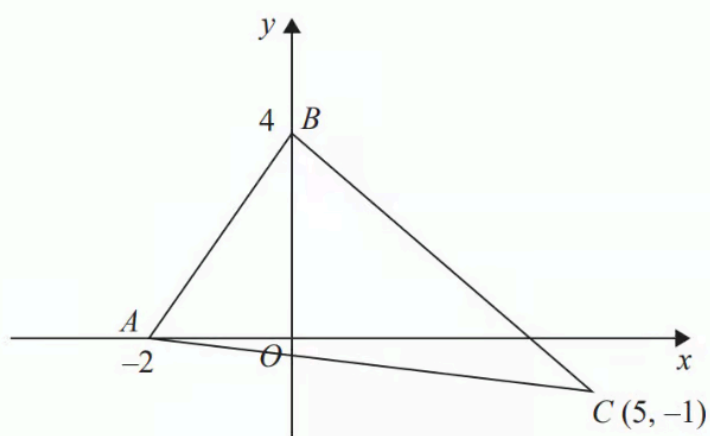


- 3 The straight line **L** has the equation $3y = 4x + 7$
The point **A** has coordinates $(3, -5)$

Find an equation of the straight line that is perpendicular to **L** and passes through **A**.

4



Find an equation of the line that passes through **C** and is perpendicular to **AB**.

5 (a) The line l_1 has equation $y = -2x + 3$

The line l_2 is perpendicular to l_1 and passes through the point $(5, 6)$.

Find an equation for l_2 in the form $ax + by + c = 0$, where a , b and c are integers.

(b) The line l_2 crosses the x -axis at the point A and the y -axis at the point B .

Find the x -coordinate of A and the y -coordinate of B .

(c) Given that O is the origin,

find the area of the triangle OAB .

- 6 The points P and Q have coordinates $(-1, 6)$ and $(9, 0)$ respectively.

The line l is perpendicular to PQ and passes through the midpoint of PQ .

Find an equation for l .

7 (a)

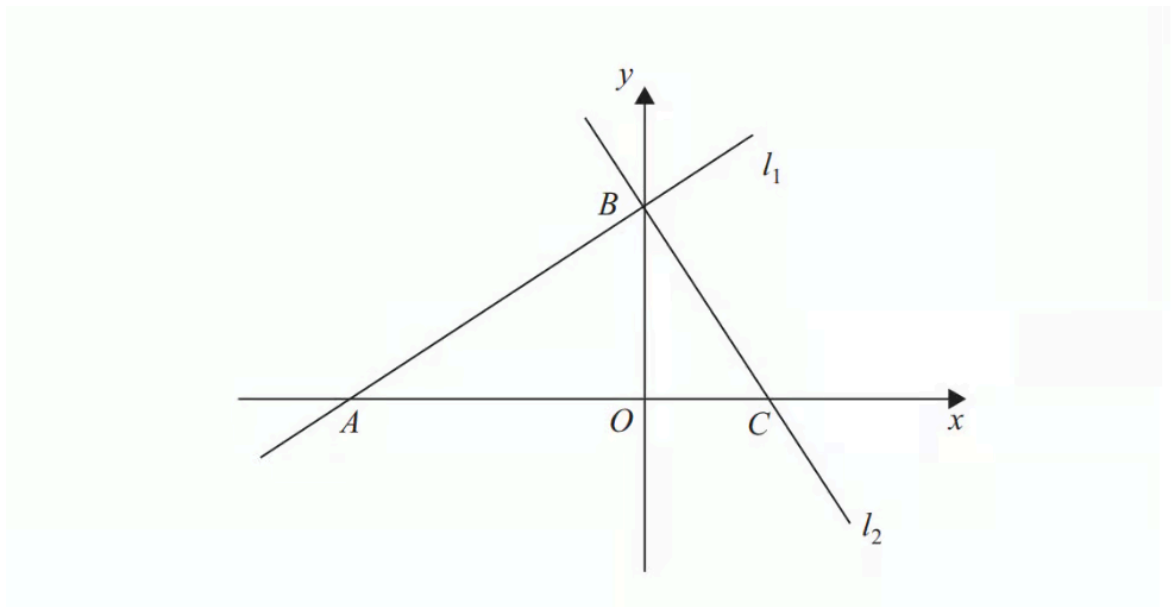


Figure 1

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 .

8 A is the point with coordinates $(1, 3)$

B is the point with coordinates $(4, -1)$

The straight line L goes through both A and B .

Is the line with equation $2y = 3x - 4$ perpendicular to line L ? You must show how you got your answer.

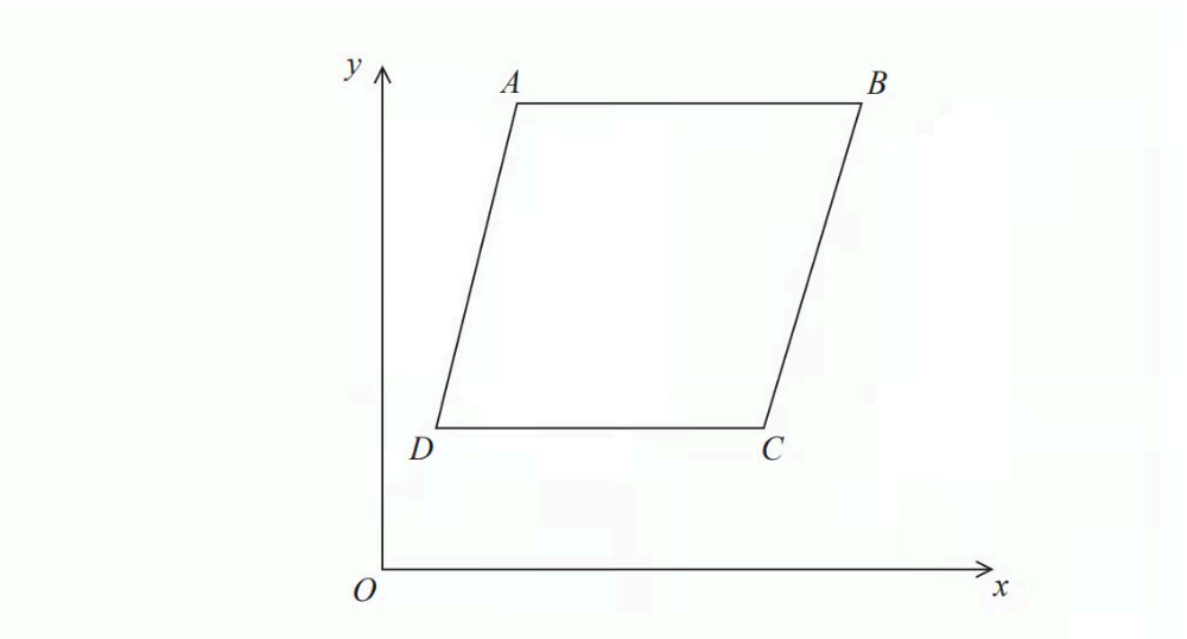
9 The line L has equation $y = 5 - 2x$. The point P with coordinates $(3, -1)$ lies on L .

Find an equation of the line perpendicular to L , which passes through P .

Give your answer in the form $ax + by + c = 0$, where a , b and c are integers.

Very Hard Questions

1



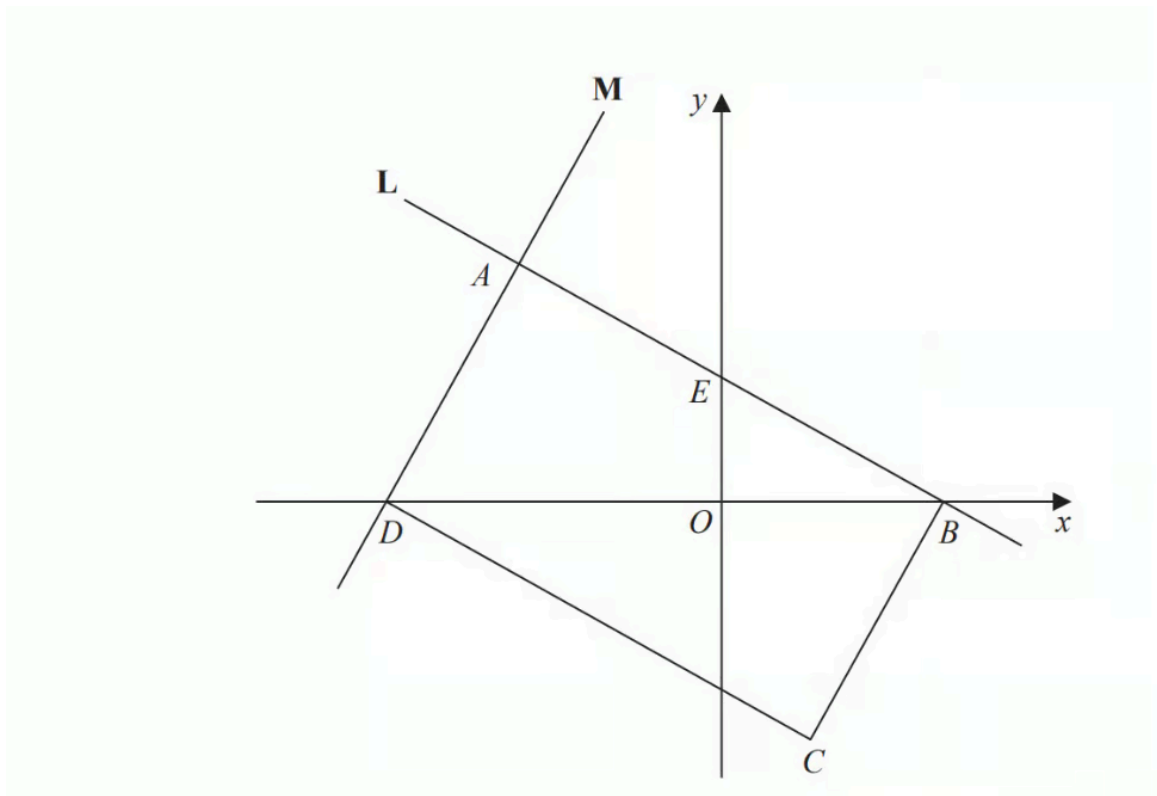
$ABCD$ is a rhombus.

The coordinates of A are $(5, 11)$

The equation of the diagonal DB is $y = \frac{1}{2}x + 6$

Find an equation of the diagonal AC .

2



$ABCD$ is a rectangle.

A , E and B are points on the straight line $\mathbf{L}$ with equation $x + 2y = 12$ A and D are points on the straight line $\mathbf{M}$.

$$AE = EB$$

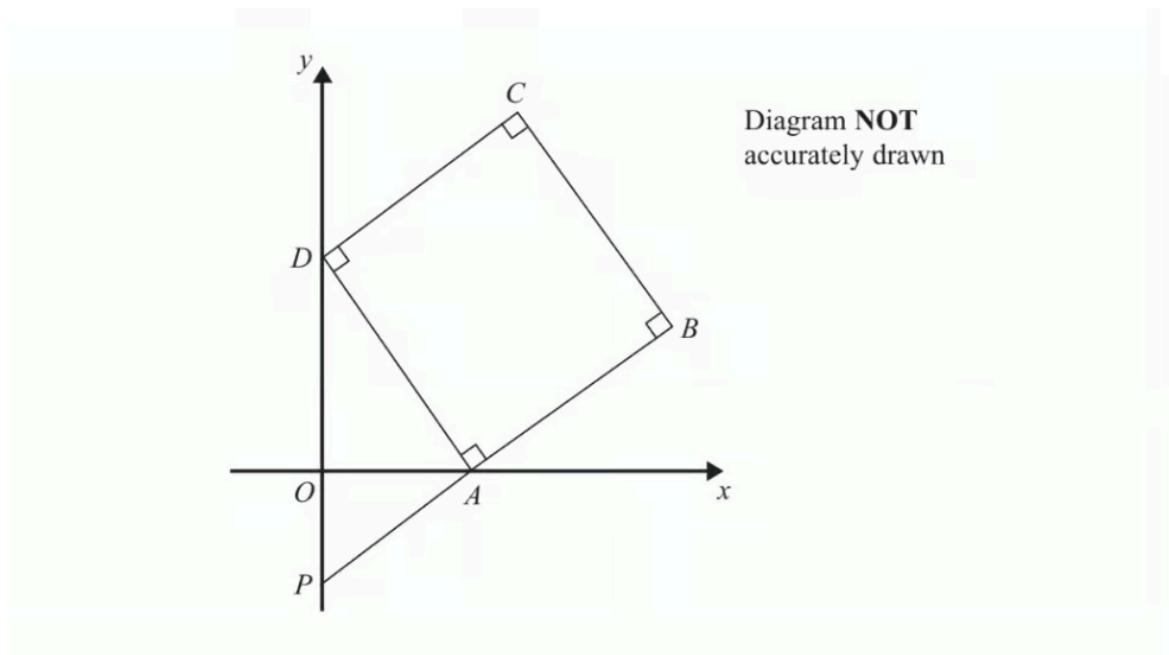
Find an equation for $\mathbf{M}$.

- 4 The point P has coordinates $(3, 4)$
The point Q has coordinates (a, b)

A line perpendicular to PQ is given by the equation $3x + 2y = 7$

Find an expression for b in terms of a .

5



$ABCD$ is a square.

P and D are points on the y -axis.

A is a point on the x -axis. PAB is a straight line.

The equation of the line that passes through the points A and D is $y = -2x + 6$

Find the length of PD .