

STD-X Practice paper – Coordinate geometry

Find the distance between the following pairs of points:

- a) $P(1, \sqrt{3})$ and $Q(2, 0)$ ans: 2
 b) $R(3/5, 2)$ and $S(-1/5, 7/5)$ ans :1
 c) $A(am^2, 2am)$ and $B(an^2, 2an)$
 ans : $a(n-m)\sqrt{(n+m)^2+4}$
 d) $A(x\sin\theta, -y\cos\theta)$ & $B(-x\cos\theta, y\sin\theta)$

$$\text{Ans}(\sin\theta + \cos\theta)\sqrt{x^2+y^2}$$

1. Find the distance of the following points from the origin :

- I. $(3-\sqrt{3}, 3+\sqrt{3})$ ans : $2\sqrt{6}$
 II. $(-2\sqrt{2}, 2\sqrt{7})$ ans : 6

2. A point P lies on the x axis and point Q lies on y axis. If the abscissa of point P is 6 and the ordinate of point Q is -8; calculate the length of PQ. Ans : 10
3. Find the coordinate of the point on y axis, which is equidistant from the points (7,6) and (-3,4).
 ans : (3,0)
4. Given $M=(x+5, -5)$ and $N(14, 3)$ find the value of x; if $MN=17$. ANS : 24 or -6
5. The coordinates of the midpoint of the line joining the points $(3p, 4)$ and $(-2, 2q)$ are $(5, p)$. find the value of p and q.
 ans : $p=4$ and $q=2$
6. If point (x, y) is equidistant from the points $(a+b, b-a)$ and $(a-b, a+b)$, then show that $bx=ay$.
7. A point P is at a distance of $\sqrt{13}$ units from the points (5, 4). Find the coordinates of the point P if its ordinate is thrice of its abscissa
 ans : (2,6) or (7/5, 21/5)
8. Using distance formula check whether the given points are collinear or not. $P(0, 3), Q(-2, 6)$ and $R(4, -3)$.

9. The vertices of a ΔABC are $A(-3, 3)$, $B(5, -2)$ and $C(4, -5)$. Determine whether the Δ is equilateral, isosceles or scalene?
10. Show that the points $(-2, 5), (3, -4)$ and $(7, 10)$ are the vertices of a right angled isosceles triangle.
11. If C is point on the line segment AB joining $A(1, 1)$ and $B(2, -3)$ such that $3AC = CB$, then find the coordinates of C.
12. The centre of a circle is $(2\alpha - 1, 7)$ and it passes through the points $(-3, -1)$. if the diameter of the circle is 20 units, then find the value(s) of α .
13. State the type of the triangle with the vertices $(2+\sqrt{3}, 5)$, $(2, 4)$ and $(2, 6)$.
14. Find the value of p so that the length of the segment joining the origin to $(p, 8)$ is 10.
 Ans : 6

II

1. Show that the points $A(2, 3)$, $B(-1, 0)$, $C(2, 1)$ and $D(5, 4)$ are the vertices of a parallelogram.
2. Show that the points $P(0, -4)$, $Q(6, 2)$, $R(3, 5)$ and $S(-3, -1)$ are the vertices of a rectangle.
3. Show that the points $A(-2, 3)$, $B(-4, -4)$, $C(3, -2)$ and $D(5, 5)$ are the vertices of a rhombus.
4. Show that the points $P(1, 2)$, $Q(5, 4)$, $R(3, 8)$ and $S(-1, 6)$ are the vertices of a square.
5. Prove that the points $A(2, -2)$, $B(-2, 1)$ and $C(5, 2)$ are the vertices of an isosceles Δ . Find the area of this Δ .
6. Prove that the diagonals of a triangle are equal and bisect each other.
7. The three vertices of a parallelogram taken in order are $(-1, 0)$, $(3, 1)$ and $(2, 2)$ resp.. find the coordinates of the fourth vertex.
 ans : $(-2, 1)$.
8. If $A(-2, -1)$, $B(a, 0)$, $C(4, b)$ and $D(1, 2)$ are the vertices of a parallelogram. Find the value of a and b. ans : $a=1, b=3$

