CLASS: X **SUB: Mathematics**

TOPIC: Coordinate Geometry

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1) Show that the points (a, a), (-a, - a) and (- √3a, √3a) are the vertices of an equilateral Δ

2) Show that four points (0,-1), (6, 7), (-2, 3) and (8, 3) are the vertices of a rectangle

3) Prove that (4, -1), (6, 0), (7, 2) and (5, 1) are the vertices of a rhombus. Is it a square?

4) Show that the following points are the vertices of a right angled isosceles triangle: (1, 2), (1, 5) and (4, 2)

5) Find a relation between x and y such that the point (x, y) is equidistant from the points (7, 1) and (3, 5) **(x - y = 2)**

6) If the distance of P(x, y) from the points A (3, 6) and B (-3, 4) are equal, prove that 3x + y = 5

7) Find the values of x for which the distance between the points P (2, -3) and Q (x, 5) is 10 units **(8 or -4)**

8) Given A (-2, 3) and AB = 10 units .If ordinate of B is 9, find abscissa of B **(-10, 6)**

9) Find the coordinates of the point equidistant from three given points A (5, 1), B (-3, -7) and C (7, -1) **(2,-4)**

10) If the point p(x, y) is equidistant from the points A (a + b, b - a) and B (a - b, a + b), prove that b x = a y

11) Find the point on y- axis which is equidistant from the point (5, -2) and (-3, 2) **(0, -2)**

12) Find the point on x- axis which is equidistant from the points (2, -5) and (-2, 9) **(-7, 0)**

13) If the points A (4, 3), and B(x, 5) are on the circle with the centre. O (2, 3), find the value of x **(x=2)**

14) The three consecutive vertices of a parallelogram are (-2, 1), (1, 0) and (4, 3). Find the Coordinates of the fourth vertex **(1, 4)**

15) Find the value of k for which the points (7, -2), (5, 1), and (3, k) are collinear. **(k = 4)**

16) Find the value of m, for which the points with co-ordinates (3, 5), (m, 6) and [1/2, 15/2] are collinear **(m = 2)**

17) Find a relation between x and y, if (x, y), (1, 3) and (8, 0) are collinear **(3x +7y = 24)**

18) If the points (-2, 1), (a, b) and (4,-1) are collinear and a - b = 1, then find the values of a and b **(a =1, b = 0)**

19) Check whether the points (4, 5), (7, 6) and (6, 3) are collinear.

20) If A (-5, 7), B (-4, -5), C (-1, -6) and D (4, 5) are the vertices of a quadrilateral, find the area of the quadrilateral ABCD.

21) ABCDE is polygon whose vertices are A (-1, 0), B (4, 0), C (4, 4), D (0, 7) and E (-6, 2). Find the area of the polygon

22) Using A (4, -6), B (3, -2) and C (5, 2), verify that a median of the ΔABC divides it into two triangles of equal areas

23) The coordinates of A, B, C are (3, 4), (5, 2), (x, y) respectively. If area of ΔABC = 3, show that x + y = 10

24) The coordinates of the vertices of ΔABC are A (4, 1), B (-3, 2) and C (0, k).Given that the area of ΔABC is 12 unit^2, Find the Value of k **(k = - 13/ 7)**

25) Find the ratio in which the point (2, y) divides the line segment joining the points A (-2, 2) and B (3, 7) **(4: 1)**

26) If P divides the join of A (-2, -2) and B (2, -4) such that AP/AB = 3/7, find the coordinates of P **(-2/7, -20/7)**

27) Find the ratio in which the line 2x + y – 5 = 0 divides the line segment joining A (2,-3) and B (3, 9) **(2:5)**

28) Determine the ratio in which the line 3x + 4y – 9 = 0 divides the line segment joining the points (1, 3) and (2, 7) **(k = - 6/25)**

29) Find the length of medians of triangle whose vertices are A (-1, 3), B (1, -1), and C (5, 1)

30) If the midpoint of of the segment joining A (a, b +1), and B (a +1, b +2) is C (3/2, 5/2) Find a and b **(a=1, b=1)**

31 The coordinates of one end point of a diameter of a circle are (4, -1) and the coordinates of the centre of the circle are (1, -3) Find the coordinates of the other end of the diameter **(-2, -5)**

32) If P(x, y) is any point on the line joining the points A (a, 0), B (0, b), then show that $\frac{x}{a} + \frac{y}{b} = -1$

33) The centre of a circle is (2a – 1, 7) and it passes through the point (-3, -1). If the diameter of the circle is 20 units, then find the value of a **(-4, 2)**

34) Determine the value of a if AB = BC, where A, B, C are the points (-5, 1), (0, 5) and (a, 1) respectively **(±5)**

35) A (5, -1), B (-1, 8) and C (-3, -2) are the vertices of triangle ABC. E and F are the midpoints of the sides AB and AC Respectively. Show that EF = ½ BC