



MATHS

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MATHS (HINGLISH)

COORDINATE GEOMETRY

Very Short Answer Answer Questions

1. What is the area of the triangle formed by the points O (0, 0), A (-3,0) and B (5, 0) ?



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2. If the centroid of the triangle formed by points $P(a, b)$, $Q(b, c)$ and $R(c, a)$ is at the origin, what is the value of $a + b + c$?



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3. If AOBC is a rectangle whose three vertices are $A(0,3)$, $O(0,0)$ and $B(5,0)$, then the length of its diagonal is



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4. Find the value of a , so that the point $(8, a)$ lie on the line $2x - 3y = 5$.



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5. Find distance between the points $(0, 5)$ and $(-5, 0)$



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6. The distance of the point $P(-6, 8)$ from the origin is



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7. If the points $A(1,2)$, $B(0,0)$ and $C (a,b)$ are collinear , then



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8. 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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9. The coordinates of the points P and Q are respectively $(4, -3)$ and $(-1, 7)$. Find the abscissa of a point R on the line segment PQ such that

$$\frac{PR}{PQ} = \frac{3}{5}.$$



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



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Short Answer Questions I

1. Write the coordinates of a point on X -axis which is equidistant from the points $(-3, 4)$

and $(2, 5)$.



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



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3. What is the distance between the points $(10\cos 30^\circ, 0)$ and $(0, 10\cos 60^\circ)$?



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4. If $A(-1, 3)$, $B(1, -1)$ and $C(5, 1)$ are the vertices of a triangle ABC , what is the length of the median through vertex A ?



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5. Write the ratio in which the line segment joining the points $A(3, -6)$ and $B(5, 3)$ is divided by X -axis.



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6. 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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7. $\triangle ABC$ with vertices A(0,-2,0), B(2,0) and C(0,2) is similar to $\triangle DEF$ with vertices D(-4,0), E(4,0) and F(0,4).



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8. 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 $B(3,3)$.



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



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10. 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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11. 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.



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12. . 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.



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13. 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 .



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14. 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.



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Short Answer Questions li

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



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

(i) $(5,7)$, $(-1,3)$ (ii) (a,b) , $(-a,-b)$



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3. Name the type of quadrilateral formed, if any, by the following points, and give reasons for your answer: (i) $(1, 2), (1, 0), (1, 2), (3, 0)$
(ii) $(3, 5), (3, 1), (0, 3), (1, 4)$
(iii) $(4, 5), (7, 6),$



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4. 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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5. 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 .



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6. Find the point on the x -axis which is equidistant from $(2, -5)$ and $(-2, 9)$.



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



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



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



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10. Find the co - ordinates of the points of trisection of the line segment joining $(4, - 1)$ and $(- 2, - 3)$.



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11. 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.



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



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



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



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16. 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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17. Find the area of the triangle whose vertices are: $(-5,-1)$, $(3,-5)$, $(5,2)$



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18. If the point $A(0, 2)$ is equidistant from the points $B(3, p)$ and $C(p, 5)$, find p .



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19. If the points $A(-2, 1)$, $B(a, b)$ and $C(4,-1)$ are collinear and $a - b = 1$, find the values of a and b .



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20. If the point $P(k-1, 2)$ is equidistant from the points $A(3, k)$ and $B(k, 5)$, find the values of k .



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21. Find the ratio in which the line segment joining the points $A(3, -3)$ and $B(-2, 7)$ is divided by x -axis. Also, find the coordinates of the point of division.



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



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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 $bx = ay$.



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24. 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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Long Answer Questions

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



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2. 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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3. 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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4. You have studied in Class IX, (Chapter 9. Example 3), that a median of a triangle divides it into two 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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5. Find the ratio in which the point $P(x, 2)$ divides the line segment joining the points $A(12, 5)$ and $B(4, -3)$. Also find the value of x .



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6. If $A(4, 2)$, $B(7, 6)$ and $C(1, 4)$ are the vertices of a $\triangle ABC$ and AD is its median, prove that the median AD divides $\triangle ABC$ into two triangles of equal areas.





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7. 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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8. The base BC of an equilateral triangle ABC lies on y -axis. The coordinates of point C are $(0, -3)$. The origin is the midpoint of the base. Find the coordinates of the points A and B .

Also, find the coordinates of another point D such that ABCD is a rhombus.



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9. Prove that the area of a triangle with vertices $(t, t - 2)$, $(t + 2, t + 2)$ and $(t + 3, t)$ is independent of t .



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10. The coordinates of A, B, C are $(6, 3), (-3, 5), (4, -2)$ respectively and P is any point (x, y) . Show that the ratio of the areas of the triangles ΔPBC and ΔABC is $\left| \frac{x + y - 2}{7} \right|$.



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11. The vertices of a ΔABC 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

$\frac{AD}{AB} = \frac{AE}{AC} = \frac{1}{4}$. Calculate the area of

$\triangle ADE$ and compare it with the area of

$\triangle ABC$.



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Hots Higher Order Thinking Skills

1. 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 .



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2. Prove that the diagonals of a rectangle bisect each other and are equal.



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3. In what ratio does the y-axis divide the line segment joining the point $P(-4, 5)$ and

$Q(3, -7)$? Also, find the coordinates of the point of intersection.



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



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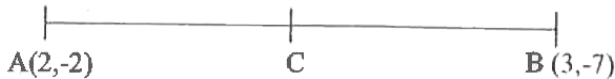
5. If the coordinates of the mid-points of the sides of a triangle are

$(1, 1)$, $(2, -3)$ and $(3, 4)$. Find its (i) centroid
(ii) in-centre.



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6. 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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7. Show that $\triangle ABC$ with vertices $A(-2, 0)$, $B(0, 2)$ and $C(2, 0)$ is similar to $\triangle DEF$ with vertices $D(-4, 0)$, $F(4, 0)$ and $E(0, 4)$.



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Proficiency Exercise Very Short Answer Questions

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



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



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3. 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 .



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



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5. if a line / passes through $(k, 2k)$, $(3k, 3k)$ and $(3, 1)$, $k \neq 0$ and the distance from the origin to the line / is $\frac{1}{\sqrt{m}}$ then $m = \dots$



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6. If $A(5, 2)$, $B(2, -2)$ and $C(-2, t)$ are the vertices of a right triangle with $\angle B = 90^\circ$ then find the value of t .



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7. If the area of a triangle formed by the points $(k, 2k)$, $(-2, 6)$ and $(3, 1)$ is 20 square units, then find k .



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8. Prove that the points $A(a, 0)$, $B(0, b)$ and $C(1, 1)$ are collinear, if $\frac{1}{a} + \frac{1}{b} = 1$.



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9. Find the ratio in which the x-axis divides the segment joining $(-3, -5)$ and $(-1, 1)$.



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10. If the centroid of the triangle formed by the points (a,b) , (b,c) and (c,a) is at the origin, then find the value of $a^3 + b^3 + c^3$.



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11. Two vertices of a triangle are at $(- 3, 1)$ and $(0,2)$ and the centroid is at the origin. Find its third vertex.



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12. What is the ratio in which the point $P\left(\frac{-2}{5}, 6\right)$ divides the line joining of A (-4, 3) and B (2, 8)?



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Proficiency Exercise Short Answer Questions I

1. What is the distance between the points $A(c, 0)$ and $B(0, -c)$?



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2. If $A(1, 2)$, $B(4, 3)$ and $C(6, 6)$ are the three vertices of a parallelogram $ABCD$, find the coordinates of the fourth vertex D .



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3. If $(2, p)$ is the midpoint of the line segment joining the points $A(6, -5)$ and $B(-2, 11)$, find the value of p .



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4. If $A(2, 2)$, $B(-4, -4)$ and $C(5, -8)$ are the vertices of a triangle, then the length of the median through vertex C is.



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5. What is the distance between the points $A(5\cos \theta, 0)$ and $B(0, 5\sin \theta)$?



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6. Write the ratio in which the line segment joining points $(2, 3)$ and $(3, -2)$ is divided by X axis.



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7. If the distance between points $(x, 0)$ and $(0, 3)$ is 5, what are the values of x ?



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8. Write the coordinates of the point dividing line segment joining the points $(1, 5)$ and $(-5, 1)$ internally in the ratio $1: 4$.



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9. What is the area of the triangle formed by the points $O(0,0)$, $A(4,0)$ and $B(0,3)$?



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10. In Q. No. 169, what is the value of

$$\frac{a^2}{bc} + \frac{b^2}{ca} + \frac{c^2}{ab} ?$$



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11. If the mid-point of a segment joining

$$A\left(\frac{x}{2}, \frac{y+1}{2}\right) \text{ and } B(x+1, y-3) \text{ is } C(5, -2),$$

find x,y.



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12. Find the distance between the points

$$\left(-\frac{8}{5}, 2\right) \text{ and } \left(\frac{2}{5}, 2\right)$$



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13. Find the value of c so that the point $(3,c)$

lies on the line represented by $2x-3y+5=0$.



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



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15. 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.



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16. Point A (2, -3) lies on the line segment joining the points P(-4,- 3) and Q (1, -3).



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



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18. Point P (0, - 7) is the point of intersection of y-axis and perpendicular bisector of line segment joining the points A (-1, 0) and B (7, -6).



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



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



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21. The points $(1, 1)$, $(13, 1)$ and $(13, 6)$ are the vertices of a right triangle.



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22. 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.



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

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



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24. In Fig. ABC is a triangle co-ordinates of whose vertex A are $(0, -1)$. D and E respectively are the mid-points of sides AB and AC their co-ordinates are $(1, 0)$ and $(0, 1)$ respectively. If F is the mid-point of BC find the areas of $\triangle ABC$ and $\triangle DEF$



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25. If the points $A(4, 3)$ and $B(x, 5)$ are on the circle with centre $O(2, 3)$, find the value of x .



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



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27. 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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28. 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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29. Find the point on x-axis which is equidistant from the points $(-2, 5)$ and $(2, -3)$.



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30. 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 .



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31. Show that four points $(1, -2)$, $(3, 6)$, $(5, 10)$ and $(3, 2)$ are the vertices of a parallelogram.



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



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33. In the following examples , can the segment joining the given points form a triangle ? If triangle is formed , state the type of the triangle considering sides of the triangle.

(iii)

A

$$(\sqrt{2}, \sqrt{2}), B(-\sqrt{2}, -\sqrt{2}), C(-\sqrt{6}, \sqrt{6})$$



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34. Do the points $A(3, 2)$, $B(-2, -3)$ and $C(2, 3)$ form a triangle? If so, name the type of triangle formed.



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35. The line segment joining the points $(3, -4)$ and $(1, 2)$ is trisected at the points P and Q . If the co-ordinates of P and Q are $(p, -2)$ and $\left(\frac{5}{3}, q\right)$ respectively, find the values of p and q .



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36. If the point $P(m, 3)$ lies on the line segment joining the points $A\left(-\frac{2}{5}, 6\right)$ and $B(2, 8)$, find the value of m .



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37. Point P divides the line segment joining the points A(-1,3) and

B(9,8) such that $\frac{AP}{BP} = \frac{k}{1}$. If P lies on the line

$x - y + 2 = 0$, find k.



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38. Point A lies on the line segment PQ joining

P(6, -6) and Q(-4, -1) in such a way that

$\frac{PA}{PQ} = \frac{2}{5}$. If the point A also lies on the line

$3x+k(y+1) = 0$, find the value of k.



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39. If $R(x, y)$ is a point on the line segment joining the points $P(a, b)$ and $Q(b, a)$, then prove that $x + y = a + b$



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40. Find the ratio in which the line $x + 3y - 14 = 0$ divides the line segment joining the points A $(-2, 4)$ and B $(3, 7)$.



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41. If the points (p, q) , (m, n) and $(p - m, q - n)$ are collinear, show that $pn = qm$.



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42. Prove that the points $(a, b + c)$, $(b, c + a)$ and $(c, a + b)$ are collinear.



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43. If the mid-point of the line segment joining the points A (3, 4) and B (k, 6) is P (x,y) and P lies on the line $x + y - 10 = 0$, find the value of k.



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44. 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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45. 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 .



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46. In what ratio does the x-axis divide the line segment joining the points $(-4,-6)$ and $(-1,7)$?
Find the co-ordinates of the point of division.



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47. Find the area of the triangle whose vertices are $(-4, 8)$, $(6, -6)$ and $(-3, -2)$.



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



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49. Find the area of the triangle ABC with $A(1, -4)$ and mid-points of sides through A being $(2, -1)$ and $(0, -1)$.



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50. 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.



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51. 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.



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



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54. Find the coordinates of points which divide the line segment joining A (5, - 6) and B (-1, 8) into four equal parts.



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55. Find the value of k for which the points A($k+1$, $2k$), B($3k$, $2k + 3$) and C($5k-1$, $5k$) are collinear.



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



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57. Find the third vertex of a triangle, if two of its vertices are at $(-3, 1)$ and $(0, -2)$ and the centroid is at the origin.



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58. 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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59. The area of a triangle is 5 square unit. Two of its vertices are $(2, 1)$, $(3, -2)$ and the third vertex lies on the line $y = x + 3$. The third vertex can be



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60. If the points $A(2,9)$, $B(a,5)$ and $C(5,5)$ are the vertices of a $\triangle ABC$. Right angled at B , then find the values of a and hence the area of $\triangle ABC$.



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61. The vertices of a triangle are $(a, b - c)$, $(b, c - a)$ and $(c, a - b)$. Prove that its centroid lies on x -axis.



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62. The base PQ of two equilateral triangles PQR and PQR with side $2a$ lies along y -axis such that the mid-point of PQ is at the origin. Find the coordinates of the vertices R and R of the triangles.



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63. If the points (a, b) , (a', b') and $(a-a', b-b')$ are collinear, show that $ab' = a'b$.



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64. Show that the points $(a^2, 0)$, $(0, b^2)$ and $(1, 1)$ are collinear if $\frac{1}{a^2} + \frac{1}{b^2} = 1$.



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65. The coordinates of A, B, C are $(6, 3), (-3, 5)$ and $(4, -2)$ respectively and P is any point (x, y) . Show that the ratio of the areas of triangles PBC and ABC is $\left| \frac{x + y - 2}{7} \right|$.



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66. Show that $(1, -1)$ is the centre of the circle circumscribing the triangle whose vertices are $(4, 3), (-2, 3)$ and $(6, -1)$.





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67. If the point A $(-2, 1)$, B (a, b) and C $(4, -1)$ are collinear and $a - b = 1$, find the values of a and b .



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68. If the points P $(-3, 9)$, Q (a, b) and R $(4, -5)$ are collinear and $a + b = 1$, find the values of a and b .



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69. If the points $A(-1, -4)$, $B(b, c)$ and $C(5, -1)$ are collinear and $2b + c = 4$, find the values of b and c .



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70. 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 .



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71. 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.



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72. the value of k for which the points $(3k - 1, k - 2)$, $(k, k - 7)$ and $(k - 1, -k - 2)$ are collinear.



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73. Points P, Q, R and S divide the line segment joining the points A(1, 2) and B(6, 7) in five equal parts. Find the coordinates of the point P.



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Proficiency Exercise Long Answer Questions

1. If the points A (1,2), B (2,3) , C (*a,2) and D (-4,-3) form a parallelogram , them find the

value of a and height of the parallelogram taking AB as base.



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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 $\triangle ADE$.



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3. Find the area of the triangle formed by joining the mid-points of the sides of the triangle, whose vertices are $(2, -4)$, $(6, 2)$ and $(-4, 6)$. Find the ratio of this area to the area of the given triangle.



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4. The mid-points D , E , F of the sides of a triangle ABC are $(3, 4)$, $(8, 9)$ and $(6, 7)$. Find the coordinates of the vertices of the triangle.





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5. Find the coordinates of the third vertex of an equilateral triangle, whose two vertices are $(3, 4)$ and $(-2, 3)$.



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6. Show that the points (a, a) , $(-a, -a)$ and $(-\sqrt{3}a, \sqrt{3}a)$ are the vertices of an equilateral triangle. Also, find its area.



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7. If $A(3, 4)$ and $C(1, -1)$ are two opposite angular points of square ABCD, find the coordinates of other two vertices.



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8. 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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9. 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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10. 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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11. 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 the coordinates of the centroid of the triangle ABC .



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12.

If

$A(-3, 5)$, $B(-2, -7)$, $C(1, -8)$ and $D(6, 3)$

are the vertices of a quadrilateral ABCD find its area.



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13. If $A(4, -6)$, $B(3, -2)$ and $C(5, 2)$ are the vertices of a $\triangle ABC$ and AD is its median, prove that the median AD divides $\triangle ABC$ into two triangles of equal areas.





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14. The midpoint P of the line segment joining the points $A(-10, 4)$ and $B(-2, 0)$ lies on the line segment joining the points $C(-9, -4)$ and $D(-4, y)$. Find the ratio in which P divides CD . Also find the value of y .



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15. If $A(-4, 8)$, $B(-3, -4)$, $C(0, -5)$ and $D(5, 6)$ are the vertices of a quadrilateral $ABCD$, find its area.



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16. Find the values of k so that the area of the triangle with vertices $(1, -1)$, $(-4, 2k)$, and $(-k, -5)$ is 24 sq. units.



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17. The base QR of an equilateral triangle PQR lies on x -axis. The coordinates of the point Q are $(-4, 0)$ and origin is the midpoint of the

base. Find the coordinates of the points P and R.



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18. Find the area of quadrilateral ABCD, the coordinates of whose vertices are A(1, 2), B(6, 2), C(5, 3) and D(3,4).



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Self Assessment Test

1. Find the area of triangle with vertices $(0, 0)$, $(4, 0)$ and $(0, 5)$.



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2. Which point lies on the perpendicular bisector of the line segment joining the points A $(-3, 4)$ and B $(3, -4)$?



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3. If the points $(1, x)$, $(5, 2)$ and $(9, 5)$ are collinear then find the value of x .



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4. In which quadrant, the point which divides the line segment joining the points $(5, 4)$ and $(-6, -7)$ in the ratio $1 : 3$ internally lies?



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5. $A(3, 2)$ and $B(-2, 1)$ are two vertices of a triangle ABC whose centroid G has the coordinates $\left(\frac{5}{3}, -\frac{1}{3}\right)$. Find the coordinates of the third vertex C of the triangle.



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6. Find the point on x-axis which is equidistant from $(-2, 5)$ and $(2, 3)$.



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7. Find the condition that the points $A(3, 4)$, $B(-5, -6)$ and $C(x, y)$ may lie on the same straight line.



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8. In what ratio does the line $x - y - 2 = 0$ divide the line segment joining the points $A(3, -1)$ and $B(8, 9)$?



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9. $A(3, 2)$ and $B(-2, 1)$ are two vertices of a triangle ABC whose centroid G has the coordinates $\left(\frac{5}{3}, -\frac{1}{3}\right)$. Find the coordinates of the third vertex C of the triangle.



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





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