



Name: _____ **Date:** _____ **Score:** _____ / 61

1 The line L has equation $3x - 4y + 12 = 0$

a. Find the gradient of L .

b. Find the coordinates of the points where L crosses the x -axis and the y -axis.

(3 marks)

Answer _____

2 The points A and B have coordinates $(-2, 7)$ and $(4, -2)$ respectively.

Find an equation of the line through A and B , giving your answer in the form $ax + by + c = 0$, where a , b and c are integers.

(3 marks)

Answer _____

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

The line l_2 is perpendicular to l_1 and passes through the point $P(5, -1)$.

Find an equation of l_2 in the form $y = mx + c$

(3 marks)

Answer _____

4 The points $A(-3, 4)$ and $B(5, 8)$ are joined to form the line segment AB .

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

(4 marks)

Answer _____

- 5 The points $A(1, k)$ and $B(k, 9)$, where k is a constant, lie on a line that is perpendicular to the line with equation $3x + y = 7$

Find the value of k .

(3 marks)

Answer _____

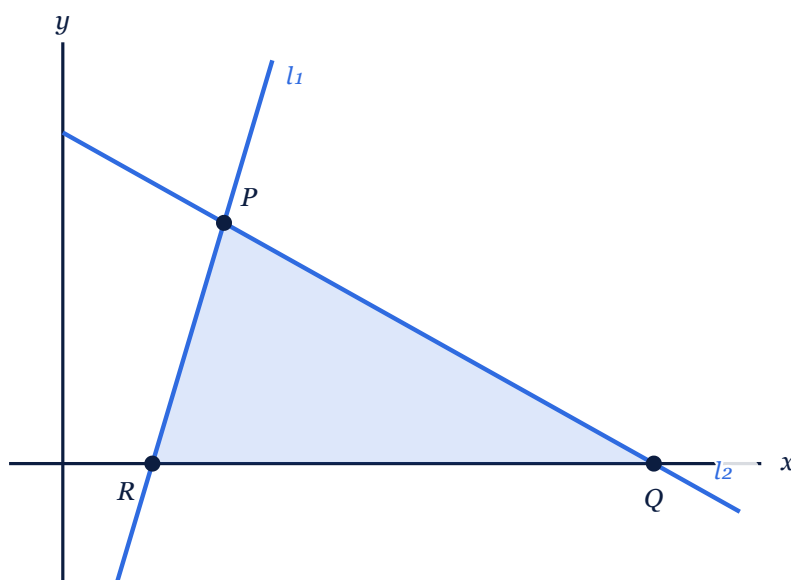
- 6 The line l_1 has equation $y = 3x - 5$ and the line l_2 has equation $x + 2y - 11 = 0$

The lines meet at the point P , as shown in the sketch.

- a. Find the coordinates of P .

The line l_1 crosses the x -axis at R and the line l_2 crosses the x -axis at Q .

- b. Find the exact area of triangle PQR .



(5 marks)

Answer _____

7 The points $A(-1, 2)$, $B(3, 5)$ and $C(6, 1)$ are three vertices of the square $ABCD$.

- Show that $AB = BC$.
- Show that AB is perpendicular to BC .
- Find the area of the square $ABCD$.
- Find the coordinates of D .

(7 marks)

Answer _____

8 The point A has coordinates $(2, -1)$.

The point B lies on the line with equation $y = 2x + 1$ and the distance AB is $2\sqrt{5}$

Find the possible coordinates of B .

(5 marks)

Answer _____

9 The line l_1 has equation $4x + 3y = 24$ and crosses the x -axis at A and the y -axis at B .

The line l_2 is parallel to l_1 and passes through the point $C(9, 8)$.

a. Find an equation of l_2 in the form $ax + by = c$

The line l_2 crosses the x -axis at D .

b. Find the coordinates of D .

c. Explain why $ABCD$ is a parallelogram and find its area.

(6 marks)

Answer _____

10 A household's monthly gas bill, $\pounds C$, is modelled by $C = a + bE$, where E is the number of kWh of gas used that month and a and b are constants.

In March the household used 820 kWh and the bill was $\pounds 162.40$. In June the household used 300 kWh and the bill was $\pounds 68.80$

a. Find the values of a and b .

b. Interpret the value of b in the context of the model.

c. Use the model to estimate the bill for a month in which 1500 kWh are used, and comment on the reliability of your estimate.

(6 marks)

Answer _____

11 The triangle ABC has vertices $A(-4, 1)$, $B(6, -4)$ and $C(2, 8)$.

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

This line meets AB at the point N .

b. Find the coordinates of N .

c. Hence find the area of triangle ABC . You must show all your working.

(8 marks)

Answer _____

12 Two candles, A and B , are lit at the same time. Their heights are modelled as linear functions of the time t hours after lighting.

- Candle A is 30 cm tall when lit and 22 cm tall 4 hours later.
- Candle B is 24 cm tall when lit and burns down completely in 16 hours.

a. Find, for each candle, an equation for its height h cm in terms of t .

b. Find the time at which the two candles are the same height, and that height.

c. Find the interval of time for which candle A is still burning but is shorter than candle B .

d. Give one limitation of the model.

(8 marks)

Answer _____

End of questions | Total 61 marks