

(c) Co-ordinate Geometry

1. The points A, B, C have coordinates $(2, 0), (1, 5)$ and $(-3, -1)$, respectively. The mid-point of BC is D .

(a) Show that the equation of AD is

$$3y + 2x - 4 = 0.$$

[5]

(b) The line L passes through B and is perpendicular to AB . Find the equation of L .

[3]

(c) The line L intersects AD at the point E . Show that E has coordinates $(-4, 4)$.

[2]

(d) Find the area of triangle ABE .

[3]

1. The points A, B and C have coordinates $(6, 6), (3, 5), (7, 3)$, respectively. The mid-point of BC is D . The line through B parallel to AC meets AD at E .

(a) Show that the equation of AD is

$$y - 2x + 6 = 0$$

and find the equation of BE .

[8]

(b) Show that E has coordinates $(4, 2)$.

[2]

(c) Show that BE and EC are perpendicular.

[2]

(d) Find the area of triangle BEC .

[3]

1. The points A and B have coordinates $(-2, 2)$ and $(6, 18)$, respectively. The mid-point of AB is C . The line through C perpendicular to AB intersects the x -axis at the point D .

(a) Find the gradient of AB .

[2]

(b) Show that C has coordinates $(2, 10)$ and hence find the equation of CD .

[4]

(c) Given that the point E has coordinates $(-10, 11)$, show that

(i) EC is parallel to AD ,

(ii) $EC = \frac{1}{2} AD$.

[7]

1. The points A, B, C, D have coordinates $(2, 0), (5, 1), (7, 10), (-3, 5)$ respectively.

(a) Show that the lines AC and BD are perpendicular.

[4]

(b) Show that the line AC has equation

$$2x - y - 4 = 0,$$

and find the equation of the line BD .

[4]

(c) Find the coordinates of E , the point of intersection of the lines AC and BD .

[2]

(d) Show that $AC = 5AE$.

[3]