

COORDINATE GEOMETRY WS 7

Class 10 - Mathematics

1. If R(x, y) is a point on the line segment joining the points P(a, b) and Q(b, a), then prove that  $x + y = a + b$ . [2]
2. In what ratio does the point C(4, 5) divide the join of A(2, 3) and B(7, 8)? [2]
3. Find the value of k for which the distance between (9, 2) and (3, k) is 10 units. [2]
4. If (a, b) is the mid-point of the line segment joining the points A (10, - 6), B (k, 4) and  $a - 2b = 18$ , find the value of k and the distance AB. [2]
5. The mid-points of the sides of a triangle are (3, 4), (4,1) and (2, 0). Find the coordinates of the vertices of the triangle. [2]
6. Find the centroid of the triangle whose vertices are (4, -8) (-9, 7) and (8, 13). [2]
7. Let A → (4, 2), B → (6, 5) and C → (1, 4) be the vertices of triangle ABC. The median from A meets BC at D. Find the coordinates of the point D. [2]
8. If A and B are (-2, -2) and (2, -4) respectively; then find the co-ordinates of the point P such that  $\frac{AP}{AB} = \frac{3}{7}$ . [2]
9. Find the co-ordinates of the points which divide the line segment joining the points (-4, 0) and (0, 6) in four equal parts. [2]
10. Show that points (-3, -7 ), (4, 7) and (5, 9) are collinear. [2]
11. Determine the ratio in which the line  $y - x + 2 = 0$  divides the line segment joining the points (3, - 1) and (8, 9). [2]
12. Find the quadrant in which the point P which divides the line segment joining the points A(2, - 5) and B(5, 2) in the ratio 2 : 3. [2]
13. Find the ratio in which point P(-1, y) lying on the line segment joining points A(- 3,10) and B(6, - 8) divides it. Also find the value of y. [2]
14. Find the distance between the points:  
A(1, -3 ) and B(4, -6) [2]
15. Find the coordinates of the point which divides the line segment joining the points (6, 3) and (-4, 5) in the ratio 3 : 2 internally. [2]
16. Find the ratio in which the point P (x, 2) divides the line segment joining the points A (12, 5) and B(4, -3). Also, find the value of x. [2]
17. Point P divides the line segment joining the points A(2, 1) and B(5, -8) such that  $\frac{AP}{AB} = \frac{1}{3}$ . If P lies on the line  $2x - y + k = 0$ , find the value of k. [2]
18. Find the coordinates of the points which divide the line segment joining the points (-2, 0) and (0, 8) in four equal parts. [2]
19. Find the coordinates of a point A, where AB is a diameter of the circle with centre (3, -1) and the point B is (2, 6). [2]
20. Find the coordinates of the point which divides the join of (-1, 7) and (4, -3) in the ratio 2 : 3. [2]
21. Find the coordinates of the points of trisection of the line segment joining (4, -1) and (-2, -3). [2]
22. 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]
23. If A(4, - 8), B(3, 6) and C(5, -4) are the vertices of  $\triangle ABC$ , D is the midpoint of BC and P is a point on AD joined such that  $\frac{AP}{PD} = 2$ . Find the coordinates of P. [2]

24. The mid-point of the line segment AB is the point P(0, 4). If the coordinates of B are (-2, 3), then what are the coordinates of A? [2]
25. In what ratio does the point P(-4, y) divide the line segment joining the points A(-6, 10) and B(3, -8)? Hence find the value of y. [2]
26. Find the centroid of the triangle whose vertices are given below: (3, -5), (-7, 4), (10, -2). [2]
27. If G (-2, 1) is the centroid of a  $\triangle ABC$  and two of its vertices are A(1, -6) and B(-5, 2), find the third vertex of the triangle. [2]
28. In what ratio does the point P(2, 5) divide the join of A(8, 2) and B(-6, 9)? [2]
29. Point A lies on the line segment XY joining X(6, -6) and Y(-4, -1) in such a way that  $\frac{XA}{XY} = \frac{2}{5}$ . If point A also lies on the line  $3x + k(y + 1) = 0$ , find the value of k. [2]
30. In what ratio does the point P(-4, 6) divide the line segment joining the points A(-6, 10) and B(3, -8)? [2]
31. 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. [2]
32. The coordinates of A and B are (1, 2) and (2, 3). Find the coordinates of R so that  $\frac{AR}{RB} = \frac{4}{3}$ . [2]
33. Find the coordinates of the point where the diagonals of the parallelogram formed by joining the points (-2, -1), (1, 0), (4, 3) and (1, 2) meet. [2]
34. Find the ratio in which the segment joining A(1, -5) and B(-4, 5) is divided by the x-axis. Also find the coordinates of the point of division. [2]
35. Find the coordinates of the midpoint of the segment joining P(-11, -8) and Q(8, -2) [2]
36. A(3, 2) and B(-2, 1) are two vertices of a triangle ABC, whose centroid G has a coordinates  $(\frac{5}{3}, -\frac{1}{3})$ . Find the co-ordinates of the third vertex C of the triangle. [2]
37. The line joining the points (2, -1) and (5, -6) is bisected at P. If P lies on the line  $2x + 4y + k = 0$ . find the value of k. [2]
38. If the centroid of  $\triangle ABC$  having vertices A(a, b), B(b, c) and C(c, a) is the origin, then find the value of (a + b + c). [2]
39. In what ratio is the line segment joining the points (-2, 3) and (3, 7) divided by the y-axis? [2]
40. The line segment joining the points A (3, 2) and B (5,1) is divided at the point P in the ratio 1 : 2 and P lies on the line  $3x - 18y + k = 0$ , Find the value of k. [2]
41. Find the centroid of the triangle whose vertices are given below : (4, -8), (-9, 7), (8, 13) [2]
42. Find the ratio in which the point P (-1, y) lying on the line segment joining A (-3, 10) and B(6, -8) divides it. Also find the value of y. [2]
43. Write the ratio in which the line segment joining the points A (3, -6) and B (5, 3) is divided by X-axis. [2]
44. In what ratio does the point P(2, -5) divide the line segment joining A(-3, 5) and B(4, -9)? [2]
45. Find the ratio in which the line segment joining the points (-3, 10) and (6, -8) is divided by (-1, 6). [2]
46. Two vertices of a triangle have coordinates (-8,7) and (9,4). If the centroid of the triangle is at the origin, what are the coordinates of the third vertex? [2]
47. If the coordinates of one end of diameter of circle are (2,3) and the coordinates of its centre are (-2,5). Find the coordinates of the other end of the diameter. [2]
48. Find the ratio in which P(4, 5) divides the join of A(2, 3) and B(7, 8). [2]
49. Find the coordinates of the point which divides the join of A(-1, 7) and B(4, -3) in the ratio 2 : 3. [2]
50. Find the co-ordinates of the points of trisection of the line-segment joining the points (5, 3) and (4, 5). [2]

51. Find the ratio in which line formed by joining  $(-1, 1)$  and  $(5, 7)$  is divided by the line  $x + y = 4$ . [2]
52. If the points A  $(6, 1)$ , B  $(8, 2)$ , C  $(9, 4)$  and D  $(p, 3)$  are the vertices of a parallelogram, taken in order, find the value of  $p$ . [2]
53. A $(5, 1)$ ; B $(1, 5)$  and C $(-3, -1)$  are the vertices of  $\triangle ABC$ . Find the length of median AD. [2]
54. Find the ratio in which the point P $(x, 2)$  divides the join of A $(12, 5)$  and B $(4, -3)$ . [2]
55. 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]
56. Find the ratio in which the line segment joining the points A $(6, 3)$  and B $(-2, -5)$  is divided by x-axis. [2]
57. Points P, Q, R and S divide the line segment joining the points A  $(1, 2)$  and B  $(6, 7)$  in 5 equal parts. Find the coordinates of the points P, Q and R. [2]
58. Find the ratio in which the point P  $(11, y)$  divides the line segment joining the points A $(15, 5)$  and B $(9, 20)$ . Also, find the value of  $y$ . [2]
59. Point P divides the line segment joining the points A $(2, -5)$  and B $(5, 2)$  in the ratio  $2 : 3$ . Name the quadrant in which P lies. [2]
60. Find the coordinates of the point of trisection (i.e., points dividing in three equal parts) of the line segment joining the points A $(2, -2)$  and B $(-7, 4)$ . [2]
61. If P  $(9a - 2, -b)$  divides the line segment joining A  $(3a + 1, -3)$  and B  $(8a, 5)$  in the ratio  $3:1$ , find the values of  $a$  and  $b$ . [2]
62. Find the co-ordinates of the points of trisection of the line segment joining the points  $(3, -1)$  and  $(6, 8)$ . [2]
63. The line segment joining the points A $(2, 1)$  and B $(5, -8)$  is trisected at the points P and Q such that P is nearer to A. If P also lies on the line given by  $2x - y + k = 0$ , find the value of  $k$ . [2]
64. If the point C $(-1, 2)$  divides internally the line segment joining A $(2, 5)$  and B $(x, y)$  in the ratio  $3 : 4$ , find the coordinates of B. [2]
65. Let A $(4, 2)$ , B  $(6, 5)$  and C $(1, 4)$  be the vertices of triangle ABC. Find the coordinates of the point P on AD such that  $AP : PD = 2:1$ . [2]
66. Find the points of trisection of the line segment joining the points  $(5, -6)$  and  $(-7, 5)$ . [2]
67. Find the mid-point of side BC of  $\triangle ABC$ , with A $(1, -4)$  and the mid-points of the sides through A being  $(2, -1)$  and  $(0, -1)$ . [2]
68. Find the ratio in which the segment joining the points  $(1, -3)$  and  $(4, 5)$  is divided by x-axis? Also, find the coordinates of this point on x-axis. [2]
69. In what ratio does the point C  $(\frac{3}{5}, \frac{11}{5})$  divide the line segment joining the points A  $(3, 5)$  and B  $(-3, -2)$ ? [2]
70. Find the area of the rhombus if its vertices are  $(3, 0)$ ,  $(4, 5)$ ,  $(-1, 4)$  and  $(-2, -1)$  taken in order. [2]  
[Hint: Area of a rhombus =  $\frac{1}{2}$  (product of its diagonals)]
71. In what ratio does the point  $(-4, 6)$  divide the line segment joining the points A $(-6, 10)$  and B $(3, -8)$ ? [2]
72. If A and B are  $(-2, -2)$  and  $(2, -4)$  respectively, find the coordinates of P such that  $AP = \frac{3}{7} AB$  and P lies on the line segment AB. [2]
73. Find the coordinates of the point which divides the line segment joining the points  $(7, -1)$  and  $(-3, -4)$  internally in the ratio  $2 : 3$ . [2]
74. Write the ratio in which the line segment joining points  $(2, 3)$  and  $(3, -2)$  is divided by X axis. [2]
75. Find the coordinates of the point which divides the line segment joining the points A $(7, -1)$  and B $(-3, -4)$  in the ratio  $2 : 3$ . [2]