MATHS

BOOKS - OSWAL PUBLICATION

LINES (IN TWO - DIMENSIONS)

Example

1. Find the coordinates of the point P which divides the line joining of A(-2,5) and B (3,-5) in the ratio 2 : 3 .

2. If $\left(1, \dfrac{p}{3}\right)$ is the mid-point of the line segment joining the points $(2, 0)$ and $\left(0, \dfrac{2}{9}\right)$, then show that the line $5x + 3y + 2 = 0$ passes through the point $(-1, 3p)$.

Self Assessment I A I Objective Type Questions

1. The distance of the point $(-3, 4)$ from the x-axis is

A. 3

B. -3

C. 4

D. 5

Answer:

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2. If $A\left(\dfrac{m}{3}, 5\right)$ s the mid-point of the line segment joining the points Q (– 6, 7) and R (– 2, 3), then the value of m is

A. -12

B. -4

C. 12

D. -6

Answer:

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3. The distance of the point P(2,4) from the origin

is :

A. 7 units

B. 5 units

C. 4 units

D. 3 units

Answer:

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1. The point which divides the line segment joining the points A(0, 5) and B(5, 0) internally in the ratio $2 : 3$ is _____

2. The mid - point of the line segment joining the

points A(a,0) and B(0,b) is ………. .

3. The perpendicular distance of A (5,12) from the

Y,axis is _____ .

1. Find the distance of point P(x,y) from the origin

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2. about to only mathematics

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

B is the point (1,4).

Self Assessment I Ii Short Answer Type Question I

1. The perimeter of a tringle with vertices (0,4), (0,0) and (3,0) is

2. Find the coordinates of the point P which divides the join of A(-2,5) and B(3,-5) in the ratiio 2

: 3.

3. Find a relation between x and y such that the point P(x,y) is equidistant from the points A (-5,3) and B(7,2).

Self Assessment I Iii Short Answer Type Question Ii

1. The point A(1,-2), B(2,3) , C(k,2) and D(-4,-3) are the vertices of a parallelogram. Find the value of k and the altitude of the parallelogram corresponding to the base AB.

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2. The vertices of a triangle are A (-1.3), B (1,-1) and C (5, 1). Find the length of the median through the vertex C.

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

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1. The vertices of quadrilateral ABCD are A(5,-1) B(8,3), C(4,0) and D(1,-4). Prove that ABCD is a rhombus.

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2. Points $A(-1, y)$ and $B(5, 7)$ lie on a circle with centre $O(2, -3y)$. Find the values of y. Hence, find the radius of the circle.
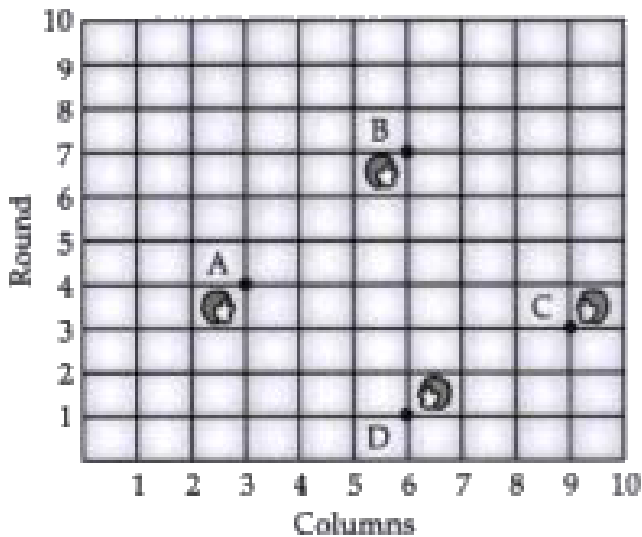
3. Find the coordinates of the points which divide the line segment joining $A(2, \ 2)\ and\ B(2, 8)$ into four equal parts.

1. In a class room 4 friends are seated at the point A,B,C,D as shown in figure.

Champa and chameli walk into the class and after observing for a few minutes, champa asks chameli, what is the shape of ABCD ?
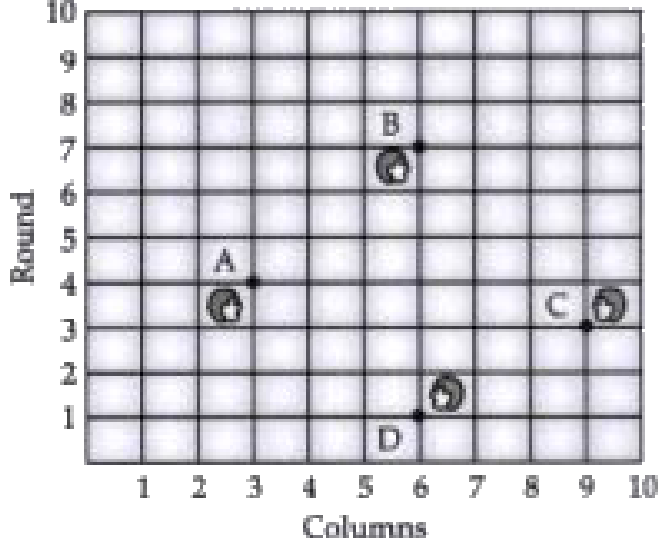
A. Trapezium

B. Rectangle

C. Rhombus

D. Square

Answer:

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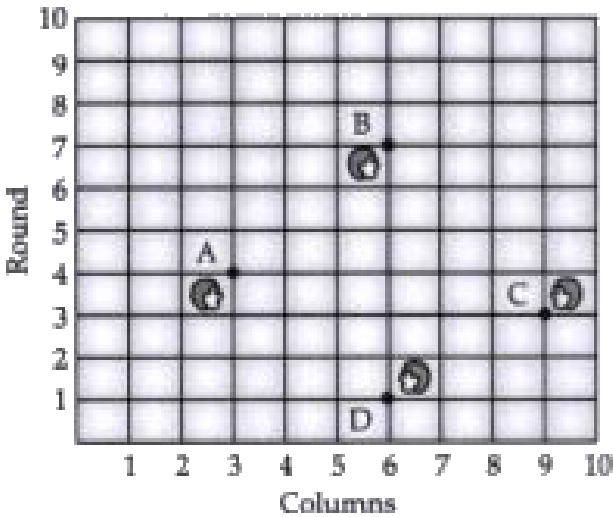**2.** In a class room 4 friends are seated at the point A,B,C,D as shown in figure.

What is the coordinate of A?

A. (3,4)

B. (4,3)

C. (3,2)

D. (3,5)

Answer:

3. In a class room 4 friends are seated at the point

A,B,C,D as shown in figure.

Find the distance between A and D.

A. $3\sqrt{3}$ units

B. $2\sqrt{2}$ units

C. $2\sqrt{2}$ units

D. $2\sqrt{3}$ units

Answer:

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4. In a class room 4 friends are seated at the point

A,B,C,D as shown in figure.

Find the distance between B and C.

A. $3\sqrt{3}$ units

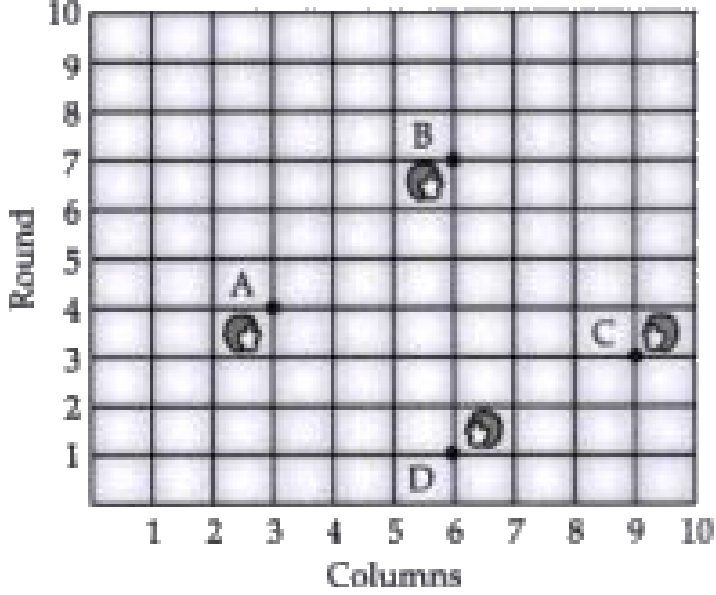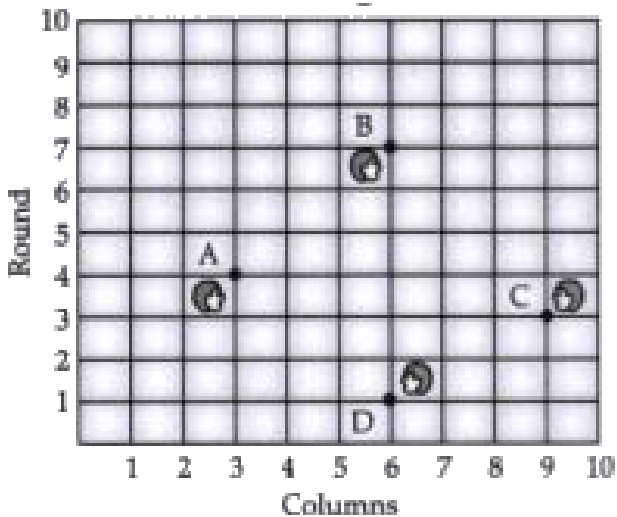B. $2\sqrt{3}$ units

C. $3\sqrt{2}$ units

D. $2\sqrt{2}$ units

Answer:

5. In a class room 4 friends are seated at the point A,B,C,D as shown in figure.

Write the coordinates of C.

A. (9,4)

B. (4,9)

C. (4,8)

D. (8,4)

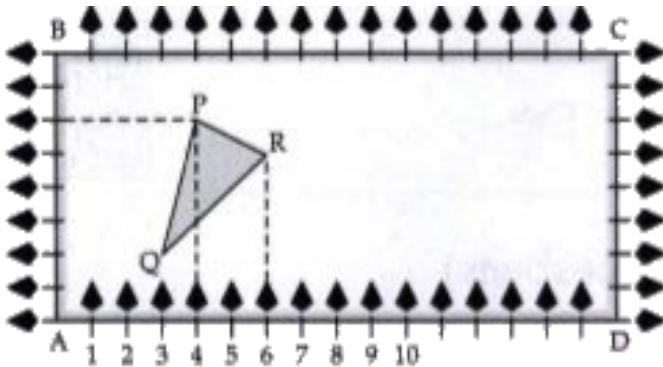**Answer:**

6. Class X students of a secondary school in Krishnagar have been alloted a rectangular plot of a land for gardening activity. Saplings of Gulmohar are planted on the boundary at a distance of 1 m from each other. There is a triangular grassy lawn in the plot as shown in the fig. The students are to

sow seeds of flowering plants on the remaining

area of the plot.

Considering A as origin, answer question (i) to (v):

Considinates A as the origin, what are the

coordinates of A ?

A. (0,1)

B. (1,0)

C. (0,0)

D. (-1,-1)

Answer:

7. The class X students school in krishnagar have been allotted a rectangular plot of land for their gardening activity. Saplings of Gulmohar are planted on the boundary at a distance of 1 m from each other. There is triangular grassy lawn in the plot as shown in the figure. The students are to sow seeds of flowering plants on the remaining area of the plot.

Taking A as origin, find the coordinates of P
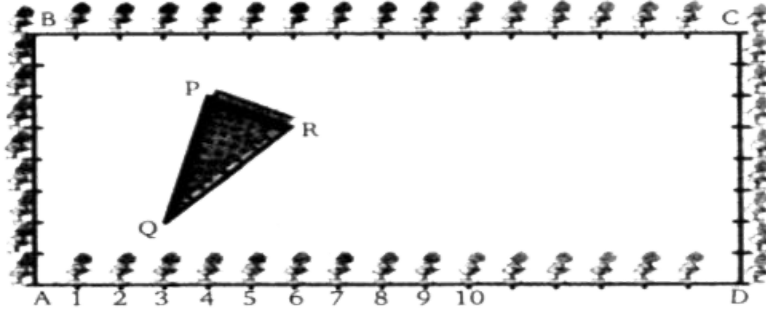
A. (4,6)

B. (6,4)

C. (4,5)

D. (5,4)

Answer:

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8. The class X students school in krishnagar have been allotted a rectangular plot of land for their gardening activity. Saplings of Gulmohar are planted on the boundary at a distance of 1 m from each other. There is triangular grassy lawn in the plot as shown in the figure. The students are to sow seeds of flowering plants on the remaining area of the plot.
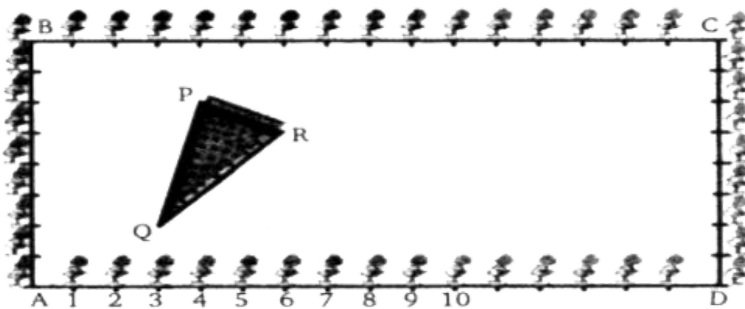
What will be the coordinates of R, if C is the origin?

A. (6,5)

B. (5,6)

C. (6,0)

D. (7,4)

Answer:

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9. Class X students of a secondary school in Krishnagar have been allotted a rectangular plot of a land for gardening activity. Saplings of

Gulmohar are planted on the boundary at a distance of 1m from each other. There is a triangular grassy lawn in the plot as shown in the fig. The students are to sow seeds of flowering plants on the remaining area of the plot.

What are the coordinate of P if D is taken as the origin?

A. (16,0)

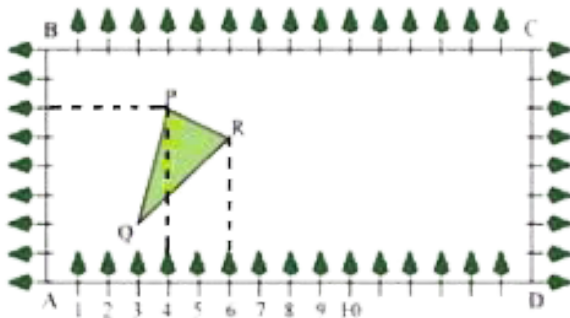B. (0,0)

C. (0,16)

D. (16,1)

Answer:

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10. Class X students of a secondary school in Krishnagar have been allotted a rectangular plot of a land for gardening activity. Saplings of Gulmohar are planted on the boundary at a distance of 1m from each other. There is a triangular grassy lawn in the plot as shown in the

fig. The students are to sow seeds of flowering plants on the remaining area of the plot.

What are the coordinate of P if D is taken as the origin?
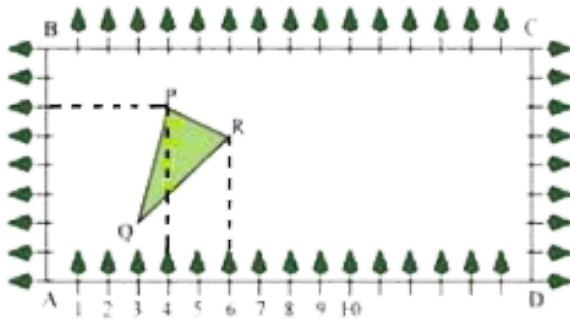
A. (12,2)

B. (-12,6)

C. (12,3)

D. (6,10)

Answer:

11. The given figure shows the arrangement of charis in a classroom. Dinesh, Mohan and Sohan are seated at A (1,1) B (-2,7) and C (3,-3) respectively.

B(-2, 7)

7
6
5
4
3
2
1   • A(1, 1)

-7 -6 -5 -4 -3 -2 -1 O 1 2 3 4 5 6 7
        -1
        -2
        -3   • C(3, -3)
        -4
        -5
        -6
        -7
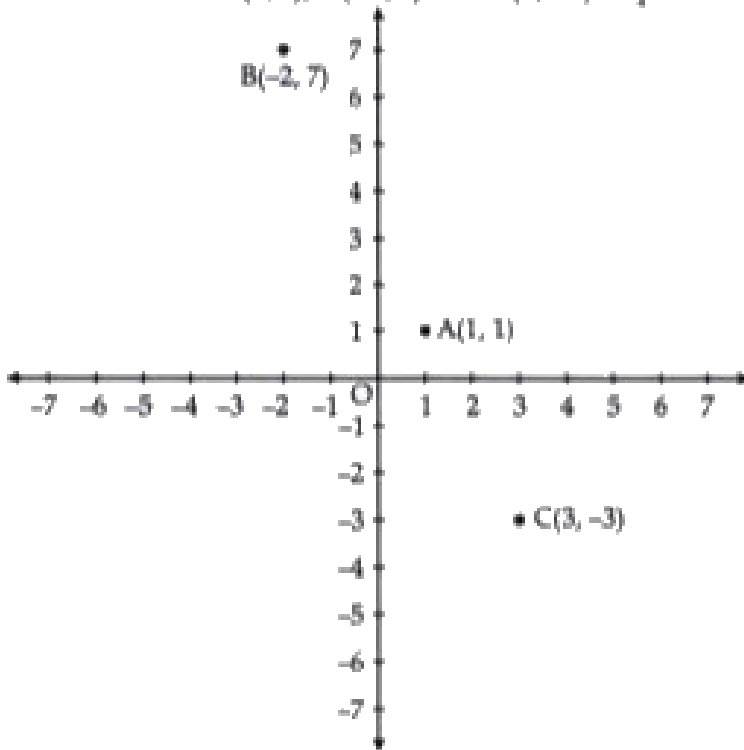
Find the distance between Dinesh and Sohan.

A. $2\sqrt{5}$ units

B. $2\sqrt{3}$ units

C. $2\sqrt{7}$ units

D. $3\sqrt{2}$ units

Answer:

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12. The given figure shows the arrangement of charis in a classroom. Dinesh, Mohan and Sohan are seated at A (1,1) B (-2,7) and C (3,-3) respectively.
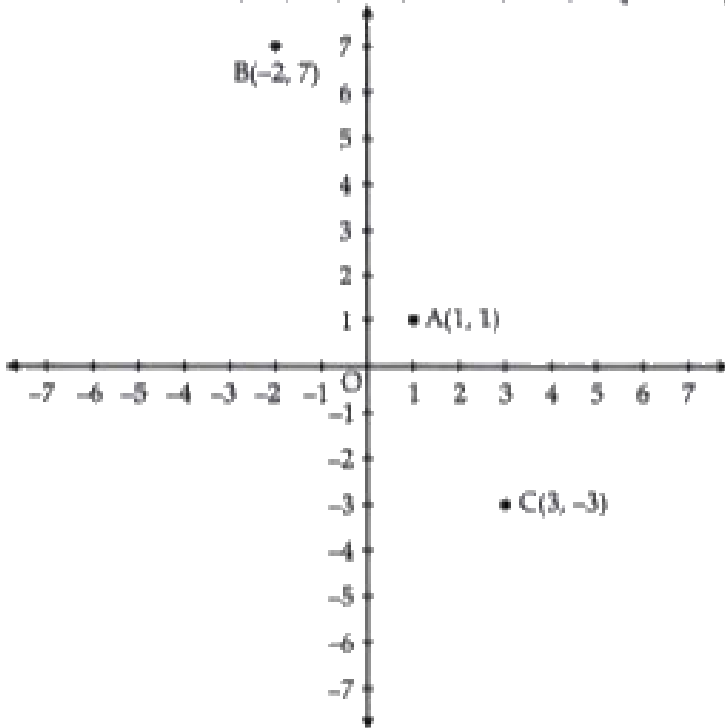
Find the distance between Dinesh and Mohan.

A. $2\sqrt{3}$ units

B. $5\sqrt{2}$ units

C. $3\sqrt{5}$ units

D. $2\sqrt{5}$ units

Answer:

13. The given figure shows the arrangement of charis in a classroom. Dinesh, Mohan and Sohan are seated at A (1,1) B (-2,7) and C (3,-3) respectively.

B(-2, 7)

• A(1, 1)

-7 -6 -5 -4 -3 -2 -1 1 2 3 4 5 6 7

• C(3, -3)
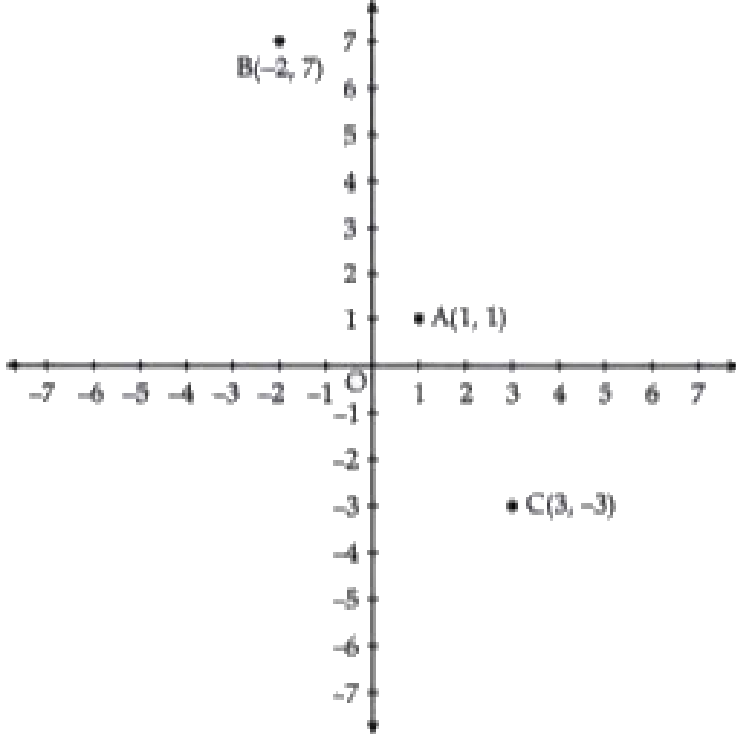
Name the quadrant in which Sohan is seated.

A. I quadrant

B. II quadrant

C. III quadrant

D. IV quadrant

Answer:

14. The given figure shows the arrangement of charis in a classroom. Dinesh, Mohan and Sohan are seated at A (1,1) B (-2,7) and C (3,-3) respectively.

B(-2, 7)

•A(1, 1)

-7 -6 -5 -4 -3 -2 -1 O 1 2 3 4 5 6 7

• C(3, -3)
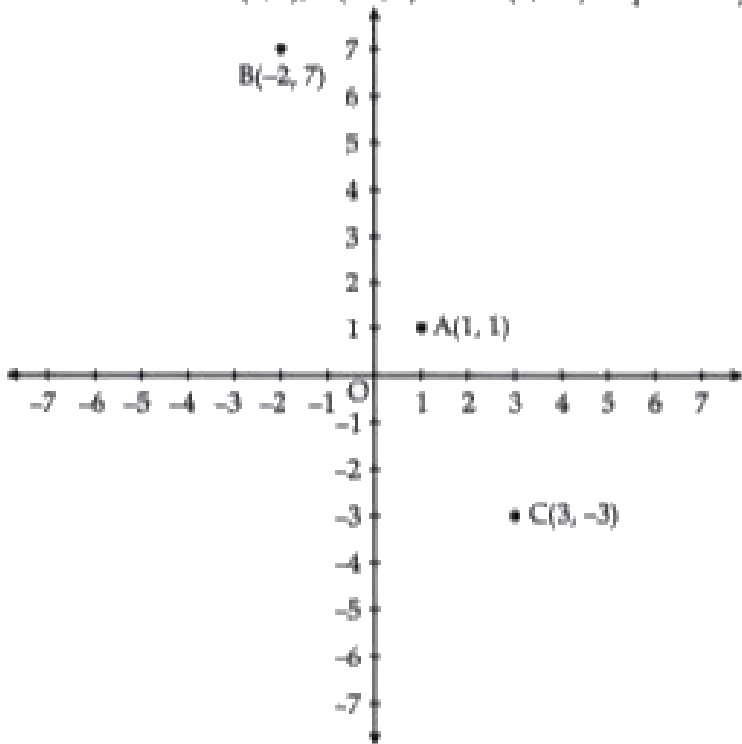
Name the quadrant in which Dinesh is seated.

A. I quadrant

B. II quadrant

C. III quadrant

D. IV quadrant

Answer:

15. The given figure shows the arrangement of charis in a classroom. Dinesh, Mohan and Sohan are seated at A (1,1) B (-2,7) and C (3,-3) respectively.
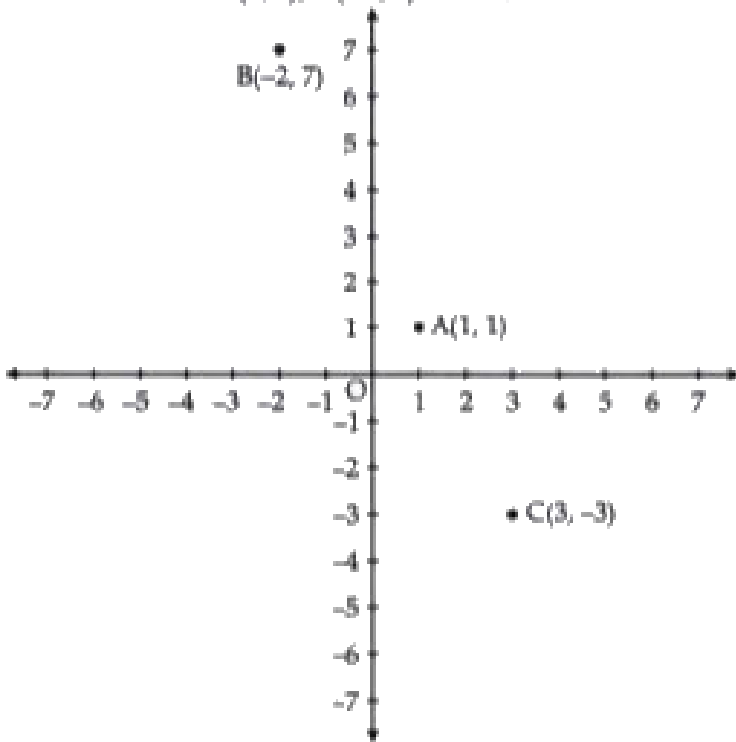
Which of the following is the correct distance formula.

A. $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

B. $[(x_1 - x_2) + (y_1 - y_2)]^2$

C. $(x_1 - x_2)^2 + (y_1 - y_2)^2$

D. $(x_1 - x_2) - (y_1 - y_2)$

Answer:

16. The given figure, shows the arrangement of desks in a classroom. Ashima, Bharti and Camell are seated at A (3,1), B(6,4) and C(8,6) respectively.

Find the distance between Ashima and Bharti.

A. $2\sqrt{3}$ units

B. $3\sqrt{2}$ units

C. $\sqrt{2}$ units

D. $\sqrt{3}$ units

Answer:

17. The given figure, shows the arrangement of desks in a classroom. Ashima, Bharti and Camell are seated at A (3,1), B(6,4) and C(8,6) respectively.
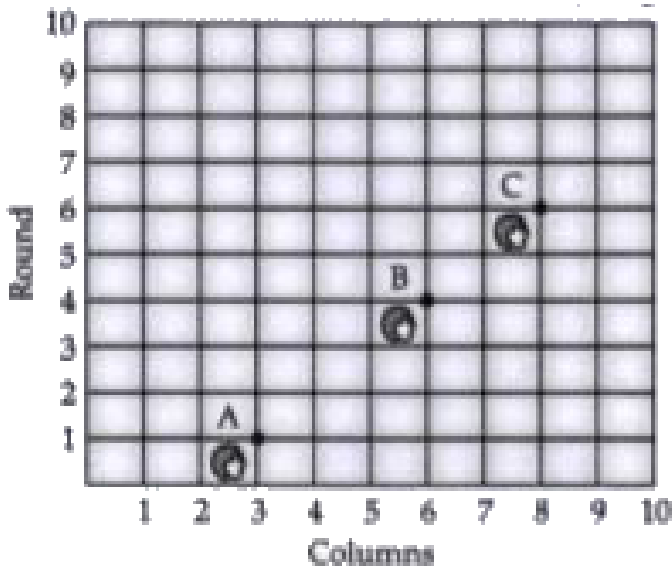
Find the distance between Bharti and Camella,

    A. $2\sqrt{2}$ units

B. $\sqrt{2}$ units

C. $\sqrt{3}$ units

D. $3\sqrt{2}$ units

Answer:

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18. The given figure, shows the arrangement of desks in a classroom. Ashima, Bharti and Camell are seated at A (3,1), B(6,4) and C(8,6) respectively.
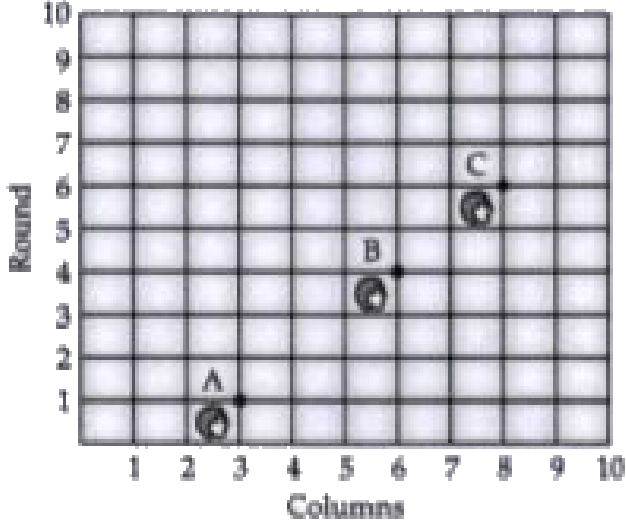
At how much distance Ashima is seated from Camella ?

A. $2\sqrt{5}$ units

B. $2\sqrt{2}$ units

C. 2 units

D. 5 units

Answer:

19. The given figure, shows the arrangement of desks in a classroom. Ashima, Bharti and Camell are seated at A (3,1), B(6,4) and C(8,6) respectively.

Write the formula for distance between :

(x_1, y_1) and (x_2, y_2)

A. $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

B. $\sqrt{(x_1 + x_2)^2 + (y_1 - y_2)^2}$

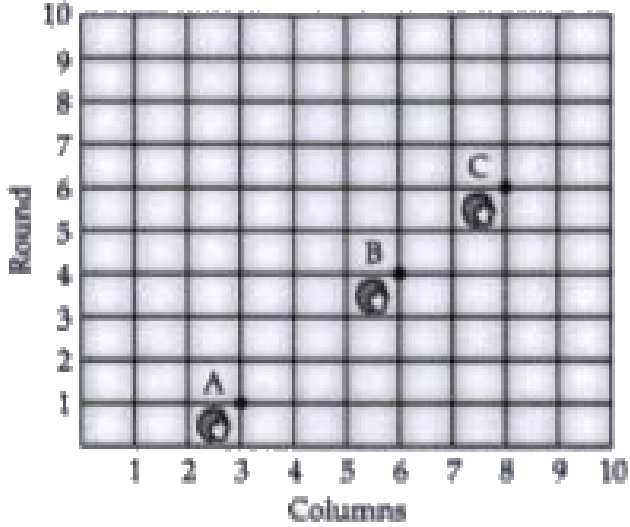C. $\sqrt{(x_1 + x_2)^2 - (y_1 + y_2)^2}$

D. $(x_1 + x_2)^2 + (y_1 - y_2)^2$

Answer:

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20. The given figure, shows the arrangement of desks in a classroom. Ashima, Bharti and Camell are seated at A (3,1), B(6,4) and C(8,6) respectively.
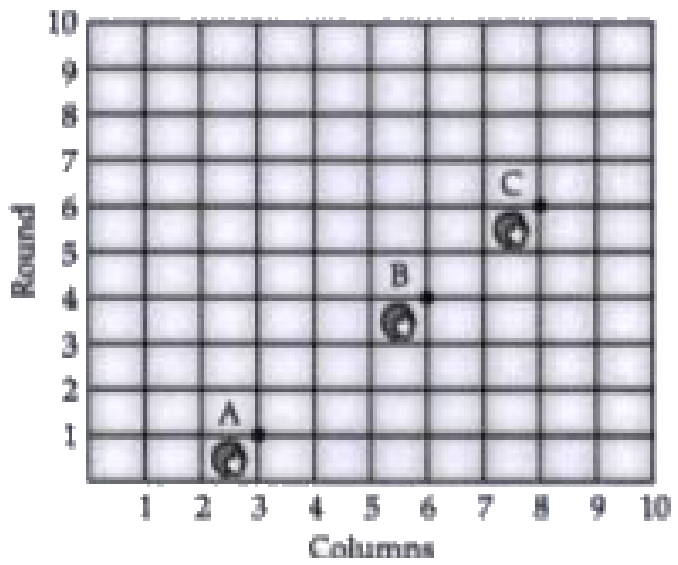
Write the formula for mid- points of two points :

A. $\dfrac{x_1 + y_1}{2}$, $\dfrac{x_2 + y_2}{2}$

B. $\dfrac{x_1 + y_1}{2}$, $\dfrac{y_1 + y_2}{2}$

C. $\dfrac{x_1, y_1}{2}, \dfrac{x_2 - y_2}{2}$

D. $\dfrac{x_1 - y_2}{2}, \dfrac{y_1 + y_2}{2}$

Answer:

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Ncert Corner Textbook Questions Exercise 7 1

1. Find the distance between the following pairs of

points :

(2,3), (4,1)

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2. Find the distance between the following pairs of points :

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

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3. Find the distance between the following pairs of points :

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

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

5. Determine if the points (1,5), (2,3) and (-2,11) are collinear.

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

7. In a classroom, 4 friends are seated at the points A. B. C and D as shown in Fig. 7.8. Champa and Chameli walk into the class and after observing for a few minutes Champa asks Chameli, "Don't you think ABCD is a square?" Chameli disagrees. Usi

8. Name the type of quadrilateral formed, if any, by the following points and give reasona for your Solution :

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

9. Name the type of quadrilateral formed, if any, by the following points and give reasona for your Solution :

(-3,5), (3,1), (0,3), (-1,-4)

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

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

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

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

13. If Q(0, 1) is equidistant from $P(5, \; 3)$ and R(x, 6), find the values of x. Also find the distances QR and PR.

14. Find a relation between x and y such that the point (x, y) is equidistant from the point $(3, 6)$ and $(-3, 4)$.

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Ncert Corner Textbook Questions Exercise 7 2

1. Find the coordinates of the point which divides the join of $A(-1, 7)$ and $B(4, -3)$ 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. 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 Figur

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

5. Find the ratio in which the line segment joining A (1,-5) and B(-4,5) is divided by the X-axis. Also find the coordinates of the point of division.

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

7. 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).

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

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

10. Find the area of a rhombus if its vertices (3,0), (4, 5), (-1,4) and (-2,-1) are taken in order.

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Ncert Corner Textbook Questions Exercise 7 3

1. Find the area of the triangle whose vertices are :

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

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2. Find the area of the triangle whose vertices are:

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

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3. In each of the following find the value of 'k', for which the points are colinear.

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

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4. Find the value of 'k', for which the given points are colinear.

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

5. 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.

6. 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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7. As we know studied that a median of a triangle divides it into triangles of equal areas. Verify this result for $\triangle ABC$ whose vertices are A (4,-6), B(3,-2) and C (5,2).

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1. Determine the ratio in which the line $2x + y\ 4 = 0$ divides the line segment joining the points A(2, 2) and B(3,7).

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2. Find a relation between x and y if the points (x, y), (1, 2) and (7, 0) are collinear.

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3. Find the centre of a circle passing through the points $(6, \ 6), \ (3, \ 7) \ and \ (3, \ 3).$

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4. The two opposite vertices of a square are $(1, \ 2) \ and \ (3, \ 2).$Find the coordinates of the other two vertices.

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5. The Class X students of a secondary school in Krishinagar have been alloted a rectangular plot

of land for their gardening activity. Sapling of Gulmohar is planted on the boundary at a distance of 1 m from each other. There is a triangular grassy lawn in the plot as shown in the figure. The students are to sow seeds of flowering plants on the remaining area of the plot.
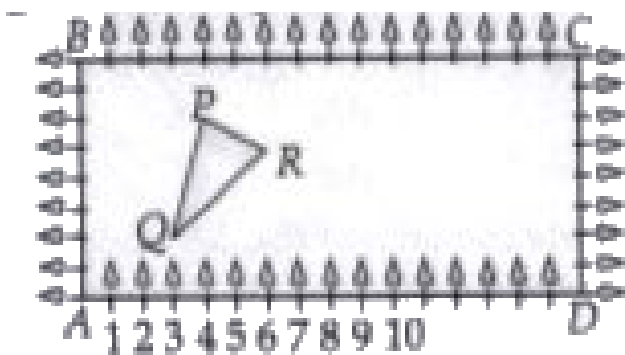
Taking A as origin, find the coordinates of ther vertices of the triangle.

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6. The Class X students of a secondary school in Krishinagar have been allotted a rectangular plot of land for their gardening activity. Sapling of Gulmohar are planted on the boundary at a distance of 1m from each other. There is a triangular gr

7. The vertices of a $\triangle ABC are A(4, 6), B(1, 5)$ and $C(7, 2)$. A line is drawn to intersect side AB and AC at D and E

respectively, such that $\dfrac{AD}{AB} = \dfrac{AE}{AC} = \dfrac{1}{4}$.

Calculate the area of $\triangle ADE$ and compare it with the area of $\triangle ABC$.

8. $A(4,\ 2)$, $B(6,5)$ and $C(1,\ 4)$ are the vertices of ABC . The median from A meets BC in D . Find the coordinates of the point D .

9. $A(4,\ 2)$, $B(6,5)$ and $C(1,\ 4)$ are the vertices of ABC . Find the coordinates of point P on AD such that $AP:PD = 2:1$.

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10. $A(4,\ 2)$, $B(6,5)$ and $C(1,\ 4)$ are the vertices of ABC . Find the coordinates of the points Q on median BE such that $BQ:QE = 2:1$

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11. Let A (4,2) , B (6,5) and C (1,4) be the vertices of ΔABC.

What do you observe?

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12. A(4,2), B(6,5) and C(1,4) are the vertices of $\triangle \; ABC$

Using centroid formula , find coordinates of centroid G and write

your observation of points P, Q and G .

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13. ABCD is a rectangle formed by the points $A(1, 1)$, $B(1, 4)$, $C(5, 4)$ and $D(5, 1)$. P, Q, R and S are the midpoints of AB, BC, CD and DA respectively. Is the quadrilateral PQRS a square? A rectangle? or a rhombus? Justify yo

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Ncert Exemplar Exercise 7 1

1. The distance of the point P (2,3) from the Y-axis is

A. 2

B. 3

C. 1

D. 5

Answer: B

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2. The distance between the points A (-1,6) and B(2,2) is

A. 6

B. 5

C. 4

D. 2

Answer: B

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3. The distance of the point P(-4,3) from the origin

is

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4. The distance between the points (-5,0) and (0,5)

is _____units.

A. 5

B. $5\sqrt{2}$

C. $2\sqrt{5}$

D. 10

Answer: B

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5. AOBC is a rectangle whose three vertices are A(0,-3), O(0,0) and B (4,0). The length of its diagonal is__

A. 5

B. 3

C. $\sqrt{34}$

D. 4

Answer: C

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6. The perimeter of a tringle with vertices (0,4), (0,0) and (3,0) is

A. 5

B. 12

C. 11

D. $7 + \sqrt{5}$

Answer: B

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7. The area of a triangle with vertices A(3,0),B(7,0) and C(8,4) is

    A. 14

    B. 28

    C. 8

    D. 6

Answer: C

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8. The points $(-4, 0), (4, 0)$ and $(0, 3)$ are the vertices of a

    A. right triangle

    B. isosceles triangle

    C. equilateral triangle

    D. scalene triangle

Answer: B

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9. The point which divides the line segment joining the points (7,-6) and (3,4) in ratio $1:2$ internally lies in the

A. I quadrant

B. II quadrant

C. III quadrant

D. IV quadrant

Answer: D

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10. The point which lies on the perpendicular bisector of the line segment joining the points A(-2,-5) and B (2,5) is

A. (0,0)

B. (0,2)

C. (2,0)

D. (-2,0)

Answer: A

11. The fourth vertex D of a parallelogram $ABCD$ whose three vertices are $A(-2, 3)$, $B(6, 7)$ and $C(8, 3)$ is

    A. (0,1)

    B. (0,-1)

    C. (-1,0)

    D. (1,0)

Answer: B

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12. If the point P(2,1) lies on the line segment joining points A (4,2) and B (8,4) then :

A. $AP = \dfrac{1}{3}AB$

B. AP = PB

C. $PB = \dfrac{1}{3}AB$

D. $AP = \dfrac{1}{2}AB$

Answer: A

13. If $P\left(\dfrac{a}{3}, 4\right)$ is the mid - point of the line segment joining the points $Q(-6, 5)$ and $R(-2, 3)$, then the value of a is

A. -4

B. -12

C. 12

D. -6

Answer: B

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14. The perpendicular bisector of the line segment joining the points A(1,5) and B(4,6) cuts the Y-axis at

A. (0,13)

B. (0,-13)

C. (0,12)

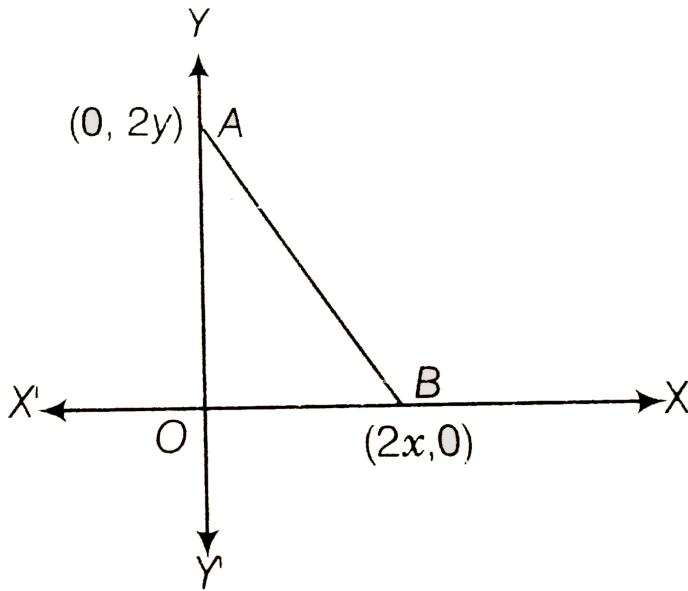D. (13,0)

Answer: A

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15. The coordinates of the point which is equidistant from the three vertices of the △ AOB as shown in the figure is

A. (x,y)

B. (y,x)

C. $\left(\dfrac{x}{2}, \dfrac{y}{2}\right)$

D. $\left(\dfrac{y}{2}, \dfrac{x}{2}\right)$

Answer: A

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16. If a circle drawn with origin as the centre passes through $\left(\dfrac{13}{2}, 0\right)$, then the point which does not lie in the interior of the circle is

A. (-3/4,1)

B. (2,7/3)

C. (5,-1/2)

D. (-6,5/2)

Answer: D

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17. A line intersects the Y- axis and X-axis at the points P and Q, respectively. If (2,-5) is the mid-point of PQ, then the coordinates of P and Q are, respectively.

A. (0,5) and (2,0)

B. (0,10) and (-4,0)

C. (0,4) and (-10,0)

D. (0,-10) and (4,0)

Answer: D

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18. The area of a triangle with vertices (a,b+c), (b,c+a) and (c,a+b) is

A. (a + b + c)

B. 0

C. a + b + c

D. abc

Answer: B

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19. If the distance between the points (3,6) and (p,10) is $2\sqrt{5}$, then the value of p is :

A. 4

B. 5

C. -4

D. 0

Answer: B

20. If the points A(1,2) , B(0,0) and C (a,b) are

collinear , then

    A. a = b

    B. a = 2b

    C. 2a = b

    D. a = - b

Answer: C

Ncert Exemplar Exercise 7 2

1. △ ABC with vertices A(0-2,0),B(2,0) and C(0,2) is similar to △ DEF with vertices D(-4,0) ,E(4,0) and F(0,4).

2. The point P(-4,2) lies on the line segment joining the points A(-4,6) and B (-4,-6).

3. The points (0,5) , (0,-9) and (3,6) are collinear.

4. Point P(0,2) is the point of intersection of Y-axis and perpendicular bisector of line segment joining the points A(-1,1) and B(3,3).

5. The points A(3,1) , B (12,-2) and C(0,2) cannot be vertices of a triangle.

6. Prove that the points A(4,3), B(6,4), C(5,-6) and D(-3,5) are vertices of a parallelogram.

7. 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.

8. The point A (2,7) lies on the perpendicular bisector of the line segment joining the points P (5,-3) and Q(0,-4).

9. The point P (5,-3) is one of the two points of trisection of line segment joining the points A(7,-2) and B(1,-5).

10. The points A (-6,10), B(-4,6) and C(3,-8) are collinear such that

$$AB = -\frac{2}{9}AC.$$

11. The points P (-2,4) lies on a circle of radius 6 and centre (3,5).

12. The points A (-1,-2), B (4,3) ,C (2,5) and D (-3,0) in that order form a rectangle.

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Ncert Exemplar Exercise 7 3

1. Name the type of triangle formed by the points A (-5,6) , B (-4,-2) and C (7,5).

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2. Find the points on the X-axis which are at distance of $2\sqrt{5}$ from the point (7,-4) . How many such points are there ?

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3. What type of quadrilateral do the points $A(2, -2), B(7, 3), C(11, -1)$ and $D(6, -6)$ taken in that order form?

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4. Find the value of 'a', if the distance between the points A(-3,14) and B (a,5) is 9 units.

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

6. Find the coordinates of the point Q on the X-axis which lies on the perpendicular bisector of the line segment joining the points A (-5,-2) and B (4,-2). Name the type of triangle formed by the points Q , A and B.

7. Find the value of m , if the points (5,1), (-2,-3) and (8,2m) are collinear .

8. If the points A(2,4) is equidistant from P (3,8) and Q (-10,y), then find the value of y . Also , find distance PQ.

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9. Find the area of the triangle wohose vertices are (-8,4) ,(-6,6) and (-3,9).

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10. In what ratio does the X -axis divide the line segment joining the points (-4,-6) and (-1,7) ? Find the coordinates of the points of division.

11. Find the ratio in which the point $P\left(\dfrac{3}{4}, \dfrac{3}{12}\right)$ divides the line segment joining the points A $\left(\dfrac{1}{2}, \dfrac{3}{2}\right)$ and B $(2, -5)$.

12. If P (9a-2,-b) divides line segment joining A (3a+1,-3) and B(8a,5) in the ratio $3:1$, then find the values of a and b.

13. If (a,b) is the mid - point of the line segment joining the points A (10,-6), B(k,4) and a-2b =18, then find the value of k and the distance AB.

14. If the centre of a circle is (2a,a-7) ,then Find the value of a , if the ciecle passes through the point (11,-9) and has diameter $10\sqrt{2}$ units .

15. 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 it lies on the line $3 \times - 18y + k = 0$. Find the value of k.

16. If D $\left(-\dfrac{1}{2}, \dfrac{5}{2} \right)$, E (7,3) and F $\left(\dfrac{7}{2}, \dfrac{7}{2} \right)$ are the mid - points of sides of $\triangle ABC$, then find the area of the $\triangle ABC$.

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17. The points $A(2, 9), B(A, 5), C(5, 5)$ are the vertices of a triangle ABC right angled at B . Find the value of a and hence the area of ABC.

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18. Find the coordinates of the point R on the line segment joining the points P($-1, 3$) and Q $(2, 5)$ such that PR $= \dfrac{3}{5}$ PQ.

19. Find the values of k, if the points A (k+1,2k) ,B (3k,2k+3) and C (5k-1,5k) are collinear.

20. 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 coordinates of the points of division.

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1. If (-4,3) and (4,3) are two vertices of an equilateral triangle , then find the coordinates of

the third vertex , given that the origin lies in the interior of the triangle.

2. A(6, 1), B(8, 2) and C(9, 4) are the vertices of a parallelogram ABCD. If E is the midpoint of DC, find the area of $\triangle ADE$.

3. The points A (x_1, y_1), $B(x_2, y_2)$ and $C(x_3, y_3)$ are the vertices of $\triangle$ ABC.

(i) The median from A Meets Bc at D. Find the coordinates of the points D.

(ii) Find the coordinates of the point P on Ad such that $AP:PD = 2:1$.

(iii) Find the coordinates of points Q and R on medians BE and CF, respectively such that $BQ:QE = 2:1$ and $CR:RF = 2:1$.

What are the coordinates of the centroid of the $\triangle$ ABC?

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6. The points A (x_1, y_1), $B(x_2, y_2)$ and $C(x_3, y_3)$ are the vertices of $\triangle ABC$.
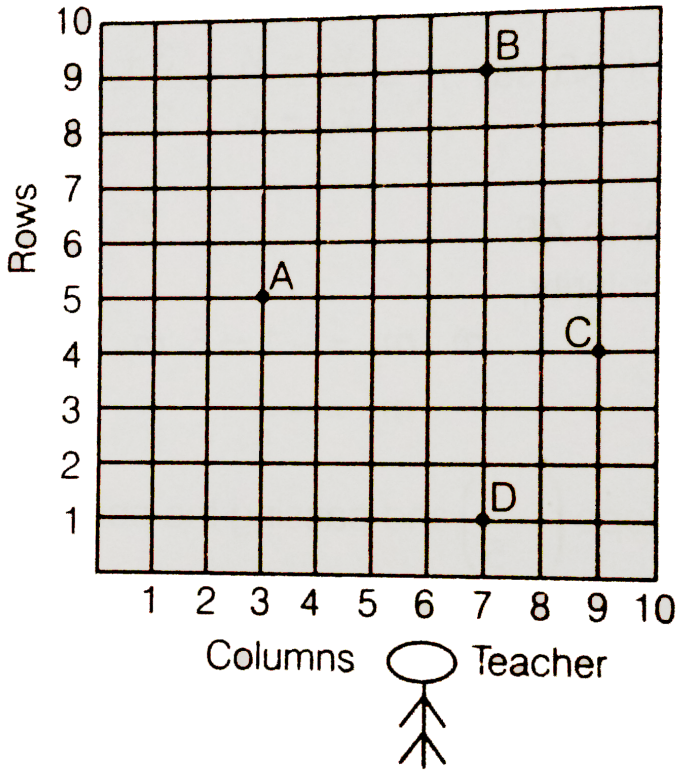
What are coordinate of the centroid of the triangle ABC ?

7. If the points A (1,-2), B (2,3) C (a,2) and D (-4,3) from a parallelogram find the value of a and height of the parallelogram taking AB as base.

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

should be his position ?

9. Ayush starts walking from his house to office . Instead of going to the office directly , he goes to 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 distance 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.

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

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3. Write the coordinate of a point P on X-axis which is equidistant from the points A (-2,0) and B(6,0).

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4. Find the distance of a point P(m,n) from the orgin.

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5. If the distance between the points (4,k) and (1,0)

is 5, then what can be the possible values of k.

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Board Corner Short Answer Type Question

1. Find the ratio in which the line segment joining

the points (1, -3) and (4 , 5) is divided by x- axis .

Also find the co-ordinates of this point on x-axiws.

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2. Find a relation between x and y if the prints A(x, y), B(-4, 6) and C(-2, 3) are collinear.

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

4. Find a point on y-axis which is equidistant from the points $(5, \ -2)$ and $(-3, \ 2)$.

5. The line segment joining 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.

6. Find the ratio in which the line x - 3y = 0 divides the line segment joining the points (-2,-5) and

(6,3). Find the coordinates of the point of intersection.

7. Point A lies on the line segment PQ joining P(6, -6) and Q(-4, -1) in such a way that $\dfrac{PA}{PQ} = \dfrac{2}{5}$. If the point A also lies on the line 3x+k(y+1) = 0, find the value of k.

8. Find the ratio in which Y-axis divides the line segment joining the points (-1,-4) and (5,-6). Also find the coordinates of the point of the intersection.

9. The area of a triangle is 5 sq. units. Two. Of its vertices are (2,1) and (3,-2). If the third vertex is $\left(\frac{7}{2}, y\right)$, find the value of y.

10. Of $A(-2, -1), B(a, 0), C(4, b) and D(1, 2)$ are the vertices f a parallelogram, find the values of $a and b$.

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11.   If

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

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12. A line intersects the y-axis and x-axis at the points P and Q respectively. If (2,-5) is the mid-point of PQ then find the coordinates of P and Q.

13. If the distances of $P(x, y)$ from $A(5, 1)$ and $B(- 1, 5)$ are equal , then ,

14. In what ratio does the point $\left(\dfrac{24}{11}, y\right)$ divide the line segment joining the points P(2, 2) and Q(3, 7) ? Also find the value of y.

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Board Corner Long Answer Type Question

1. If $a \neq b \neq c$, prove that (a, a^2), (b, b^2), $(0, 0)$ will not be collinear.

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2. If points A(k + 1, 2k); B (3k, 2k + 3) and C(5k - 1, 5k)

are collinear, then find the value of k.