

- " The equation of the line L_1 is $y = x + 3$
The equation of the line L_2 is $5y - x + 4 = 0$
- Show that these two lines are parallel.

2 Here are the equations of two straight lines.

$$y = \frac{1}{2}x - 6 \qquad 6y = 3x + 7$$

Oscar says that these lines are parallel.

Is Oscar correct?

You must give a reason for your answer.

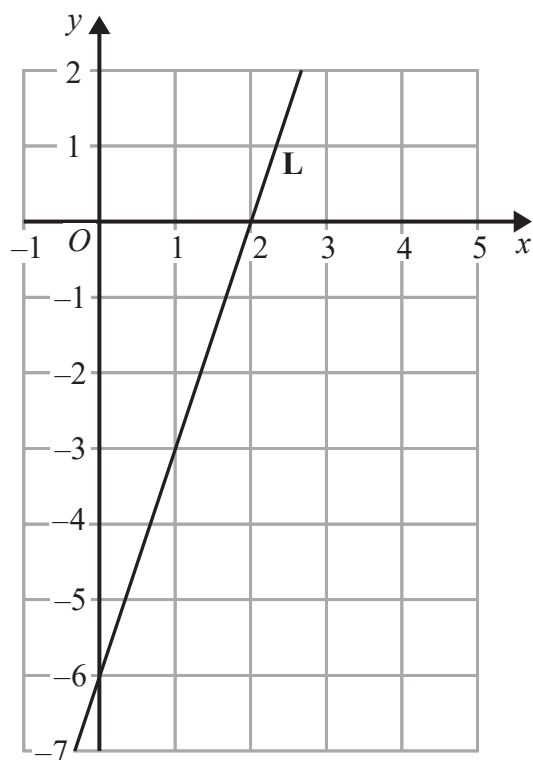
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(Total for Question 2 is 2 marks)

3 The line **L** is shown on the grid.



Find an equation for **L**.

.....
(Total for Question 3 is 3 marks)

- 4 The equation of the line L_1 is $y = 3x - 2$
The equation of the line L_2 is $3y - 9x + 5 = 0$

Show that these two lines are parallel.

(Total for Question 4 is 2 marks)

- 5 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*.

.....
(Total for Question 5 is 3 marks)

- 6 The straight line L_1 has equation $y = 3x - 4$
The straight line L_2 is perpendicular to L_1 and passes through the point $(9, 5)$

Find an equation of line L_2

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(Total for Question 6 is 3 marks)

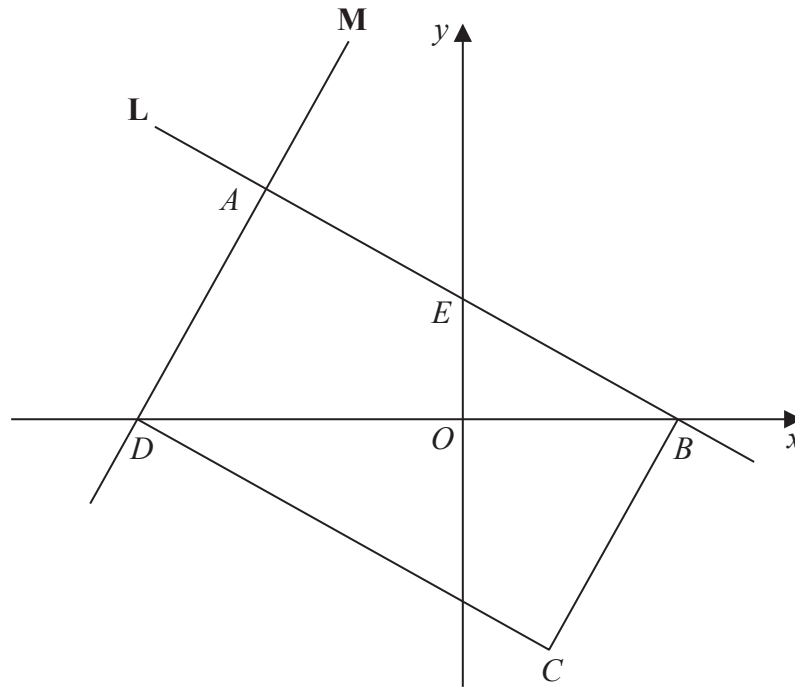
- 7 A is the point with coordinates $(5, 9)$
 B is the point with coordinates $(d, 15)$

The gradient of the line AB is 3

Work out the value of d .

.....
(Total for Question 7 is 3 marks)

8



$ABCD$ is a rectangle.

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

$$AE = EB$$

Find an equation for M .

.....
 (Total for Question 8 is 4 marks)

9 A triangle has vertices P , Q and R .

The coordinates of P are $(-3, -6)$

The coordinates of Q are $(1, 4)$

The coordinates of R are $(5, -2)$

M is the midpoint of PQ .

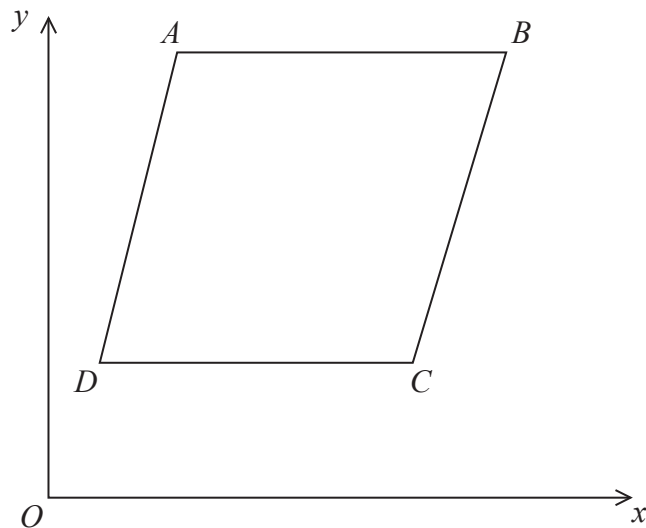
N is the midpoint of QR .

Prove that MN is parallel to PR .

You must show each stage of your working.

(Total for Question 9 is 4 marks)

10



$ABCD$ is a rhombus.

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

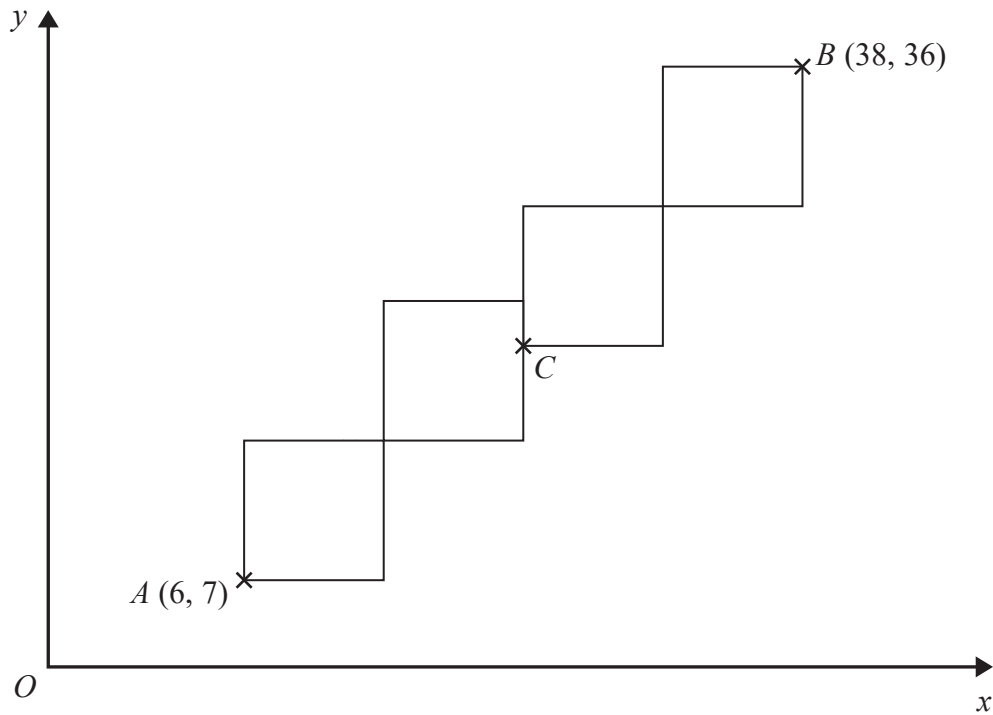
The equation of the diagonal DB is $y = \frac{1}{2}x + 6$

Find an equation of the diagonal AC .

.....
(Total for Question 10 is 4 marks)

11 A pattern is made from four identical squares.

The sides of the squares are parallel to the axes.



Point A has coordinates $(6, 7)$

Point B has coordinates $(38, 36)$

Point C is marked on the diagram.

Work out the coordinates of C .

(.....,))

(Total for Question 11 is 5 marks)

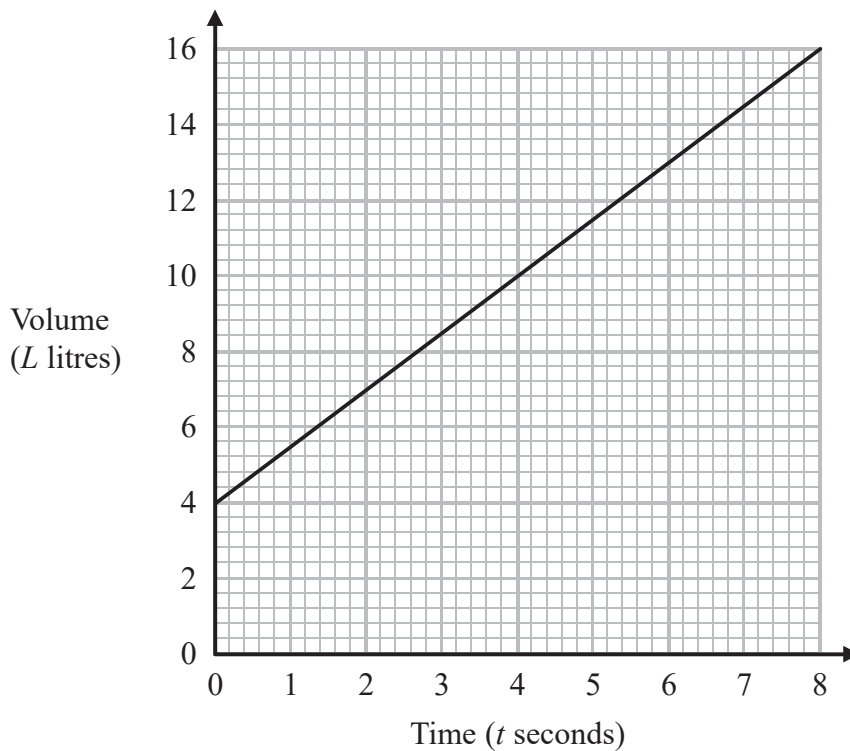
- 12** The point P has coordinates $(3, 4)$
The point Q has coordinates (a, b)

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

Find an expression for b in terms of a .

.....
(Total for Question 12 is 5 marks)

13 The graph shows the volume of liquid (L litres) in a container at time t seconds.



(a) Find the gradient of the graph.

.....
(2)

(b) Explain what this gradient represents.

.....
.....
(1)

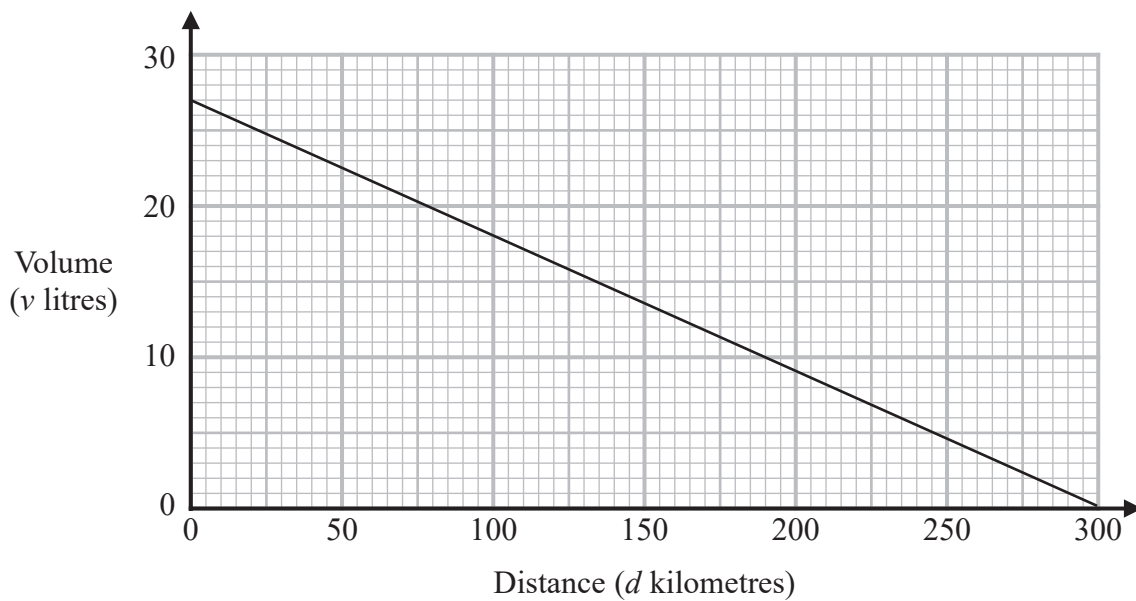
The graph intersects the volume axis at $L = 4$

(c) Explain what this intercept represents.

.....
.....
(1)

(Total for Question 13 is 4 marks)

- 14 The graph gives information about the volume, v litres, of petrol in the tank of Jim's car after it has travelled a distance of d kilometres.



- (a) Find the gradient of the graph.

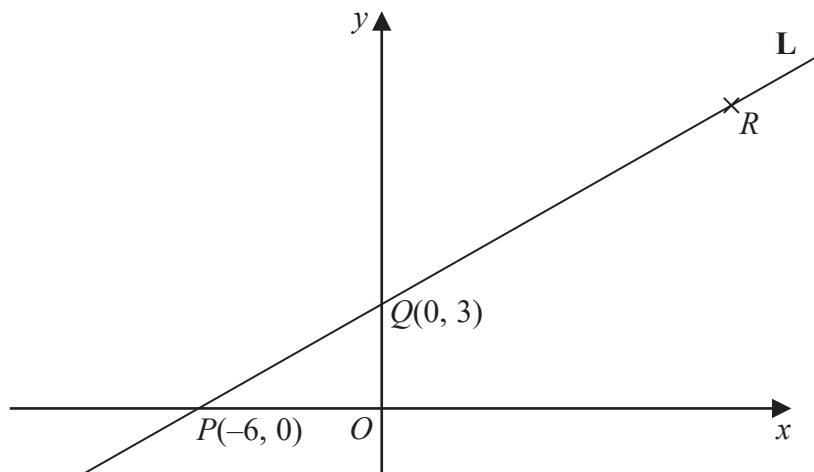
.....
(2)

- (b) Interpret what the gradient of the graph represents.

.....
.....
.....
(1)

(Total for Question 14 is 3 marks)

15 Here is a sketch of the line **L**.



The points $P(-6, 0)$ and $Q(0, 3)$ are points on the line **L**.

The point R is such that PQR is a straight line and $PQ:QR = 2:3$

(a) Find the coordinates of R .

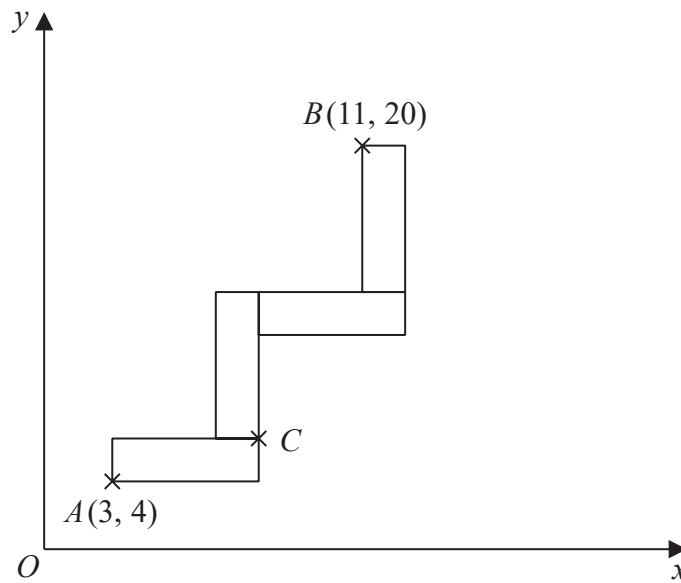
(.....,)
(2)

(b) Find an equation of the line that is perpendicular to **L** and passes through Q .

.....
(3)

(Total for Question 15 is 5 marks)

- 16 A pattern is made from four identical rectangles.
The sides of the rectangles are parallel to the axes.



Point A has coordinates $(3, 4)$
Point B has coordinates $(11, 20)$
Point C is marked on the diagram.

Work out the coordinates of C .
You must show all your working.

(.....,))

(Total for Question 16 is 5 marks)

- 17 The straight line L_1 passes through the points with coordinates (4, 6) and (12, 2)
The straight line L_2 passes through the origin and has gradient -3
The lines L_1 and L_2 intersect at point P .

Find the coordinates of P .

(..... ,)

(Total for Question 17 is 4 marks)

25 The straight line **L** has equation $3x + 2y = 17$

The point *A* has coordinates (0, 2)

The straight line **M** is perpendicular to **L** and passes through *A*.

Line **L** crosses the *y*-axis at the point *B*.

Lines **L** and **M** intersect at the point *C*.

Work out the area of triangle *ABC*.

You must show all your working.

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(Total for Question 25 is 5 marks)

5 The points L , M and N are such that LMN is a straight line.

The coordinates of L are $(-3, 1)$

The coordinates of M are $(4, 9)$

Given that $LM : MN = 2 : 3$,

find the coordinates of N .

(..... ,)

(Total for Question 5 is 4 marks)