Coordinate Geometry

Q. 1 A) MCQ

1) Point P is midpoint of segment AB where A(- 4,2) and B(6,2) then the coordinates of P are ---------

A) (-1, 2) B) (1, 2) C) (1, - 2) D) (-1, - 2)

2) The distance between Point P (2 , 2) and Q (5, x) is 5 cm then the value of x = ----------

A) 2 B) 6 C) 3 D) 1

3) The distance between points P (-1 , 1) and Q(5, -7) is ----------..

A) 11 cm B) 10 cm C) 5 cm D) 7 cm

4) If the length of the segment joining point L (x , 7) and point

M(1, 15) is 10 cm then the value of x is ---------

A) 7 B) 7 or -5 C) - 1 D) 1

5) Find distance between point A (-3 , 4) and origin O.

A) 7 cm B) 10 cm C) 5 cm D) -5 cm

6) If point P (1 , 1) divide segment joining point A and point B (-1 , -1) in the ratio 5 : 2 then the coordinates of A are ---------

A)(3 ,3) B)(6, 6) C)(2, 2) D)(1, 1)

7) If segment AB is parallel Y-axis and coordinates of A are (1, 3) then the coordinates of B are ----------

A)(3 ,1) B)(5, 3) C)(3, 0) D)(1, -3)

8) If point P is midpoint of segment joining point A (-4, 2) and point B(6, 2) then the coordinates of P are ----------

A)(-1, 2) B)(1 , 2) C)(1 , -2) D) (-1, - 2)

9) If point P divides segment AB in the ratio 1:3 where A(-5 , 3) and B(3 , -5) then the coordinates of P are ----------

A)(-2, -2) B)(-1 , -1) C) (-3 , 1) D) (1, - 3)

10) If the sum of x-coordinates of the vertices of a triangle is 12 and the sum of Y-coordinates is 9 then the coordinates of centroid are ----------

A)(12 , 9) B)(9 , 12) C)(4, 3) D)(3 ,4)

Q. 1 B. Solve the following (1 mark each)

1) Find the coordinates of the point of intersection of the graph of the equation X = 2 and y = -3.
2) Find distance between point A (7, 5) and B (2, 5).
3) The coordinates of diameter AB of a circle are A (2, 7) and B (4 , 5) then find the coordinates of the centre.
4) Write the X-coordinate and Y-coordinate of point P(- 5 , 4).
5) What are the coordinates of origin?
6) Find distance of point A(6, 8) from origin:
7) Find coordinates of midpoint joining (-2 ,6) and (8 ,2)
8) Find the coordinates of centroid of a triangle whose vertices are (4, 7) , (8, 4) and (7 ,11).
9) Find distance between point O(0, 0) and B (-5 , 12).
10) Find coordinates of midpoint of point (0, 2) and (12, 14).

Q. 2 A) Complete the activity (each of 2 mark)

1) Find distance between point Q (3 , - 7) and point R (3, 3)

Solution: Suppose Q (x_1 , y_1) and point R (x_2 , y_2)

$X_1 = 3$, $y_1 = -7$ and $x_2 = 3$, $y_2 = 3$

Using distance formula,

$d (Q, R) = \sqrt{\quad\quad}$

$\therefore$ d (Q , R) $= \sqrt{\square - 100}$

$\therefore$ d (Q , R) $= \sqrt{\square}$

$\therefore$ d (Q , R) $= \square$

2) Find distance between point A(-1 , 1) and point B (5, -7) :

Solution : - Suppose A(x_1 , y_1) and B(x_2, y_2)

$X_1 = -1$, $y_1 = 1$ and $x_2 = 5$, $y_2 = -7$

Using distance formula,

d (A, B) $= \sqrt{(x2 - x1)^2 + (y2 - y1)^2}$

$\therefore$d (A , B) $= \sqrt{\square + ((-7) - \square)^2}$

$\therefore$ d (A , B) $= \sqrt{\square}$

$\therefore$ d (A , B) $= \square$

3) Find coordinates of the midpoint of a segment joining point A(-1 , 1) and point B(5 , -7).

Solution: - Suppose A(x_1 , y_1) and B(x_2, y_2)

$X_1 = -1$, $y_1 = 1$ and $x_2 = 5$, $y_2 = -7$

Using midpoint formula,

$\therefore$ *Coordinates of midpoint of segment* AB $= \left(\frac{x1+x2}{2} , \frac{y1+y2}{2} \right) = \left(\frac{\square}{2} , \frac{\square}{2} \right)$

$\therefore$ Coordinates of the midpoint $= \left(\frac{4}{2} , \frac{\square}{2} \right)$

$\therefore$ Coordinates of the midpoint $= (2, \square)$

4) The coordinates of the vertices of a triangle ABC are A (-7, 6) ,B(2 , -2) and C(8 , 5) find coordinates of its centroid.

Solution : - Suppose A(x_1 , y_1) and B(x_2,y_2) and C (x3, y3)

$X_1 = -7$, $y_1 = 6$ and $x_2 = 2$, $y_2 = -2$ and $x_3 = 8$, $y_3 = 5$

Using Centroid formula

$\therefore$ *Coordinates of the centroid of a triangle*

ABC= $\left(\frac{x1+x2+x3}{3} , \frac{y1+y2+y3}{3} \right) = \left(\frac{\square}{3} , \frac{\square}{3} \right)$

$\therefore$ *Coordinates of the centroid of a triangle* ABC $= \left(\frac{3}{3}, \square \right)$

$\therefore$ *Coordinates of the centroid of a triangle* ABC= (1, $\square$)

Q. 2 Solve (Each of 2 marks)

1) The point Q divides segment joining A (3, 5) and B (7, 9) in the ratio 2 : 3. Find the X-coordinate of Q.
2) If the distance between point L (x , 7) and point M (1, 15) is 10 then find the value of X.
3) Find the coordinates of midpoint of segment joining (22, 20) and (0 ,16)
4) Find distance CD where C(-3a , a), D(a, -2a).
5) Show that the point(11, -2) is equidistant from (4, -3) and (6, 3).

Q. 3 A) Complete the activity (Each of 3 marks)

1) If the point P (6,7) divides the segment joining A (8, 9) and B(1, 2) in some ratio. Find that ratio.

Solution : Point P divides segment AB in the ratio m : n.

A (8, 9) = (x_1 , y_1) , B (1, 2) = (x_2 , y_2) and P (6, 7) = (x, y)

Using Section formula of internal division,

$\therefore\ 7 = \dfrac{m(\square) + n(9)}{m+n}$

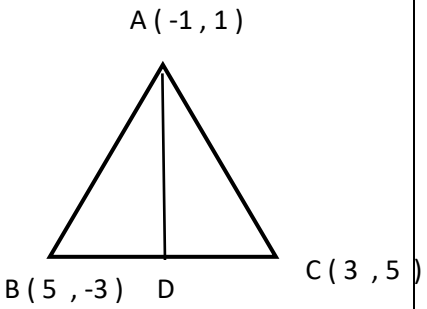
$\therefore 7m + 7n = \square + 9n$

$\therefore 7m - \square = 9n - \square$

$\therefore\ \square = 2n$

$\therefore\ \dfrac{m}{n} = \square$

1) From the figure given alongside find the length of the median AD of triangle ABC .



Complete the activity.

Solution :- Here A (-1 , 1),B(5, -3), C (3, 5) and suppose D (x,y) are coordinates of point D.

Using midpoint formula,

$X = \dfrac{5+3}{2}$ $\qquad$ $y = \dfrac{-3+5}{2}$

$\therefore\ x = \square$ $\qquad$ $\therefore\ y = \square$

Using distance formula,

$\therefore\ AD = \sqrt{(4 - \square)^2 + (1-1)^2}$

$\therefore\ AD = \sqrt{(\square)^2 + (0)^2}$

$\therefore\ AD = \sqrt{\square}$

$\therefore\ The\ length\ of\ median\ AD = \square$

Q. 3 B) Solve the following (Each of 3 marks)

1) Show that P(-2 , 2), Q (2, 2) and R (2, 7) are vertices of a right angled triangle.
2) Show that the point (0 , 9) is equidistant from the points (-4,1) and (4 , 1).

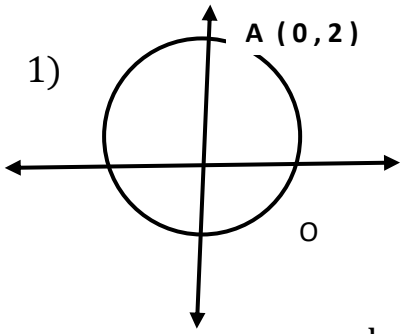
3) Point P(-4 , 6) divides point A (-6 , 10) and B (m , n) in the ratio 2:1 then find the coordinates of point B.

Q. 4 Solve (Each of 4 marks)

1) Show that points A(-4 , -7), B(-1,2), C (8, 5) and D (5 , -4) are the vertices of a parallelogram ABCD.
2) Show that the points (0 , -1), (8, 3) , (6 , 7) and (-2 , 3) are vertices of a rectangle.
3) Show that the points (2, 0), (-2 , 0) and (0, 2) are vertices of a triangle. State the type of triangle with reason.
4) If A(5,4) , B (-3 , -2) and C (1 -8) are the vertices of a $\Delta\ ABC$. Segment AD is median. Find the length of seg AD:
5) Show that A (1, 2) , (1, 6) , C $(1 + 2\sqrt{3}$, 4) are vertices of an equilateral triangle.

Q.5) Solve (Each of 3 marks)

1)



Seg OA is the radius of a circle with centre O.

The coordinates of point A is (0 , 2) then decide whether the point B(1, 2) is on the circle?

2) Find the ratio in which Y-axis divides the point A(3, 5) and point B(-6 , 7). Find the coordinates of that point.
3) The points (7, -6) , (2, K) and (h,18) are the vertices of triangle. If (1,5) are the coordinates of centroid. Find the value of h and k..
4) Using distance formula decide whether the points (4, 3), (5, 1) and (1, 9) are collinear or not ?