MATHS

BOOKS - EDUCART PUBLICATION

COORDINATE GEOMETRY

Examples

1. Find the distance between the points (2, 3) and (4, 1).

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

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Objective Type Questions 1 Mark Multiple Choice Questions

1. The point on the x-axis which is equidistant from (-4,0) and (10,0) is

    A. (7,0)

    B. (5,0)

    C. (0,0)

    D. (3,0)

Answer: D

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2. The centre of a circle whose end points of a diameter are $(-6, 3)$ and $(6, 4)$ is

   A. (8,-1)

   B. (4,7)

   C. $\left(0, \dfrac{7}{2}\right)$

   D. $\left(4, \dfrac{7}{2}\right)$

Answer: C

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3. The distance between the points (m,-n) and

(-m,n) is

A. $\sqrt{m^2 + n^2}$

B. $m + n$

C. $2\sqrt{m^2 + n^2}$

D. $\sqrt{2m^2 + 2n^2}$

Answer: C

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4. 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

5. The distance between the points $(a\cos\theta + b\sin\theta, 0)$ and $(0, a\sin\theta - b\cos\theta)$.

A. $a^2 + b^2$

B. $a^2 - b^2$

C. $\sqrt{a^2 + b^2}$

D. $\sqrt{a^2 - b^2}$

Answer: C

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6. 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,-1)

C. (-1,0)

D. (1,0)

Answer: A

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7. 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,)

    B. (0,-1)

    C. (-1,0)

    D. (1,0)

Answer: B

8. If the point p(k,0) , divides the line segment joining the points A(2,-2) and B(-7,4) in the ratio 1:2 ,then the value of k is

A. 1

B. 2

C. -2

D. -1

Answer: D

9. The distance of the point P (-3,-4) form the x-axis (in units) is

A. 3

B. -3

C. 4

D. 5

Answer: C

10. 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: D

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11. If $A\left(\dfrac{m}{3}, 5\right)$ is 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: A

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12. The perimeter of a triangle with vertices $(0, 4), (0, 0)$ and $(3, 0)$ is `

A. 5 units

B. 11 units

C. 12 units

D. $\left(7 + \sqrt{5}\right)$ units

Answer: C

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13. If $P\left(\dfrac{a}{3}, 4\right)$ is the mid the 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
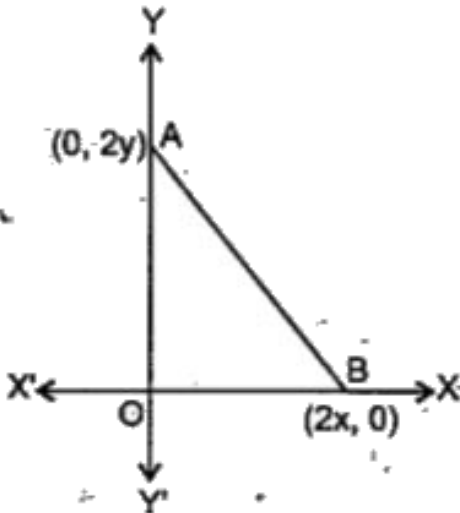
A. (0,13)

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 $\triangle\ AOB$ 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. $\left(-\dfrac{3}{4}, 1\right)$

B. $\left(2, \dfrac{7}{3}\right)$

C. $\left(5, -\dfrac{1}{2}\right)$

D. $\left(-6, \dfrac{5}{2}\right)$

Answer: D

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

2. The centroid of the triangle whose vertices are (4, - 8), (- 9,7) and (8,13) is _____

3. The ratio in which x-axis divides the line segment joining the point (2, 3) and (4, - 8) is

4. The mid-point of the line segment AB is (4,0). If the co-ordinates of point A is (3,-2), then coordinates of point B is _____

5. Distance of a point (-24, 7) from the origin (in units) is_____.

6. If $P(-1, 1)$ is the midpoint of the line segment joining $A(-3, b)$ and $B(1, b+4)$ then $b = ?$

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).

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

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

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4. 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).

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

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6. 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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Objective Type Questions 1 Mark Very Short Answer Type Questions

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

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2. The coordinate of a point A, where AB is the diameter of a circle whose center is (2, -3) and B (1,4) are:

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3. Find the distance between the points (a,b) and $(-a, -b)$.

Short Answer Sa I Type Questions 2 Marks

1. Find the value of a so that the point (3,a) lies on the line represented by 2x-3y=5

2. The mid-point of the line segment joining A(2a, 4) and B(-2, 3b) is (1, 2a +1). Find the value of a and b.

3. Determine the ratio in which the line y - x + 2 = 0 divides the line segment joining the points (3, -1) and (8, 9).

4. If two vertices of a parallelogram are $(3, 2)$, $(-1, 0)$ and the diagonals cut at $(2, -5)$, find the other vertices of the parallelogram.

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

6. Find the ratio in which the point $(-3, p)$ divides the line segment joining the points $(-5, -4)$ and $(-2, 3)$. Hence, find the value of p .

7. 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.

8. If the distances of P(x, y) from A(5,1) and (-1,5)

are equal, then prove that 3x = 2y.

9. The coordinates of P and Q are (-3, 4) and (2, 1), respectively. If PQ is extended to R such that $PR = 2QR$, then what are the coordinates of R ?

10. The points A(4, 7), B(p, 3) and C(7, 3) are the vertices of a right triangle, right-angled at B. Find the value of p.

11. 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

12. Find the area of a quadrilateral ABCD having vertices at A(l, 2), B(1, 0), C(4,0) and D(4,4).

13. If thepoint $C(-1, 2)$ divides internally the line segment joining $A(2, 5)$ and B in the ration $3 : 4$. Find the coordinates of B.

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1. Prove that the points (2,-2), (-2, 1) and (5, 2) are the vertices of a right angled triangle. Also find the area of this triangle.

2. Find the ratio in which the y-axis divides the line segment joining the points $(5, \ -6)$ and $(-1, \ -4)$. Also, find the coordinates of the point of division.

3. The x-coordinate of a point P is twice its y-coordinate.   If   P   is   equidistant   from

$Q(2, \ -5)$ and $R(-3, 6)$, then find the coordinates of P.

4. If the distance between the points (4, k) and (1, 0) is 5, what can be the possible values of k ?

5. . Let P and Q be the points of trisection of the line segment joining the points A(2, -2) and B(-7, 4) such that P is nearer to A. Find the coordinates of P and Q.

6. Find the co-ordinates of the point of bisection of the line segment joining the points (9, -3) and (9,7).

7. 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 ?

8. 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?

9. Point P divides the line segment joining the points $A(2, 1)$ and $B(5, -8)$ such that $\dfrac{AP}{AB} = \dfrac{1}{3}$. If P lies on the line 2x - y + k =0, find the value of k.

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

11. In what ratio does the point P(-4, y) divide the line segment joining the points A(-6, 10) and B(3, -8)? Find the value of y.

12. Find the coordinates of the point of intersection of x - 3y = 0 and the line segment joining the points (- 2, - 5) and (6, 3).

13. 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.

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

15. The line joining the points $(2, 1)$ and $(5, -8)$ is trisected at the points P and Q. If point P lies on the line $2x - y + k = 0$. Find the value of k.

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

17. If $A(-2, -1), B(p, 0), C(4, q)$ and $D(1, 2)$ are the vertices of a parallelogram, find the values of p and q.

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18. Find the coordinates of the point of bisection of the line segment joining the points (7, - 2) and (-5, -4).

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19. 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.

20. 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, 1) Also find the value of y.

21. 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.

22. Find the coordinates of a point on the x-axis which is equidistant from the points A(2, -5) and B(- 2, 9).

23. If the point P(x, y) is equidistant from the points A(a + b, b - a) and B(a - b, a + b). Prove that bx = ay.

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

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

26. The point R divides the line segment AB, where A (- 4, 0) and B (0, 6) such that $R = \dfrac{3}{4}AB$. Find the coordinates of R

27. 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.

28. Find the ratio in which P(4, m) divides the line segment joining the points A(2, 3) and B(6, 3). Hence find m.

29. Prove that the points (3, 0), (6, 4) and (-1, 3) are the vertices of a right angled isosceles triangle.

30. The line joining the points $(2, 1)$ and $(5, -8)$ is trisected at the points P and Q. If point P lies on the line $2x - y + k = 0$. Find the value of k.
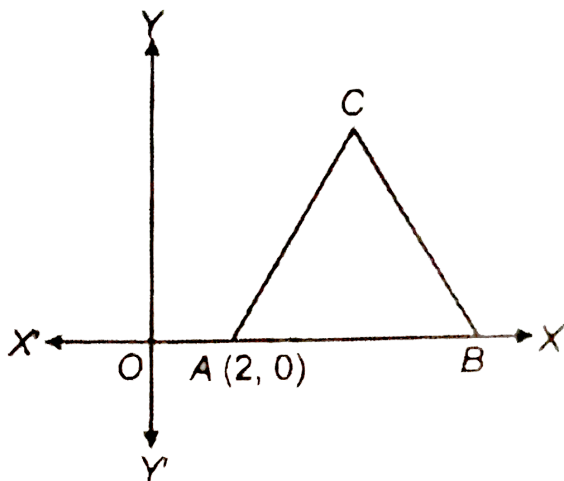
Long Answer La Type Questions 4 Marks

1. In the given figure, ΔABC is an equilateral triangle of side 3 units. Find the coordinates

of the other two vertices.

Y

C

X' ← O A (2, 0) B → X

Y'

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2. Show that $\triangle ABC$, where

$A(-2, 0), B(2, 0), C(0, 2)$ and $\triangle PQR$

where $P(-4, 0), Q(4, 0)$ and $R(0, 4)$ are

similar triangles.

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 $x^2 + y^2$.

4. 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.

5. The points A $(x_1, y_1), B(x_2, y_2)$ and $C(x_3, y_3)$ are the vertices of △ 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 $CR:RF = 2:1$.
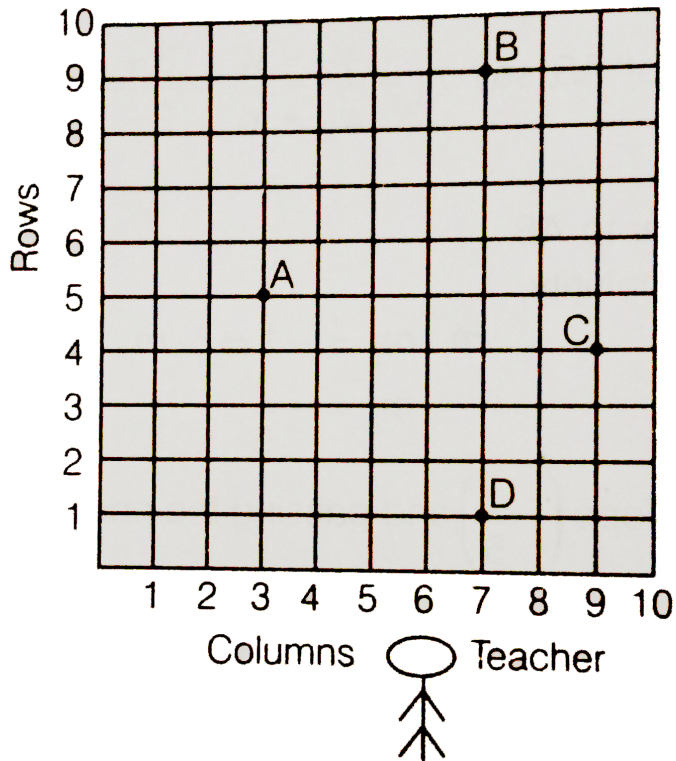
What are the coordinates of the centroid of the △ ABC?

6. 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 ?

7. 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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