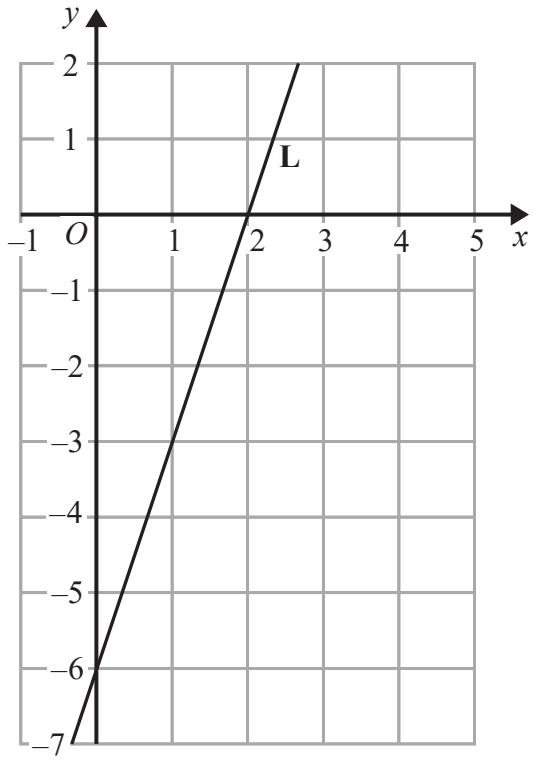
1 The line **L** is shown on the grid.

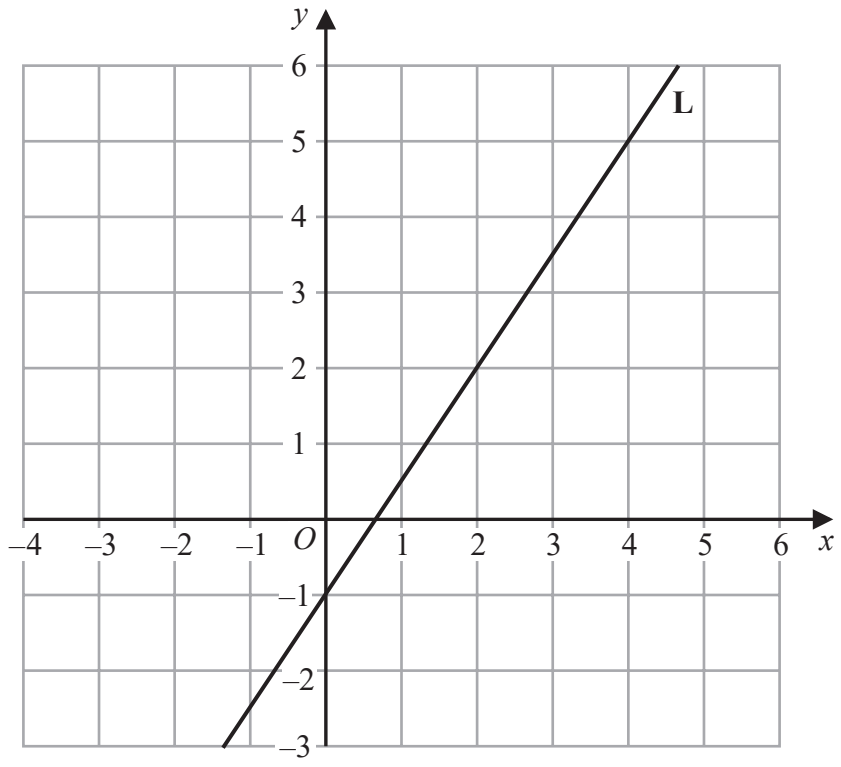


Find an equation for **L**.

.....

(Total for Question 1 is 3 marks)

2 Line **L** is drawn on the grid.

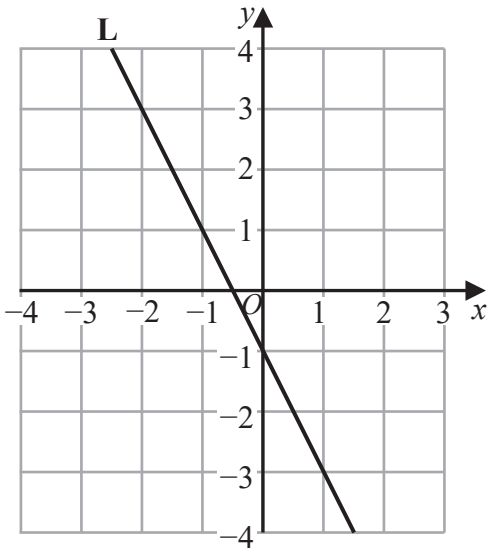


Find an equation for **L**
Give your answer in the form $y = mx + c$

.....

(Total for Question 2 is 3 marks)

3 Line **L** is drawn on the grid.



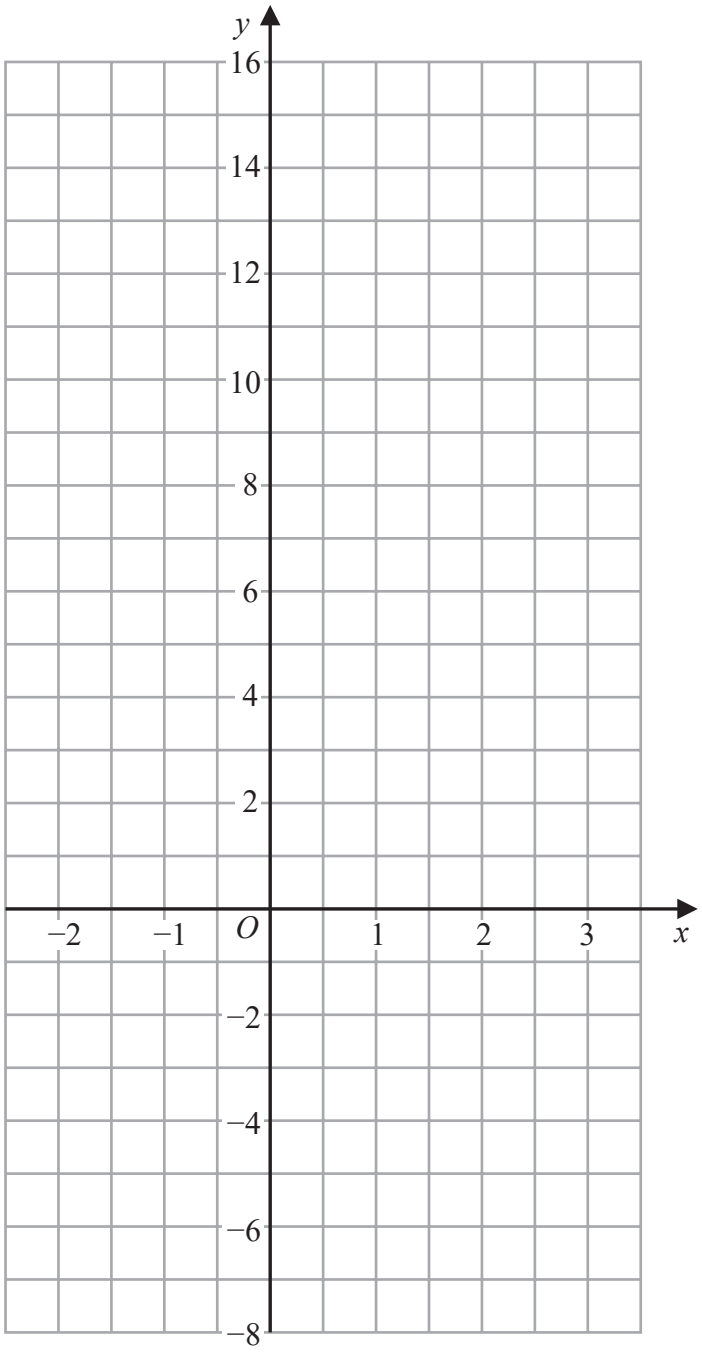
Find an equation for **L**.

.....

(Total for Question 3 is 3 marks)

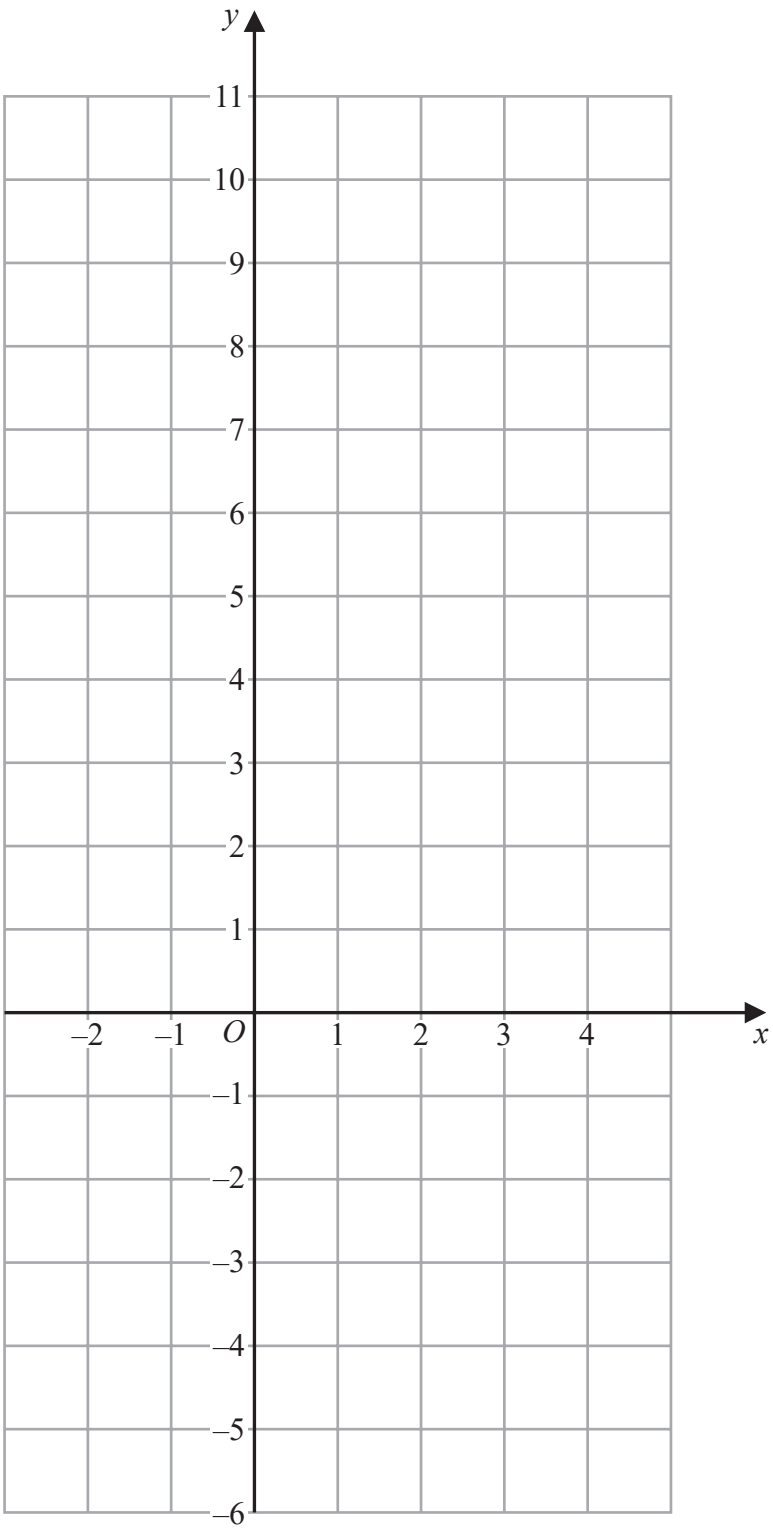
4

On the grid, draw the graph of $y = 7 - 4x$ for values of x from -2 to 3



(Total for Question 4 is 3 marks)

5 On the grid, draw the graph of $5x + 2y = 10$ for values of x from –2 to 4



(Total for Question 5 is 3 marks)

6

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.

.....

.....

.....

(Total for Question 6 is 2 marks)

7 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 7 is 2 marks)

8 The equation of the line $\mathbf{L}_1$ is $y = 2x + 3$
The equation of the line $\mathbf{L}_2$ is $5y - 10x + 4 = 0$

Show that these two lines are parallel.

(Total for Question 8 is 2 marks)

9 A and B are points on a centimetre grid.
A is the point with coordinates $(-7, 6)$
B is the point with coordinates $(8, -5)$

Work out the length of AB.
Give your answer correct to 1 decimal place.

..... cm

(Total for Question 9 is 2 marks)

10 A is the point with coordinates (5, 9)
B is the point with coordinates (d, 15)

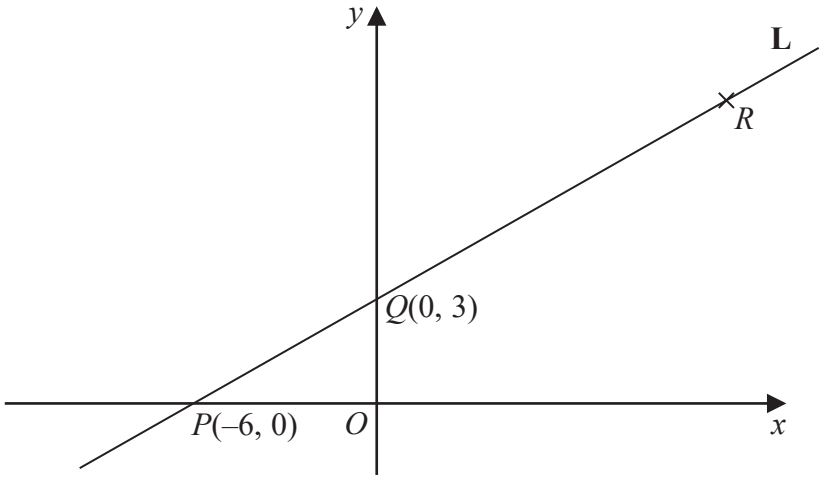
The gradient of the line AB is 3

Work out the value of d.

.....

(Total for Question 10 is 3 marks)

11 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 11 is 5 marks)

12 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 $LM : MN = 2 : 3$,

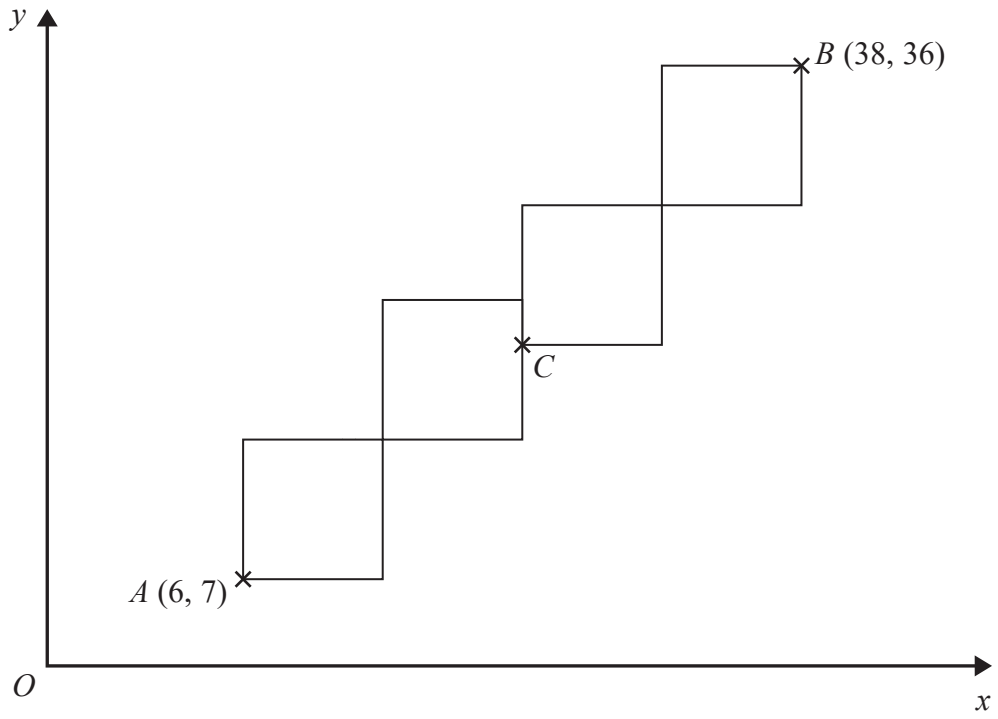
find the coordinates of N.

(..... , ...)

(Total for Question 12 is 4 marks)

13 A pattern is made from four identical squares.

The sides of the squares are parallel to the axes.



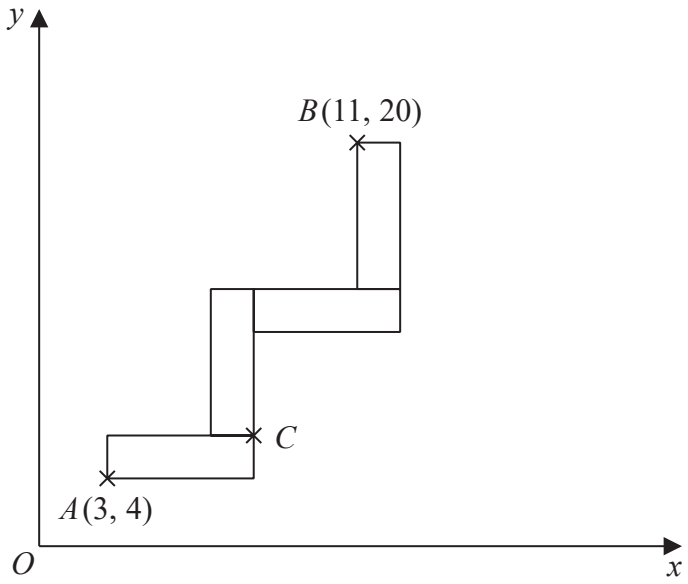
Point A has coordinates (6, 7)
Point B has coordinates (38, 36)
Point C is marked on the diagram.

Work out the coordinates of C.

(..... , ...)

(Total for Question 13 is 5 marks)

14 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 14 is 5 marks)

15 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

.....

(Total for Question 15 is 3 marks)

16 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 16 is 3 marks)

17 The curve **C** has equation $y = x^2 + 3x - 3$

The line **L** has equation $y - 5x + 4 = 0$

Show, algebraically, that **C** and **L** have exactly one point in common.

(Total for Question 17 is 4 marks)

18 The point P has coordinates (3, 4)
The point Q has coordinates (a, b)

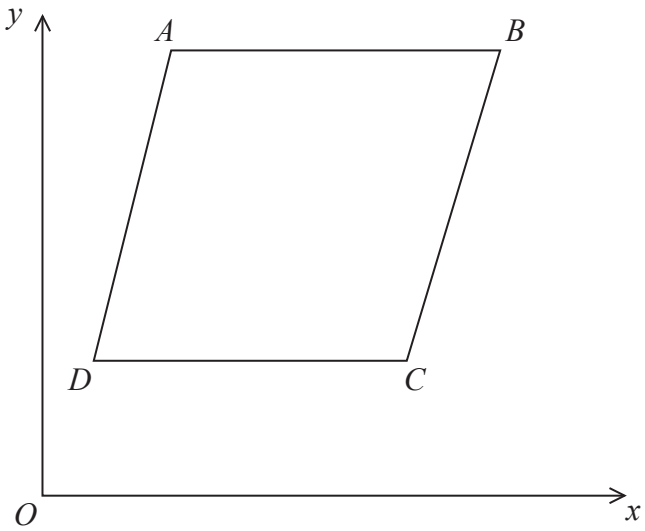
A line perpendicular to PQ is given by the equation $3x + 2y = 7$

Find an expression for b in terms of a.

.....

(Total for Question 18 is 5 marks)

19



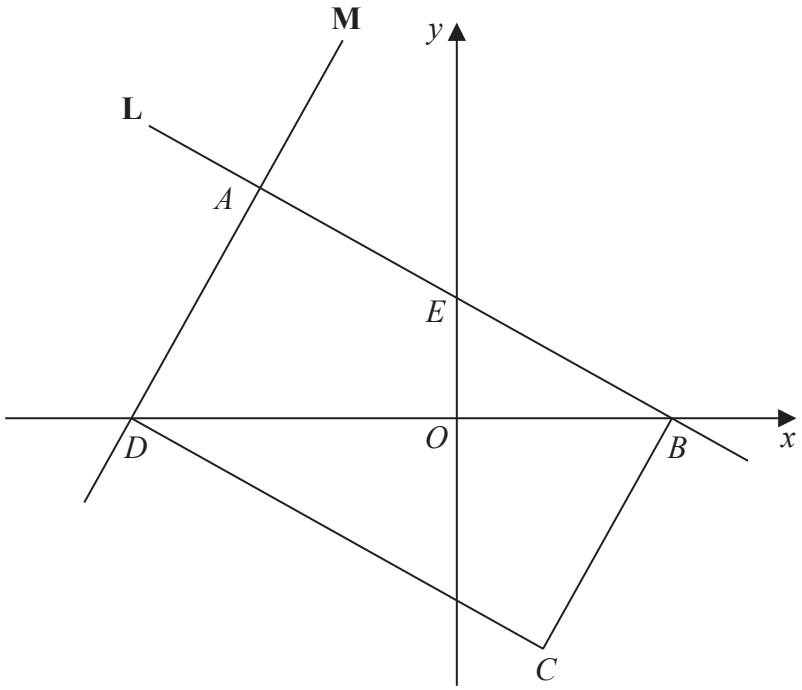
ABCD is a rhombus.
The coordinates of *A* are $(5, 11)$
The equation of the diagonal *DB* is $y = \frac{1}{2}x + 6$

Find an equation of the diagonal *AC*.

.....

(Total for Question 19 is 4 marks)

20



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 21 is 4 marks)

22 The straight line $\mathbf{L}_1$ passes through the points with coordinates (4, 6) and (12, 2)
The straight line $\mathbf{L}_2$ passes through the origin and has gradient -3

The lines $\mathbf{L}_1$ and $\mathbf{L}_2$ intersect at point P.

Find the coordinates of P.

(..... , ...)

(Total for Question 22 is 4 marks)

23 Prove algebraically that the straight line with equation $x - 2y = 10$ is a tangent to the circle with equation $x^2 + y^2 = 20$

(Total for Question 23 is 5 marks)

24 The centre of a circle is the point with coordinates $(-1, 3)$

The point A with coordinates $(6, 8)$ lies on the circle.

Find an equation of the tangent to the circle at A.
Give your answer in the form $ax + by + c = 0$ where a, b and c are integers.

.....

(Total for Question 24 is 4 marks)

25 A circle has equation $x^2 + y^2 = 12.25$

The point P lies on the circle.
The coordinates of P are (2.1, 2.8)

The line **L** is the tangent to the circle at point P.

Find an equation of **L**.
Give your answer in the form $ax + by = c$, where a, b and c are integers.

.....

(Total for Question 25 is 4 marks)

26 The line l is a tangent to the circle $x^2 + y^2 = 40$ at the point A.
A is the point (2, 6).

The line l crosses the x-axis at the point P.

Work out the area of triangle OAP.

.....

(Total for Question 26 is 5 marks)

27 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.

.....

(Total for Question 27 is 5 marks)

28 $A(-2, 1)$, $B(6, 5)$ and $C(4, k)$ are the vertices of a right-angled triangle ABC.
Angle ABC is the right angle.

Find an equation of the line that passes through A and C.
Give your answer in the form $ay + bx = c$ where a, b and c are integers.

.....

(Total for Question 28 is 5 marks)