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 point .....lies 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 anlge 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. $\frac{1}{qrt3}$

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 coordintes 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 poins.

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

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

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

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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 triagle 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 from 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 veties 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 acitvity.

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

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

$PR = \sqrt{[2-(-2)]^2 + (7-2)^2} = \square$ ...(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 pf rhomus 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), $C\left(1+2\sqrt{3}, 4\right)$ 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 co-ordinates of point A which divides segment PQ in the ratio $a:b$

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

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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 $\Delta ABC, G(-4, -7)$ is the centroid. If $A(-14, -19)$ and $B(3, 5)$ then find the co-ordinates 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 points .

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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

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

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

$C(5, -2)$ and $D(7, 3)$

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

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

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

$E(-4, -2)$ and $F(6, 3)$

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

$T(4, 5)$ 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 $||$ RS and P(2,4), Q (3,6), R (3,1), S(5,k).

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Higher Order Thinking Skills Hots Solved

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 $(-6, 8)(-2, 4)$ 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 ΔLMN, 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 $2:1 \quad Q \equiv (-5, 8), R \equiv (4, -4)$ then $P \equiv$ ....

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 anlge 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 coordintes 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 points .

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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 ΔABC 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 veties 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 $A(-2, 4), B \equiv (-3, 5)$ 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 suare.

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11. A(-3,-4), B(-5,0),C(3,0) are the veties of ΔABC . Fin the co-ordinates of the circumcentre of ΔABC.

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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 □ ABCD , show that □ 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), $C\left(1+2\sqrt{3}, 4\right)$ 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 acitvity.

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

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

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

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

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

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

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

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5. Find k, if PQ $||$ 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 veties 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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