

Perpendicular lines

Grade 7 | Higher | 13 questions, 44 marks

GCSE Maths topic practice



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Name: _____ **Date:** _____ **Score:** _____ / 44

1 For each pair of lines, decide whether they are perpendicular. You must show your working.

a. $y = 4x + 1$ and $4y + x = 8$

b. $y = 2x + 5$ and $2y = x - 3$

(3 marks)

Answer _____

2 The line $y = ax + 5$ is perpendicular to the line $by = 3x - 2$.

Find b in terms of a .

(3 marks)

Answer _____

3 The line l passes through the points $(-1, 2)$ and $(3, 10)$.

Find the equation of the line perpendicular to l that passes through the point $(4, 5)$. Give your answer in the form $y = mx + c$.

(3 marks)

Answer _____

4 A straight line has equation $y = 4x + 3$

Write down the gradient of a line perpendicular to this line.

(1 mark)

Answer _____

- 5 The line L is perpendicular to the line with equation $y = 2x - 3$
L passes through the point (4, 1).
Find an equation of L.

(3 marks)

Answer _____

- 6 Find the equation of the straight line that is perpendicular to $y = 2x - 3$ and passes through the point (4, 1).

(3 marks)

Answer _____

- 7 The straight line L has equation $y = -\frac{x}{3} + 5$
Find the equation of the straight line that is perpendicular to L and passes through the point (2, -1).

(3 marks)

Answer _____

- 8 The straight line L_1 has equation $y = px + 4$, where p is a constant.
The straight line L_2 has equation $2x + 6y = 9$
 L_1 is perpendicular to L_2
Find the value of p .

(3 marks)

Answer _____

9 The straight line L_1 has equation $y = 2x + 6$

L_1 crosses the x -axis at the point A and crosses the y -axis at the point B.

The straight line L_2 is perpendicular to L_1 and passes through B.

L_2 crosses the x -axis at the point C.

Work out the area of triangle ABC.

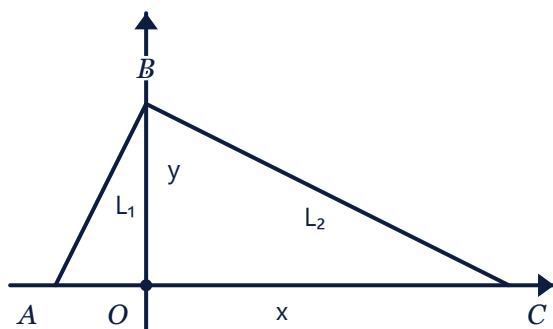


Diagram NOT accurately drawn

(5 marks)

Answer _____

10 A is the point (0, 2) and B is the point (8, 6).

The point M lies on AB so that $AM : MB = 1 : 3$

Find the equation of the straight line that passes through M and is perpendicular to AB.

(5 marks)

Answer _____

11 A is the point $(-1, 3)$ and B is the point $(5, 7)$.

Find the equation of the perpendicular bisector of AB. Give your answer in the form $y = mx + c$.

(4 marks)

Answer _____

12 ABCD is a rectangle, with the vertices in order. A is $(1, 2)$, B is $(5, 4)$ and C is $(7, 0)$.

a. Show that $\angle ABC = 90^\circ$.

b. Work out the coordinates of D.

(4 marks)

Answer _____

13 Line L_1 passes through $(0, 1)$ and $(1, k + 1)$.

Line L_2 passes through $(0, 0)$ and $(1, k - 4)$.

L_1 and L_2 are perpendicular.

Show that $k^2 - 4k + 1 = 0$ and hence find the possible values of k , giving your answers as surds.

(4 marks)

Answer _____

End of questions | Total 44 marks