



MATHS

BOOKS - UNIQUE MATHS (HINGLISH)

CO-ORDINATE GEOMETRY

Problem Set

1. Seg AB is parallel to Y-axis and Co-ordinates of point A are $(1, 3)$ then co-ordinates of point B can be

A. (3, 1)

B. (5, 3)

C. (3, 0)

D. (1, - 3)

Answer: D



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2. Out of the following pointlies to the right of the origin on X-axis.

A. (- 2, 0)

B. $(0, 2)$

C. $(2, 3)$

D. $(2, 0)$

Answer: D



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3. Distance of point $(-3,4)$ from the origin is

A. 7

B. 1

C. 5

D. -5

Answer: C



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4. A line makes an angle of 30° with the positive direction of X-axis.

So the slope of the line is _____

A. $\frac{1}{2}$

B. $\frac{\sqrt{3}}{2}$

C. $\frac{1}{\sqrt{3}}$

D. $\sqrt{3}$

Answer: C



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5. Determine whether the given points are collinear.



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6. Determine whether the given points are collinear.

$$P(1, 2), Q\left(2, \frac{8}{5}\right), R\left(3, \frac{6}{5}\right)$$



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7. Determine whether the given points are collinear.

$L(1, 2)$, $M(5, 3)$, $N(8, 6)$



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8. Find the coordinates of the midpoint of the segment joining

$P(0,6)$ and $Q(12,20)$.



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9. Find the ratio of which the line segment joining the points $A(3, 8)$ and $B(-9, 3)$ is divided by the Y-axis.



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



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11. 5) Find the distance between the following pairs of points $A(a, 0)$, $B(0, a)$



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12. Find the distance between the following pairs of points.

$P(-6, -3)$, $Q(-1, 9)$



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13. Find the distance between the following pairs of points.

$$R(-3a, a), S(a, -2a)$$



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14. Find the co-ordinates of the circumcentre of a triangle whose vertices are $(-3,1)$, $(0,-2)$ and $(1,3)$.



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15. In the following example, 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 :

$$L(6, 4), M(-5, -3), N(-6, 8)$$



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16. 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.

$$P(-2, -6), Q(-4, -2), R(-5, 0)$$



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17. 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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18. Find k if the line passing through points $P(-12, -3)$ and $Q(4, k)$ has slope $\frac{1}{2}$.



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19. Show that the line joining the points $A(4,8)$ and $B(5,5)$ is parallel to the line joining the points $C(2,4)$ and $D(1,7)$.



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20. Show that points $P(1, - 2)$, $Q(5, 2)$, $R(3, - 1)$, $S(- 1, - 5)$ are the vertices of a parallelogram.



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21. Show that the points $P(2,1)$, $Q(-1,3)$, $R(-5,-3)$ and $S(-2,-5)$ are the vertices of a square .



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22. Find the lengths of the medians of triangle whose vertices are $A(-1,1)$, $B(5,-3)$ and $C(3,5)$.



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23. Find the coordinates of the centroid of the triangles if points $D(-7, 6)$, $E(8, 5)$ and $F(2, -2)$ are the midpoints of the sides of that triangle.



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24. Show that points A (4,-1) B (6,0) C (7,-2) and D (5,-3) are the vertices of a square.



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25. Find the co-ordinates of circumcentre and radius of circumcircle of $\triangle ABC$ if $A(7,1)$, $B(3,5)$ and $C(2,0)$ are given .



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26. Given $A(4,-3)$, $B(8,5)$. Find the coordinates of the point that divides segment AB in the ratio $3:1$



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27. चतुर्भुज ABCD जिसके शीर्ष क्रम में $A(-4, -2)$, $(B(-3, -5)$, $C(3, -2)$ और $D(2, 3)$ है, का क्षेत्रफल ज्ञात कीजिए ।



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28. The line segment AB is divided into five congruent parts at P,Q,R and S such that $A - P - Q - R - S - B$. If point $Q(12, 14)$ and $S(4, 18)$ are given find the coordinates of A, P,R,B.



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29. Find the coordinates of centre of the circle passing through the points $P(6,-6)$, $Q(3,-7)$ and $R(3,3)$



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30. Find the possible pairs of co-ordinates of the fourth vertex D of the parallelogram, if three of its vertices are $A(5, 6)$, $B(1, 2)$ and $C(3, -2)$



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31. Find the slope of the diagonals of a quadrilateral with vertices $A(1, 7)$, $B(6, 3)$, $C(0, -3)$ and $D(-3, 3)$.



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Practice Set 5 1

1. Find the distance between each of the following pairs of points

$A(2, 3)$, $B(4, 1)$



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

$$P(-5, 7), Q(-1, 3)$$



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3. Find the distance between the following pairs of points

$$R(0, 3), S\left(0, \frac{5}{2}\right)$$



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4. Find the distance between each of the following pairs of points

$$L(5, -8), M(-7, -3)$$



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5. Find the distance between each of the following pairs of the points.

$$T(-3, 6), R(9, -10)$$



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6. Find the distance between each of the following pairs of points

$$W\left(-\frac{7}{2}, 4\right), X(11, 4)$$



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7. Determine whether the points are collinear OR not

$$A(1, -2), B(2, -5), C(-4, 7)$$



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8. Determine whether the points are collinear

$$L(-2, 3), M(1, -3), N(5, 4)$$



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9. Determine whether the points are collinear

$$R(0, 3), D(2, 1), S(3, -1)$$



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10. Determine whether the points are collinear.

$$P(-2, 3), Q(1, 2), R(4, 1)$$





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11. Find the point on the X-axis which is equidistant from (-3,4) and B(1,-4).



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12. Verify whether P(-2,2) , Q(2,2) and R(2,7) are the vertices of a right angled triangle or not by completing the following activity.

$$PQ = \sqrt{[2 - (-2)]^2 + (2 - 2)^2} = \square \dots(1)$$

$$QR = \sqrt{(2 - 2)^2 + 97 - 2^2} = 5 \dots(2)$$

$$PR = \sqrt{[2 - (-2)]^2 + (7 - 2)^2} = \square \dots(3)$$

from (1),(2),(3)

$$PR^2 = \square, QP^2 + QR^2 = \square$$

$$\therefore PR^2 \square PQ^2 + QR^2 [= \text{ or } \neq]$$

$\therefore \triangle PQR \square$ a right angled triangle [is /is not]



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13. Show that points P(2,-2) , Q (7,3) ,R(11,-1) and S(6,-6)

are vertices of a parallelogram.



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14. Show that points A (-4, -7), B (-1,2) , C (8,5) and D(5,-4)

are the vertices of rhombus ABCD.



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15. Find x , if distance between L ($x,7$) and M(1,15) is 10.



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16. Show that the points $A(1,2), B(1,6),$
 $C(1 + 2\sqrt{3}, 4)$ are the
vertices of an equilateral triangle .



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Practice Set 5 2

1. Find the co-ordinates of point P if P divides the
line segment joining the points
 $A(-1, 7)$ and $B(4, -3)$ in the ratio 2:3



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2. Find the co-ordinate of point A which divides segment PQ in the ratio $a:b$

$$P(-3, 7), Q(1, -4), a:b = 2:1$$



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3. In each of the following examples find the co-ordinates of point A which divides segment PQ in the ratio $a:b$

$$P(-2, -5), Q(4, 3), a:b = 3:4$$



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4. In each of the following examples find the coordinates of point A which divides segment PQ in the ratio $a : b$

$$P(2, 6), Q(-4, 1) \quad a : b = 1 : 2$$



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5. Find the ratio in which point $T(-1, 6)$ divides the line segment joining the points $P(-3, 10)$ and $Q(6, -8)$



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6. Point P is the centre of the circle and AB is a diameter . Find the coordinates of point B. If coordinates of point A and Pare (2,-3) and (-2,0) respectively .



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7. Find the ratio in which point P (k,7) divides the segment joining A(8,9) and B(1,2) .



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8. Find the co-ordinates of midpoint of the segment joining the points $(22, 20)$ and $(0, 16)$



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9. Find the centroids of the triangles whose vertices are given below

$(-7, 6), (2, -2), (8, 5)$



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10. Find the centroids of the triangles whose vertices are given below

$$(3, -5), (4, 3), (11, -4)$$



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11. Find the centroids of the triangles whose vertices are given below

$$(4, 7), (8, 4), (7, 11)$$



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12. In ΔABC , $G(-4, -7)$ is the centroid. If $A(-14, -19)$ and $B(3, 5)$ then find the coordinates of C



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13. $A(h, -6)$, $B(2, 3)$ and $C(-6, k)$ are the coordinates of vertices of a triangle whose centroid is $G(1, 5)$. Find h and k .



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14. Find the co-ordinates of the points of trisection of the line segment AB with $A(2, 7)$ and $B(-4, -8)$



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15. If $A(-14, -10)$, $B(6, -2)$ is given. Find the coordinates of points which divide segment AB into four equal parts.



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16. If $A(20, 10)$, $B(0, 20)$ are given, then find the co-ordinate of the point which bisects segment AB into two equal parts.



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Practice Set 5 3

1. Angles made by the line with the positive direction of X-axis are given. Find the slope of these lines

45°



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2. Angles made by the line with the positive direction of X-axis are given. Find the slope of these lines

60°



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3. Angles made by the line with the positive direction of X-axis are given. Find the slope of these lines

90°



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4. Find the slope of the lines passing through the given points

$$A(2, 3), B(4, 7)$$



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5. Find the slope of the lines passing through the given points

$$P(-3, 1) \text{ and } Q(5, -2)$$



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6. Find the slope of the lines passing through the given points

$$C(5, -2) \text{ and } D(7, 3)$$



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7. Find the slope of the lines passing through the given points

$$L(-2, -3) \text{ and } M(-6, -8)$$



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8. Find the slope of the lines passing through the given points

$$E(-4, -2) \text{ and } F(6, 3)$$



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9. Find the slope of the line passing through the given points

$$T(4, 5) \text{ and } S(3, 4)$$



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10. Determine whether the following points are collinear

$$A(-1, -1), B(0, 1), C(1, 3)$$



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11. Determine whether the following points are collinear

$$D(-2, -3), E(1, 0), F(2, 1)$$



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12. Determine whether the following points are collinear

$$L(2, 5), M(3, 3), N(5, 1)$$



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13. Determine whether following points are collinear.

$$P(2, -5), Q(1, -3), R(-2, 3)$$



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14. Determine whether the following points are collinear

$$R(1, -4), S(-2, 2), T(-3, 4)$$



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15. Determine whether the following points are collinear or not:

$$A(-4, 4), K\left(-2, \frac{5}{2}\right), N(4, -2)$$



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16. If $A(1, -1)$, $B(0, 4)$, $C(-5, 3)$ are vertices of a triangle, then find the slope of each side.



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17. Show that $A(-4, -7)$, $B(-1, 2)$, $C(8, 5)$ and $D(5, -4)$ are the vertices of a parallelogram.



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18. Find k , if $R(1, -1)$, $S(-2, k)$ and slope of line RS is -2



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19. Find k , if $B(k, -5)$, $C(1,2)$ and slope of the line is 7.



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20. Find k , if $PQ \parallel RS$ and $P(2,4)$, $Q(3,6)$, $R(3,1)$, $S(5,k)$.



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1. If the vertices of triangle PQR are $P \equiv (1, -9)$, $Q \equiv (2, 5)$ and $R \equiv (6, 7)$, then find the co-ordinate of point G which divides the median PT in the ratio 2:1



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2. Show that the line segment S joining the points $(-6, 8)$ and $(-2, 4)$ and $(-4, 13)$, $(-4, -1)$ bisects each other



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3. If $\square EFGH$ is a parallelogram and $E = (3, 4)$, $F = (-1, -6)$, $G = (3, -8)$ then find the co-ordinates of point H



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4. Do the line segments joining the points $(-6, 2)$, $(-2, -2)$ and $(1, 1)$ form a triangle? If so name the type of triangle so formed



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5. In $\triangle LMN$, D is the midpoint of seg MN. If $L \equiv (2, 4)$, $D \equiv (2, -2)$, find the coordinates of the point G which divides the median internally in the ratio 2:1



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6. The equation of a line is $3x - 4y + 12 = 0$. It intersects X-axis in point A and Y-axis in point B, find the co-ordinates of points A and B, find the length of AB



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Unique Practice Session Mcqs

1. What is the distance between the points A (4,5) and B(2, 5) ?

A. 4

B. 2

C. 16

D. $\sqrt{102}$

Answer: B



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2. $P(-1, 2)$ is the midpoint of seg AB. If $B(4, 3)$, what are the co-ordinates of the point A ?

A. $(6, 1)$

B. $(1, 6)$

C. $(-1, 6)$

D. $(-6, 1)$

Answer: D



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3. $A(4, 8)$, $B(5, 5)$, $C(2, 4)$ and $D(1, 7)$ are the vertices of the parallelogram .

Find the coordinates of the point of intersection of its diagonals .

A. $(6, 12)$

B. $(12, 6)$

C. $(3, 6)$

D. $(6, 3)$

Answer: C



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4. The ratio in which the point $(5, 4)$ divides the line joining points $(2, 1)$ and $(7, 6)$ is.....

A. 3 : 2

B. 2 : 3

C. 1 : 3

D. 2 : 3

Answer: A



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5. The co-ordinate of the mid-point of the line segment joining the points $P(4, -6)$ and $Q(-2, 4)$ is.....

A. $(-1, 1)$

B. $(1, -1)$

C. $(3, 5)$

D. $(-3, -5)$

Answer: B



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6. Coordinates $(3, 3)$, $(-4, 1)$ and $(3, -5)$ are the vertices of an....

A. Right angle triangle

B. Isosceles triangle

C. Equilateral triangle

D. Scalene triangle

Answer: D



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7. P divides segment QR internally in the ratio 2:1 $Q \equiv (-5, 8)$, $R \equiv (4, -4)$ then $P \equiv \dots$

A. (0,1)

B. (0, - 1)

C. (1, 0)

D. (- 1, 0)

Answer: C



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8. Angles made by the line with the positive direction of X-axis are given. Find the slope of these lines

45°

A. 1

B. 2

C. $\frac{1}{2}$

D. $\frac{1}{\sqrt{2}}$

Answer: A



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9. Centroid divides each median in ratio 2:1.

A. 1 : 2

B. 2 : 1

C. 2 : 3

D. 4 : 2

Answer: B



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10. What are the values of m and n if $D(m, -2)$ is the midpoint of the segment joining $(-3, n)$ and $(2, -5)$

A. $m = 1, n = \frac{-1}{2}$

B. $m = -1, n = \frac{1}{2}$

C. $m = \frac{-1}{2}, n = 1$

D. $m = \frac{1}{2}, n = -1$

Answer: C



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11. If slope of line joining the points $(2, x)$ and $(-3, 0)$ is $2/5$ then find x .

A. 2

B. -2

C. -5

D. 5

Answer: A



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12. The slope of line passing through $A(2, 3)$, $B(4, 7)$

A. 1

B. $\frac{5}{2}$

C. -4

D. 2

Answer: D



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13. The slope of X-axis is _ _ _ _ _

A. 1

B. 2

C. 0

D. not determind

Answer: C



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14. The slope of the parallel to Y-axis

A. not determind

B. 1

C. 0

D. 2

Answer: A



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15. If the points $(k, 2k)$, $(3k, 3k)$ and $(3, 1)$ are collinear, then k $\frac{1}{3}$ (b) $-\frac{1}{3}$ (c) $\frac{2}{3}$ (d) $-\frac{2}{3}$

A. $\frac{-1}{3}$

B. $\frac{1}{3}$

C. -3

D. 3

Answer: A



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1 Marks Question

1. A line makes an angle of 30° with the positive direction of X-axis.

So the slope of the line is _____



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2. Find the distance between origin of point

$$P(-3, 4)$$



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3. Points are $A(-2, 0)$, $B(0, 2)$, $C(2, 0)$ which

point lies to the right of the origin on x-axis



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4. What is the slope of the line parallel to X-axis ?



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5. Find the distance between points $A(a, 0)$, $B(0, a)$



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6. Point P is the centre of circle and AB is a diameter. Find the co-ordinate of centre of circle if $A(22, 20)$ $B(0, 6)$



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7. Are the points $A(0, 2)$, $B(1, -0.5)$, $C(2, -3)$ collinear ?



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8. Find the coordinates of the midpoint of the segment joining $P(0,6)$ and $Q(12,20)$.



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9. If $A(-14,-10)$, $B(6,-2)$ is given . Find the coordinates of points

which divide segment AB into four equal parts .



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2 Marks Question

1. Show that point $P(-3, 2)$, $Q(1, -2)$ and $R(9, -10)$ are collinear



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2. Find the distance between points $C(-3a, a)$ and $D(a, -2a)$



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3. If $A(3,5)$, $B(7,9)$ and Q divides seg AB in the ratio $2:3$, then find the co-ordinates of points Q .



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4. Find the slope of the lines passing through the given points

$L(-2, -3)$ and $M(-6, -8)$



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5. Show that $A(-4, -7)$, $B(-1, 2)$, $C(8, 5)$ and $D(5, -4)$ are the vertices of a parallelogram.



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6. Find the slope of the diagonals of a quadrilateral with vertices $A(1, 7)$, $B(6, 3)$, $C(0, -3)$ and $D(-3, 3)$.



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7. Find the ratio of which the line segment joining the points $A(3, 8)$ and $B(-9, 3)$ is divided by the Y-axis.



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8. If $A(-1, 1)$, $B(5, -3)$, $C(3, 5)$ are the vertices of $\triangle ABC$ and seg AM is its median find the length of median AM .



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9. If point $P(-4,6)$ divides the line segment AB with $A(-6,10)$ in the ratio $2:1$, then coordinates of the point B are _ _ _ _ _



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10. If $A(3,5)$, $B(7,9)$ and Q divides seg AB in the ratio $2:3$, then find the co-ordinates of points Q .



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11. $A(15, 5)$, $B(9, 20)$ and $A - P - B$. The ratio in which point $P(11, 15)$ divides segment AB is.....



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12. If slope of the line joining points $P(k,0)$ and $Q(-3,-2)$ is $\frac{2}{7}$, then find k .



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3 Marks Question

1. Show that the points $A(4, 7)$, $B(8, 4)$, $C(7, 11)$ are the vertices of right angled triangle



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2. If the distances of $P(x, y)$ from $A(5, 1)$ and $B(-1, 5)$ are equal, then prove that $3x=2y$.



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3. Show that the points $A(1,2), B(4,3), C(1,0)$ and $D(-2,-1)$ are the vertices of a parallelogram.



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4. Solve the following questions. (Any two)

(iv) Find the ratio in which point $P(k,7)$ divides the segment joining $A(8,9)$ and $B(1,2)$. Also find k .



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5. Find the distance between the points

$P(-1, 1)$ and $Q(5, -7)$



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6. $M(-3, 7)$ and $N(-1, 6)$ are the points of trisection of segment AB where A-M-N-B Find the co-ordinates of A and B



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7. If slope of the line joining points $(k, -3)$ and $(4, 5)$ is $\frac{1}{2}$ then find the value of k



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8. Find the value of k if $(-3, 11)$, $(6, 2)$ and $(k, 4)$ are collinear points



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9. Find the value of k if line PQ will be parallel to line RS where $P(2, 4)$, $Q(3, 6)$, $R(8, 1)$, $S(10, k)$





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10. Find the co-ordinates of centroid of the triangles if points $D(-7, 6)$, $E(8, 5)$ and $F(2, -2)$ are the mid points of the sides of that triangle.



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11. Find the co-ordinates of a point on Y-axis which is equidistant from $M(-5, -2)$ and $N(3, 2)$



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12. If point (x, y) is equidistant from points $(7, 1)$ and $(3, 5)$ show that $y = x - 2$



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13. Find the value of y if the distance between the points A $(2, -2)$ and B $(-1, y)$ is 5.



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14. Find the co-ordinates of point P if P is the midpoint of a line segment AB with

$A(-4, 2)$ and $B(6, 2)$



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15. If point T divides the segment AB with A (-7,4) and B (-6,-5) in the ratio 7:2, find the co-ordinates of T



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16. Show that points P (-2,3), Q(1,2), R(4,1) are collinear.



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17. If point $P(-4,6)$ divides the line segment AB with $A(-6,10)$ in the ratio $2:1$, then coordinates of the point B are _ _ _ _ _



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4 Marks Question

1. Find the lengths of the medians of a ABC whose vertices are $A(7, -3)$, $B(5, 3)$ and $C(3, -1)$.



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2. The line segment AB is divided into five congruent parts at P, Q, R and S such that $A - P - Q - R - S - B$. If point $Q(12, 14)$ and $S(4, 18)$ are given find the coordinates of A, P, R, B .

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3. Show that points $A(4, -1), B(6, 0), C(7, -2)$ and $D(5, -3)$ are the vertices of a square.

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4. Find the coordinates of the circumcentre and the radius of the circumcircle of ΔABC if $A(2,3)$, $B(4,-1)$ and $C(5,2)$.



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5. Show that the line segment joining the points $A(-6, 8)$, $B(-2, 4)$ and $P(-4, 13)$, $S(-4, -1)$ bisect each other



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6. Show that points $P(1, -2)$, $Q(5, 2)$, $R(3, -1)$, $S(-1, -5)$ are the vertices of a parallelogram.



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7. If ABCD is a parallelogram and $A(-2, 4)$, $B(-3, 5)$ and $D(3, -2)$ Find the co-ordinates of C



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8. Show that point $P(-3, 2)$, $Q(1, -2)$ and $R(9, -10)$ are collinear



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9. Verify, whether points $P(6, -6)$, $Q(3, -7)$ and $R(3, 3)$ are collinear



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



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11. $A(-3,-4)$, $B(-5,0)$, $C(3,0)$ are the vertices of $\triangle ABC$.

Find the co-ordinates of the circumcentre of $\triangle ABC$.



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



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13. If $A(6,1)$, $B(8,2)$, $C(9,4)$ and $D(7,3)$ are the vertices of $\square ABCD$, show that $\square ABCD$ is a parallelogram.



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Assignment V

1. The ratio in which the point $(5, 4)$ divides the line joining points $(2, 1)$ and $(7, 6)$ is.....

A. $3:2$

B. $2:3$

C. $1:3$

D. $2:3$

Answer:



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2. Find k if the line passing through points $P(-12, -3)$ and $Q(4, k)$ has slope $\frac{1}{2}$



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3. Show that the points $A(1,2), B(1,6), C(1 + 2\sqrt{3}, 4)$ are the vertices of an equilateral triangle .



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4. Verify whether P(-2,2) , Q(2,2) and R(2,7) are the vertices of a right angled triangle or not by completing the following activity.

$$PQ = \sqrt{[2 - (-2)]^2 + (2 - 2)^2} = \square \dots(1)$$

$$QR = \sqrt{(2 - 2)^2 + (7 - 2)^2} = 5 \dots(2)$$

$$PR = \sqrt{[2 - (-2)]^2 + (7 - 2)^2} = \square \dots(3)$$

from (1),(2),(3)

$$PR^2 = \square, PQ^2 + QR^2 = \square$$

$$\therefore PR^2 \square PQ^2 + QR^2 [= \text{ or } \neq]$$

$\therefore \triangle PQR \square$ a right angled triangle [is /is not]



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5. Find k , if $PQ \parallel RS$ and $P(2,4)$, $Q(3,6)$, $R(3,1)$, $S(5,k)$.



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6. Find the co-ordinates of the circumcentre of a triangle whose vertices are $(-3,1)$, $(0,-2)$ and $(1,3)$.



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7. Show that points $A(4,-1)$, $B(6,0)$, $C(7,-2)$ and $D(5,-3)$ are the vertices of a square.





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8. Find the coordinates of centre of the circle passing through the points $P(6,-6)$, $Q(3,-7)$ and $R(3,3)$



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