ASSIGNMENT **COORDINATE GEOMETRY** **CLASS X**

Q1. Find the distance between the following points:

(a) A(3 , 5) and B(8 , – 7) (b) P(a + b , a – b) and Q (a– b , –a – b)

Q2. Find the value of x for which the distance between points A(x, 7) and B (–2 , 3) is $4\sqrt{5}$ units.

Q3. If the points (3, 2) and (2, –3) are equidistant from points (x, y) show that x + 5y = 0.

Q4. Show that the following points are collinear:

(a) (–5, 6), (–1, 2) and (2, –1) (b) (4, 3) , (5,1) and (1, 9) (c) (1, –1), (5, 2) and (9, 5)

Q5. Show that following points are vertices of right triangle. Also, name the right angle.

(a) (4, 4) , (3 , 5) , (–1 ,1) (b) (–2, 3) , (8, 3) , (6, 7) (c) (–2, 3), (8, 3) and (6, 7)

Q6. Show that following points are vertices of a rectangle:

(a) (2 , –2) , (8, 4) , (5, 7) , (– 1, 1) (b) (–4 , –1) , (–2 , 4) , (4, 0) , (2, 3)

Q7. Show that following points are vertices of a square:

(a) (0 , –1) , (2, 1) , (0, 3) , (–2, 1) (b) (0, 1) , (1, 4) , (4,3) , (3, 0)

Q8. Show that following points are vertices of rhombus:

(a) (0, 5) , (–2, –2) , (5 , 0) , (7, 7) (b) (2, –1) , (3, 4) , (–-2, 3) , (–3 , –2)

Q9. Show that the following points are the vertices of an equilateral triangle :

(a) A(1, 1), B(–1, –1) and C $\left(-\sqrt{3}, \sqrt{3}\right)$ (b) P(2, 4), Q(2, 6) and R($\left(2+\sqrt{3}, 5\right)$

Q10. Find the co-ordinates of circumcenter of a Δ ABC where A(1, 2) , B (3, –4) and C (5, –6).

Q11. Find radius of the circle, the co-ordinates of the ends of whose diameter are (–1, 2) and (3, –4).

Q12. (a) Find the point on x-axis, which is equidistant from points (7, 6) and (9 , 4).

(b) Find the point on y-axis, which is equidistant from points (5, 2) and (–4 , 3).

Q13. A point P is at a distance of $\sqrt{10}$ from the point (4, 3). Find the co-ordinates of P, if its ordinate is twice its abscissa.

Q14. A line of length 10 units has (–-2, 3) as one of its end points. If the ordinate of the other end be 9, Show that its abscissa is 6 or –10.

Q15. The opposite angular points of a square be (3, 4) and (1, –1). Find the co-ordinates of the remaining angular points.

Q16. Show that the following points are the vertices of isosceles right triangle :

(a) (6, 4), (3, 0) and (–1, 3) (b) (0, 0), (5, 5) and (–5, 5) (c) (–5, 6), (3, 0) and (9, 8)

Q17. Show that the following points are the vertices of a parallelogram :

(a) A(–2, –1), B(1, 0), C(4, 3) and D(1, 2) (b) P(1, –2), Q(3, 6), R(5, 10) and S(3, 2)

Q18. Show that the points A(2, –1), B(3, 4), C(–2, 3) and D(–3, –2) forms a rhombus but not a square. Find the area of the rhombus also.

Q19. If the point (x, y) is equidistant from the points (a+ b , b –a) and (a – b, a + b), prove that bx = ay.

Q20. The centre of a circle is (3*k* + 1, 2*k* – 1). If the circle passes through the point (–1, –3) and the length of its diameter be 20 units, find the value of *k*.

Q21.Find the value of x such that PQ = QR, where the co-ordinates of P, Q and R are (6, –1), (1,3) and (x, 8).

Q22. If two vertices of an equilateral triangle are (0, 0) , (3, $\sqrt{3}$), find the third vertex.

Answers

Ans1 . (a) 13, (b) $2\sqrt{a^2+b^2}$ Ans2. 6 or – 10 Ans10. (11, 2) Ans11. $\sqrt{13}$

Ans12. (a) (3, 0) (b) (0, 15) Ans13. (3, 6) Ans15. (9/2 , 1/2) and (–1/2 , 5/2)

Ans18. 24 sq. units. Ans20. $k = 2, \frac{-46}{13}$ Ans21. 5 or –3 Ans22. (0, $2\sqrt{3}$) or (3, $-\sqrt{3}$)

Assignment Co-ordinate Class X (Continued)

Q1. Find the co-ordinates of a point which divide the segment AB in the ration 3:5 internally, where A(4 , –1) and B(–2, 4).

Q2. Find the co-ordinates of points of trisection of the segment joining points (4, –8) and (7, 4).

Q3. In what ratio does the point (3, 12) divide line segment joining the points (1, 4) and (4, 16)?

Q4. Determine the ratio in which the line $3x + y – 9 = 0$ divides the segment joining the points (1, 3) and (2, 7).

Q5. Find the points of trisection of the line segment joining the points :

(a) (3, –2) and (–3, –4) (b) (1, –2) and (–3, 4)

Q6. (a) In what ratio the line segment joining the points (–2, –3) and (3, 7) divided by y-axis? Also, find the co-ordinates of the point of division.

(b) In what ratio the line segment joining the points (2, –3) and (5, 6) divided by y-axis? Also, find the co-ordinates of the point of division.

Q7. If A (5, –1), B (–3 , –2) and C (–1, 8) are the vertices of ΔABC, find length of median through A and also find the co-ordinates of the centroid.

Q8. Find the co-ordinates of vertices of triangle, if the co-ordinates of mid points of sides of the Triangle are: (a) (3, 2) , (4, 4) and (1, 3) (b) (3, 4) , (4, 1) and (2, 0)

Q9. Find co-ordinate of centroid of triangle whose vertices are:

(a) (–2, 1) , (–3, 4) and (8, –11) (b) (–2, 4) , (7, –3) and (4, 5)

Q10. Find the third vertex of triangle, if its two vertices are (–4, 1) and (5, 2) and its centroid is (1, 3).

Q11.Three consecutive vertices of a parallelogram are (–2, –1), (1, 0) and (4, 3). Find its fourth vertex.

Q12. Find the co-ordinates of points which divide the line segment joining the points (–4, 0) and (0, 6) in four equal parts.

Q13. A line segment joining the points (3, –4) and (1, 2) is trisected at the points P and Q. If the co-ordinates of P and Q are (p, –2) and (5/3, q) respectively. Find p and q.

Q14. Determine ratio in which the point P(m, 6) divides the join of A(–4, 3) and B(2, 8). Also find m.

Q15. Three consecutive vertices of a parallelogram are (–2, –1), (1, 0) and (4, 3). Find the coordinate of the fourth vertex.

Q16. The co-ordinates of the mid points of the sides of a triangle are (1, 1) , (2, –3) and (3, 4). Find The co-ordinates of its centroid.

Q17. The line joining the points (2, 1) and (5, 8) is trisected at the points P and Q. If point P lies on the line $2x – y + k = 0$, find the value of k.

Q18. (a) For what value of *k*, the points (*k*, –1), (5, 7) and (8, 11) are collinear?

(b) For what value of *k* are the points (*k*, 2 – 2*k*), (–*k* + 1, 2*k*) and (–4 – *k*, 6 – 2*k*) are collinear?

Q19. Find the area of the quadrilateral, the coordinates of whose vertices are :

(a) (–3, 2), (5, 4), (7, –6) and (–5, –4) (b) (–4, –2), (–3, –5), (3, –2) and (2, 3)

Q20. If the area of the quadrilateral whose angular points, taken in order, are (1, 2), (–5, 6), (7, –4), (*p*, –2) be zero, find the value of *p*.

Answers

Ans1.(7/4, 7/8) Ans2. (5, –4) and (6, 0) Ans3. 2:1 Ans4. 3:4

Ans5. $(a)\left(1,\frac{-8}{3}\right),\left(-1,\frac{-10}{3}\right)$ $(b)\left(\frac{-1}{3},0\right),\left(\frac{-5}{3},2\right)$ Ans6. (a) 2:3 and (0, 1) (b) 1: 2

Ans7. $\sqrt{65}$ and (1/3, 5/3) Ans8. (a) (0, 1) , (6, 3) and (2, 5) (b) (1,3) , (5, 5) and (3, –3)

Ans9. (a) (1, –2) (b) (3, 2) Ans10. (–1, 3) Ans11. (1, 2) Ans12. (–3, 3/2) , (–2, 3) and (–1, 9/2) Ans13. p = 7 /3 and q = 0 Ans14. 3:2 , m = –2/5

Ans15. $(1,2)$ Ans16. (2, 2/3) Ans17. –8 Ans18. $(a)\ k = -1$ (b) $k = -1 \text{ or } \frac{1}{2}$

Ans19. (a) 80 sq. units (b) 28 sq. units Ans20. 3