

Edexcel GCE

Core Mathematics C1

Advanced Subsidiary

Coordinate Geometry

Materials required for examination

Mathematical Formulae (Pink or Green)

Items included with question papers

Nil

Calculators may NOT be used in this examination.

Advice to Candidates

You must ensure that your answers to parts of questions are clearly labelled.

You must show sufficient working to make your methods clear to the Examiner.

Answers without working may not gain full credit.

1. The line l_1 passes through the point $A(2, 5)$ and has gradient $-\frac{1}{2}$.

(a) Find an equation of l_1 , giving your answer in the form $y = mx + c$. (3)

The point B has coordinates $(-2, 7)$.

(b) Show that B lies on l_1 . (1)

(c) Find the length of AB , giving your answer in the form $k\sqrt{5}$, where k is an integer. (3)

The point C lies on l_1 and has x -coordinate equal to p .

The length of AC is 5 units.

(d) Show that p satisfies
$$p^2 - 4p - 16 = 0.$$
 (4)

2. The point $A(-6, 4)$ and the point $B(8, -3)$ lie on the line L .

(a) Find an equation for L in the form $ax + by + c = 0$, where a , b and c are integers. (4)

(b) Find the distance AB , giving your answer in the form $k\sqrt{5}$, where k is an integer. (3)

3.

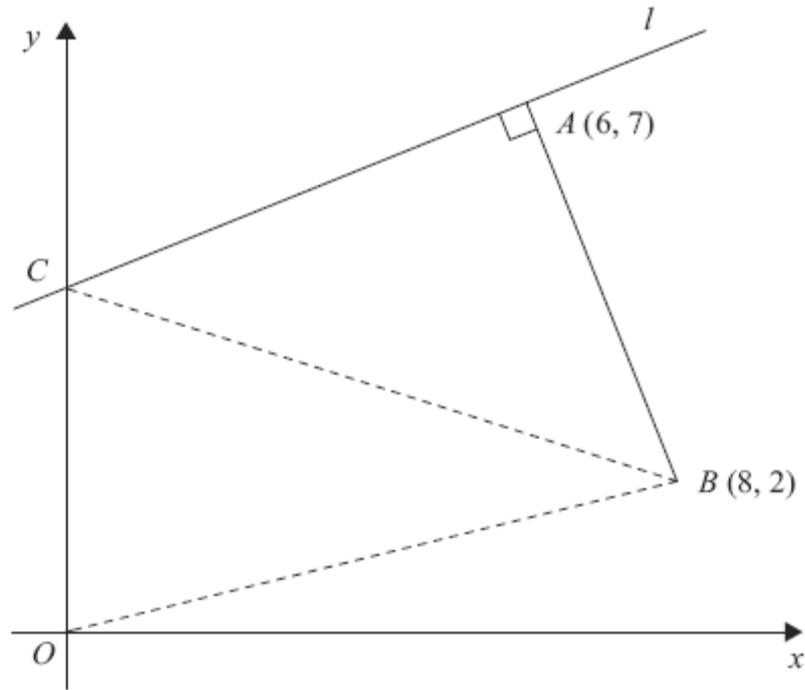


Figure 1

The points A and B have coordinates $(6, 7)$ and $(8, 2)$ respectively.

The line l passes through the point A and is perpendicular to the line AB , as shown in Figure 1.

(a) Find an equation for l in the form $ax + by + c = 0$, where a , b and c are integers.

(4)

Given that l intersects the y -axis at the point C , find

(b) the coordinates of C ,

(2)

(c) the area of $\triangle OCB$, where O is the origin.

(2)

4.

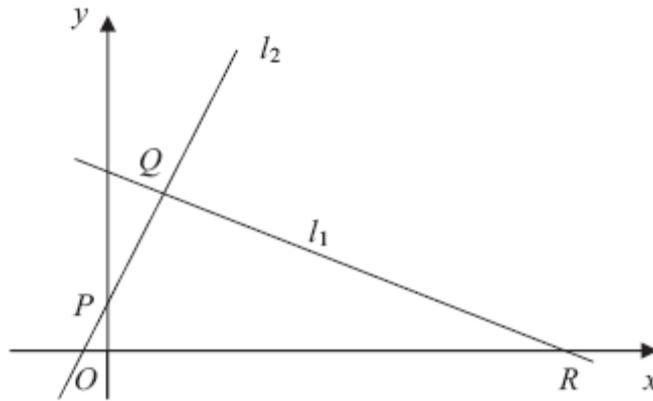


Figure 2

The points $Q(1, 3)$ and $R(7, 0)$ lie on the line l_1 , as shown in Figure 2.

The length of QR is $a\sqrt{5}$.

(a) Find the value of a .

(3)

The line l_2 is perpendicular to l_1 , passes through Q and crosses the y -axis at the point P , as shown in Figure 2. Find

(b) an equation for l_2 ,

(5)

(c) the coordinates of P ,

(1)

(d) the area of $\triangle PQR$.

(4)

5. The line L has equation $y = 5 - 2x$.

(a) Show that the point $P(3, -1)$ lies on L .

(1)

(b) Find an equation of the line perpendicular to L , which passes through P . Give your answer in the form $ax + by + c = 0$, where a, b and c are integers.

(4)

6. The line l_1 has equation $y = 3x + 2$ and the line l_2 has equation $3x + 2y - 8 = 0$.

(a) Find the gradient of the line l_2 .

(2)

The point of intersection of l_1 and l_2 is P .

(b) Find the coordinates of P .

(3)

The lines l_1 and l_2 cross the line $y = 1$ at the points A and B respectively.

(c) Find the area of triangle ABP .

(4)

7. The line l_1 passes through the points $P(-1, 2)$ and $Q(11, 8)$.

(a) Find an equation for l_1 in the form $y = mx + c$, where m and c are constants.

(4)

The line l_2 passes through the point $R(10, 0)$ and is perpendicular to l_1 . The lines l_1 and l_2 intersect at the point S .

(b) Calculate the coordinates of S .

(5)

(c) Show that the length of RS is $3\sqrt{5}$.

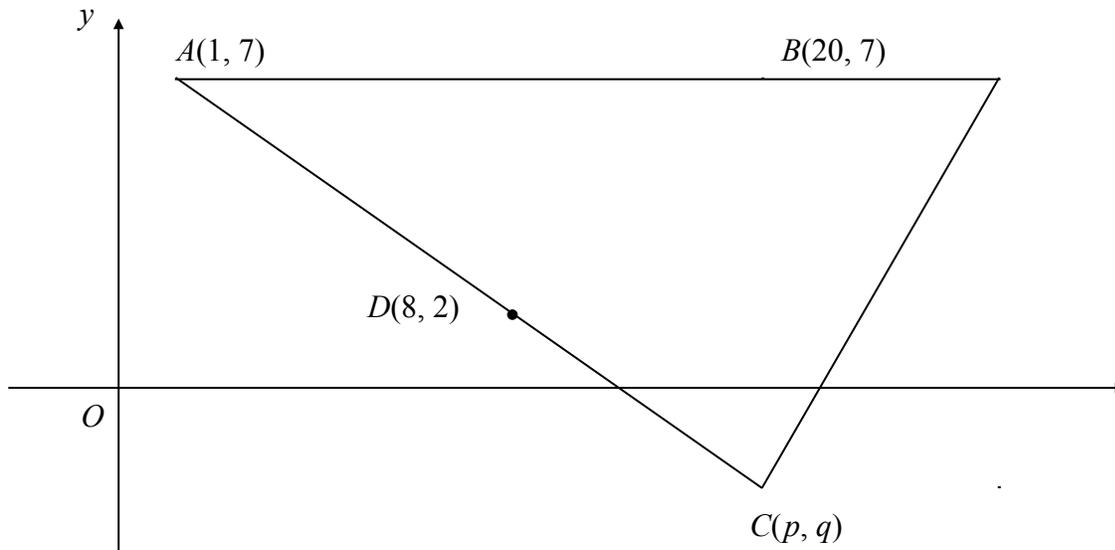
(2)

(d) Hence, or otherwise, find the exact area of triangle PQR .

(4)

8.

Figure 2



The points $A(1, 7)$, $B(20, 7)$ and $C(p, q)$ form the vertices of a triangle ABC , as shown in Figure 2. The point $D(8, 2)$ is the mid-point of AC .

(a) Find the value of p and the value of q .

(2)

The line l , which passes through D and is perpendicular to AC , intersects AB at E .

(b) Find an equation for l , in the form $ax + by + c = 0$, where a , b and c are integers.

(5)

(c) Find the exact x -coordinate of E .

(2)

9. The line l_1 passes through the point $(9, -4)$ and has gradient $\frac{1}{3}$.

(a) Find an equation for l_1 in the form $ax + by + c = 0$, where a , b and c are integers. **(3)**

The line l_2 passes through the origin O and has gradient -2 . The lines l_1 and l_2 intersect at the point P .

(b) Calculate the coordinates of P . **(4)**

Given that l_1 crosses the y -axis at the point C ,

(c) calculate the exact area of $\triangle OCP$. **(3)**

END