

Linear Graphs

Equations of Straight Lines ($y = mx + c$) / Drawing Straight Line Graphs / Parallel Lines / Perpendicular Lines

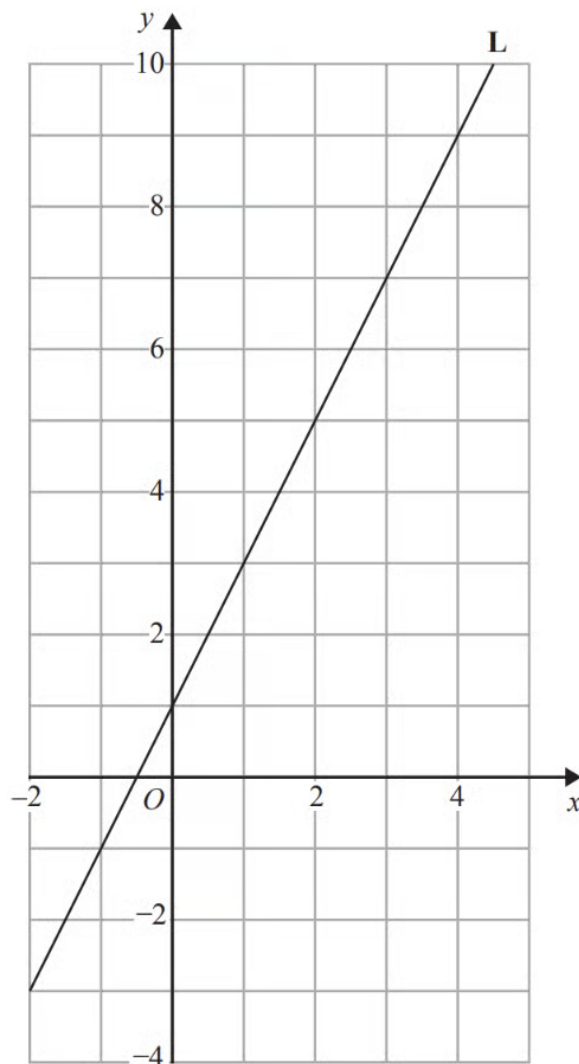
Easy (3 questions)	/8
Medium (3 questions)	/8
Hard (8 questions)	/48
Total Marks	/64

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Easy Questions

- 1 Line **L** is drawn on the grid below.

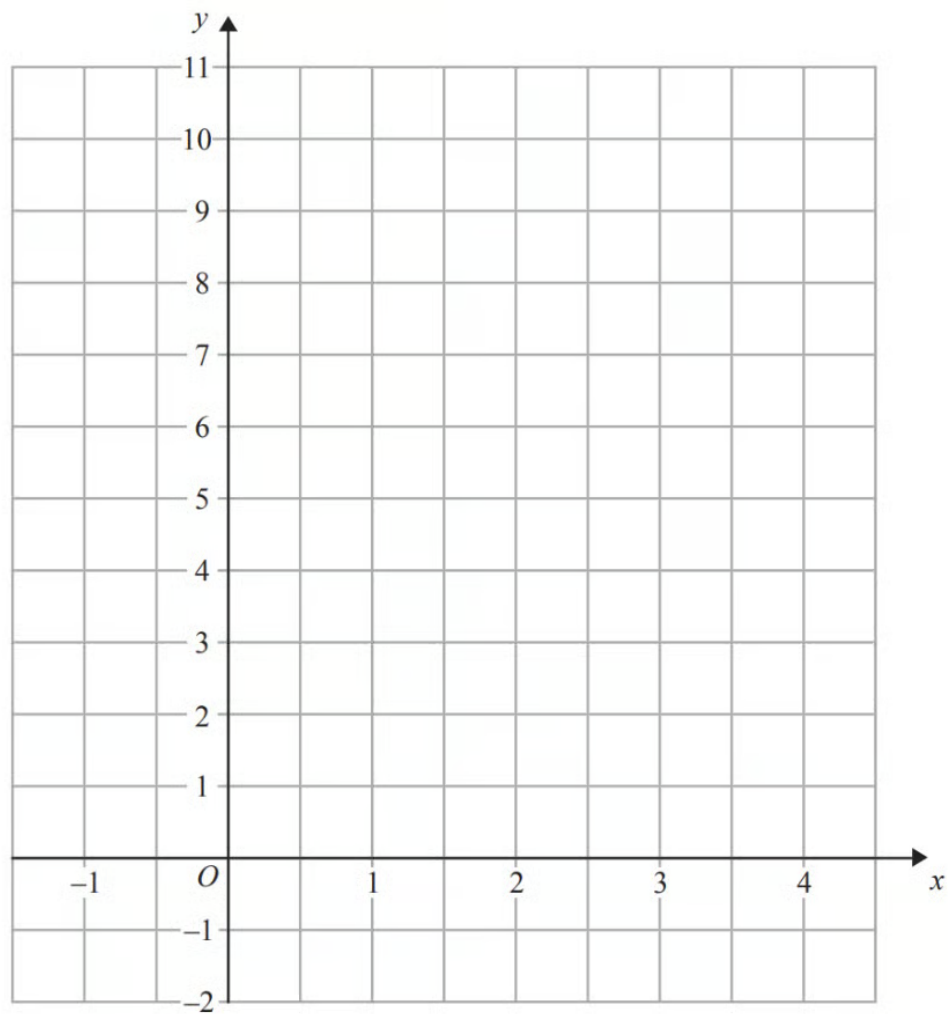


Find the equation for the straight line **L**.

Give your answer in the form $y = mx + c$

(3 marks)

2 On the grid, draw the graph of $y = 8 - 2x$ for values of x from -1 to 4



(3 marks)

3 The equation of a straight line is $2y = 3x + 4$.

i) Find the gradient of this line.

[1]

ii) Find the co-ordinates of the point where the line crosses the y-axis.

(..... ,) [1]

(2 marks)

Medium Questions

1 (a) A straight line, l , has equation $y = 5x + 12$.

Find the coordinates of the point where line l crosses the x -axis.

(..... ,)

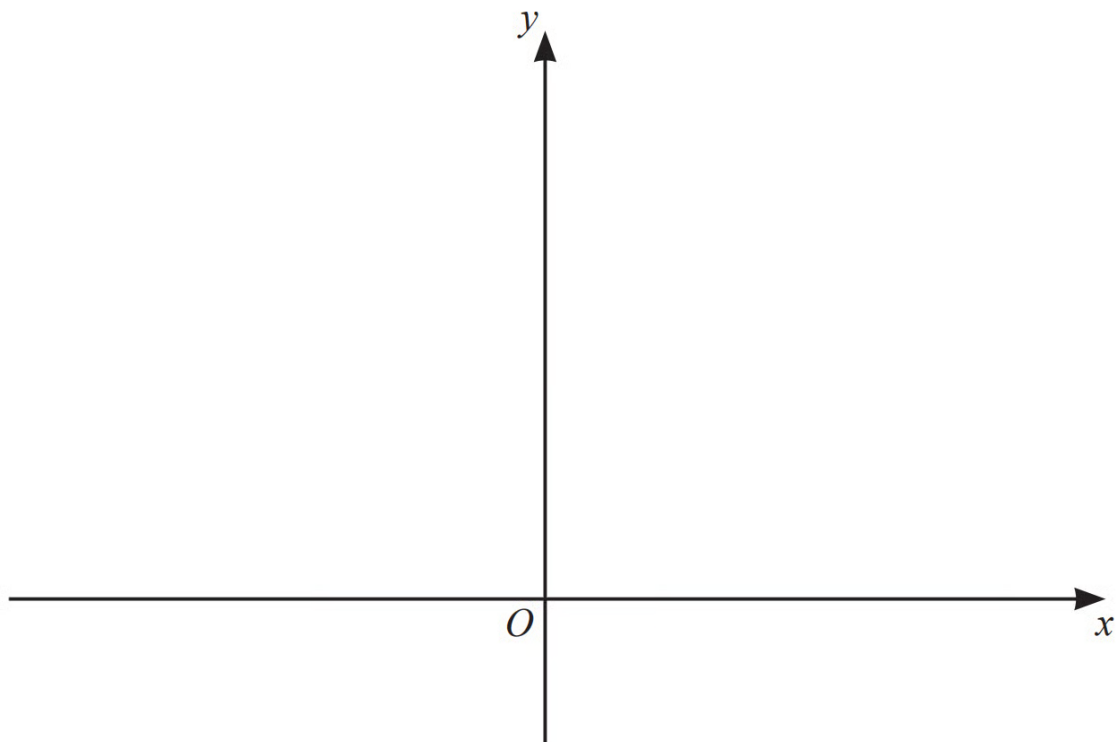
(2 marks)

(b) A line perpendicular to line l has gradient k . Find the value of k .

$k =$

(1 mark)

2



On the diagram,

Sketch the graph of $y = \frac{1}{2}x + 1$.

(2 marks)

3 A line joins $A(1, 3)$ to $B(5, 8)$.

Find the equation of the line AB .

Give your answer in the form $y = mx + c$.

$y = \dots\dots\dots$

(3 marks)

Hard Questions

- 1 A is the point $(7, 2)$ and B is the point $(-5, 8)$.

Find the equation of the line that is perpendicular to AB and that passes through the point $(-1, 3)$.

Give your answer in the form $y = mx + c$.

$y = \dots\dots\dots$

(4 marks)

- 2 A line from the point $(2, 3)$ is perpendicular to the line $y = \frac{1}{3}x + 1$. The two lines meet at the point P .

Find the coordinates of P .

(..... ,)

(5 marks)

- 3 A is the point $(2, 3)$ and B is the point $(7, -5)$.

Find the equation of the line through A that is perpendicular to AB .
Give your answer in the form $y = mx + c$.

$y = \dots\dots\dots$

(4 marks)

4 P is the point $(16, 9)$ and Q is the point $(22, 24)$.

Find the equation of the line perpendicular to PQ that passes through the point $(5, 1)$.
Give your answer in the form $y = mx + c$.

$y = \dots\dots\dots$

(4 marks)

5 (a) A rhombus $ABCD$ has a diagonal AC where A is the point $(-3, 10)$ and C is the point $(4, -4)$.

i) Calculate the length AC .

[3]

ii) Show that the equation of the line AC is $y = -2x + 4$.

[2]

(5 marks)

(b) Find the equation of the line BD .

(4 marks)

6 (a) The coordinates of P are $(-3, 8)$ and the coordinates of Q are $(9, -2)$.

Find the equation of the perpendicular bisector of PQ .

(4 marks)

(b) The coordinates of P are $(-3, 8)$ and the coordinates of Q are $(9, -2)$.

Find the equation of the line parallel to PQ that passes through the point $(6, -1)$.

(3 marks)

7 (a) A straight line joins the points A $(-2, -3)$ and C $(1, 9)$.

Find the equation of the line AC in the form $y = mx + c$.

$y = \dots\dots\dots$

(3 marks)

(b) $ABCD$ is a kite, where AC is the longer diagonal of the kite. B is the point $(3.5, 2)$.

i) Find the equation of the line BD in the form $y = mx + c$.

$y = \dots\dots\dots$ [3]

ii) The diagonals AC and BD intersect at $(-0.5, 3)$.

Work out the co-ordinates of D .

$(\dots\dots\dots, \dots\dots\dots)$ [2]

(5 marks)

8 (a)

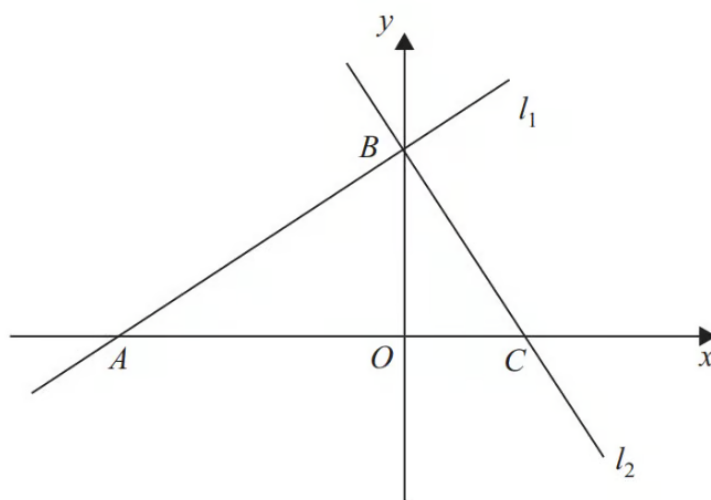


Figure 1

The line l_1 has equation $2x - 3y + 12 = 0$

Find the gradient of l_1 .

(1 mark)

- (b) The line l_1 crosses the x -axis at the point A and the y -axis at the point B , as shown in Figure 1.

The line l_2 is perpendicular to l_1 and passes through B .

Find an equation of l_2 .

(3 marks)

- (c) The line l_2 crosses the x -axis at the point C .

Find the area of triangle ABC .

(3 marks)