

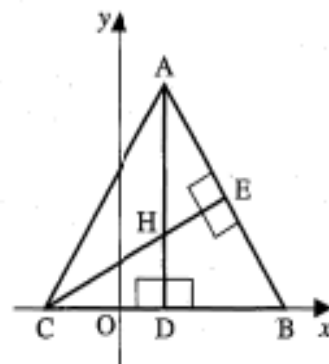
Exercise 1N

- 1 E, D and V are the points with coordinates $(0, -5)$, $(2, -11)$ and $(8, 1)$, respectively. Find

- the equation of EH, the altitude of triangle EDV
- the area of triangle EDV.

- 2 A triangle ABC has vertices $A(1, 6)$, $B(4, 0)$ and $C(-2, 0)$.

- Use Pythagoras' theorem to show that the triangle is isosceles.
- The altitudes AD and CE intersect at H, where D and E lie on BC and AB, respectively. Find the coordinates of H.
 - Hence show that H lies one quarter of the way up DA.



- 3 A triangle has vertices $K(4, 1)$, $L(5, 4)$ and $M(8, 1)$. Find

- the equation of the altitude through L
- the equation of the altitude through M
- the coordinates of the orthocentre of triangle KLM.

- 4 P is the point $(3, 0)$, Q is $(7, 0)$ and R is $(5, -3)$. Find

- the equation of the median through R
- the equation of the median through P
- the coordinates of the centroid of triangle PQR.

- 5 In triangle ABC, A has coordinates $(0, 5)$, B has coordinates $(6, 9)$ and C has coordinates $(0, 12)$. Find

- the equation of the perpendicular bisector of AC
- the equation of the perpendicular bisector of AB
- the coordinates of the circumcentre of triangle ABC
- the radius of the circumcircle of triangle ABC.

- 6 A triangle has vertices $L(2, 3)$, $M(0, 2)$ and $U(4, -2)$.

- Find the coordinates of the centroid, G, of triangle LMU.
- Find the coordinates of the orthocentre, H, of triangle LMU.
- Find the coordinates of the circumcentre, C, of triangle LMU.
- Show that C, H and G are collinear.

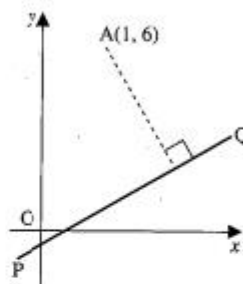
The line through G, H and C is called the Euler line for triangle LMU.

Exercise 10 Mixed questions

- 1 Two sides of a rectangle have equations $y = 2x$ and $2y + x = 5$. Find, algebraically, the coordinates of the vertex of the rectangle formed by these sides.

- 2 The point A has coordinates (1, 6) and the line PQ has equation $2x - 5y - 1 = 0$.

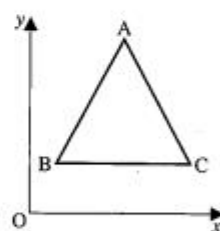
- (a) Find the equation of the line through A perpendicular to PQ.
(b) Find the coordinates of the point where this line meets PQ.



- 3 A triangle ABC has vertices A(4, 8), B(1, 2) and C(7, 2).

- (a) Show that the triangle is isosceles.
(b) (i) The altitudes AD and BE intersect at H, where D and E lie on BC and CA respectively. Find the coordinates of H.
(ii) Hence show that H lies one quarter of the way up DA.

[Higher]



- 4 OABC is a parallelogram where O is the origin and B is the point (3, 7). OC has equation $y = 6x$ and OA has equation $y = -5x$.

- (a) Find the equations of AB and BC.
(b) Hence determine the coordinates of A and C.

