# CBSE

COORDINATE GEOMETRY WS 6

Class 10 - Mathematics

Section A

1. If the mid-point of the line joining (3, 4) and (k, 7) is (x, y) and 2x + 2y + 1 = 0 find the value of k. **[2]**

2. If the mid-point of the line segment joining the points A (3, 4) and B (k, 6) is P (x, y) and x + y - 10 = 0, find the value of k. **[2]**

3. If the mid-point of the line segment joining A($\frac{x}{2}$, $\frac{y+1}{2}$) and B(x + 1, y - 3) is C(5, -2), find y. **[2]**

4. If the point C (-1, 2) divides internally the line segment joining the points A (2, 5) and B (x, y) in the ratio 3 : 4, find the value of $x^2 + y^2$. **[2]**

Section B

5. Find the ratio in which the point (x, 2) divides the line segment joining the points (-3 , -4) and (3, 5). Also find the value of x. **[3]**

6. ABCD is a parallelogram with vertices A(x_1, y_1), B (x_2, y_2) and C (x_3, y_3). Find the coordinates of the fourth vertex D in terms of x_1, x_2, x_3, y_1, y_2 and y_3. **[3]**

7. To conduct Sports Day activities, in your rectangular-shaped school ground ABCD, lines have been drawn with chalk powder at a distance of 1m each. 100 flower pots have been placed at a distance of 1m from each other along AD, as shown in Figure. Niharika runs $\frac{1}{4}$ th the distance AD on the 2nd line and posts a green flag. Preet runs $\frac{1}{5}$ th the distance AD on the eighth line and posts a red flag. What is the distance between both the flags? If Rashmi has to post a blue flag exactly halfway between the line segment joining the two flags, where should she post her flag? **[3]**
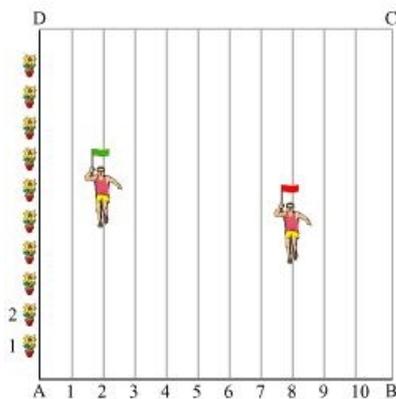
8. Point A lies on the line segment PQ joining P(6, -6) and Q (-4, -1) in such a way that $\frac{PA}{PQ} = \frac{2}{5}$. If the point A also lies on the line 3x + k(y + 1)=0, find the value of k. **[3]**

9. If the point C (-1, 2) divides the line segment AB in the ratio 3 : 4, where the coordinates of A are (2, 5), find the coordinates of B **[3]**

10. Find k so that the point P (-4, 6) lies on the line segment joining A (k, 10) and B (3, - 8). Also, find the ratio in which P divides AB. **[3]**

11. Find the coordinates of the points of trisection of the line segment joining the points (3, -1) and (6, 8). **[3]**

12. The vertices of a $\triangle$ABC are A (5,5), B (1,5) and C (9,1). A line is drawn to intersect sides AB and AC at P and **[3]**

Q respectively, such that $\frac{AP}{AB} = \frac{AQ}{AC} = \frac{3}{4}$. Find the length of the line segment PQ.

13. A point P divides the line segment joining the points A (3, - 5) and B (- 4, 8) such that $\frac{AP}{PB} = \frac{k}{1}$. If P lies on the line x + y = 0, then find the value of k. **[3]**

14. Find the ratio in which the line segment joining (-2, -3) and (5,6) is divided by (i) x-axis (ii) y-axis. Also, find the coordinates of the point of division in each case. **[3]**

15. The three vertices of a parallelogram ABCD taken in order are A (-1, 0), B(3, 1) and C(2, 2). Find the height of a parallelogram with AD as its base. **[3]**

16. Find the ratio in which the y-axis divides the line segment joining the points (6, -4) and (-2, -7). Also find the point of intersection. **[3]**

17. Find the co-ordinates of the points which divide the line segment joining the points (5, 7) and (8, 10) in 3 equal parts. **[3]**

18. Point A is on x-axis, point B is on y-axis and the point P lies on line segment AB, such that P (4, - 5) and AP : PB = 5 : 3. Find the coordinates of point A and B. **[3]**

19. In what ratio is the line segment joining (-3, -1) and (-8, -9) divided at the point (-5,-21/5)? **[3]**

20. The point A divides the join of P (-5, 1) and Q (3, 5) in the ratio k : 1. Find the two values of k for which the area of $\triangle ABC$ where B is (1, 5) and C (7, -2) is equal to 2 units. **[3]**

21. Find the coordinates of points which trisect the line segment joining (1, -2) and (-3, 4). **[3]**

22. The base AB of two equilateral triangles ABC and ABC' with side 2a lies along the X-axis such that the mid-point of AB is at the origin. Find the coordinates of the vertices C and C' of the triangles. **[3]**
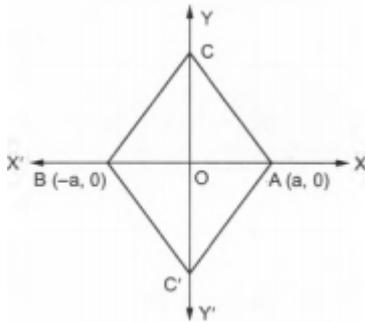
23. (1, -1), (0, 4) and (- 5, 3) are vertices of a triangle. Check whether it is a scalene triangle, isosceles triangle or an equilateral triangle. Also, find the length of its median joining the vertex (1, - 1) the mid-point of the opposite side. **[3]**

24. If the points A (a, -11), B (5, b), C (2, 15) and D (1, 1) are the vertices of a parallelogram ABCD, find the values of a and b. **[3]**

25. The mid-point P of the line segment joining the points A (-10,4) and B (- 2,0) lies on the line segment joining the points C (- 9, - 4) and D (- 4, y). Find the ratio in which P divides CD. Also, find the value of y. **[3]**

26. If G be the centroid of a triangle ABC, prove that: $AB^2 + BC^2 + CA^2 = 3 (GA^2 + GB^2 + GC^2)$ **[3]**

27. Find the ratio in which the line 2x + 3y - 5 = 0 divides the line segment joining the points (8, - 9) and (2, 1). Also find the co-ordinates of the point of division. **[3]**

28. If A (5,-1), B (-3,-2) and C (-1,8) are the vertices of triangle ABC, find the length of median through A and the coordinates of the centroid. **[3]**

29. If (1, 2), (4, y), (x, 6) and (3, 5) are the vertices of a parallelogram taken in order, find x and y. **[3]**

30. The line segment joining the points (3, -4) and (1, 2) is trisected at the points P and Q. If the coordinates of P and Q are (p, -2) and (5/3, q) respectively. Find the values of p and q. **[3]**

31. Three vertices of a parallelogram are (a + b, a - b), (2a + b, 2a - b), (a - b , a + b). Find the fourth vertex. **[3]**

32. In what ratio does the y-axis divide the line segment joining the point P (- 4,5) and Q (3,-7)? Also, find the coordinates of the point of intersection. **[3]**

33. If the points P, Q(x, 7), R, S(6, y) in this order divide the line segment joining A(2, p) and B (7, 10) in 5 equal parts, find x, y and p. **[3]**

34. The line segment joining the points A(3, - 4) and B(1, 2) is trisected at the points P and Q. Find the coordinates of P. **[3]**

35. Find the lengths of the medians of a $\triangle$ ABC whose vertices are A (7, -3), B (5,3) and C (3, -1). **[3]**

36. In what ratio is the line segment joining the points (-2, -3) and (3, 7) divided by the y-axis? Also, find the coordinates of the point of division. **[3]**

37. If the points A (6, 1), B (8, 2), C (9, 4) and D (k, p) are the vertices of a parallelogram taken in order, then find the values of k and p. **[3]**

38. The line segment joining the points P (3,3) and Q (6, - 6) is trisected at the points A and B such that A is nearer to P. If A also lies on the line given by 2x + y + k = 0, find the value of k. **[3]**

39. If the coordinates of the mid-points of the sides of a triangle are (1, 1), (2, -3) and (3, 4). Find its centroid. **[3]**

40. Determine the ratio in which the point (-6, a) divides the join of A(-3, 1) and B (-8, 9). Also find the value of a. **[3]**

41. If three consecutive vertices of a parallelogram are (1,-2), (3,6) and (5,10), find its fourth vertex. **[3]**

42. Let the opposite angular points of a square be (3, 4) and (1, -1). Find the coordinates of the remaining angular points. **[3]**

43. The points (3, -4) and (-6, 2) are the extremities of a diagonal of a parallelogram. If the third vertex is (-1, -3). Find the coordinates of the fourth vertex. **[3]**

44. In what ratio does the x-axis divide the line segment joining the points (2, -3) and (5, 6)? Also, find the coordinates of the point of intersection. **[3]**

45. Determine the ratio in which the point P(a, -2) divides the line segment joining the points A(-4, 3) and B(2, -4). Also, find the value of **a**. **[3]**

46. Find the ratio between the point $\left(\frac{24}{11}, y\right)$ which divides the line segment joining the points P(2, - 2) and Q(3, 7). Also find the value of y. **[3]**

47. Prove analytically that the line segment joining the middle points of two sides of a triangle is equal to half of the third side. **[3]**

48. 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. **[3]**

49. Find the co-ordinates of a point P on the line segment joining A(1, 2) and B (6, 7) such that AP = $\frac{2}{5}$ AB. **[3]**

50. In what ratio does y-axis divide the line segment joining the points (-4, 7) and (3, -7)? **[3]**

51. The coordinates of the point P are (-3, 2). Find the coordinates of the point Q which lies on the line joining P and origin such that OP = OQ. **[3]**

52. Find the ratio in which the point $P\left(\frac{3}{4}, \frac{5}{12}\right)$ divides the line segment joining the point $A\left(\frac{1}{2}, \frac{3}{2}\right)$ and B(2, -5). **[3]**

53. If A (-1, 3), B (1, -1) and C (5,1) are the vertices of a triangle ABC, find the length of the median through A. **[3]**

Section C

Question No. 54 to 57 are based on the given text. Read the text carefully and answer the questions: **[4]**

To raise social awareness about the hazards of smoking, a school decided to start a 'No smoking' campaign. 10 students are asked to prepare campaign banners in the shape of a triangle. The vertices of one of the triangles are P(-3, 4), Q(3,

4) and R(-2, -1).

54. What are the coordinates of the centroid of △PQR?

55. If T be the mid-point of the line joining R and Q, then what are the coordinates of T?

56. If U be the mid-point of line joining R and P, then what are the coordinates of U?

57. What are the coordinates of centroid of △STU?

Question No. 58 to 61 are based on the given text. Read the text carefully and answer the questions: **[4]**

Jagdish has a field which is in the shape of a right angled triangle AQC. He wants to leave a space in the form of a square PQRS inside the field for growing wheat and the remaining for growing vegetables (as shown in the figure). In the field, there is a pole marked as O.
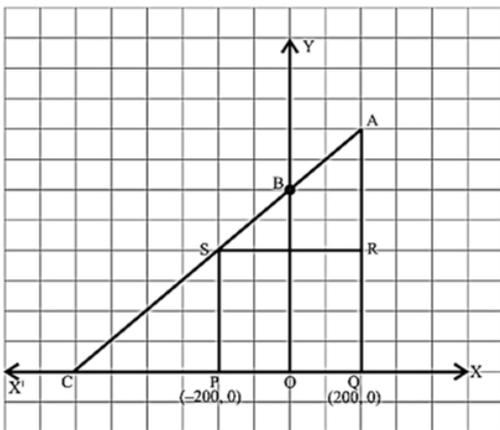
58. Taking O as origin, coordinates of P are (-200, 0) and of Q are (200, 0). PQRS being a square, what are the coordinates of R and S?

59. What is the area of square PQRS?

60. What is the length of diagonal PR in square PQRS?

61. If S divides CA in the ratio K : 1, what is the value of K, where point A is (200, 800)?

Question No. 62 to 65 are based on the given text. Read the text carefully and answer the questions: **[4]**

In an examination hall, students are seated at a distance of 2 m from each other, to maintain the social distance due to CORONA virus pandemic. Let three students sit at points A, B and C whose coordinates are (4, -3), (7, 3) and (8, 5) respectively.

62. What is the distance between A and C?

63. If an invigilator at point 7, lying on the straight line joining B and C such that it divides the distance between them in the ratio of 1 : 2. Then what are the coordinates of I(invigilator)?

64. What is the mid-point of the line segment joining A and C?

65. What is the ratio in which B divides the line segment joining A and C?

Question No. 66 to 69 are based on the given text. Read the text carefully and answer the questions: [4]

Use of mobile screen for long hours makes your eye sight weak and give you headaches. Children who are addicted to play "PUBG'' can get easily stressed out. To raise social awareness about ill effects of playing PUBG, a school decided to start 'BAN PUBG' campaign, in which students are asked to prepare campaign board in the shape of a rectangle. One such campaign board made by class X student of the school is shown in the figure.
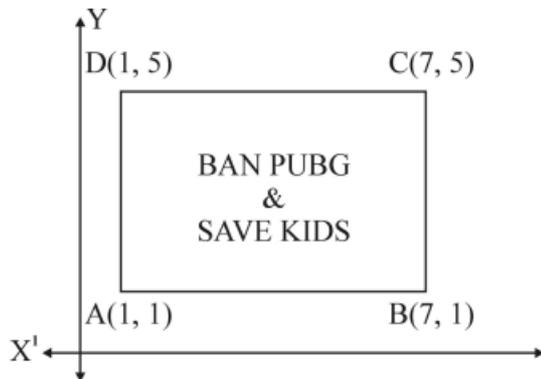
66. Find the coordinates of the point of intersection of diagonals AC and BD.

67. Find the length of the diagonal AC.

68. Find the area of the campaign Board ABCD.

69. Find the ratio of the length of side AB to the length of the diagonal AC.