Class X ICSE - Section Formula

A. Multiple Choice Questions

Choose the correct option:

1. The centroid of the triangle whose vertices are $(-3, -7)$, $(-8, 6)$ and $(5, 10)$ is:

   1. (0, 9)
   2. (0, 3)
   3. (1, 3)
   4. (3, 3)

2. A line intersects the y-axis and x-axis at the points A and B respectively. If $(2, 5)$ is the mid-point of AB, then the coordinates of A and B are, respectively:

   1. (0, 4) and $(-10, 0)$
   2. (0, 10) and $(-4, 0)$
   3. (0, 10) and (4, 0)
   4. (0, 4) and (10, 0)

3. If $\left(\frac{a}{3}, 4\right)$ is the mid-point of a line segment joining the points $X(-6, 5)$ and $Y(-2, 3)$, then the value of a is:

   1. -4
   2. -6
   3. 12
   4. -12

4. If the centroid of the triangle formed by $(7, x)$, $(y, -6)$ and $(9, 10)$ is $(6, 3)$, then the values of x and y respectively are:

   1. 5, 3
   2. 5, 2
   3. -3, 2
   4. 6, 5

5. The ratio in which the point $\left(\frac{3}{4}, \frac{5}{12}\right)$ divides the line segment joining the points $A\left(\frac{1}{2}, \frac{3}{2}\right)$ and $B(2, -5)$ is:

   1. 1 : 2
   2. 3 : 2
   3. 1 : 5
   4. 2 : 3

6. The fourth vertex D of a parallelogram $ABCD$ whose three vertices are $A(-2, 3)$, $B(6, 7)$ and $C(8, 3)$ is:

   1. (0, 1)
   2. (0, -1)
   3. (-1, 0)
   4. (1, 0)

7. The ratio in which $P(4, m)$ divides the line segment joining the points $A(2, 3)$ and $B(6, -3)$ is:

   1. 1 : 2
   2. 2 : 1
   3. 1 : 3
   4. 1 : 1

8. If $\left(\frac{m}{2}, 5\right)$ is the mid-point of the line segment joining the points $Q(-6, 7)$ and $R(-2, 3)$, then the value of m is:

   1. -8
   2. 4
   3. 12
   4. -6

9. The mid-point of the line segment joining the points $(-5, 7)$ and $(-1, 3)$ is:

   1. (-3, 7)
   2. (-3, 5)
   3. (-1, 5)
   4. (5, -3)

10. In the figure, AB is a diameter of the circle with centre $O(4, 5)$. If A is $(1, 1)$, then B is:

    1. (6, 9)
    2. (7, 9)
    3. (-7, 9)
    4. (7, -9)

11. The ratio in which $P(4, m)$ divides the line segment joining the points $A(2, 3)$ and $B(6, -3)$ is:

1. 1 : 2

2. 2 : 1

3. 1 : 3

4. 1 : 1

12. If the mid-point of the line segment joining the points $P(6, a-2)$ and $Q(2,3)$ is $(4,1)$, then the value of a is:

1. -5

2. -6

3. -7

4. -8

13. If the coordinates of one end of a diameter of a circle are $(2,3)$ and the coordinates of its centre are $(-2,5)$, then the coordinates of the other end of the diameter are:

1. (-6, 7)

2. (6, -7)

3. (6, 7)

4. (-6, -7)

14. The point which lies on the perpendicular bisector of the line segment joining points $A(-2,-5)$ and $B(2,5)$ is:

1. (0, 0)

2. (0, 2)

3. (2, 0)

4. (-2, 0)

15. The vertices of a parallelogram in order are $A(1,2)$, $B(4,y)$, $C(x,6)$, $D(3,6)$. The value of x and y respectively are:

1. 6, 2

2. 3, 6

3. 5, 6

4. 1, 4

16. A line intersects the y-axis and x-axis at the points P and Q, respectively. If $(2,5)$ is the mid-point of PQ, then the coordinates of P and Q respectively are:

1. (0, 5) and (-2, 0)

2. (0, 10) and (-4, 0)

3. (0, 4) and (-10, 0)

4. (0, 10) and (4, 0)

17. If $A(1,3)$, $B(-1,2)$, $C(2,5)$ and $D(x,y)$ are the vertices of a parallelogram $ABCD$, then the value of (x,y) is:

1. (3, 4)

2. (4, 3)

3. (0, 0)

4. $\left(\frac{3}{2}, \frac{5}{2}\right)$

B. Short Answer Type Questions

1. Find the ratio in which the line segment joining $(-2,5)$ and $(-5,-6)$ is divided by the line $y = -3$. Hence find the point of intersection.

2. $P(1,-2)$ is a point on the line segment joining $A(3,-6)$ and $B(x,y)$ such that $AP : PB$ is equal to $2:3$. Find the coordinates of B.

3. In what ratio is the line segment joining $P(5,3)$ and $Q(-5,3)$ divided by the y-axis? Also find the coordinates of the point of intersection.

4. In what ratio does the point $C\left(\frac{3}{5}, \frac{11}{5}\right)$ divide the line segment joining the points $A(3,5)$ and $B(-3,-2)$?

5. Find the coordinates of the points of trisection (i.e., points dividing into three equal parts) of the line segment joining the points $A(2,-2)$ and $B(-7,4)$.

6. Find the ratio in which the y-axis divides the line segment joining the points $(5,6)$ and $(-1,-4)$. Also, find the point of intersection.

7. If the points $A(6,1)$, $B(8,2)$, $C(9,4)$ and $D(p,3)$ form a parallelogram, find the value of p.

8. Prove that the points $(2,1)$, $(8,3)$, $(10,4)$, $(4,2)$ form a parallelogram.

9. Find the length of the median of a triangle joining a vertex to the mid-point of its opposite side.

C. Long Answer Type Questions

1. Find the ratio in which the point $(-3, p)$ divides the line segment joining the points $(-5, -4)$ and $(-2, 3)$. Hence, find the value of p.

2. If the coordinates of the midpoints of the sides of a triangle are $(1, 2)$, $(0, 1)$ and $(2, 1)$, find the coordinates of its vertices.

3. The base BC of an equilateral triangle ABC lies on y-axis. The coordinates of point C are $(0, 3)$. If the origin is the midpoint of the base BC, find the coordinates of the points A and B.

4. Find the area of the triangle whose vertices are $(0, 0)$, $(6, 0)$, and $(0, 8)$. Verify using the formula for the area of a triangle.

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