Coordinate Geometry

LEVEL I

1. If the distances of P(x, y) from the points A(3, 6) and B(–3, 4) are equal prove that $3x + y = 5$.
2. Find the point on y-axis which is equidistant from the points (5, –2) and (–3, 2).
3. Find the distance of point (h, k) from the x-axis.
4. If the distance of the point (4, a) from x-axis is half the distance from y-axis, then find a.
5. Two vertices of a triangle are (3, –5) and (–7, 4). If its centroid is (2, –1), find the third vertex.
6. Find a relation between x and y if the points (x, y), (1, 2) and (7, 0) are collinear.
7. If the area of the triangle formed by points A(x, y), B(1, 2) and C(2, 1) is 6 square units, then show that $x + y = 15$.
8. The centre of a circle is (2a, a – 7). Find the values of a if the circle passes through the point (11, –9) and has diameter $10\sqrt{2}$ units.
9. Find the area of a rhombus if its vertices are (3, 0), (4, 5), (–1, 4) and (–2, –1) taken in order.
10. If the mid-point of the line segment joining the points P(6, b – 2) and Q(–2, 4) is (2, –3), find the value of b.

LEVEL II

11. If the point (x, y) be equidistant from the points (a + b, b – a) and (a – b, a + b), prove that $bx = ay$.
12. Find the centre of a circle passing through (5, –8), (2, –9) and (2, 1).
13. The three vertices of a parallelogram ABCD are A(3, –4), B(–1, –3) and C(–6, 2). Find the coordinates of vertex D and find the area of ABCD.
14. If A(4, –8), B(3, 6) and C(5, –4) are the vertices of ΔABC, D is the mid-point of BC and P is a point on AD joined such that $\dfrac{AP}{AD} = 2$, find the coordinates of P.
15. The coordinates of the mid-point of the line joining the points (3p, 4) and (–2, 2q) are (5, p). Find the values of p and q.

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