Orienting Yourself: The Use of Coordinates

Standard difficulty · 20 questions · 40 marks · Time: 28 minutes

Name: _____ Date: _____ Score: ____ / 40

Show your working for Sections B and C. Answers are on the last page — try every question first!

Section A — Choose the correct answer — 8 × 1 = 8 marks

1. The point (−9, −2) lies in:
(a) quadrant II **(b)** quadrant I **(c)** quadrant IV **(d)** quadrant III

2. The distance between (10, 3) and (10, 22) is:
(a) 19 **(b)** 25 **(c)** 20 **(d)** 18

3. The point where the x-axis and the y-axis meet is called the:
(a) quadrant **(b)** vertex **(c)** origin **(d)** centre

4. The reflection of (−9, −3) in the x-axis is:
(a) (−9, −3) **(b)** (9, 3) **(c)** (−9, 3) **(d)** (−3, −9)

5. The distance of (12, −16) from the origin is:
(a) 20 **(b)** 21 **(c)** 28 **(d)** 400

6. The midpoint of (2, 6) and (10, 8) is:
(a) (7, 6) **(b)** (12, 14) **(c)** (6, 7) **(d)** (4, 1)

7. The distance between (2, 3) and (2, 11) is:
(a) 4 **(b)** 8 **(c)** 14 **(d)** 9

8. Start at (9, −9), move 6 units right and 6 units down. You reach:
(a) (15, −3) **(b)** (15, −15) **(c)** (3, −3) **(d)** (16, −15)

Section B — Short answer — 8 × 2 = 16 marks

9. Say where each point lies: (3, 9), (8, 6), (−6, 4), (7, 6).

10. Find the distance between (0, 5) and (−72, 26).

11. A rectangle has corners (1, −5), (5, −5), (5, −3) and (1, −3). Find its length, breadth, perimeter and area.

12. M (8, −5) is the midpoint of AB, and A is (9, 3). Find B.

13. Write the reflections of (5, −6) in the x-axis, in the y-axis and in the origin.

14. On the line y = −5, find the distance between the points with x = −3 and x = 4, and the point halfway between them.

15. A square has side 9 units. Its bottom-left corner is (4, 1) and its sides are parallel to the axes. Find the other three corners.

16. How far is (−9, −12) from the origin? Which quadrant is it in?

Section C — Word problems — 4 × 4 = 16 marks

17. Taking Ananya's home as the origin, with east and north positive (1 unit = 100 m), Ananya walks 12 units east and 10 units north to school, then 8 west and 7 south to the library. What are the coordinates of the school and the library?

18. On a map grid (1 unit = 1 km), a village is at (0, 0) and a well is at (14, 48). How long is a straight pipe from the village to the well?

19. A rectangular field on a grid (1 unit = 1 m) has opposite corners (−6, −8) and (6, 2), with sides along the grid. Find the fencing needed and its cost at Rs 39 per metre.

20. Two friends live at (10, 9) and (22, 25) on a town grid. They want to meet exactly halfway. Where should they meet?

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Answer key

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Q	Answer	Working
1	**(d) quadrant III**	x is negative, y is negative
2	**(a) 19**	same x: 22 − 3 = 19
3	**(c) origin**	its coordinates are (0, 0)
4	**(c) (−9, 3)**	the y-coordinate changes sign
5	**(a) 20**	$\sqrt{(12^2 + 16^2)} = 20$
6	**(c) (6, 7)**	the average of the x-coordinates, and of the y-coordinates
7	**(b) 8**	same x: 11 − 3
8	**(b) (15, −15)**	9 + 6, −9 − 6
9	**quadrant I; quadrant I; quadrant II; quadrant I**	I (+, +), II (−, +), III (−, −), IV (+, −); a 0 puts the point on an axis
10	**75**	$\sqrt{(72^2 + 21^2)} = \sqrt{5625} = 75$
11	**4 by 2; perimeter 12; area 8 square units**	5 − 1 = 4; −3 − (−5) = 2
12	**(7, −13)**	B = (2 × 8 − 9, 2 × (−5) − 3)
13	**(5, 6); (−5, −6); (−5, 6)**	change the sign of y; of x; of both
14	**7; (0.5, −5)**	4 − (−3) = 7
15	**(13, 1), (13, 10), (4, 10)**	add 9 to x, to y, and to both
16	**15; quadrant III**	$\sqrt{(81 + 144)} = 15$
17	**school (12, 10); library (4, 3)**	(12 − 8, 10 − 7)
18	**50 km**	$\sqrt{(196 + 2304)} = 50$
19	**44 m; Rs 1,716**	sides 12 m and 10 m
20	**(16, 17)**	((10 + 22) ÷ 2, (9 + 25) ÷ 2)

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