COORDINATE GEOMETRY QUESTIONS SL

1.

The line L_1 passes through the points A (2, 5) and B (10, 9). The line L_2 is parallel to L_1 and passes through the origin. The point C lies on L_2 such that AC is perpendicular to L_2. Find

(i) the coordinates of C, [5]

(ii) the distance AC. [2]

2.

The coordinates of A are $(-3, 2)$ and the coordinates of C are $(5, 6)$. The mid-point of AC is M and the perpendicular bisector of AC cuts the x-axis at B.

(i) Find the equation of MB and the coordinates of B. [5]

(ii) Show that AB is perpendicular to BC. [2]

(iii) Given that $ABCD$ is a square, find the coordinates of D and the length of AD. [2]

3.

The point A has coordinates $(-1, -5)$ and the point B has coordinates $(7, 1)$. The perpendicular bisector of AB meets the x-axis at C and the y-axis at D. Calculate the length of CD. [6]

4.

The point P lies on the line joining $A(-1, -5)$ and $B(11, 13)$ such that $AP = \frac{1}{3}AB$.

(i) Find the equation of the line perpendicular to AB and passing through P. [5]

The line perpendicular to AB passing through P and the line parallel to the x-axis passing through B intersect at the point Q.

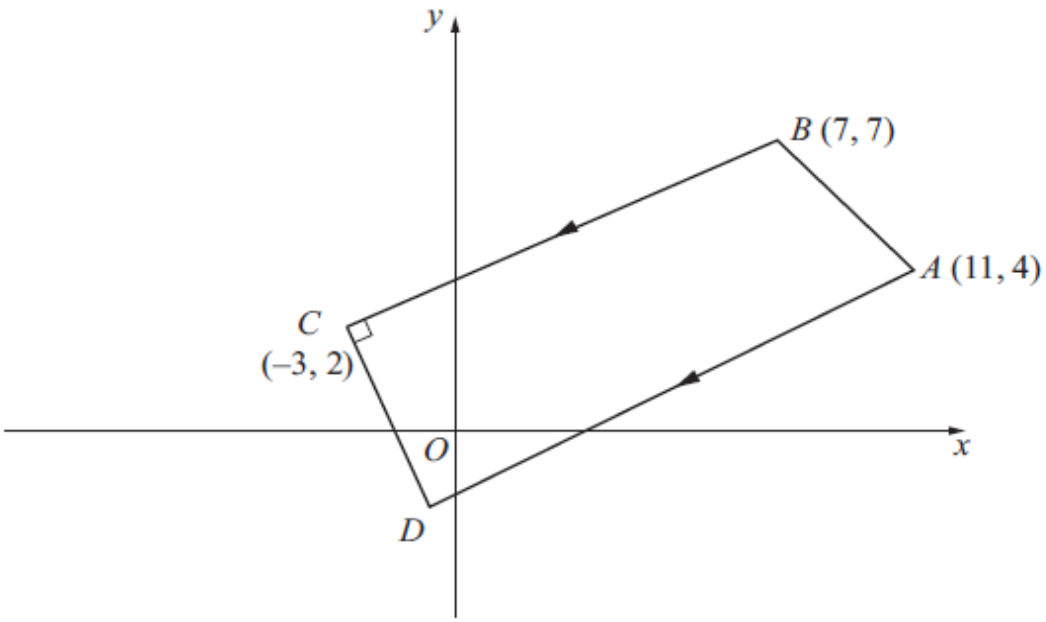
(ii) Find the coordinates of the point Q. [2]

(iii) Find the area of the triangle PBQ. [2]

5.

The line $\frac{x}{a} + \frac{y}{b} = 1$, where a and b are positive constants, meets the x-axis at P and the y-axis at Q. Given that $PQ = \sqrt{(45)}$ and that the gradient of the line PQ is $-\frac{1}{2}$, find the values of a and b. [5]

7.



The diagram shows a trapezium $ABCD$ with vertices $A(11, 4)$, $B(7, 7)$, $C(-3, 2)$ and D. The side AD is parallel to BC and the side CD is perpendicular to BC. Find the area of the trapezium $ABCD$. [9]