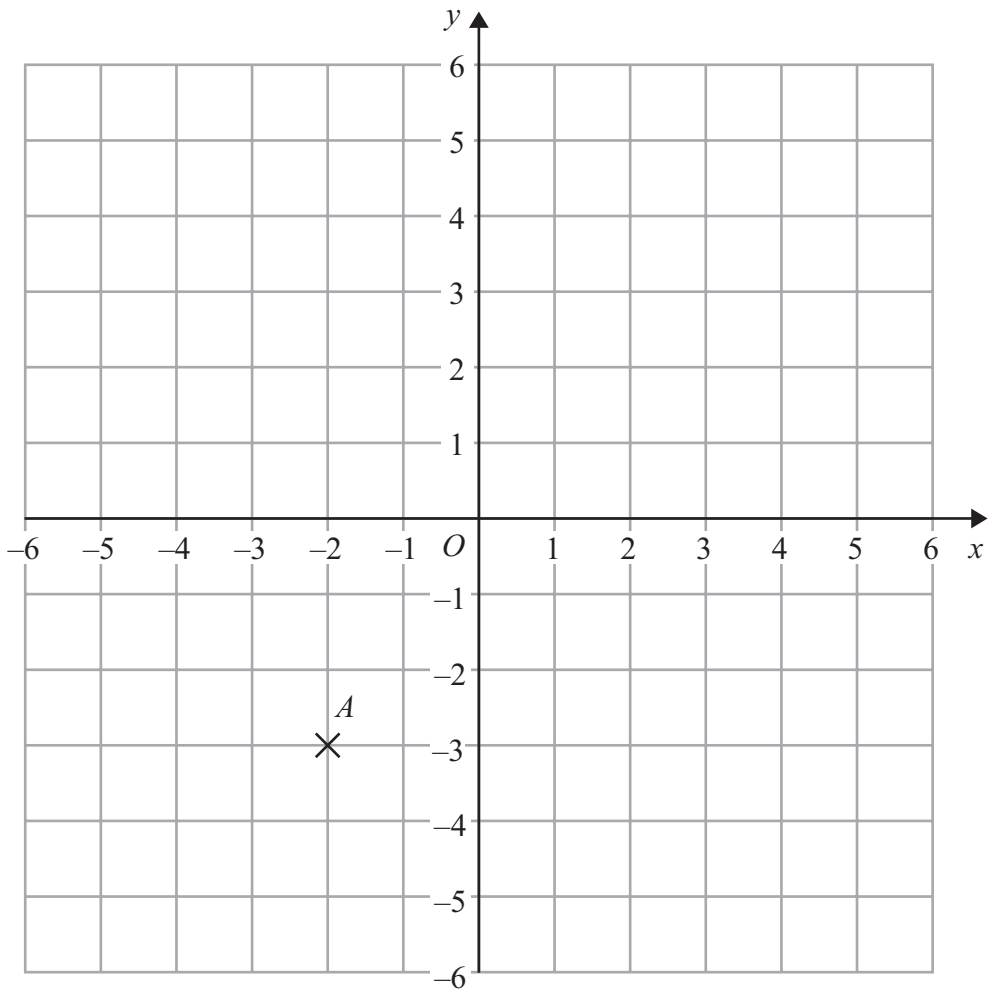
(c) Find the gradient of the straight line drawn on this grid.

.....

(2)

(Total for Question 22 is 4 marks)

9



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

(....., ...)

(ii) On the grid, mark with a cross (✕) the point with coordinates (5, 2).
Label this point B.

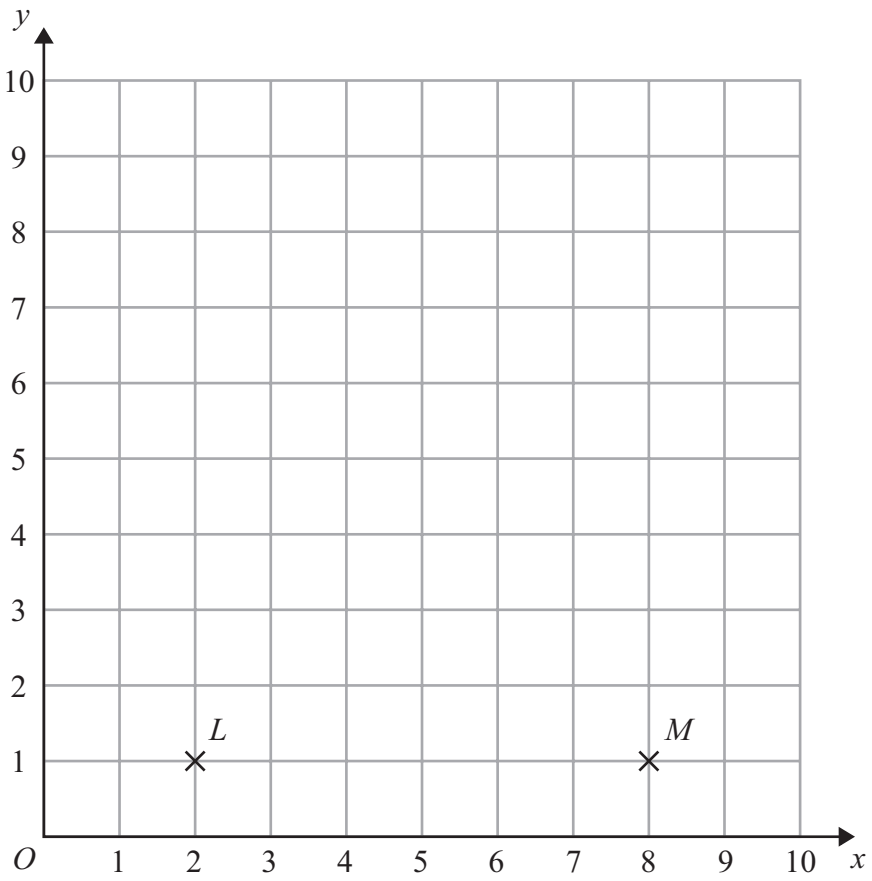
(2)

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

(1)

(Total for Question 9 is 3 marks)

11 Here is a coordinate grid.



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

(..... , ...)

(1)

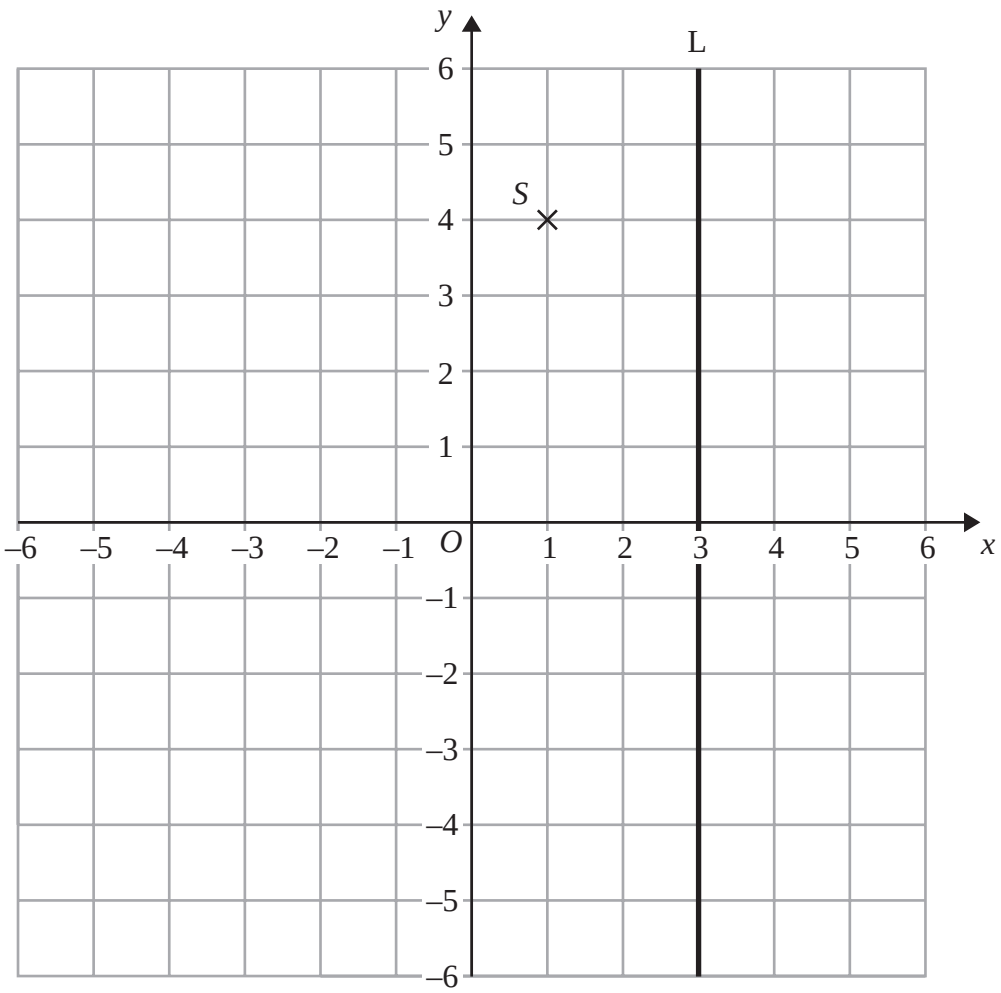
LM is the shortest side of an isosceles triangle.

(b) Mark with a cross (×) a point N, so that LNM is an isosceles triangle.

(2)

(Total for Question 11 is 3 marks)

16



(a) Write down the coordinates of the point *S*.

(..... , ...)

(1)

The coordinates of the point *T* are (–3, 2).

(b) On the grid, mark this point with a cross (×).
Label the point *T*.

(1)

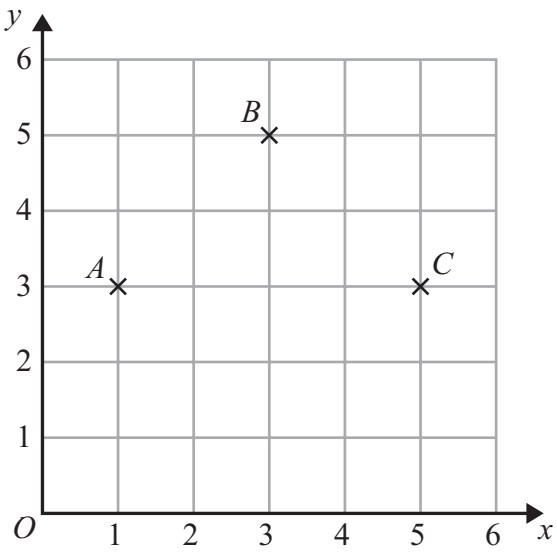
(c) Write down an equation of the line L.

.....

(1)

(Total for Question 16 is 3 marks)

8



(a) Write down the coordinates of point C.

(..... , ...)

(1)

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

(..... , ...)

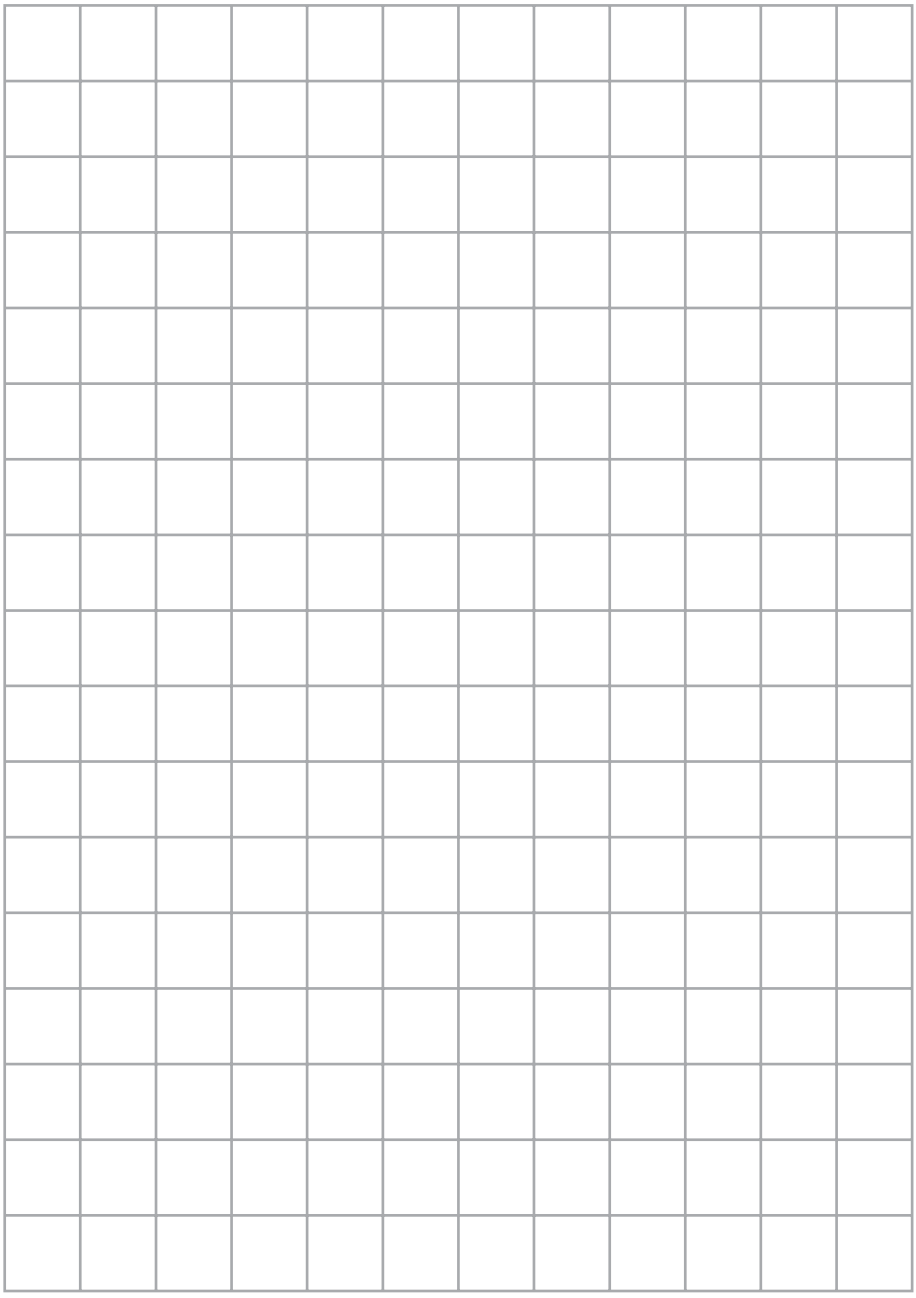
(1)

(c) On the grid, mark with a cross (×) the point D so that $ABCD$ is a square.
Label this point D.

(1)

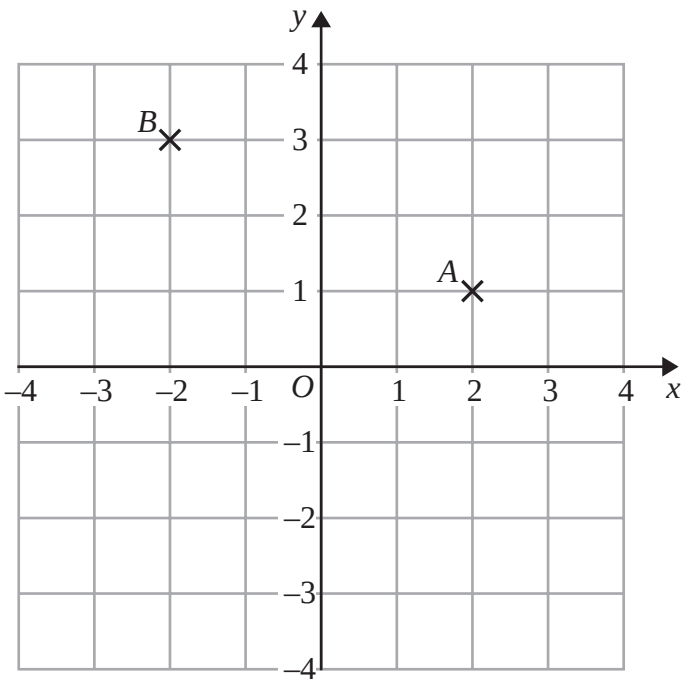
(Total for Question 8 is 3 marks)

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



(Total for Question 25 is 4 marks)

11



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

(..... , ...)

(1)

(b) Write down the coordinates of the point *B*.

(..... , ...)

(1)

(c) On the grid, mark with a cross (×) the point (–3, –1).
Label this point *C*.

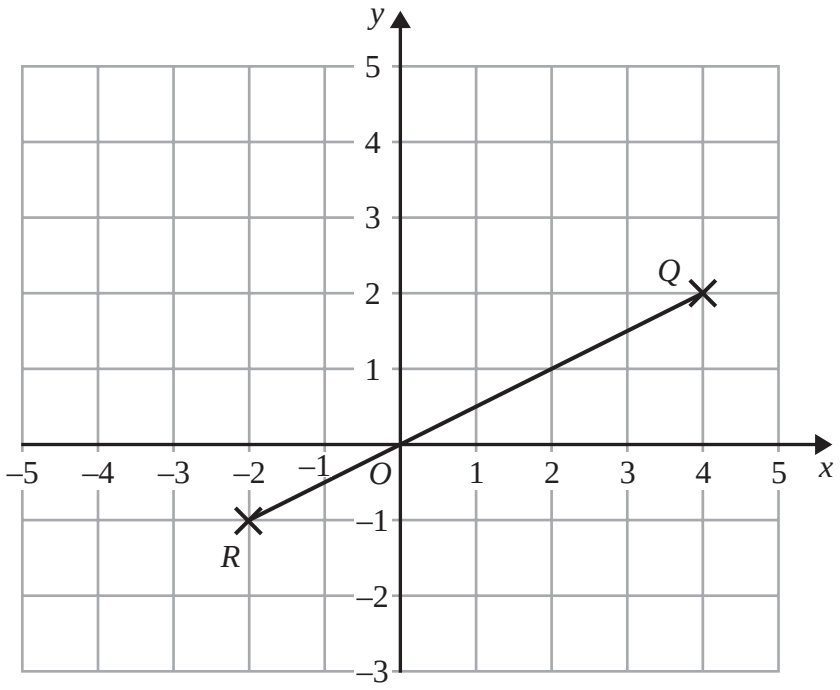
(1)

(d) On the grid, draw the line $x = 3$

(1)

(Total for Question 11 is 4 marks)

3



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

(..... , ...)

(1)

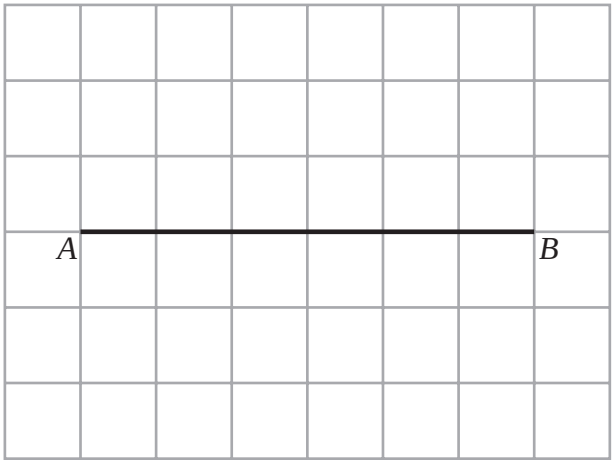
M is the midpoint of the line RQ.

(b) On the grid, mark with a cross (X) the point M.

(1)

(Total for Question 3 is 2 marks)

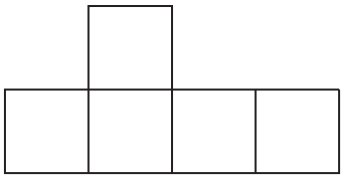
10 The line *AB* is drawn on a grid of centimetre squares.



(a) On the grid, draw a line that is parallel to the line *AB*.

(1)

The diagram shows an incomplete net of a cube.

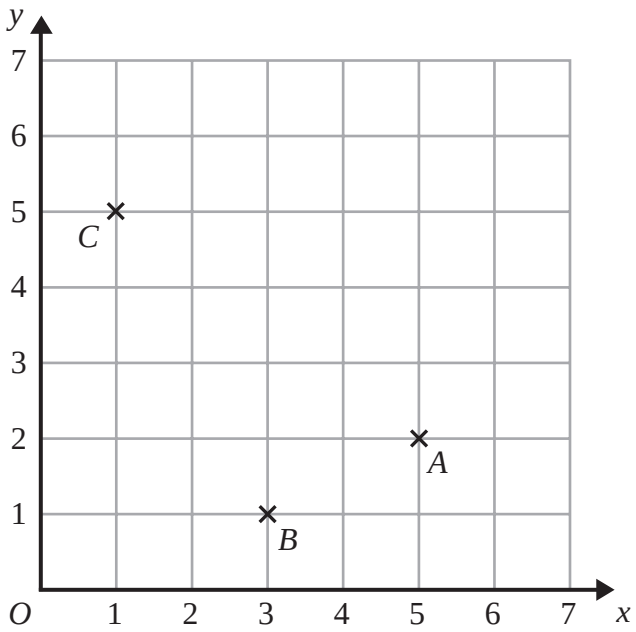


(b) On the diagram, complete a net for the cube.

(1)

(Total for Question 10 is 2 marks)

8



(a) Write down the coordinates of point C.

(..... , ...)

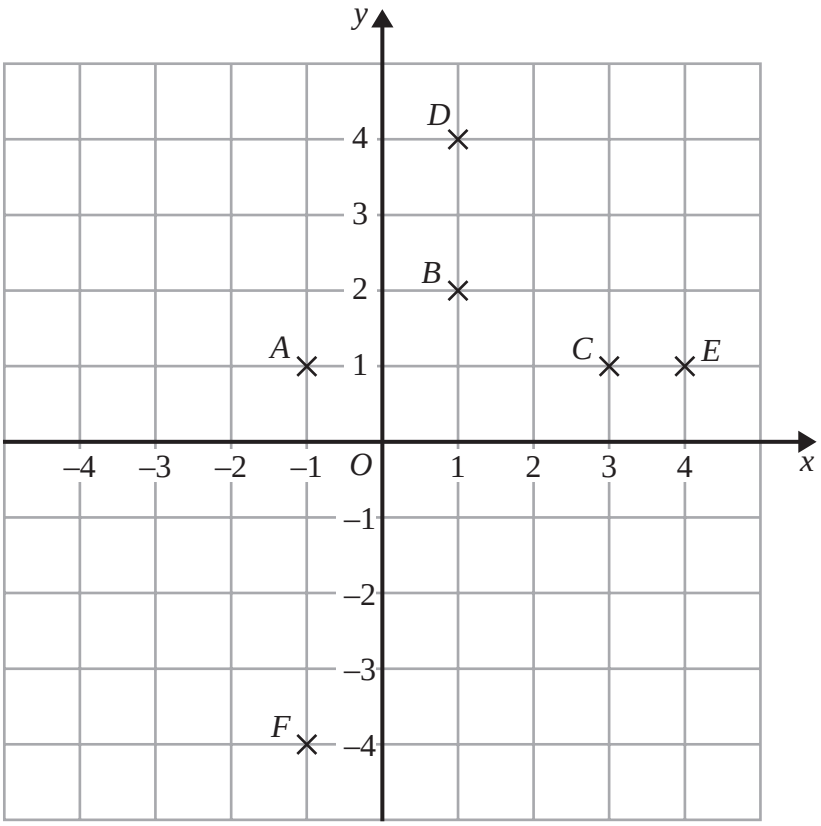
(1)

(b) On the grid, mark with a cross (×) the point D so that $ABCD$ is a rectangle.
Label this point D.

(1)

(Total for Question 8 is 2 marks)

9



The points *A*, *B*, *C*, *D*, *E* and *F* are shown on the grid.

One of these points has coordinates (4, 1).

(a) Which point?

.....

(1)

(b) (i) On the grid, mark with a cross (×) a point *P* such that the shape *ABCP* is a kite.
Label your point *P*.

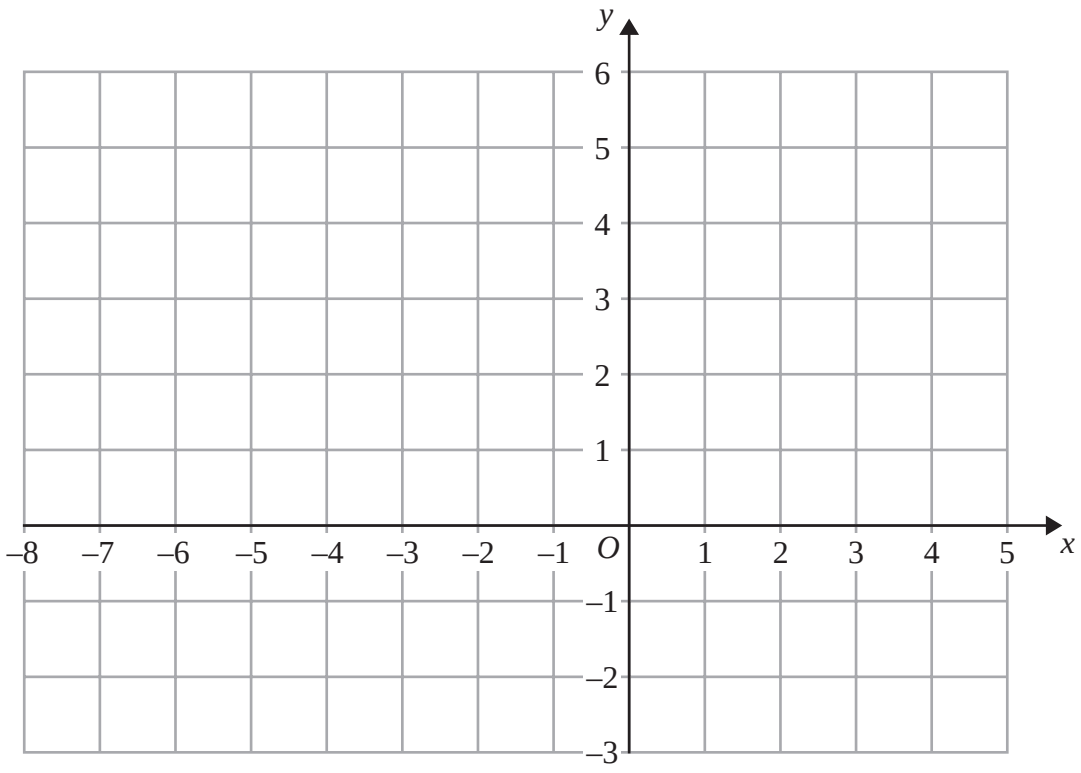
(ii) Write down the coordinates of your point *P*.

(..... , ...)

(2)

(Total for Question 9 is 3 marks)

7



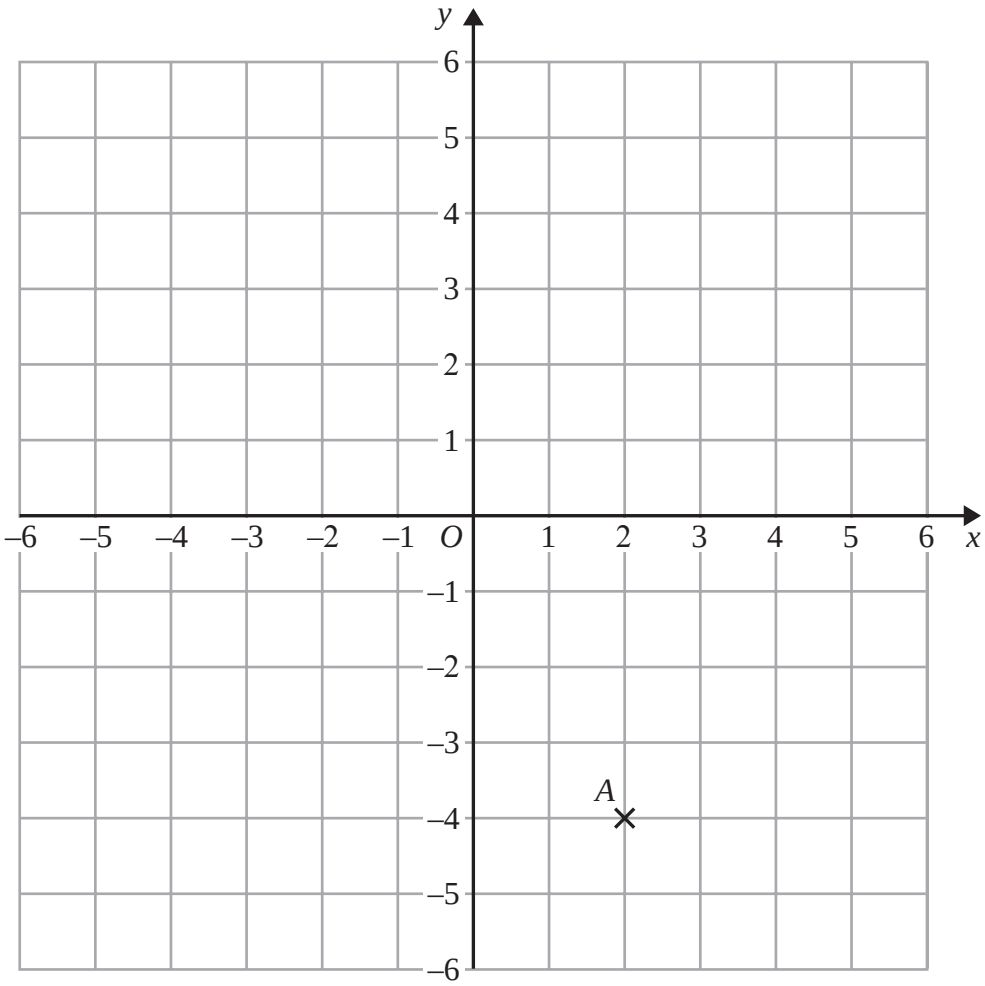
The points (–3, –1), (–2, 2) and (3, 2) are three vertices of a parallelogram.

Find the coordinates of the fourth vertex of the parallelogram.

(..... , ...)

(Total for Question 7 is 3 marks)

9



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

(..... , ...)

(ii) On the grid, mark with a cross (×) the point with coordinates (−2, 3).

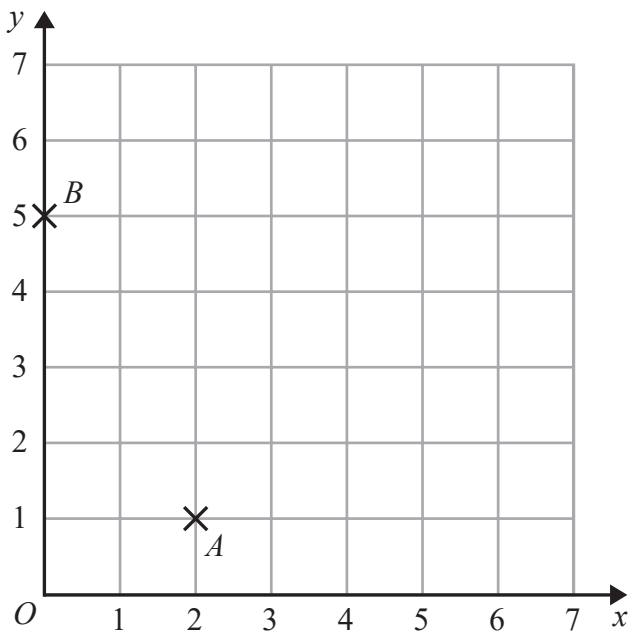
(2)

(b) On the grid, draw the line with equation $y = x$

(1)

(Total for Question 9 is 3 marks)

2



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

(..... , ...)

(1)

(b) Write down the coordinates of the point B.

(..... , ...)

(1)

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

(..... , ...)

(1)

(d) On the grid, mark with a cross ($\times$) a point C so that ABC is an isosceles triangle.
Label this point C.

(1)

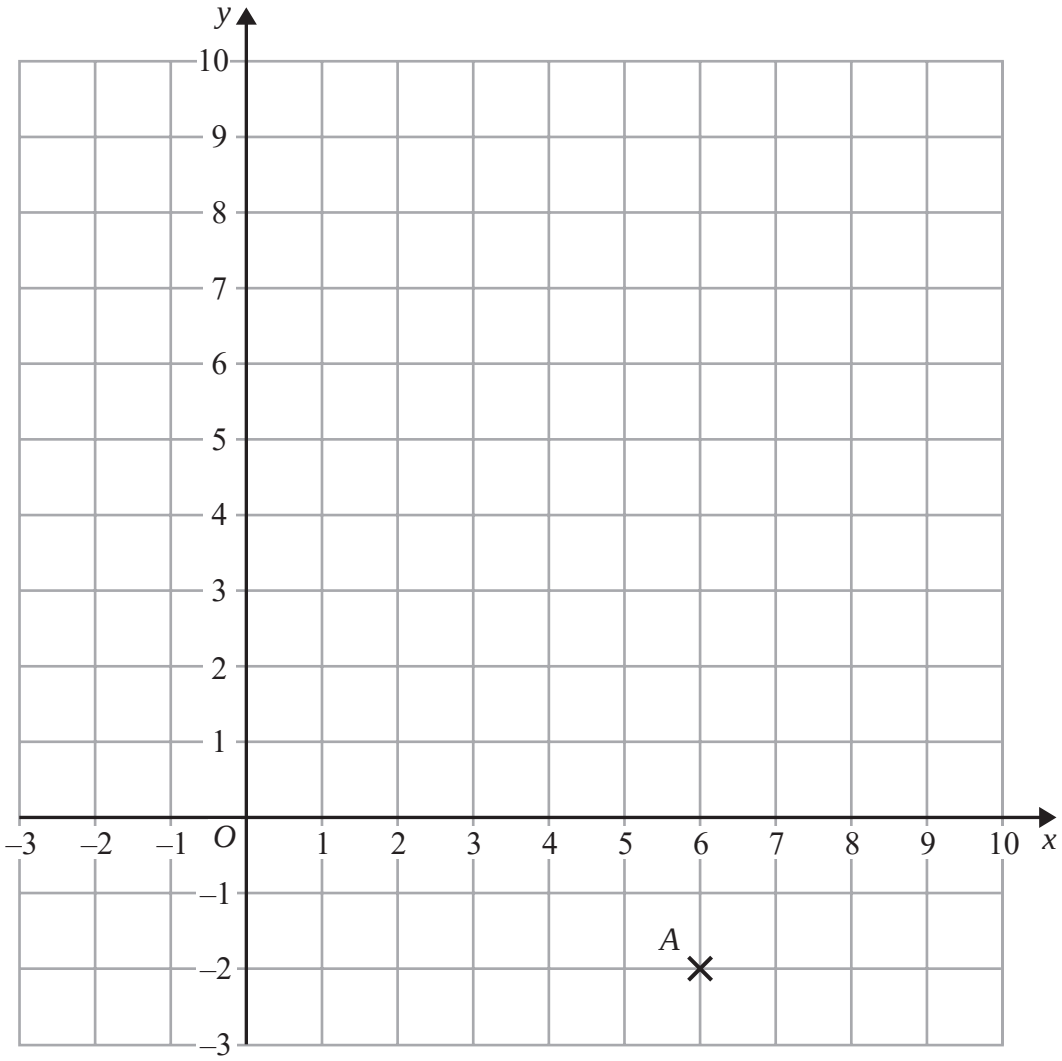
(Total for Question 2 is 4 marks)

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.

(Total for Question 26 is 2 marks)

7



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

(..... , ...)

(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.

.....

.....

(1)

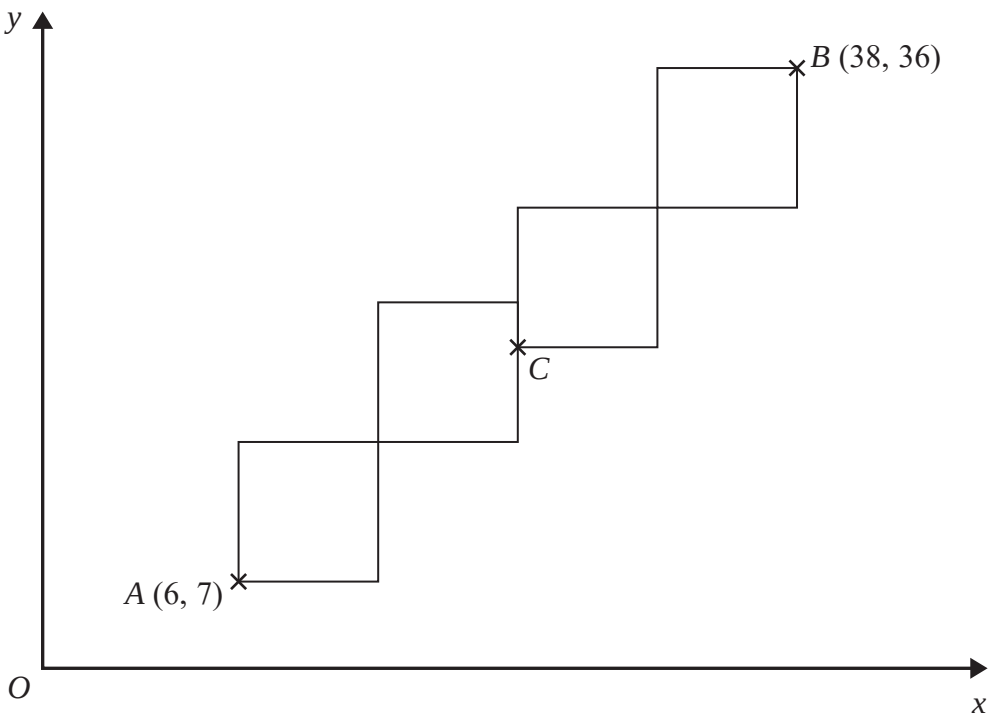
(c) On the grid, draw the line with equation $x = -2$

(1)

(Total for Question 7 is 4 marks)

24 A pattern is made from four identical squares.

The sides of the squares are parallel to the axes.



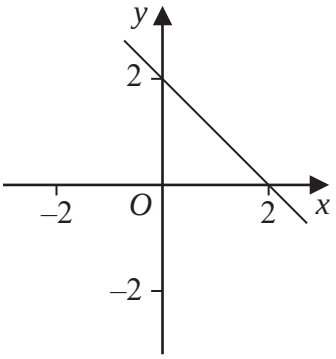
Point A has coordinates (6, 7)
Point B has coordinates (38, 36)
Point C is marked on the diagram.

Work out the coordinates of C.

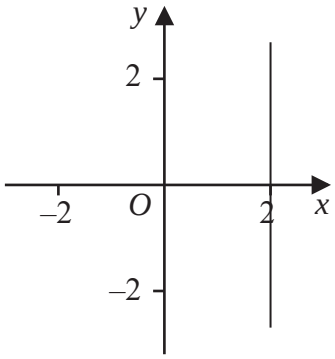
(..... , ...)

(Total for Question 24 is 5 marks)

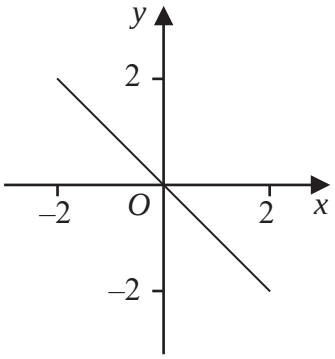
13 Here are six straight line graphs.



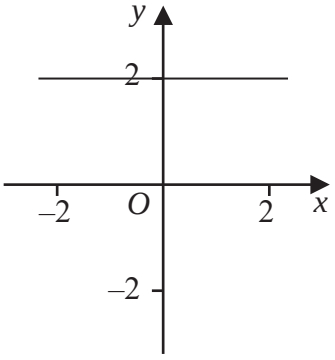
Graph **A**



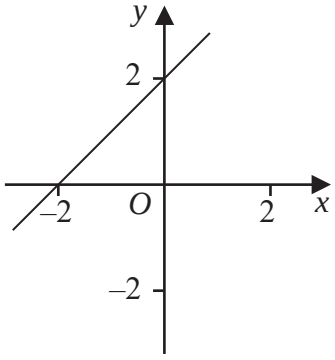
Graph **B**



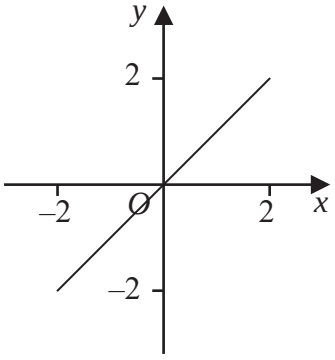
Graph **C**



Graph **D**



Graph **E**



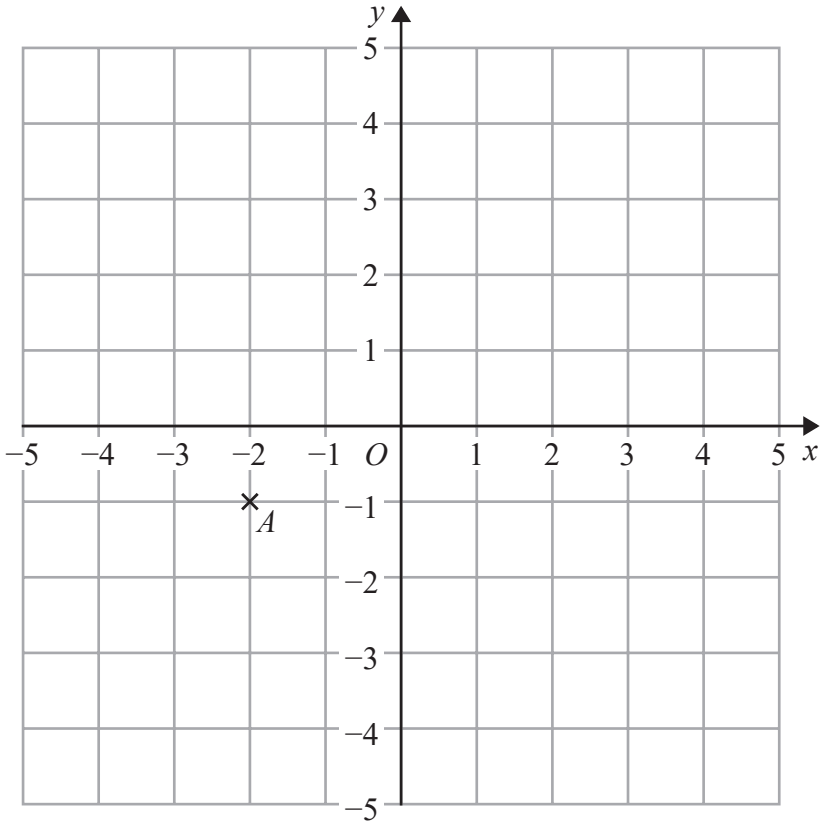
Graph **F**

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

Equation	Graph
$y = 2$	
$y = x$	
$x + y = 2$	

(Total for Question 13 is 2 marks)

8



(a) Write down the coordinates of point A.

(..... , ...)

(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)

(Total for Question 8 is 3 marks)

Question 25

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

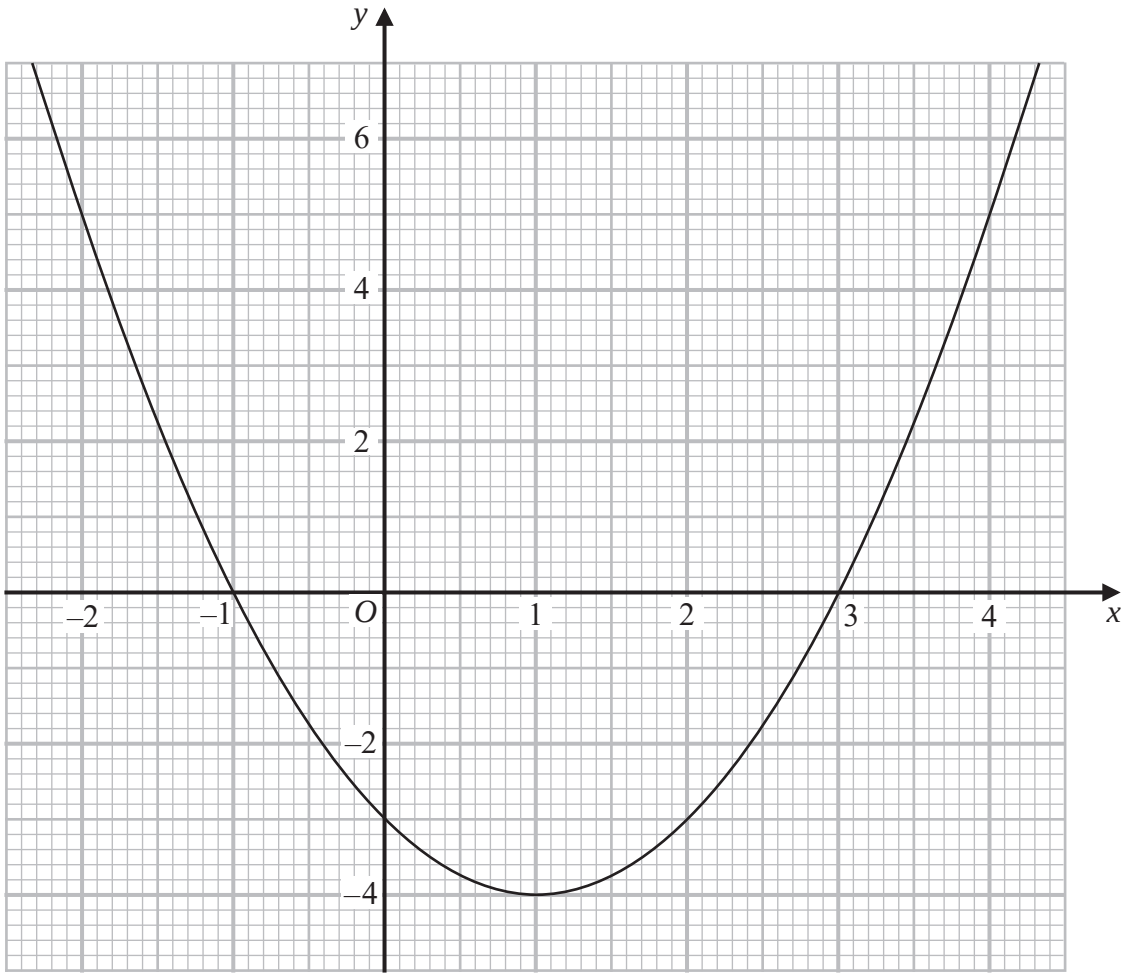
The gradient of the line AB is 3

Work out the value of d.

.....

(Total for Question 25 is 3 marks)

29 Here is the graph of $y = x^2 - 2x - 3$



(a) Write down the coordinates of the turning point on the graph of $y = x^2 - 2x - 3$

(..... , ...)

(1)

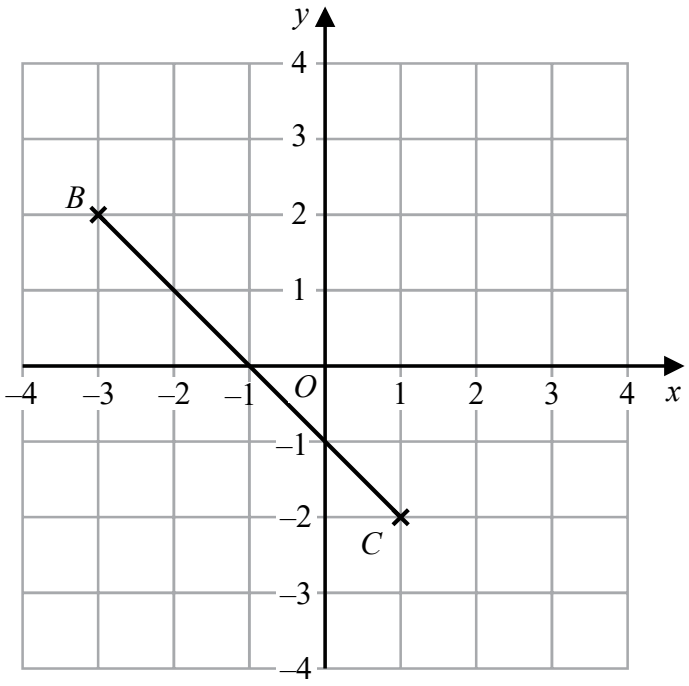
(b) Use the graph to find the roots of the equation $x^2 - 2x - 3 = 0$

.....

(2)

(Total for Question 29 is 3 marks)

10



(a) Plot the point with coordinates (3, 2)
Label this point A.

(1)

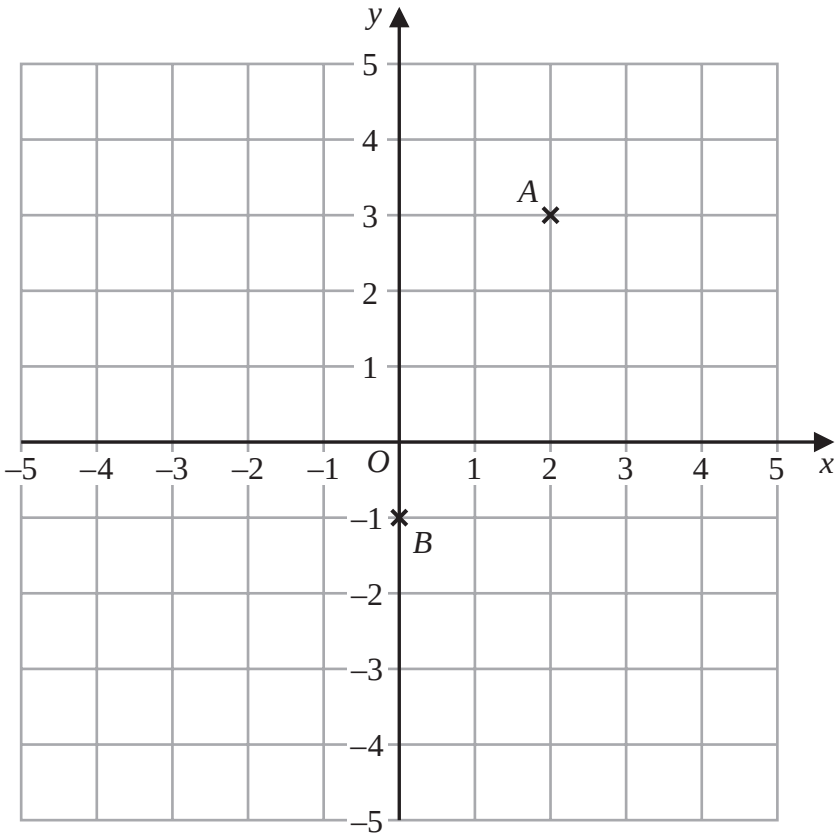
(b) Write down the coordinates of the midpoint of BC.

(..... , ...)

(1)

(Total for Question 10 is 2 marks)

8



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

(..... , ...)

(1)

(b) Write down the coordinates of the point *B*.

(..... , ...)

(1)

(c) On the grid, mark with a cross (×) the point (–2, 1)
Label this point *C*.

(1)

(Total for Question 8 is 3 marks)

Question 29

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

.....

(Total for Question 29 is 1 mark)

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

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

.....

(1)

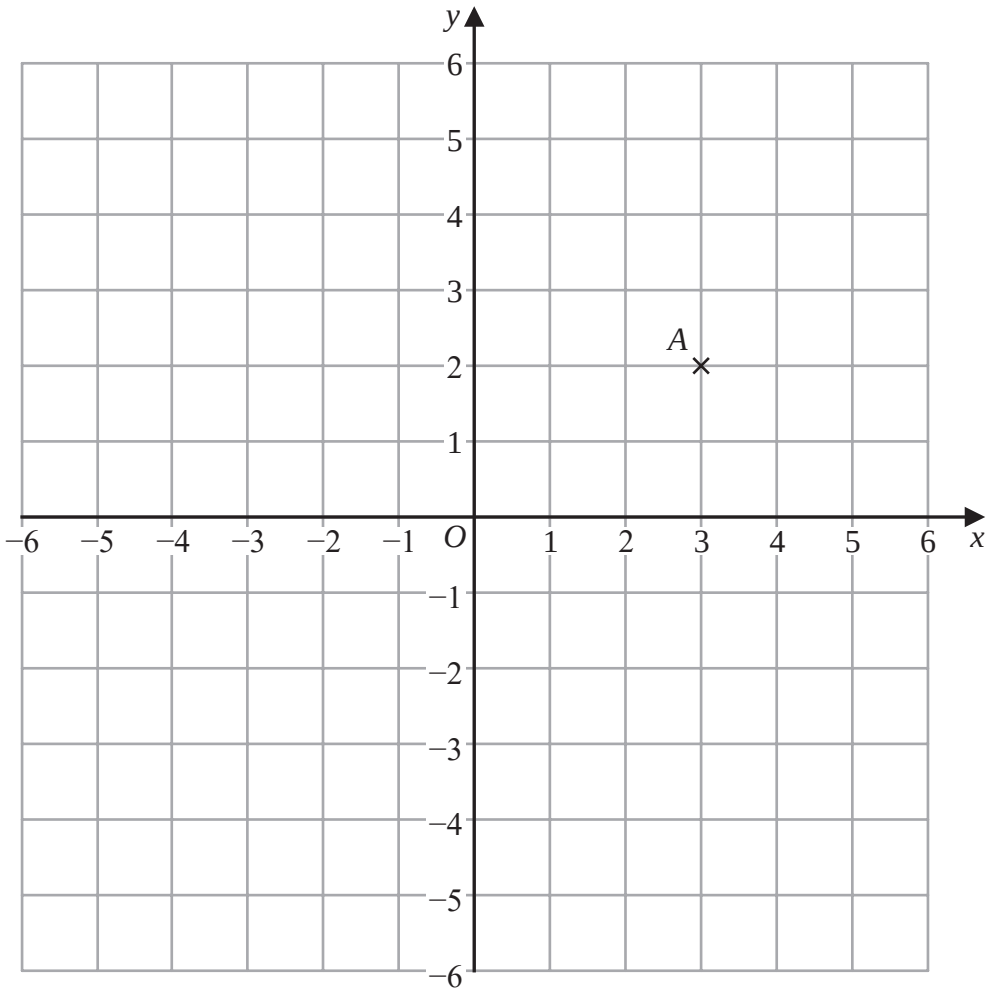
(ii) Write down the coordinates of the point where **L** crosses the y-axis.

(..... , ...)

(1)

(Total for Question 28 is 2 marks)

8 Here is a centimetre grid.



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

(..... , ...)

(1)

(b) On the grid, mark with a cross (×) the point with coordinates (−4, 3)
Label this point *B*.

(1)

(c) On the grid, draw the circle with
centre (1, −1)
and radius 4 cm.

(2)

(Total for Question 8 is 4 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 $(4, 9)$

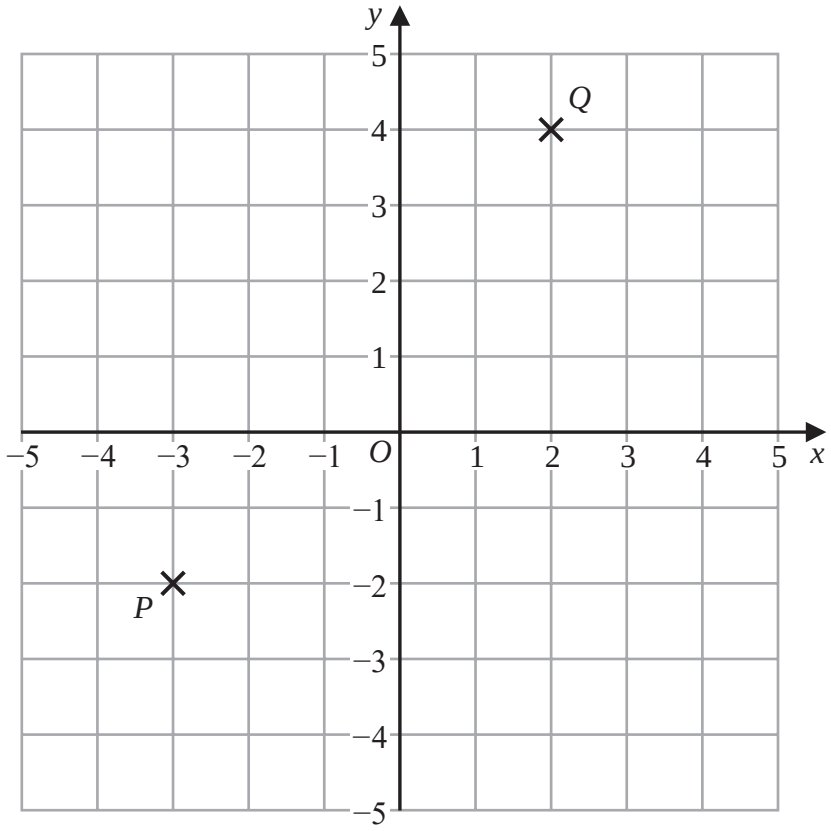
Given that $LM : MN = 2 : 3$,

find the coordinates of N.

(..... , ...)

(Total for Question 25 is 4 marks)

15

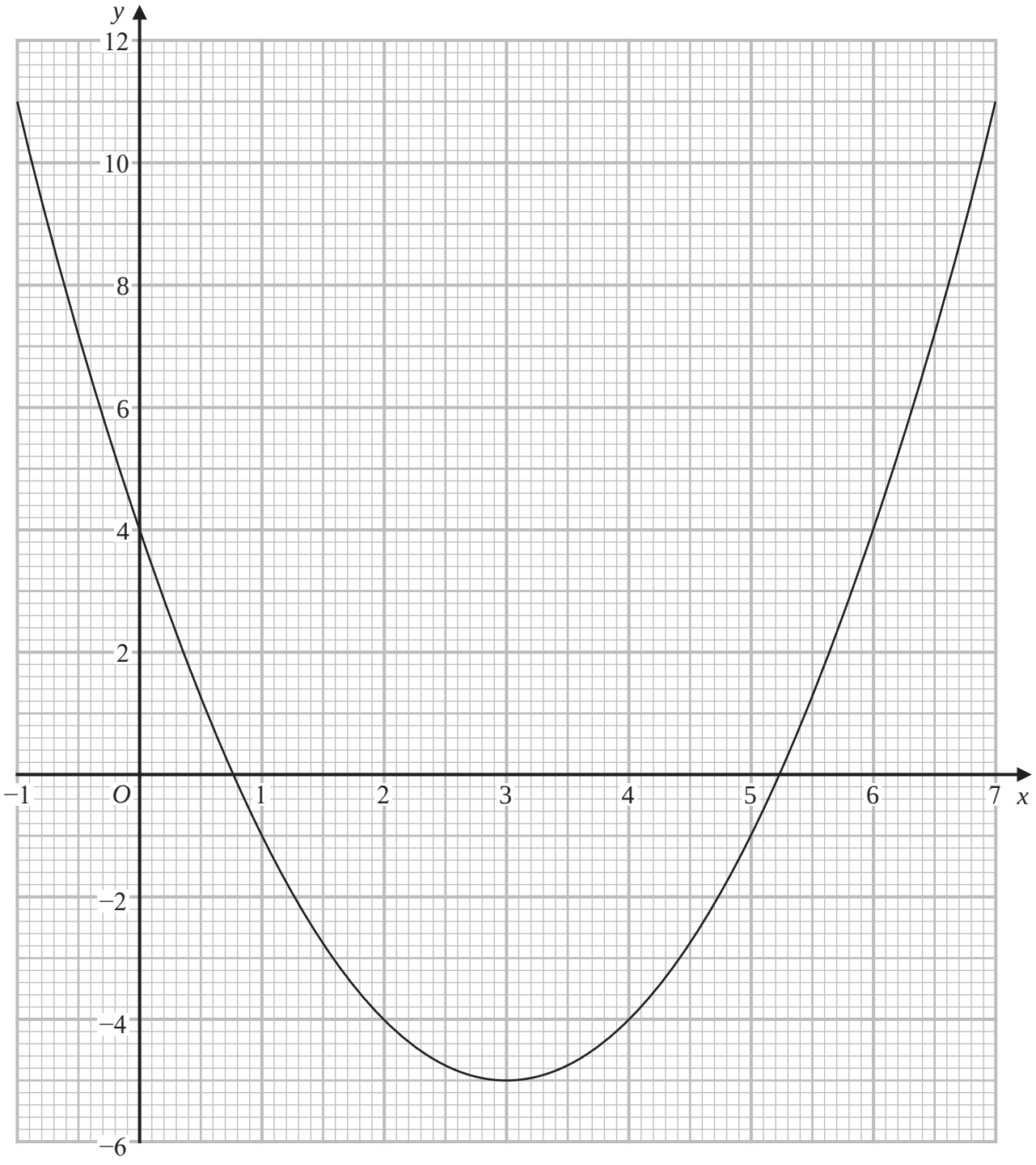


Find the coordinates of the midpoint of PQ.

(..... , ...)

(Total for Question 15 is 2 marks)

24 Here is the graph of $y = x^2 - 6x + 4$



(a) Write down the y intercept of the graph of $y = x^2 - 6x + 4$

.....

(1)

(b) Write down the coordinates of the turning point of the graph of $y = x^2 - 6x + 4$

(..... , ...)

(1)

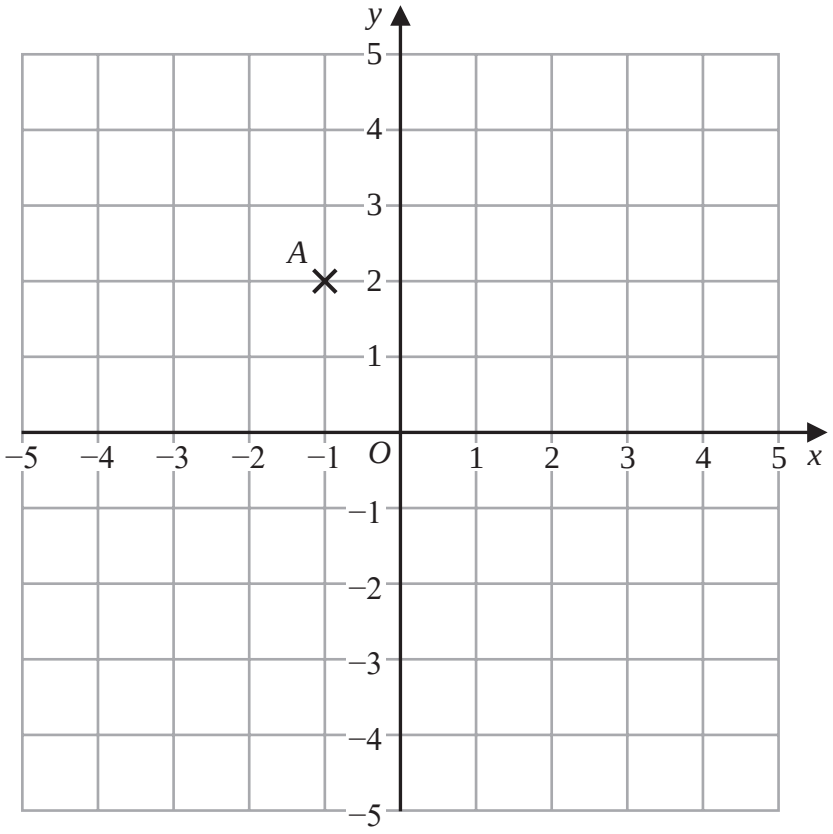
(c) Use the graph to find estimates for the roots of $x^2 - 6x + 4 = 0$

.....

(2)

(Total for Question 24 is 4 marks)

9



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

(..... , ...)

(1)

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

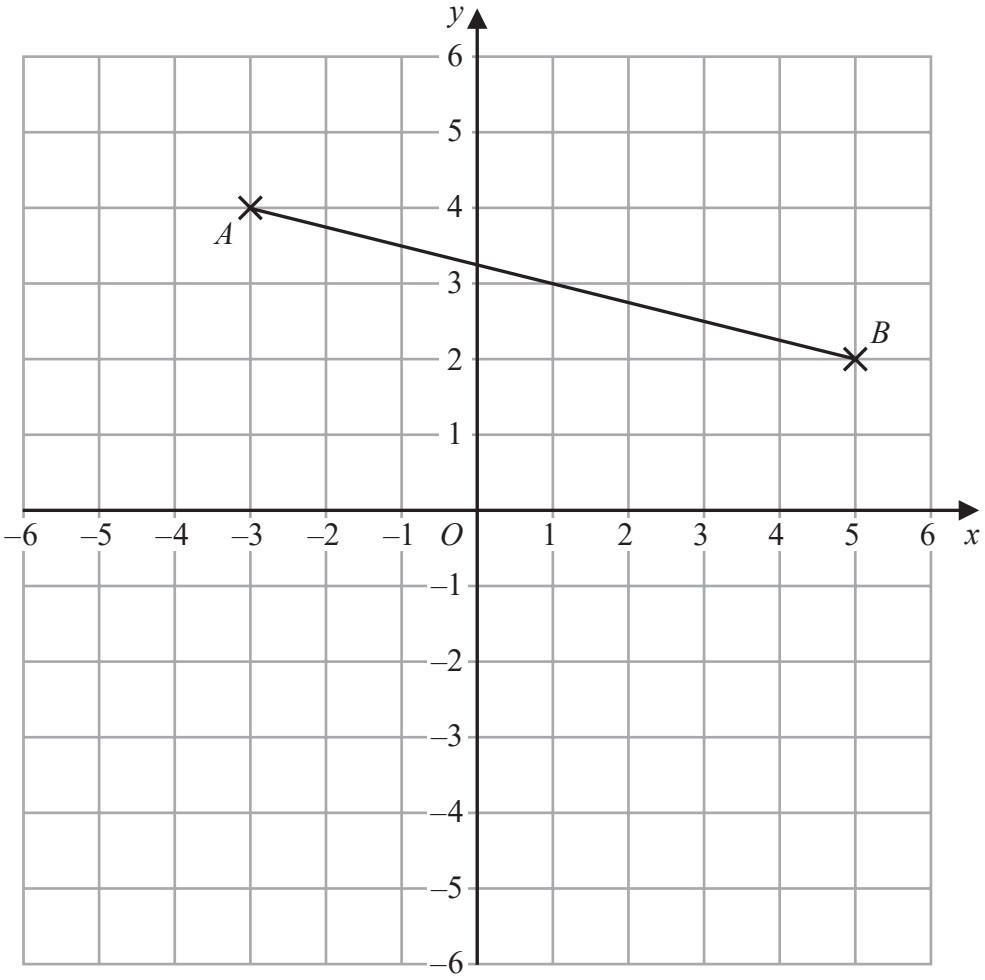
(1)

(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.

(..... , ...)

(1)

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

(1)

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

(..... , ...)

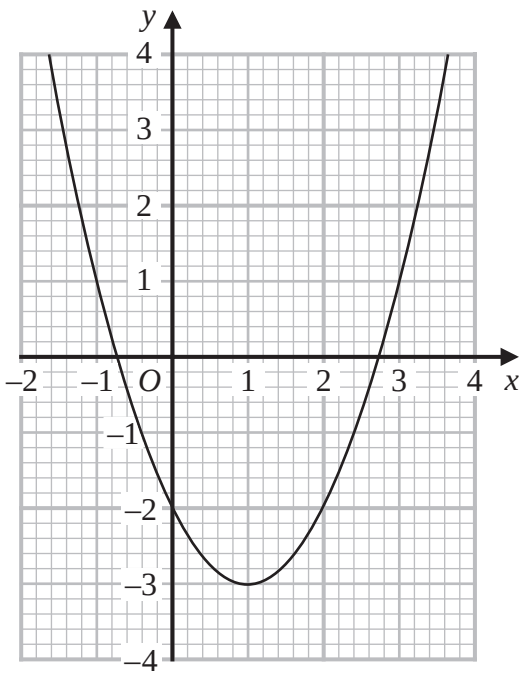
(1)

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

(1)

(Total for Question 9 is 4 marks)

26 Here is the graph of $y = x^2 - 2x - 2$



(a) Write down the coordinates of the turning point on the graph of $y = x^2 - 2x - 2$

(..... , ...)

(1)

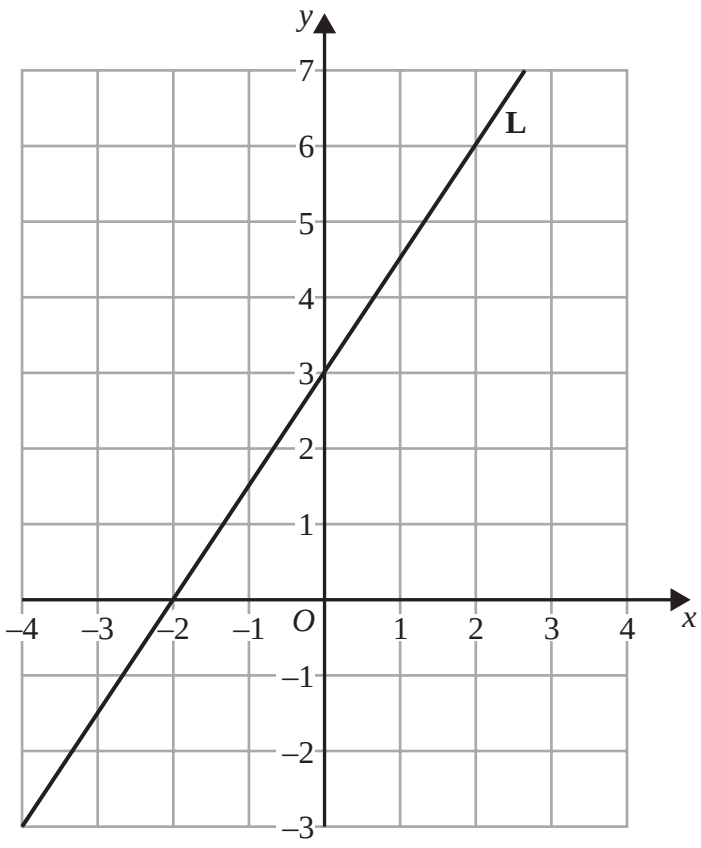
(b) Write down an estimate for one of the roots of $x^2 - 2x - 2 = 0$

.....

(1)

(Total for Question 26 is 2 marks)

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



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

.....

(3)

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

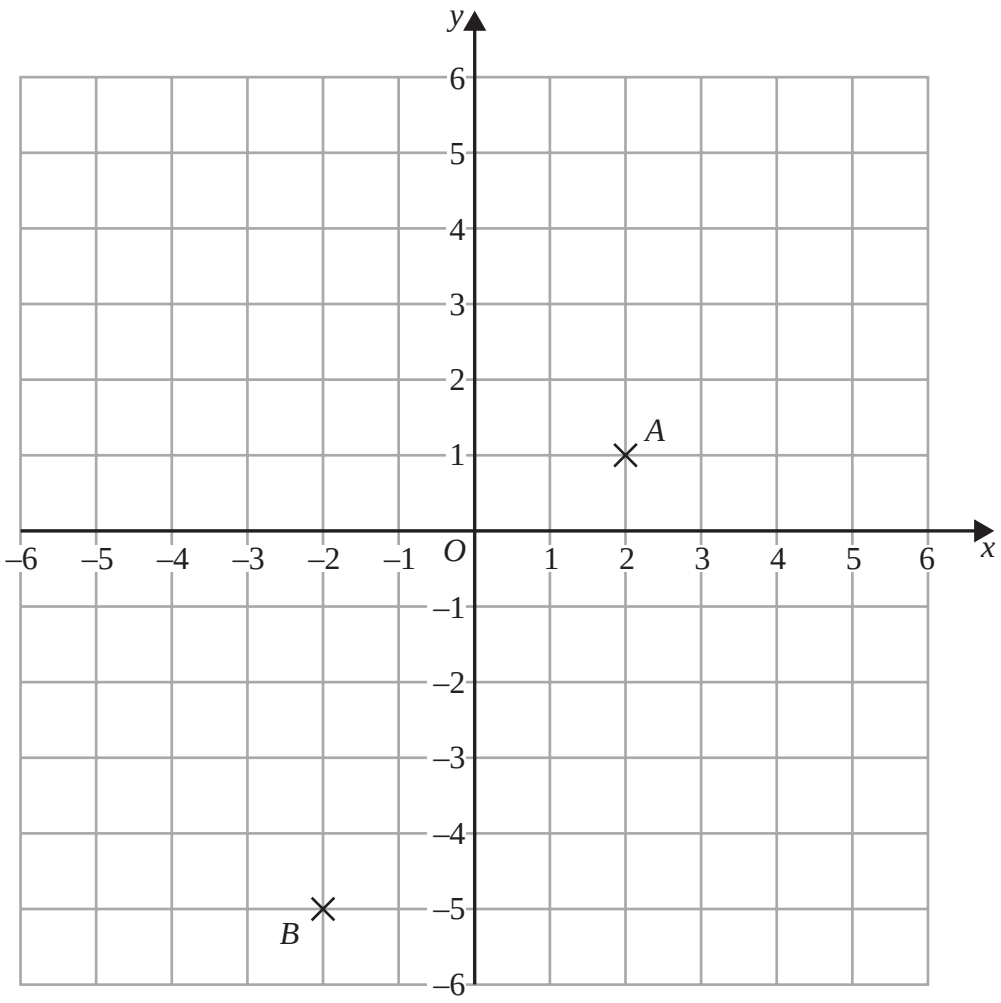
(b) Write down the equation of a straight line parallel to **M**.

.....

(1)

(Total for Question 25 is 4 marks)

8 The points A and B are shown on the grid.



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

(..... , ...)

(1)

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

(..... , ...)

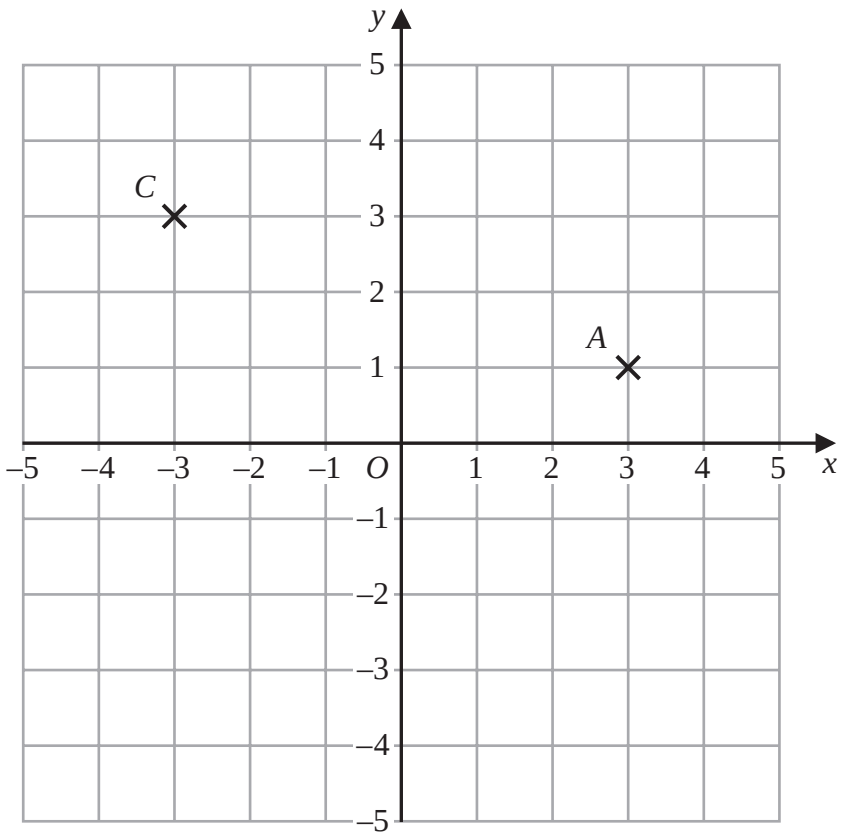
(2)

(c) On the grid, mark with a cross (×) the point with coordinates (–4, 2)
Label this point C.

(1)

(Total for Question 8 is 4 marks)

8



(a) Write down the coordinates of point A.

(..... , ...)

(1)

(b) On the grid, mark with a cross (×) the point $(3, -4)$
Label this point B.

(1)

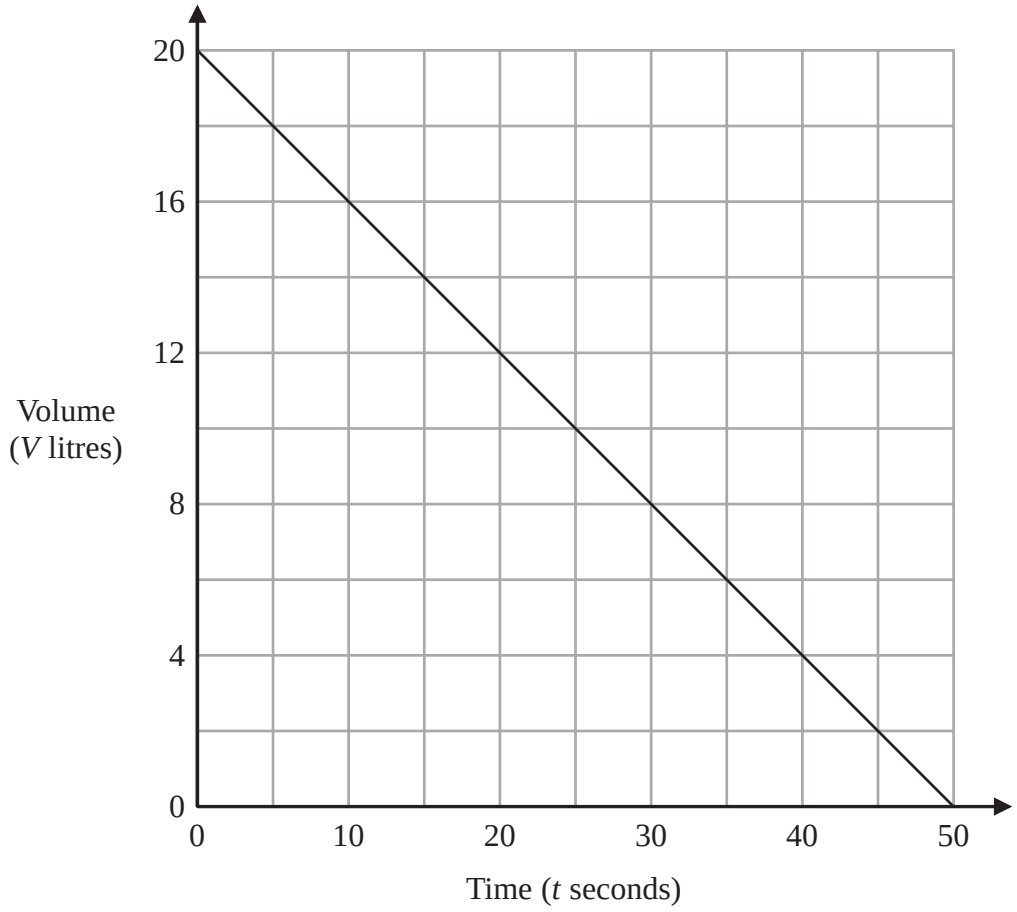
(c) Write down the coordinates of the midpoint of AC.

(..... , ...)

(1)

(Total for Question 8 is 3 marks)

24 The graph shows the volume of water, V litres, in a tank at time t seconds.



What does the gradient of this graph represent?

.....

.....

.....

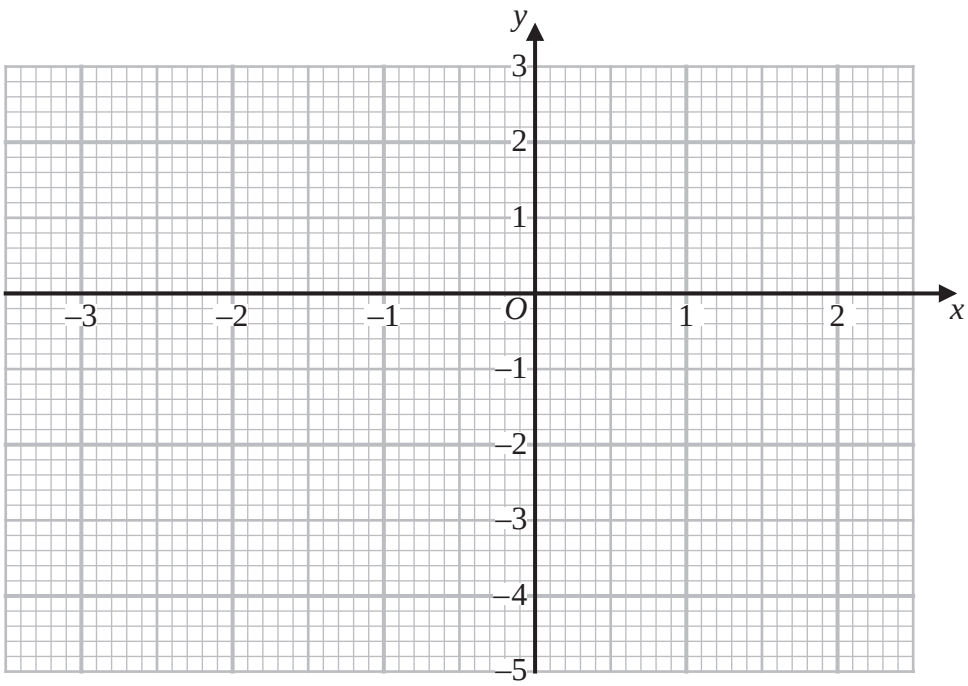
(Total for Question 24 is 1 mark)

21 (a) Complete the table of values for $y = x^2 + x - 4$

x	–3	–2	–1	0	1	2
y	2		–4			

(2)

(b) On the grid, draw the graph of $y = x^2 + x - 4$ for values of x from –3 to 2



(2)

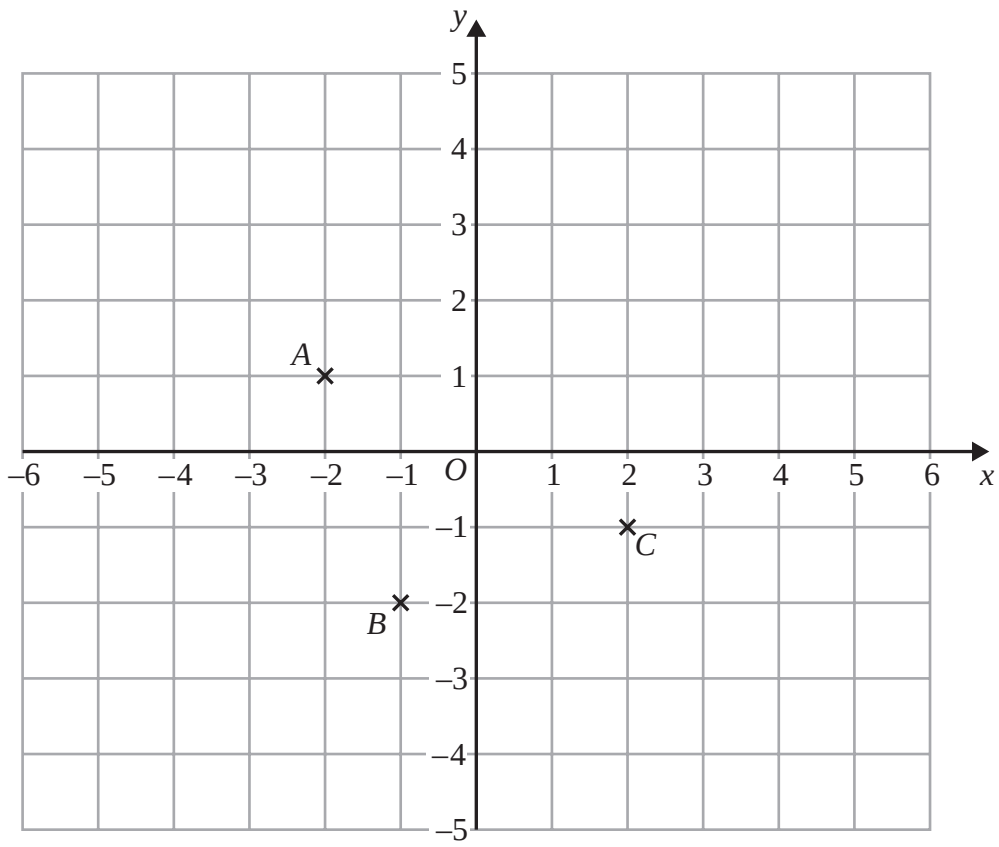
(c) Write down the coordinates of the turning point of the graph of $y = x^2 + x - 4$

(..... , ...)

(1)

(Total for Question 21 is 5 marks)

9



(a) Write down the coordinates of point A.

(..... , ...)

(1)

(b) On the grid, mark with a cross (×) the point D so that $ABCD$ is a square.
Label this point D.

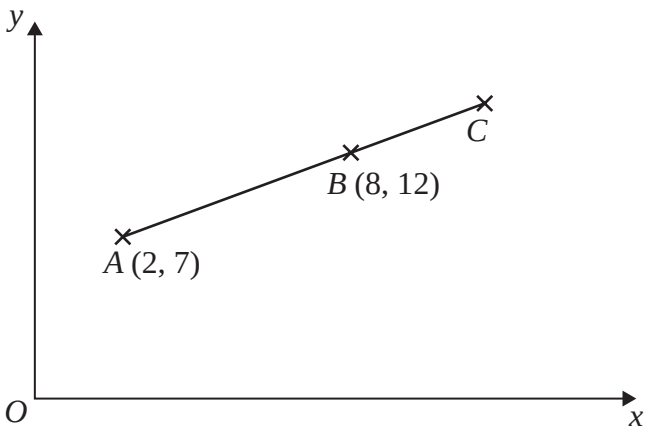
(1)

(c) On the grid, mark with a cross (×) the point E so that C is the midpoint of BE.
Label this point E.

(1)

(Total for Question 9 is 3 marks)

28 ABC is a straight line.



Point A has coordinates (2, 7)
Point B has coordinates (8, 12)

$BC = \frac{1}{2} AB$

Find the coordinates of point C.

(..... , ...)

(Total for Question 28 is 3 marks)