CHAPTER-7 | Coordinate Geometry

QUIZ-01

1. What is the distance between the points (4, 0) and (6, 0)?
   A. 4 units B. 2 units
   C. 1 unit D. 3 units (B)
   Explanation : Since both points lie on the x-axis, the distance is simply the difference between their x-coordinates: 6 - 4 = 2 units.
2. Which of the following is the formula to find the distance between two points $P(x_1, y_1)$ and $Q(x_2, y_2)$?
   A. $\sqrt{(x_2 - x_1 + y_2 - y_1)}$
   B. $\sqrt{[(x_2 - x_1)^2 + (y_2 - y_1)^2]}$
   C. $(x_2 - x_1) + (y_2 - y_1)$
   D. $(x_2 + x_1) + (y_2 + y_1)$ (B)
   Explanation : The correct distance formula is $\sqrt{[(x_2 - x_1)^2 + (y_2 - y_1)^2]}$.
3. The points (3, 2), (-2, -3), and (2, 3) form which type of triangle?
   A. Equilateral B. Right-angled
   C. Scalene D. Isosceles (B)
   Explanation : Using the distance formula, we find that the points form a right-angled triangle, since the Pythagorean theorem holds true.
4. The midpoint of a line segment joining two points $A(x_1, y_1)$ and $B(x_2, y_2)$ is given by which of the following formulas?
   A. $((x_1 + x_2), (y_1 + y_2))$
   B. $((x_1 + x_2)/2, (y_1 + y_2)/2)$
   C. $((x_1 - x_2)/2, (y_1 - y_2)/2)$
   D. $(x_1 + y_1, x_2 + y_2)$ (B)
   Explanation : The midpoint of a line segment is given by the average of the x and y coordinates of the two points.
5. If the points A(1, 7), B(4, 2), and C(-1, -1) are vertices of a quadrilateral, what is the relation between them?
   A. They are collinear.
   B. They form a square.
   C. They form a triangle.
   D. They form a parallelogram. (A)
   Explanation : The points lie on the same straight line, as verified by the distance formula. Therefore, they are collinear.
6. In the Section Formula, if a point divides a line segment in the ratio 1 : 2, how do we calculate the coordinates of the point?
   A. $(x_1 + 2x_2, y_1 + 2y_2)$
   B. $(x_1 + x_2, y_1 + y_2)$
   C. $(2x_1 + x_2, 2y_1 + y_2)$
   D. $(x_1 + 2x_2/3, y_1 + 2y_2/3)$ (D)
   Explanation : The section formula for dividing a line segment in the ratio $m_1 : m_2$ gives the coordinates as $[(m_2x_1 + m_1x_2) / (m_1 + m_2), (m_2y_1 + m_1y_2) / (m_1 + m_2)]$.
7. What is the ratio in which the point (0, 5) divides the line segment joining A(2, 3) and B(4, 7)?
   A. 1 : 1 B. 2 : 1
   C. 3 : 2 D. 4 : 1 (B)
   Explanation : By applying the section formula, we determine the ratio of division as 2 : 1.
8. The points (3, 0), (4, 1), and (5, 4) form which type of triangle?
   A. Right-angled B. Equilateral
   C. Scalene D. Isosceles (C)
   Explanation : Using the distance formula, the triangle formed by these points is scalene, with all sides of different lengths.
9. The distance between the points (0, 0) and (36, 15) is :
   A. 36 units B. 15 units
   C. 39 units D. 10 units (C)
   Explanation : The distance formula gives $\sqrt{(36^2 + 15^2)} = \sqrt{(1296 + 225)} = \sqrt{1521} = 39$ units.
10. Which equation represents the set of points that are equidistant from the points (7, 1) and (3, 5)?
    A. x - y = 2 B. x + y = 10
    C. x - y = 4 D. x + y = 5 (A)
    Explanation : The equation x - y = 2 represents the perpendicular bisector of the line joining the points (7, 1) and (3, 5), which contains all points equidistant from them.