CBSE

COORDINATE GEOMETRY WS 2

Class 10 - Mathematics

Section A

1. Find the distance between the points A and B in the following: A(a, b), B(–b, a) **[1]**
2. AOBC is a rectangle whose three vertices are A(0, –3), O(0, 0) and B(4, 0). The length of its diagonal is _____. **[1]**
3. If the points A (2, 3), B (-5, 6), C (6, 7) and D (p, 4) are the vertices of a parallelogram ABCD, find the value of p. **[1]**
4. A circle has its centre at the origin and a point P(5,0) lies on it. The point Q (6,8) lies outside the circle. State whether true or false. Justify your answer. **[1]**
5. Find the value of k, if the point P (0, 2) is equidistant from (3, k) and (k, 5). **[1]**
6. Find the perimeter of a triangle with vertices (0, 4), (0,0) and (3,0). **[1]**
7. Find the co-ordinates of the point on the y-axis which is equidistant from the points A(5,3) and B(1, - 5). **[1]**
8. Find the centre and radius of a circle having end points of its diameter as (3, -10) and (1, 4). **[1]**
9. Find the points of X-axis which are at a distance of $2\sqrt{5}$ from the point (7,-4). How many such points are there? **[1]**
10. Find the distance between the points A and B in the following:A(1,-3), B(4, 1) **[1]**
11. Show that the points A(3, 0), B(6, 4) and C(-1, 3) are vertices of a right-angled triangle. **[1]**
12. Write the distance between the points A (10 cos θ, 0) and B(0, 10 sin θ). **[1]**
13. The vertices of a triangle are (-2, 0), (2, 3) and (1, -3). Is the triangle equilateral, isosceles or scalene? **[1]**
14. Write the coordinates of a point P on x-axis which is equidistant from the points A(-2, 0) and B(6, 0). **[1]**
15. If the segment joining the points (a, b) and (c, d) subtends a right angle at the origin then show that ac + bd = 0. **[1]**
16. Find the number of points on x-axis which are at a distance of 2 units from (2, 4). **[1]**
17. Show that the four points A(0, -1), B(6, 7), C(-2, 3) and D(8, 3) are the vertices of a rectangle ABCD. **[1]**
18. Find the distance between the points $\mathrm{A}\left(-\frac{7}{3}, 5\right)$ and $\mathrm{B}\left(\frac{2}{3}, 5\right)$. **[1]**
19. On which axis does the point R(-4, 0) lie? **[1]**
20. Find the distance between the points, A(2a, 6a) and B(2a + $\sqrt{3}a$, 5a). **[1]**
21. Write the coordinates of the reflections of point (3,5) in X and Y-axis. **[1]**
22. Find the value(s) of x, if the distance between the points A(0, 0) and B(x, - 4) is 5 units. **[1]**
23. Find the distance between the pair points (a + b, b + c) and (a - b, c - b). **[1]**
24. Find the distance between the points A and B if A (- 1, - 1), B(8, -2). **[1]**
25. Find the distance between the pair of points (2, 3), (4, 1). **[1]**
26. On which axis do the point S (0,5) lie? **[1]**
27. Find the distance between the points A and B in the following : A(a, 0), B(0, a) **[1]**
28. If the centre and radius of circle is (3, 4) and 7 units respectively, then what is the position of the point A(5,8) with respect to circle? **[1]**

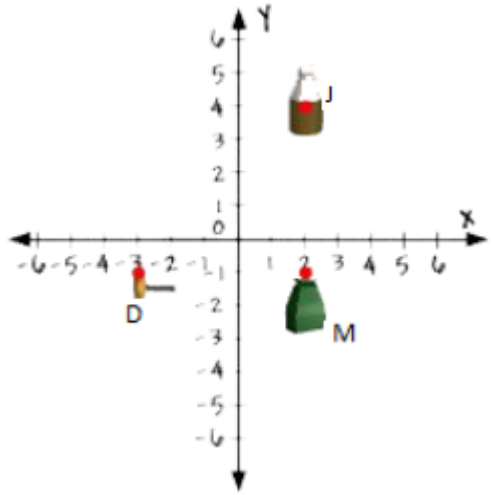
Section B

29. The length of a line segment is of 10 units and the coordinates of one end-point are (2,-3). If the abscissa of the **[3]**

other end is 10, find the ordinate of the other end.

30. The centre of a circle is (2a, a - 7). Find the values of **a** if the circle passes through the point (11, -9). Radius of the circle is $5\sqrt{2}$ cm. **[3]**

31. A team of archaeologists is studying the ruins of Lignite, a small mining town from the 1800's. They plot points on a coordinate plane to show exactly where each artifact is found. **[3]**



They are using this coordinate plane as a map of a section of the town. It shows the location of a medicine bottle (M), a doorknob (D), and a pottery jug (J). Notice that each unit on the grid is equal to 5 meters.

i. How far apart are the doorknob and the medicine bottle?

ii. How far apart are the medicine bottle and pottery jug?

iii. How far apart are the doorknob and the pottery jug?

32. Show that the points A (1, 7), B (4, 2), C (-1, -1) and D (-4, 4) are the vertices of a square. **[3]**

33. If the point P (2, 2) is equidistant from the points A (-2, k) and B (-2k, -3), find k. Also, find the length of AP. **[3]**

34. Find the distance between the pair of points $(a\sin\alpha, -b\cos\alpha)$ and $(-a\cos\alpha, b\sin\alpha)$. **[3]**

35. Find the value of p for which the points (-1, 3), (2, p) and (5, -1) are collinear. **[3]**

36. Which point on y-axis is equidistant from (2, 3) and (-4, 1)? **[3]**

37. In equilateral $\triangle$ABC , coordinates of points A and B are (2,0) and (5,0) respectively. Find the co-ordinates of the other two vertices. **[3]**

38. Find the centre of the circle passing through (5, - 8), (2, - 9) and (2, 1). **[3]**

39. Name the type of triangle formed by the points A (-5, 6), B (-4, -2) and C (7, 5). **[3]**

40. Find the distance between the points (0, 0) and (36, 15). Can you now find the distance between the two towns A and B discussed in Section 7.2. **[3]**

41. Write the coordinates of a point on X-axis which is equidistant from the points (-3, 4) and (2, 5). **[3]**

42. Show that A(3, 2), B(0, 5), C(-3, 2) and D(0, -1) are the vertices of a square. **[3]**

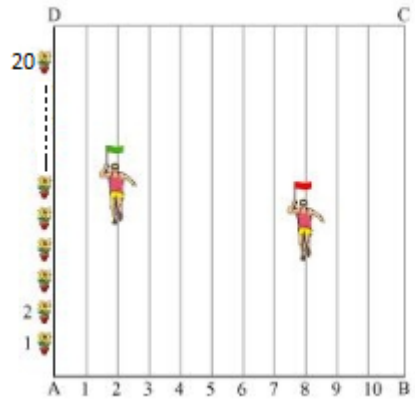
43. Find the distance between the points $(0, a\cos 55^\circ)$ and $(a\cos 35^\circ, 0)$ **[3]**

44. If (0, -3) and (0, 3) are the two vertices of an equilateral triangle, find the coordinates of its third vertex. **[3]**

45. Show that A(1, 2), B(4, 3), C(6, 6) and D(3, 5) are the vertices of a parallelogram. Show that ABCD is not a rectangle. **[3]**

46. To conduct Sports Day activities, in your rectangular shaped school ground ABCD, lines have been drawn with chalk powder at a distance of 1 m each. 100 flower pots have been placed at a distance of 1m from each other along AD, as shown in Fig. Niharika runs the distance AD on the 2nd line and posts a green flag. Preet runs the **[3]**

distance AD on the eighth line and posts a red flag.



i. Calculate the distance Niharika and Preet posted the green flag and reg flag respectively.

ii. What is the distance between both the flags?

iii. If Rashmi has to post a blue flag exactly halfway between the line segment joining the two flags, where should she post her flag?

47. Show that the points A(3, 5), B(6, 0), C(1, -3) and D(-2, 2) are the vertices of a square ABCD. **[3]**

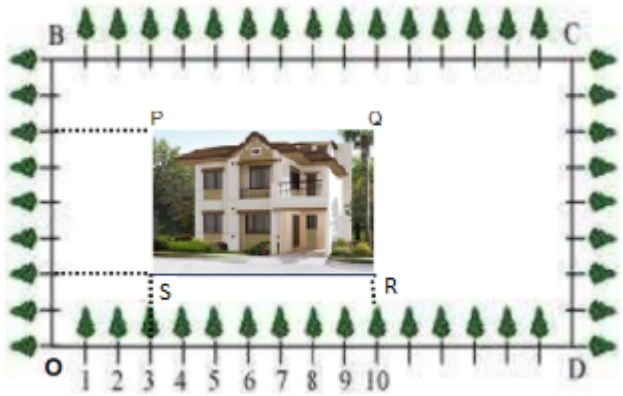
48. Prove that the points (2,3), (-4, -6) and (1,3/2) do not form a triangle. **[3]**

49. Prove that the points (2a, 4a), (2a, 6a) and (2a + $\sqrt{3}$a, 5a) are the vertices of an equilateral triangle. **[3]**

50. Find the values of x, y if the distances of the point (x, y) from (-3,0) as well as from (3,0) are 4. **[3]**

51. The centre of a circle is (2a, a -7). Find the values of a, if the circle passes through the point (11, -9) and has diameter $10\sqrt{2}$ units. **[3]**

52. In Green Park, New Delhi Ramesh is having a rectangular plot ABCD as shown in the following figure. Sapling of Gulmohar is planted on the boundary at a distance of 1m from each other. In the plot, Ramesh builds his house in the rectangular area PQRS. In the remaining part of plot, Ramesh wants to plant grass. **[3]**



i. Find the coordinates of vertices P, Q, R and S of rectangle PQRS.

ii. Find the coordinates of mid-point of diagonal QS.

iii. What is the area of rectangle PQRS?

53. Show that the points A (2,-2), B(14,10), C (11, 13) and D(-1, 1) are the vertices of a rectangle. **[3]**

54. Two vertices of an isosceles triangle are (2,0) and (2,5). Find the third vertex if the length of the equal sides is 3. **[3]**

55. Find the coordinates of the centre of the circle passing through the points (0, 0), (-2, 1) and (-3, 2). Also, find its radius. **[3]**

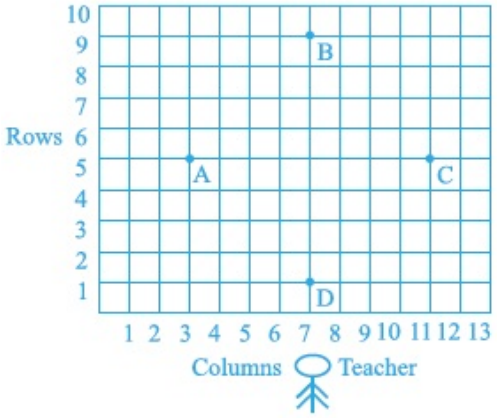
56. If A(5, 3), B(11, -5) and C(12, y) are vertices of a right angled at C, then find the value of y. **[3]**

57. Show that the points A(3, -1), B(5, -1) and C(3, -3) are the vertices of a right angled isosceles triangle. **[3]**

58. Using the distance formula, show that the given points are collinear (-1, -1), (2, 3) and (8, 11) **[3]**

59. Show that the points A(1, 7), B(4, 2) C(-1, -1) and D(-4, 4) are vertices of the square ABCD. **[3]**

60. Students of a school are standing in rows and columns in their playground for a drill practice. A, B, C and D are the positions of four students as shown in figure. **[3]**



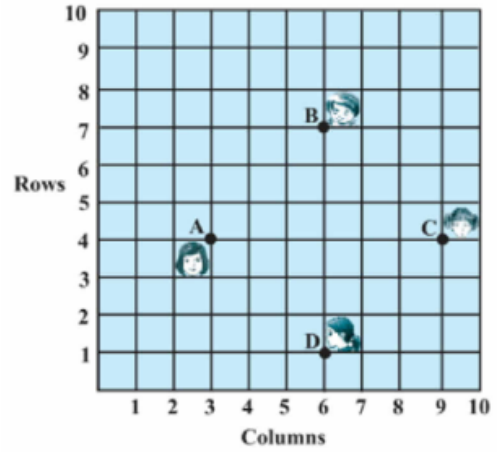
i. Find the positions of the four students A, B, C and D and find the distance between them.

ii. Is it possible to place Jaspal in the drill in such a way that he is equidistant from each of the four students A, B, C and D?

iii. If so, what should be the Jaspal's position?

61. Read the following passage and answer the question that follows: **[3]**

In a class room, four student Sita, Gita, Rita and Anita are sitting at A(3, 4), B(6, 7), C(9, 4), D(6, 1) respectively. Then a new student Anjali joins the class.



i. Teacher tells Anjali to sit in the middle of the four students. Find the coordinates of the position where she can sit.

ii. Calculate the distance between Sita and Anita.

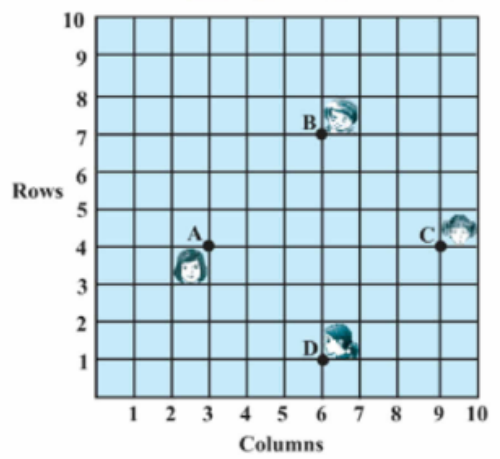
iii. Which two students are equidistant from Gita.

62. Name the type of quadrilateral formed, if any, by the points (-3, 5), (3, 1), (0, 3), (-1, -4), and give a reason for your answer. **[3]**

63. Find the point on the x–axis which are at a distance of $2\sqrt{5}$ from point (7, –4). How many such points are there? **[3]**

64. If (-5, 3) and (5, 3) are two vertices of an equilateral triangle, then find coordinates of the third vertex, given that origin lies inside the triangle. (Take $\sqrt{3}$ = 1.7) **[3]**

65. In a class room, 4 friends are seated at the points A, B, C and D as shown in Figure **[3]**



i. Find the positions of the four friends.

ii. Find far apart the four friends are from each other.

iii. Jarina and Phani walk into the class and after observing for a few minutes Jarina asks Phani "Don't you notice that ABCD is a square?" Phani disagrees. Using distance formula, find which of them is correct. Why?

66. Ayush starts walking from his house to office. Instead of going to the office directly, he goes to a bank first, from there to his daughter's school and then reaches the office. What is the extra distance travelled by Ayush in reaching his office? (Assume that all distances covered are in straight lines). If the house is situated at (2, 4), bank at (5, 8), school at (13, 14) and office at (13, 26) and coordinates are in km. **[3]**

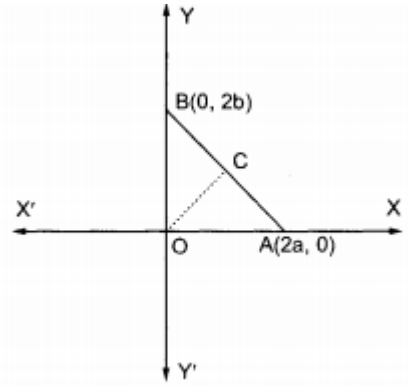
67. If the point Q(0, 1) is equidistant from the points P(5, -3) and R(x, 6); find the value of x. Also, find the distance PR. **[3]**

68. If x is a positive integer such that the distance between the points P(x, 2) and Q(3, - 6) is 10 units, then x =? **[3]**

69. Find the values of x for which the distance between the point P (2, -3) and Q (x, 5) is 10. **[3]**

70. If P(2,-1), Q(3,4), R(-2,3) and S (-3,-2) be four points in a plane, show that PQRS is a rhombus but not a square. Find the area of the rhombus. **[3]**

71. A right triangle BOA is given. C is the mid-point of the hypotenuse AB. Show that it is equidistant from the vertices O, A and B. **[3]**

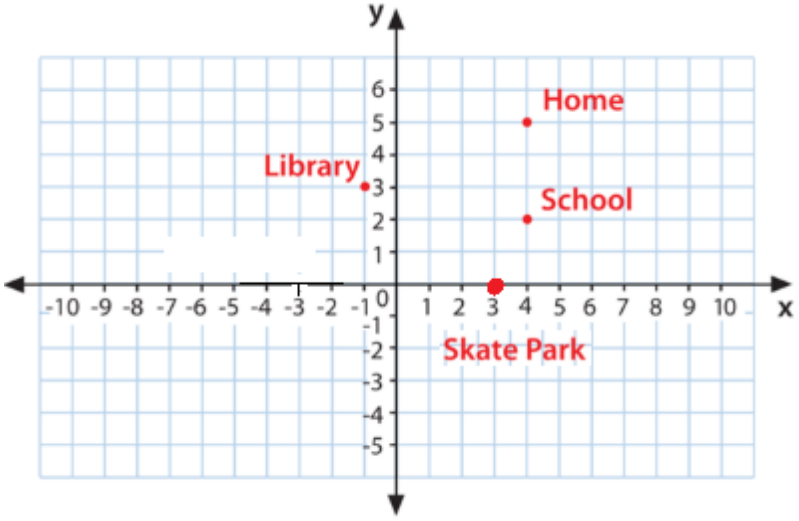


72. Find a point which is equidistant from the points A (-5,4) and B (-1,6). How many such points are there? **[3]**

73. If the distances of P (x, y) from A (5,1) and B (-1,5) are equal, then prove that 3x = 2y. **[3]**

74. Two brothers Ramesh and Pulkit were at home and have to reach School. Ramesh went to Library first to return a book and then reaches School directly whereas Pulkit went to Skate Park first to meet his friend and then **[3]**

reaches School directly.



i. How far is School from their Home?

ii. What is the extra distance travelled by Ramesh in reaching his School?

iii. What is the extra distance travelled by Pulkit in reaching his School? (All distances are measured in metres as straight lines)

75. Find the angle subtended at the origin by the line segment whose end points are (0, 100) and (10, 0). **[3]**