MATHS

BOOKS - CHETAN MATHS (TAMIL ENGLISH)

CO-ORDINATE GEOMETRY

Master Key Question Set 5 Practice Set 5 1

1. Find the distance between the following pairs of points : $(1)(2, 3), (4, 1)(ii)(-5, 7), (-1, 3)(iii)(a, b), (-a, -b)$

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2. Find the distance between the following pairs of points

$: (1)(2, 3), (4, 1)(ii)(- 5, 7), (- 1, 3)(iii)(a, b), (- a, - b)$

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

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

4. If L(5,-8) and M (-7,-3) then the distance between points

L and M is $_____$

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

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

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6. If $W\left(\dfrac{-7}{2}, 4\right)$ and X(11,4) then the distance between points W and X is _____

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7. Find the point on X-axis which is equdistant from $A(-3, 4)$ and $1, -4$).

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8. 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.

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

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

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

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

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

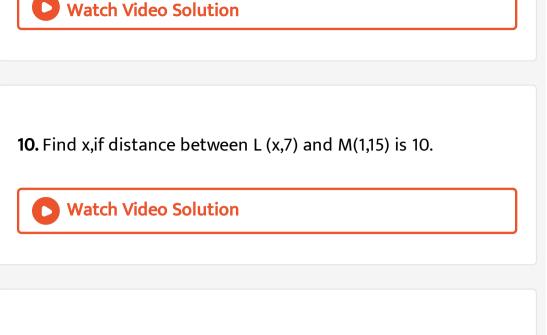$$\therefore PR^2 \ \square \ PQ^2 + QR^2 [= \ \text{ or } \ \neq]$$

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

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9. Show that points A (-4, -7), B (-1,2) , C (8,5) and D(5,-4) are the vertices pf rhomus ABCD.

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

11. 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 .
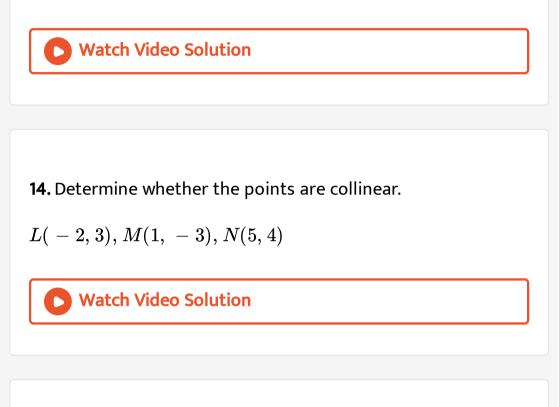
12. Show that points P(2,-2) , Q (7,3) ,R(11,-1) and S(6,-6) are vertices of a parallelogram.

13. Determine whether the points A(1, -3) , B(2,-5) and

C(-4,7) are collinear or not .

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14. Determine whether the points are collinear.

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

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15. Determine whether the points are collinear.

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

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16. Determine whether the points are collinear.

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

17. 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 $2 : 3$

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

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

19. In each of the following examples find the co-ordinates of point A with divides segment PQ in the ratio $a:b$.
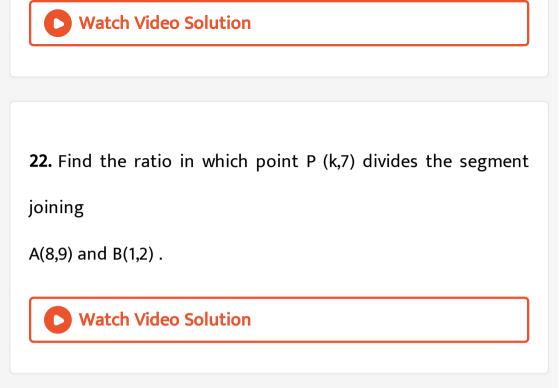
$P(-2, -5), Q(4, 3), a:b = 3:4$

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

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

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

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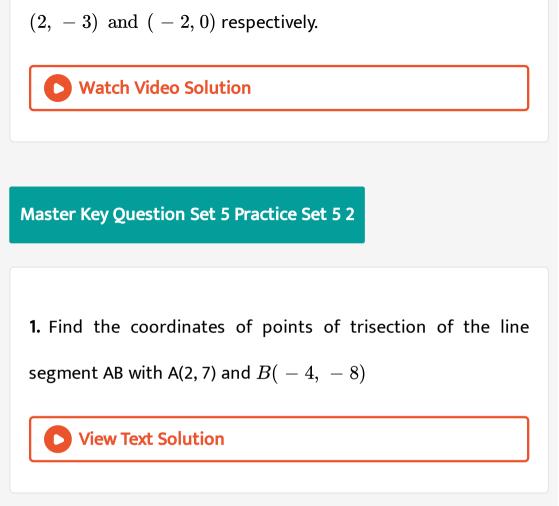
A(8,9) and B(1,2) .

23. Find the coordinates of the midpoint of the segment joining the points $(22, 20)$ and $(0, 16)$

24. Point P is the centre of the circle and AB is a diameter. Find the c0-ordinates of point B if co-ordinates of point A and P are

$(2, \ -3)$ and $(-2, 0)$ respectively.

Master Key Question Set 5 Practice Set 5 2

1. Find the coordinates of points of trisection of the line segment AB with A(2, 7) and $B(-4, \ -8)$

2. If $A(-14, \ -10)$, $B(6, \ -2)$ is given, find the co-ordinates of the points which divide segment AB into four equal parts.

3. If $A(20, 10)$, $B(0, 20)$ are given, find the co-ordinates of the points which is divide segment AB into five congruent parts.

4. In each of the following vertices of a triangles are given. Find the coordinates of centroid of each triangle.

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

5. In each of the following vertices of a triangles are given. Find the coordinates of centroid of each triangle.

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

6. In each of the following vertices of a triangles are given. Find the coordinates of centroid of each triangle.

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

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

8. 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.

1. Find the slope of the lines whose iclination is given :

$(i)\,45°$ $(ii)\,60°$ $(iii)\,120°$

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2. Find the slopes of lines passing through the given point.

$(2,\,3)$ and $B(3,\,7)$

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3. Write the slope of line passing through P(-3,1) and Q(5-2).

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4. Find the slopes of lines passing through the given point.

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

5. Find the slope of line passing through L(-2,-3) and M(-6,-8).

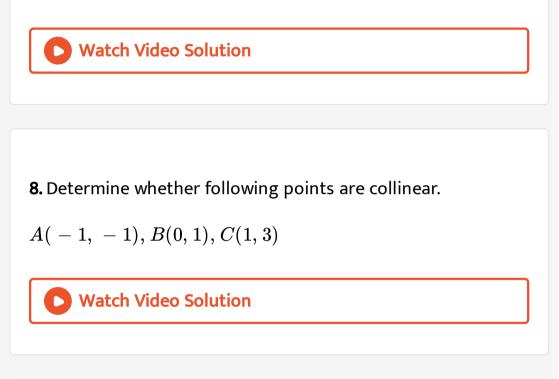**6.** Find the slopes of lines passing through the given point.

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

7. Find the slopes of lines passing through the given point.

$T(0, \ -3)$ and $S(0, 4)$

8. Determine whether following points are collinear.
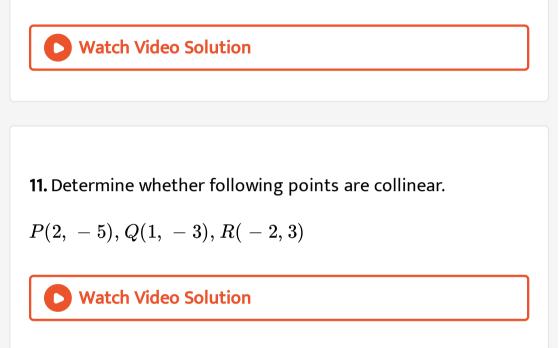
$A(-1, \ -1), B(0, 1), C(1, 3)$

9. Determine whether following points are collinear.

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

10. Determine whether following points are collinear.

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

11. Determine whether following points are collinear.

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

12. Using slope concept , determine whether R(1,-4), S(-2,2)

and T(-3,4) are collinear or not .

13. Determine whether following points are collinear.

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

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14. 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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15. 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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16. Find k, if $R(1, -1)$, $S(-2, K)$ and slope of line RS is -2.

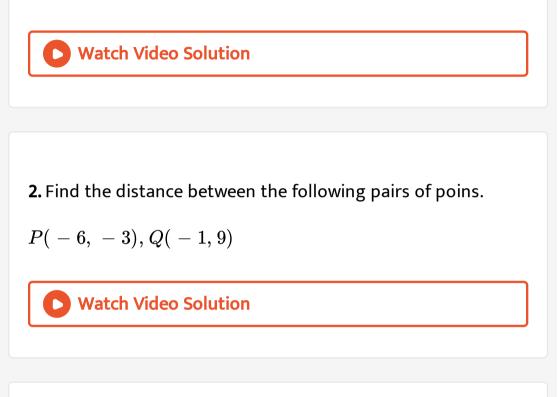**17.** Find k, If B (k, - 5), C (1,2) and slope of the line is 7.

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

Problem Set 5

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

$A(a, 0), B(0, a)$

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

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

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

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

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4. Find a point on X-axis which is equidistant from $P(2, -5)$ and $Q(-2, 9)$.

5. Do the points joining L(6,4), M(-5,-3) and N(-6,8) from a triangle ? Mention the type of triangle so formed .

6. 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.

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

7. 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.

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

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

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

10. Find the coordintes of the midpoint of the segment joining

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

11. Find the lengths of the medians of triangle whose vertices

are

A (-1,1) , B (5,-3) and C (3,5).
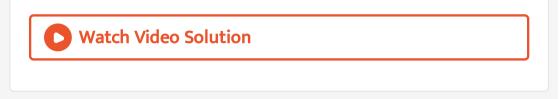
12. The line segment AB is divided into five congruent parts at

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 co-ordiates of A, P, R and B.

13. 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 $C(3, -2)$.

14. 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.

15. Determine whether the given points are collinear.
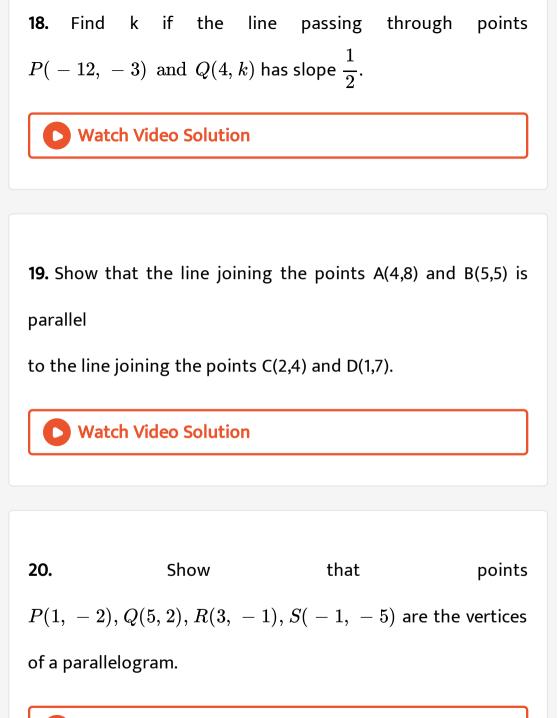
$A(0, 2), B(1, \ -0.5), C(2, \ -3)$

16. Determine whether the given points are collinear.

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

17. Determine whether the given points are collinear.

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

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

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).

20. Show that points

$P(1, -2), Q(5, 2), R(3, -1), S(-1, -5)$ are the vertices

of a parallelogram.

21. Show that the points P(2,1), Q(-1,3) , R (-5,-3) and

S (-2,-5) are the vertices of a square .

22. If the points A(-4, -2) , B (-3,-7) , C(3,-2) and D(2,3) are

joined serially , find the type of quadrilateral ABCD by

completing

the following activity.

23. Find the slope of the diagonals of a quadrilateral with

vertices $A(1, 7), B(6, 3)C(0, -3)$ and $D(-3, 3)$.

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)$(1, -3)$

    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

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

So the slope of the line is _ _ _ _ _ _ _ _

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

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

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

D. $\sqrt{3}$

Answer: C

Problem Set 5 Addutonal Mcqs

1. Find the slope of the line with inclination $60°$.

A. $\sqrt{3}$

B. $\dfrac{1}{\sqrt{3}}$

C. 1

D. 0

Answer: A

2. Find the inclination of a line with slope 1. A)$60°$ B)$45°$ C)$90°$

D)Can't say

A. $60°$

B. $45°$

C. $90°$

D. Can't say

Answer: B

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3. Line l is parallel to line m. It slopes of line l is $\dfrac{1}{2}$ then slope

of line m is _____

A. -2

B. 0

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

D. Can't say

Answer: C

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4. What is slope of line passing through points (4, 6) and (1, -2) ?

A. $\dfrac{4}{3}$

B. $\dfrac{3}{4}$

C. $\dfrac{8}{5}$

D. $\dfrac{8}{3}$

Answer: D

5. The slope of X-axis is $\_\,\_\,\_\,\_\,\_\,\_$

A. 0

B. 1

C. -1

D. Not defined

Answer: A

6. Wrtie the slope of X-axis and Y-axis .

A. 0

B. 1

C. -1

D. Not defined

Answer: D

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7. Distance of point $A(7, 24)$ from the origin is _____. A)17 B)-17

C)25 D)Can not be found

A. 17

B. -17

C. 25

D. Can not be found

Answer: C

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8. Find the co-ordinates of the point P which bisects seg having co- ordinates $(3, 2)$ and $(5, -2)$ A)$(-3, 5)$ B)$(0, 4)$ C)$(4, 0)$ D)$(5, -3)$

A. $(-3, 5)$

B. $(0, 4)$

C. $(4, 0)$

D. $(5, -3)$

9. Find the co-ordinates of the point which divides line seg QR in the ratio $1:2$ where Q (1, 1) and $R1, -2)$ A)$(-5, 3)$ B) $(1, 0)$ C)$(-3, 2)$ D)$(4, 0)$

A. $(-5, 3)$

B. $(1, 0)$

C. $(-3, 2)$

D. $(4, 0)$

Answer: B

10. In what ratio does the point $(1, 6)$ divide the line segment joinigng the points $(3, 6)$ and $(-5, 6)$?
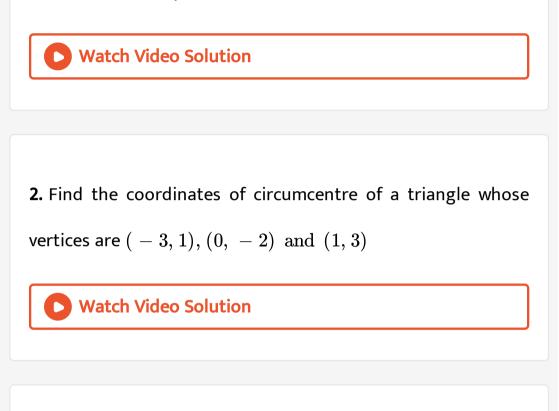
A. $1:3$

B. $2:3$

C. $3:1$

D. $3:2$

Answer: A

Problem Set 5 1

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

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

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

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4. Find the coordinates of centre of the circle passing through

the

points P(6,-6),Q (3,-7) and R(3,3)

Problem For Practice

1. Find the distance between the given points.

(i) $A(3, \ - \ 4), B(\ - \ 5, 6),$

(ii) $P(10, \ - \ 8), Q, (\ - \ 3, \ - \ 2)$

(iii) $K(0, \ - \ 5), L(\ - \ 5, 0)$

(iv) $I(3.5, 6.8), J(1.5, 2.8)$

2. Show that the point $(5, 11)$ is equidistant from the Points $(-5, 13)$ and $(3, 1)$

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3. Check whether points $(3, 3)$, $(-4, -1)$ and $(3, -5)$ are the vertices of an isosceles triangle.

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4. Find the relation between x and y, where point (x, y) is equidistant from $(2, -4)$ and $(-2, 6)$.

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5. Show that point (0,9) is equidistant from point (-4,1) and (4,1)

6. Find a point on the y-axis which is equidistant from the point $A(6, \ 5)$ and $B(\ - \ 4, \ 3)$.

7. Using distance formula, check whether following points are collinear of not.

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

(ii) $A(\ - \ 5, 4), B(\ - \ 2, \ - \ 2)C(3, \ - \ 12)$

8. Find the distance of point $Z(-2.4, -1)$ from the origin.

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9. Show that the points $A(4, 7) B(8, 4)$ and $C(7, 11)$ are the vertices of a right angled triangle.
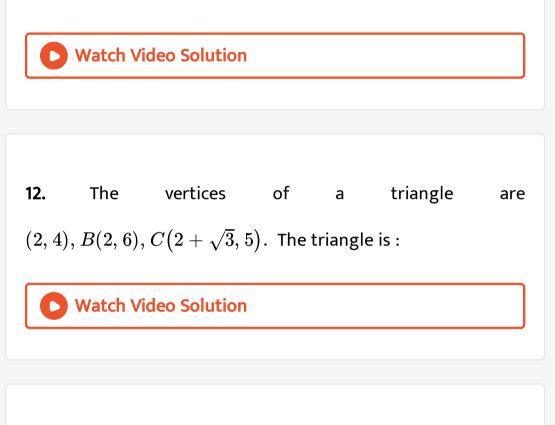
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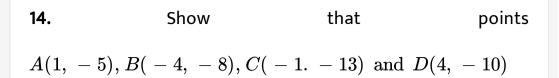**10.** Show that $A(4, -1), B(6, 0), C(7, -2)$ and $D(5, -3)$ are vertices of a square.

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11. Find the coordinates of the circumcentre of PQR if `P(2,7), Q(-5,8) and R(-6,1).

12. The vertices of a triangle are $(2, 4), B(2, 6), C(2 + \sqrt{3}, 5)$. The triangle is :

13. Find the coordinates of the circumcentre of ABC, if $A(2, 3), B(4, -1)$ and $C(5, 2)$. Also find circumradius

14. Show that points

$A(1, -5), B(-4, -8), C(-1. -13)$ and $D(4, -10)$

are the vertices of a rhombus.

15. Find the coordinates of the point P which divides line segment QR in the ratio $m:n$ in the following examples. $Q(-5,8),, R(4, -4), m:n = 2:1$

16. Find the coordinates of the midpoint of segment QR, if $Q(2.5, -4.3)$ and $R(-1.5, 2.7)$

17. Find the coordinates of the midpoint P of seg AB, if $A(3.5, 9.5)$ and $B(-1.5, 0.5)$

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18. In what ratio does the point $(1, 3)$ divide line segment joining the points $(3, 6)$ and $(-5, -6)$?

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19. 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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20. Show that the mid-point of the line segment joining the points $(5, \ 7)$ and $(3, \ 9)$ is also the mid-point of the line segment joining the points $(8, \ 6)$ and $(0, \ 10)$.

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21. Segments AB and CD bisects each other at point M. If `A(4,3), B(-2,5), C(-3,5), then find coordinates of D.

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22. Find the ratio in which the line segment joining the points $(6, \ 4)$ and $(1, \ -7)$ is divided by X-axis.

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23. Find the coordinates of the points which divide the line segment joining the points $(-2, 2)$ and $(6, -6)$ in four equal parts.

24. Find the coordinates of the points which divide segment AB into four equal parts, if $A(5, 7)$ and $B(-3, -1)$

25. If $A - P - Q - B$, point P and Q trisects seg AB and $A(3, 1), Q(-1, 3)$, then find coordinates of points B and P.

26. Find the coordinates of centorid G of ABC, if

(i)$A(8, 9), B(4, 5), C(6, 2)$

(ii) $A(11, 8), B(-6, 5), C(1, -28)$

27. The origin 'O' is the centroid of ABC in which $A(-4, 3)B(3, k)$ and $C(h, 5).$ Find h and k.

28. Find the coordinates of the points dividing the segment joining $A(-5, 7)$ and $B(11, -1)$ int four equal parts.

29. Find the slope of a line which makes an angle with the positive X-axis.

(i) $0°$

(ii) $30°$

(iii) $45°$

(iv) $60°$

(v) $90°$

30. Find the slope of the line passing through the points. (i) $(-1, 4), (3, -7)$ (ii) $(5, 5), (1, 6)$

31. Using slope concept, check whether the following points are collinear. $(-2, -1)(4, 0)(3, 3)$

32. Find the value of k, if $(5, k), (-3, 1)$ and $(-7, -2)$ are collinear.

33. Find the value of k, if $(2, 1)(4, 3)$ and $(0, k)$ are collinear 1.`

34. Find the value of k, if the slope of the line passing through $(2, 5)$ and $(k, 3)$ is 2.

35. `P(3,4), Q(7,2) and R(-2, -1) are the vertices of PQR. Write down the slope of each side of the triangle.

36. Show that line joining $(4, -1)$ and $(6, 0)$ is parallel to line joining $(7, -2)l$ and $(5, -3)$.

37. Show that $\square ABCD$ is a parallelogram, if $A(-1, 2), B(-5, -6)C(3, -2)$ and $D(7, 6)$

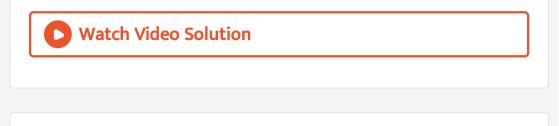**38.** Show that $P(3, 4), Q(7, -2), R((1, 1)$ and $S(-3, 7)$ are the vertices of a parallelogram.

Assignment 5

1. Slope of a line is $\sqrt{3}$. Find its inclination.

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

3. Seg AB is a dimeter of a circle with centre $P(1, 2)$, If $A(-4, 2)$ then find the co-ordinates of point B.

4. If $P - T_Q$ and $P(-3, 10), Q(6, -8)$ and $T(-1, 6)$, then find the ratio in which point T divides seg PQ (Complete the following activity) Let point T divides seg PQ in the ratio $m:n$

$P(-3, 10) = (x_1, y_1)Q(6, -8) - (x_2, Y_2)T)(-1, 6) = (x, y)$
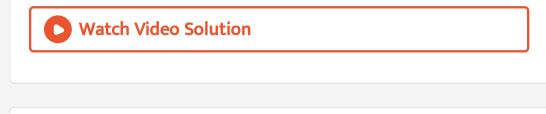
By section formula,

5. $A(-7, 6), B(2-2)$ and $B(8, 5)$ are co-ordinates of vertices of $\triangle ABC$. Find the co-ordinates of centroid of $\triangle ABC$.

6. Decide $(2, 10), (0, 4)$ and $(3, 13)$ are colliner or not.

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

8. Prove that $\left(\sqrt{2}, \sqrt{2}\right)\left(-\sqrt{2}, -\sqrt{2}\right)$ and $\left(-\sqrt{6}, \sqrt{6}\right)$ are

ther vertices of an equilateral triangle.

9. Find the co ordinates of circumcentre and radius of a

circumcircle of $\triangle ABC$, if A(7, 1) , B (3, 5) and C(2,0)` are given.

10. Find the possible co-ordinates of the fourth vertex of the parallelogram, if three of its vertices are $(5, 6), (1, \ -2) \ \text{and} \ (-3, 2).$

11. Find the co-ordinate of the point which divide the line segment joining the points (-2, 2) and (6, -6) into two equal parts.