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## MATHS

## NCERT - NCERT Maths(Tamil)

## 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.
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 squre.

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7. State whether the following triangles are congruent or not? Give reasons for your answer.


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8. Find the a relation between $x$ and $y$ such that the point ( $x, y$ ) is equidistant from the points $(7,1)$ and $(3,5)$.
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
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 $B(-7,4)$.
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)?
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.
17. 

$A(6,1), B(8,2), C(9,4)$ and $D(P, 3)$ are the vertices of a parallelogram, taken in order. Find the value of $P$.

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

$A(-5,7), B(-4,-5), C(-1,-6)$ and $D(4,5)$
are the vertices of a quadrilateral, find the area of the quadrilateral $A B C D$.
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 .
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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# 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. Find the value of $a$ and $b$, given that $p \| q$ and $r$
|| s.


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9. Show that the following points form an equilateral triangle $A(a, 0), B(-a, 0), C(0, a \sqrt{3})$
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)
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 ( $-3,-5$ )

Exercise 72

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 $A B$ 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 $A B$ such that $A P=\frac{3}{7} A B$.

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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.
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
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 $(4,-7)$
12. Find the coordinates of centroid of the triangle with vertices:

$$
(1,-1),(0,6) \text { and }(-3,0)
$$

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## Exercise 73

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

$$
(0,0),(3,0) \text { and }(0,2)
$$

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4. Find the value of ' $K$ ' for which the points are collinear
$(7,-2)(5,1)(3, K)$

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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).
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 74

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 $(\sqrt{3}, 3)$

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3. Find the slope of the line passing through the given two point
(2a, 3b) and (a, -b)
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
$\mathrm{A}(-1.4,-3.7), \mathrm{B}(-2.4,1.3)$

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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. Centre of a circle $Q$ is on the $Y$-axis. The circle passes through the points $(0,7)$ and $(0,-1)$. If it intersects the positive $X$-axis at ( $P, 0$ ), what is the value of ' $P$ '?
2. A triangle $A B C$ is formed by the points $A(2,3)$, $B(-2,-3), C(4,-3)$. What is the point of intersection of the side $B C$ and the bisector of angle $A$ ?

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3. The side $B C$ of an equilateral triangle $D A B C$ is parallel to X -axis. Find the slopes of the lines along sides $B C, C A$ and $A B$.
4. Find the area of the triangle formed by the lines

$$
y-x=0, x+y=0 \text { and } x-k=0
$$

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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. What is the distance between $(0,-3),(0,-8)$ and justify that the distance between two points on Y axis is $\left|y^{2}-y^{1}\right|$ on coordinate plane?

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3. Find the distance between points ' $O$ ' (origin) and 'A' $(7,4)$.
4. Find the distance between $A(1,-3)$ and $B(-4,4)$ and rounded to two decimal

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5. $A D$ is the median on $B C$. Find the coordinates of
the point $D$

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6. Complete the table

| $\vec{a}$ | $\vec{b}$ | $\vec{a} \cdot \vec{b}$ | $\vec{b} \cdot \vec{a}$ | $\vec{a} \times \vec{b}$ | $\vec{b} \times \vec{a}$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| i. $\hat{i}+3 \hat{j}+4 \hat{k}$ | $\hat{j}+8 \hat{k}$ |  |  |  |  |
| ii. $\hat{+}+\hat{j}-6 \hat{k}$ | $2 \hat{i}+\hat{j}+8 \hat{k}$ |  |  |  |  |
| iii. $2 \hat{j}-6 \hat{k}$ | $\hat{i}-6 \hat{j}+\hat{k}$ |  |  |  |  |

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7. Find the coordinates of points $Q$ and $R$ on medians BE and CF respectively such that BQ:CF $=2: 1$ and CR:RF $=2: 1$
8. Let $A(4,2) B(6,5)$ and $C(1,4)$ be the vertices of triangle. What do you observe? Justify that the point that divides each median in the ratio $2: 1$ is the centriod of a triangle.

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9. The vertices of a triangle have integer coordinates then the triangle cannot be

# 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 the points $(0,-1),(2,1)(0,3)$ and $(-2,1)$ as vertices.

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12. Find the slope of $\overline{A B}$, where
$A(2,1), B(2,6)$

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13. Find the slope of $\overline{A B}$, where
$A(-4,2), B(-4,-2)$

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14. Find the slope of $\overline{A B}$, where
$A(-2,8), B(-2,-2)$

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15. Justify that the line $\overline{A B}$ line segment formed by points given in the above three examples is parallel to $Y$-axis. What can you say about their slope? Why? i) $A(-4,2), B(-4,-2)$

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