MATHS

NCERT - NCERT MATHEMATICS (Bengali)

COORDINATE GEOMETRY

Example

1. What is the distance between A (4,0) and B (8, 0).

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2. A and B are two points given by (8, 3), (-4, 3).

Find the distance between A and B.

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3. Let's find the distance between two points A(4, 3) and B(8, 6)

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4. Show that the points A (4, 2), B (7, 5) and C (9, 7) are three points lying on a same line.

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5. Do the points (3, 2), (-2, -3) and (2, 3) form a triangle?

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6. Show that the points (1, 7), (4, 2), (-1, -1) and (-4, 4) are the vertices of a square .

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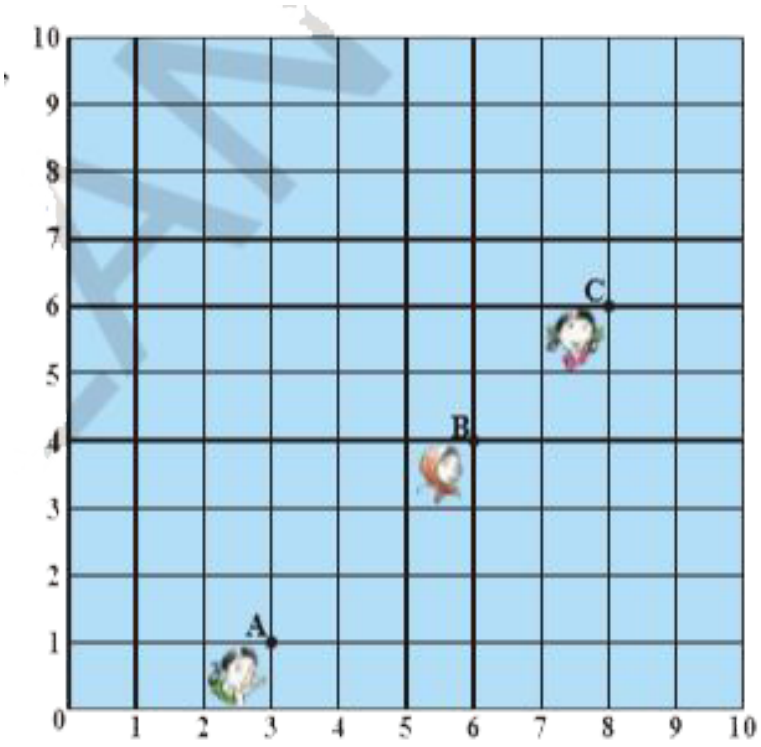
7. The figure shows the arrangement of desks in a class room. Madhuri, Meena, Pallavi are seated at A(3, 1), B(6, 4) and C(8, 6) respectively. Do you think they are seated in a line ? Give

reasons for your answer.



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8. Find the relation between x and y such that the point (x , y) is equidistant from the points

(7, 1) and (3, 5).

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9. Find a point on the Y-axis which is equidistant from both the points A(6, 5) and B(– 4, 3).

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10. Find the coordinates of the point which divides the line segment joining the points (4,

-3) and (8, 5) in the ratio 3 : 1 internally

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11. Find the mid point of the line segment joining the points (3, 0) and (-1, 4)

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12. Find the coordinates of the points of trisection of the line segment joining the points A(2,-2) and B(-7, 4).

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13. Find the centroid of the triangle whose vertices are (3, -5), (-7, 4) and (10, -2).

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14. In what ratio does the point (– 4, 6) divide the line segment joining the points A(– 6, 10) and B(3, – 8)?

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15. 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.

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16. Show that the points A(7, 3), B(6, 1), C(8, 2) and D(9, 4) taken in that order are vertices of a parallelogram.

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17. If the points A(6, 1), B(8, 2), C(9, 4) and D(p, 3) are the vertices of a parallelogram, taken inorder, find the value of p.

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18. Find the area of a triangle whose vertices are (1, -1), (-4, 6) and (-3, -5).

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19. Find the area of a triangle formed by the points A(5, 2), B(4, 7) and C(7, -4).

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

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21. The points (3, -2) (-2, 8) and (0, 4) are three points in a plane. Show that these points are collinear.

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22. Find the value of 'b' for which the points A(1, 2), B(-1, b) and C(-3, -4) are collinear .

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23. The end points of a line segment are (2, 3), (4, 5). Find the slope of the line segment.

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24. Determine x so that 2 is the slope of the line passing through P(2, 5) and Q(x, 3).

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Exercise 7 1

1. Find the distance between the pair of points

(2, 3) and (4, 1)

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2. Find the distance between the pair of points

(-5, 7) and (-1, 3)

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3. Find the distance between the pair of points

(-2, -3) and (3, 2)

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4. Find the distance between the pair of points

(a, b) and (-a, -b)

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5. Find the distance between the points (0, 0) and (36, 15).

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6. Verify whether the points (1, 5), (2, 3) and (-2, -1) are collinear or not.

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7. Check whether (5, -2), (6, 4) and (7, -2) are the vertices of an isosceles triangle.

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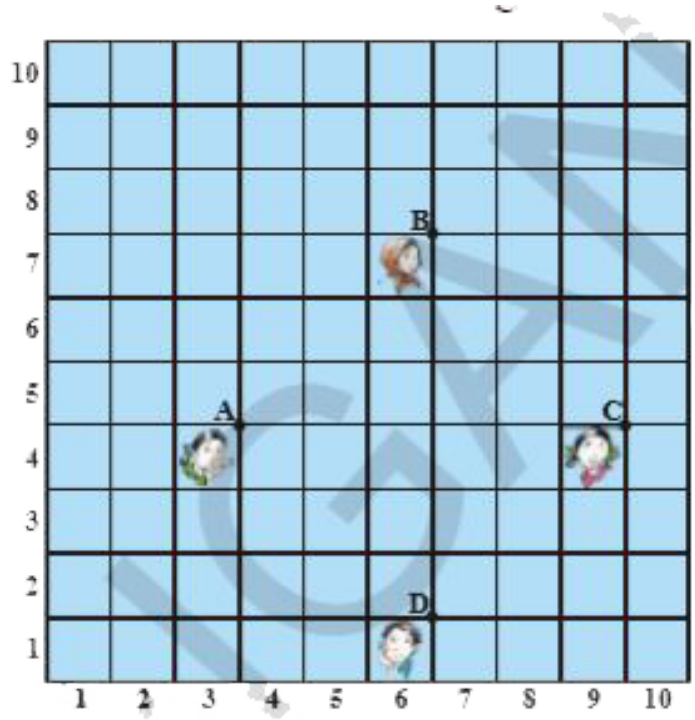
8. In a class room, 4 friends are seated at the points A, B, C and D as shown in Figure. Jarina and Phani walk into the class and after observing for a few minutes Jarina asks Phani "Don't you notice that ABCD is a square?" Phani disagrees. Using distance formula,

decide who is correct and why?



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9. Show that the following points form an equilateral triangle A(a, 0), B(-a, 0), C(0, a $\sqrt{3}$)

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10. Prove that the points (-7, -3), (5, 10), (15, 8) and (3, -5) taken in order are the corners of a parallelogram.

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11. Show that the points (-4, -7), (-1, 2), (8, 5) and (5, -4) taken in order are the vertices of a rhombus. Find its area.

(Hint : Area of rhombus $= \frac{1}{2} \times$ product of its diagonals)

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12. Name the type of quadrilateral formed, if any, by the points, and give reasons for your answer.

(-1, -2), (1, 0), (-1, 2), (-3, 0)

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13. Name the type of quadrilateral formed, if any, by the points, and give reasons for your answer.

(-3, 5), (3, 1), (1, -3), (-5, 1)

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14. Name the type of quadrilateral formed, if any, by the points, and give reasons for your answer.

(4, 5), (7, 6), (4, 3), (1, 2)

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15. Find the point on the X-axis which is equidistant from (2, -5) and (-2, 9).


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16. If the distance between two points (x, 7) and (1, 15) is 10, find the value of x


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17. Find the values of y for which the distance between the points P(2, -3) and Q(10, y) is 10 units.

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18. Find the radius of the circle whose centre is (3, 2) and passes through (-5, 6).

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19. Can you draw a triangle with vertices (1, 5), (5, 8) and (13, 14) ? Give reason

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20. Find a relation between x and y such that the point (x, y) is equidistant from the points (-2, 8) and (-3, -5)

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Exercise 7 2

1. Find the coordinates of the point which divides the line segment joining the points (-1, 7) and (4, -3) in the ratio 2:3 .

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2. Find the coordinates of the points of trisection of the line segment joining (4, -1) and (-2, -3).

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3. Find the ratio in which the line segment joining the points (-3, 10) and (6, -8) is divided by (-1, 6) .

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

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5. Find the coordinates of a point A, where AB is the diameter of a circle whose centre is (2, -3) and B is (1, 4).

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6. If A and B are (-2, -2) and (2, -4) respectively, find the coordinates of P on AB such that AP $= \frac{3}{7}$ AB.

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7. Find the coordinates of points which divide the line segment joining A(-4, 0) and B(0, 6) into four equal parts.

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8. Find the coordinates of the points which divides the line segment joining A(-2, 2) and B(2, 8) into four equal parts.

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9. Find the coordinates of the point which divides the line segment joining the points (a + b, a - b) and (a - b, a + b) in the ratio 3 : 2 internally

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10. Find the coordinates of centroid of the triangle with vertices:

(-1, 3), (6, -3) and (-3, 6)

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11. Find the coordinates of centroid of the triangle with vertices:

(6, 2), (0, 0) and (4, -7)

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12. Find the coordinates of centroid of the triangle with vertices:

(1, -1), (0, 6) and (-3, 0)

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Exercise 7 3

1. Find the area of the triangle vertices are

(2, 3) (-1, 0), (2, -4)

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2. Find the area of the triangle vertices are

(-5, -1), (3, -5), (5, 2)

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3. Find the area of the triangle vertices are

(0, 0), (3, 0) and (0, 2)

4. Find the value of 'K' for which the points are

collinear

(7, -2) (5, 1) (3, K)

5. Find the value of ‘K’ for which the points are collinear

(8, 1), (K, -4), (2, -5)

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6. Find the value of ‘K’ for which the points are collinear

(K, K) (2, 3) and (4, -1).

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7. Find the area of the triangle formed by joining the mid-points of the sides of the triangle whose vertices are (0, -1), (2, 1) and (0, 3). Find the ratio of this area to the area of the given triangle.

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8. Find the area of the quadrilateral whose vertices, taken in order, are (-4, -2), (-3, -5), (3, -2) and (2, 3).

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9. Find the area of the triangle formed by the points (2, 3), (6, 3) and (2, 6) by using Heron's formula

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Exercise 7 4

1. Find the slope of the line passing through the given two point

(4, -8) and (5, -2)

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2. Find the slope of the line passing through the given two point

(0, 0) and $\left(\sqrt{3}, 3\right)$

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3. Find the slope of the line passing through the given two point

(2a, 3b) and (a, -b)

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4. Find the slope of the line passing through the given two point

(a, 0) and (0, b)

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5. Find the slope of the line passing through the given two point

A(-1.4, -3.7), B(-2.4, 1.3)

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6. Find the slope of the line passing through the given two point

A(3, -2), B(-6, -2)

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7. Find the slope of the line passing through the given two point

$A\left(-3\frac{1}{2}, 3\right), B\left(-7, 2\frac{1}{2}\right)$

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8. Find the slope of the line passing through the given two point

A(0, 4), B(4, 0)

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Optional Exercise

1. Find distace between the points (a+b,a-b) and origin.

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2. Find distace between the points (8,3) and origin.

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3. The side BC of an equilateral triangle DABC is parallel to X-axis. Find the slopes of the lines along sides BC, CA and AB.

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4. Find the centroid of the triangle formed by the line $2x + 3y - 6 = 0$, with the coordinate axes.

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Try This

1. Where do these following points lie (0, -3), (0, -8), (0, 6) and (0, 4) on coordinate plane?

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2. Find distace between the points (6,8) and origin.

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3. Find the distance between points 'O' (origin) and 'A' (7, 4).

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4. Find the distance between A(1, -3) and B(-4, 4) and rounded to two decimal

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5. Find distace between the points (7,-24) and origin.

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6. Find distace between the points (3,-4) and origin.

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7. Find distace between the points (a+b,c-d) and (a-b,c+d).

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8. Distance between (x,-7) and the point (3,-3) is 5 unit . Find the value of x.

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9. Distance between origin and the point (-4,x) is 5 unit . Find the value of x.

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10. Take a point A on X-axis and B on Y-axis and find area of the triangle AOB. Discuss with your friends how they do it?

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11. Find the area of the square formed by (0, -1), (2, 1) (0, 3) and (-2, 1) as vertices.

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12. Find the slope of $\overline{AB}$, where

A(2, 1), B(2, 6)

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13. Find the slope of $\overline{AB}$, where

A(-4, 2), B(-4, -2)

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14. Find the slope of $\overline{AB}$, where

A(-2, 8), B(-2, -2)

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15. Distance between origin and the point (x,4)

is 5 unit . Find the value of x.

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