Q3. **Find distance between pairs of points**

i) $(6,3), (3,-3)$

Let $P(6,3), Q(3,-3)$

$|PQ| = \sqrt{(3-6)^2 + (-3-3)^2}$

$= \sqrt{(-3)^2 + (-6)^2}$

$= \sqrt{9+36} = \sqrt{45}$

ii) $(7,5), (1,-1)$

Let $P(7,5), Q(1,-1)$

$|PQ| = \sqrt{(7-1)^2 + (5+1)^2}$

$= \sqrt{(6)^2 + (6)^2} = \sqrt{36+36}$

$= \sqrt{72} = \sqrt{36 \times 2} = 6\sqrt{2}$

iii) $(0,0), (-4,-3)$

Let $P(0,0), Q(-4,3)$

$|PQ| = \sqrt{(-4-0)^2 + (-3-0)^2}$

$$= \sqrt{(-4)^2 + (-3)^2}$$
$$= \sqrt{16+9} = \sqrt{25} = 5$$

Q4. **Find the midpoint between the following pairs of points.**

SOL. **(i)** $(6,6),(4,-2)$

If $R(x,y)$ be desired midpoint, then,

$$x = \frac{6+4}{2} = \frac{10}{2} = 5$$
$$y = \frac{6-2}{2} = \frac{4}{2} = 2$$
$$R(x,y) = R(5,2)$$

ii) $(-5,-7),(-7,-5)$

If $R(x,y)$ be desired midpoint, then,

$$x = \frac{-5-7}{2} = \frac{-12}{2} = -6$$
$$y = \frac{-5-7}{2} = \frac{-12}{2} = -6$$
$$\therefore \quad R(x,y) = R(-6,-6)$$

iii) $(8,0),(0,-12)$

If $R(x,y)$ be desired midpoint, then,

$$x = \frac{8+0}{2} = \frac{8}{2} = 4$$
$$y = \frac{-12+0}{2} = \frac{-12}{2} = -6$$
$$\therefore \quad R(x,y) = R(4,-6)$$

Objective

1. Distance between points (0, 0) and (1, 1) is:
    (a)   0   (b)   1
    (c) $\sqrt{2}$ (d)   2

2. Distance between the points (1, 0) and (0, 1) is:
    (a)   0   (b)   1
    (c) $\sqrt{2}$ (d)   2

3. Mid-point of the points (2, 2) and (0,0) is:
    (a)   (1, 1)   (b)   (1, 0)
    (c)   (0, 1)   (d)   (-1, -1)

4. Mid-point of the points (2, -2) and (-2, 2) is:
    (a)   (2, 2)   (b)   (-2, -2)
    (c)   (0, 0)   (d)   (1, 1)

5. A triangle having all sides equal is called
    (a) Isosceles   (b) Scalene
    (c) Equilateral (d) None of these

6. A triangle having all sides different is called:
    (a) Isosceles   (b) Scalene
    (c) Equilateral (d) None of these

7. The points P, Q and R are collinear if:
    (a) $|PQ| + |QR| = |PR|$
    (b) $|PQ| - |QR| = |PR|$
    (c) $|PQ| + |QR| = 0$
    (d)   None

8. The distance between two points $P(x_1, y_1)$ and $Q(x_2, y_2)$ in the coordinate plane is:

(a) $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$, $d > 0$

(b) $d = \sqrt{(x_1 - x_2)^2 - (y_1 - y_2)^2}$

(c) $d = \sqrt{(x_2 - x_1)^2 - (y_2 - y_1)^2}$

(d) $d = \sqrt{(x_1 + x_2)^2 - (y_1 + y_2)^2}$

9. A triangle having two sides equal is called

(a) Isosceles   (b) Scalene

(c) Equilateral   (d) None

10. A right triangle is that in which one of the angles has measure equal to:

(a) $80°$ (b) $90°$

(c) $45°$ (d) $60°$

11. In a right angle triangle ABC, Pythagoras's theorem,

(a) $|AB|^2 = |BC|^2 + |CA|^2$ where $\angle ACB = 90°$.

(b) $|AB|^2 = |BC|^2 - |CA|^2$

(c) $|AB|^2 + |BC|^2 > |CA|^2$

(d) $|AB|^2 - |BC|^2 > |CA|^2$

Answer key

1.	c	2.	c	3.	a	4.	c	5.	c	6.	b
7.	a	8.	a	9.	a	10.	b	11	a		