



## INTEGRATED EXERCISE

1. Find the value of  $x$  if the distance between  $(4, 2)$  and  $(x, 6)$  is 5 units.
2. Find the distance of the point  $(a \cos \theta, a \sin \theta)$  from the origin.
3. Find the relation between  $x$  and  $y$  so that  $(x, y)$  is equidistant from  $(6, -1)$  and  $(2, 3)$ .
4. If  $(3, 2)$ ,  $(-3, 5)$  and  $(x, y)$  are collinear, find the relation between  $x$  and  $y$ .
5. If two vertices of an equilateral triangle are  $(0, 0)$  and  $(3, \sqrt{3})$ , then find the third vertex.
6.  $LM$  is a straight line of 13 units. If  $L$  has the coordinates  $(2, 5)$  and  $M$  has the coordinates  $(x, -7)$ , then find the possible value of  $x$ .
7. Find the value of  $m$  if  $PQ = QR$  where the coordinates of  $P$ ,  $Q$  and  $R$  are  $(6, -1)$ ,  $(1, 3)$  and  $(m, 8)$ .
8. The ends of a diagonal of a square have the coordinates  $(a, 1)$  and  $(-1, a)$ . Find the value of  $a$  for which the area of the square is 50 sq units.

9. Find the coordinates of the circumcentre of a triangle  $ABC$  whose vertices are  $A(8, 6)$ ,  $B(8, -2)$  and  $C(2, -2)$ .
10. Show that the points  $A(5, 6)$ ,  $B(1, 5)$ ,  $C(2, 1)$  and  $D(6, 2)$  are the vertices of a square.
11. Points  $(-2, -3)$ ,  $(5, 1)$ ,  $(6, 9)$  and  $(-1, 5)$  are the vertices of a quadrilateral. Using distance formula, show that the quadrilateral is a rhombus.

## STORM YOUR BRAIN

1. The points  $A(3, 5)$ ,  $B(1, 3)$  and  $C(k, 6)$  are the vertices of a  $\triangle ABC$  right-angled at  $A$ . Find the value of  $k$ .
2. Find the radius and the centre of the circle passing through the points  $(6, 6)$ ,  $(7, 5)$  and  $(3, -3)$ .
3. A point  $P(5, 2)$  is equidistant from the points  $(b, 10)$  and  $(0, b)$ . Find the value of  $b$ .
4. Show by distance formula that the point  $(-2, -3)$ ,  $(1, 1)$  and  $(7, 9)$  are collinear.
5. Find the point(s) which is/are at a distance of  $\sqrt{10}$  units from the point  $(4, 3)$  given that the ordinate of the point(s) is(are) twice the abscissa.
6. Prove that the points  $A(-6, 5)$ ,  $B(-2, -1)$ ,  $C(4, 3)$  and  $D(0, 9)$  are the vertices of a rhombus. Also find whether  $ABCD$  is a square.

## Integrated Exercise

1. 1 or 7
2.  $a$  units
3.  $x - y - 3 = 0$
4.  $(x + 2y - 7) = 0$
5.  $(0, 2\sqrt{3})$  or  $(3, -\sqrt{3})$
6. 7 or  $-3$
7. 5 or  $-3$
8.  $\pm 7$
9.  $(5, 2)$

## Storm Your Brain

1.  $k = 2$
2. 5 units
3.  $b = 10$
4.  $AB + BC = AC$

Hence,  $A$ ,  $B$  and  $C$  are collinear.

5.  $(3, 6)$  or  $(1, 2)$

6.  $AC = BD$

Hence,  $ABCD$  is a square.