



# EXAM PAPERS PRACTICE

GCSE Edexcel Math

1MA1

Perpendicular Lines

Question Paper

*"We will help you to  
achieve A Star "*



### Question 1

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

The line  $l$  is perpendicular to  $PQ$  and passes through the mid-point of  $PQ$ .

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

[5 marks]

### Question 2

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

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

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

[3 marks]



**Question 3**

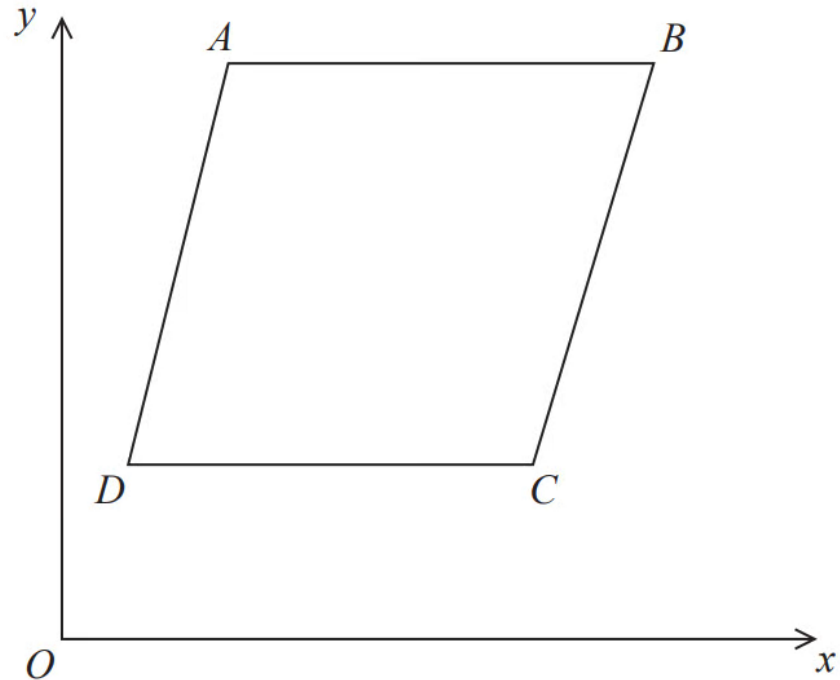
The line  $l_2$  crosses the  $x$ -axis at the point  $A$  and the  $y$ -axis at the point  $B$ .

(b) Find the  $x$ -coordinate of  $A$  and the  $y$ -coordinate of  $B$ .

[2 marks]



**Question 4**



$ABCD$  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  $AC$ .

[4 marks]



**Question 5**

The line  $l_1$  has equation  $3x + 5y - 2 = 0$

(a) Find the gradient of  $l_1$ .

[2 marks]

**Question 6**

The line  $l_2$  is perpendicular to  $l_1$  and passes through the point (3, 1).

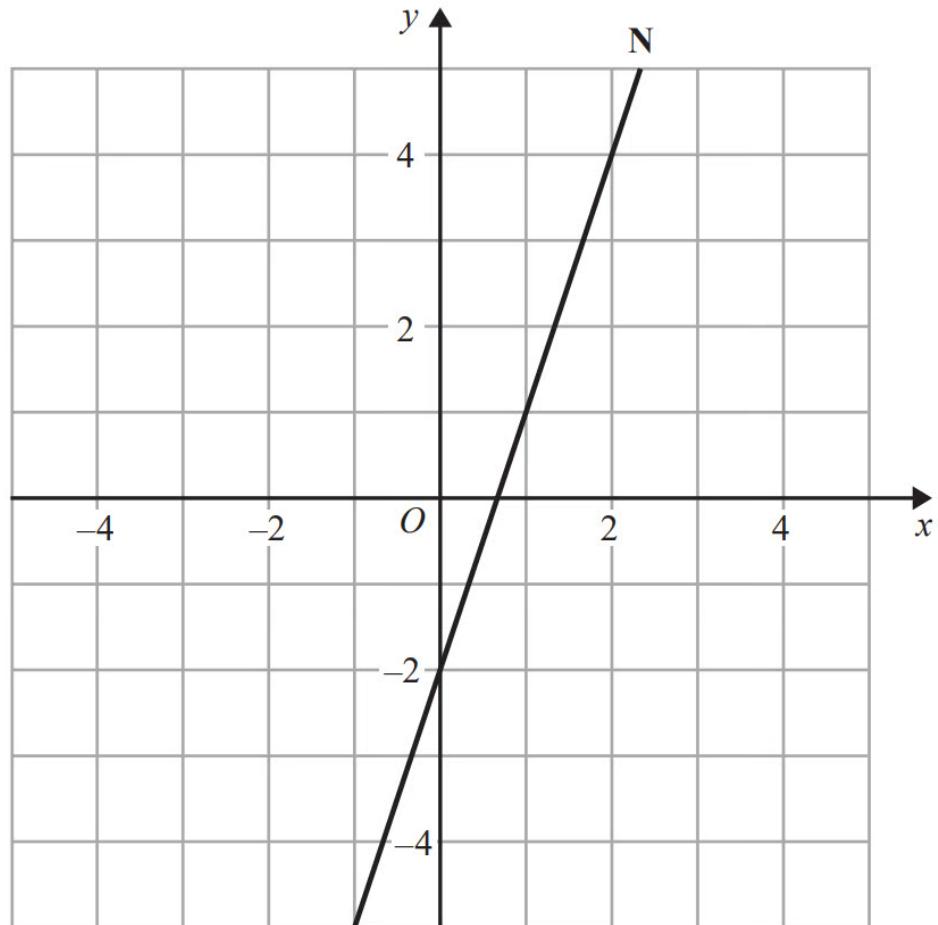
(b) Find the equation of  $l_2$  in the form  $y = mx + c$ , where  $m$  and  $c$  are constants.

[3 marks]



**Question 7**

The line **N** is drawn below.

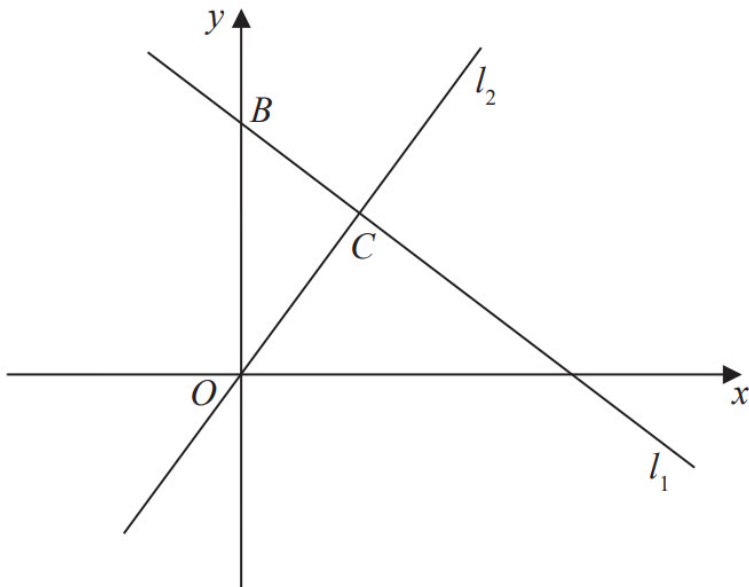


Find an equation of the line perpendicular to line **N** that passes through the point  $(0, 1)$ .

[3 marks]



**Question 8**



**Figure 2**

The line  $l_1$ , shown in Figure 2 has equation  $2x + 3y = 26$

The line  $l_2$  passes through the origin  $O$  and is perpendicular to  $l_1$

(a) Find an equation for the line  $l_2$

**[4 marks]**



**Question 9**

The line  $L$  has equation  $y = 5 - 2x$ .

- (a) Show that the point  $P(3, -1)$  lies on  $L$ .

[1 mark]

**Question 10**

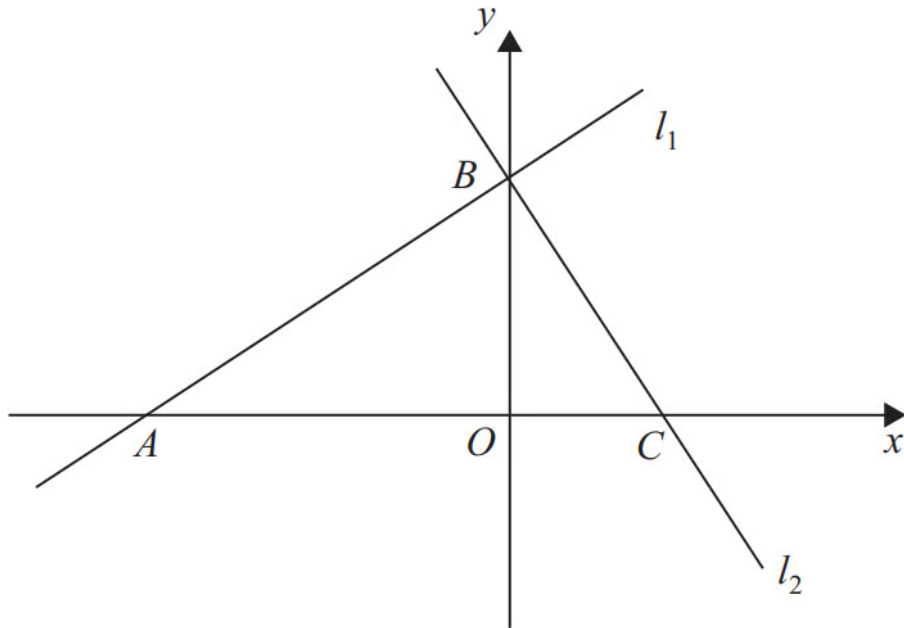
- (b) Find an equation of the line perpendicular to  $L$ , which passes through  $P$ . Give your answer in the form  $ax + by + c = 0$ , where  $a$ ,  $b$  and  $c$  are integers.

[4 marks]





**Question 11**



**Figure 1**

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

(a) Find the gradient of  $l_1$ .

[1 mark]



**Question 12**

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  $B$ .

(b) Find an equation of  $l_2$ .

**[3 marks]**



**Question 13**

The points  $A$  and  $B$  have coordinates  $(3, 4)$  and  $(7, -6)$  respectively. The straight line  $l$  passes through  $A$  and is perpendicular to  $AB$ . Find an equation for  $l$ , giving your answer in the form  $ax + by + c = 0$ , where  $a$ ,  $b$  and  $c$  are integers.

[5 marks]



**Question 14**

$A$  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.

**[4 marks]**



**Question 15**

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 marks]**