

Parallel and Perpendicular Lines

For Pearson Edexcel GCSE Mathematics (1MA1) • Higher tier

Name _____

Total marks: **26**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method.

- 1** The line L_1 passes through the points $(-1, 2)$ and $(3, 10)$
The line L_2 has equation $4x - 2y = 7$
Show that L_1 and L_2 are parallel.

(2)

(Total for Question 1 is 2 marks)

- 2** The line L passes through $(3, 1)$ and is parallel to the line $y = 5 - 2x$
Find an equation for L .

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(2)

(Total for Question 2 is 2 marks)

3 Here are the equations of three lines.

A: $y = 3x + 2$ B: $3y = -x + 6$ C: $2y = x - 1$

Which two lines are perpendicular?

Give a reason for your answer.

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(2)

(Total for Question 3 is 2 marks)

4 The line L_1 has equation $2x + 3y = 6$

The points $A(1, k)$ and $B(5, 9)$ lie on the line L_2 .

L_1 is perpendicular to L_2

Find the value of k .

You must show all your working.

$k =$
(3)

(Total for Question 4 is 3 marks)

5 A is the point $(-2, 5)$ and B is the point $(4, 2)$

Find an equation of the line through B that is perpendicular to AB .

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(3)

(Total for Question 5 is 3 marks)

- 6** The straight line L has equation $5x + 2y = 8$
 The straight line N is perpendicular to L .
 L and N cross the y -axis at the same point.
 Find an equation for N .
 Give your answer in the form $ax + by = c$ where a , b and c are integers.

.....
 (3)

(Total for Question 6 is 3 marks)

- 7** The point $P(-3, 6)$ lies on the circle $x^2 + y^2 = 45$
 The line T is the tangent to the circle at P .
 Find the coordinates of the point where T crosses the y -axis.

(..... ,)
 (3)

(Total for Question 7 is 3 marks)

- 8** The point P has coordinates $(2, 9)$
 The point Q lies on the line $y = 3x$
 The line PQ is perpendicular to the line $x + 2y = 10$
 Find the coordinates of Q .

(..... ,)
 (3)

(Total for Question 8 is 3 marks)

- 9 The straight line L has equation $y = 2x - 2$
The point $P(4, 6)$ lies on L .
The straight line M is perpendicular to L and passes through P .
 M crosses the x -axis at the point Q .
Find the exact length of PQ .
You must show all your working.

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(5)

(Total for Question 9 is 5 marks)
