

CHAPTER 07

COORDINATE GEOMETRY

ASSIGNMENT 07

SUBJECT: MATHEMATICS

MAX. MARKS : 40

CLASS : X

DURATION : 1½ hrs

General Instructions:

- (i). All questions are compulsory.
- (ii). This question paper contains 20 questions divided into five Sections A, B, C, D and E.
- (iii). **Section A** comprises of 10 MCQs of 1 mark each. **Section B** comprises of 4 questions of 2 marks each. **Section C** comprises of 3 questions of 3 marks each. **Section D** comprises of 1 question of 5 marks each and **Section E** comprises of 2 Case Study Based Questions of 4 marks each.
- (iv). There is no overall choice.
- (v). Use of Calculators is not permitted

SECTION – A

Questions 1 to 10 carry 1 mark each.

1. If the distance between the points (4, p) and (1, 0) is 5 units, then the value of p is
(a) 4 only (b) ± 4 (c) -4 only (d) 0
2. The points (2, 5), (4, -1) and (6, -7) are vertices of an/a
(a) isosceles triangle (b) equilateral triangle (c) right-angled triangle (d) none of these
3. AOBC is a rectangle whose three vertices are A(0, 3), O(0, 0) and B(5, 0). The length of its diagonal is
(a) 5 (b) 3 (c) $\sqrt{34}$ (d) 4
4. The perimeter of a triangle with vertices (0, 4), (0, 0) and (3, 0) is
(a) 5 (b) 12 (c) 11 (d) $7 + \sqrt{5}$
5. The ratio in which x-axis divides the join of (2, -3) and (5, 6) is:
(a) 1: 2 (b) 3 : 4 (c) 1: 3 (d) 1: 5
6. If $P\left(\frac{a}{3}, 4\right)$ is the mid-point of the line segment joining the points Q (-6, 5) and R (-2, 3), then the value of a is
(a) -4 (b) -12 (c) 12 (d) -6
7. If P(2, p) is the mid-point of the line segment joining the points A(6, -5) and B(-2, 11), find the value of p.
(a) 5 (b) 2 (c) 3 (d) 4
8. Find the value of k if P(4, -2) is the mid-point of the line segment joining the points A(5k, 3) and B(-k, -7).
(a) 4 (b) 2 (c) 3 (d) 5

In the following questions 9 and 10, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:

- (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
- (b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
- (c) Assertion (A) is true but reason (R) is false.
- (d) Assertion (A) is false but reason (R) is true.

9. **Assertion (A):** The value of y is 3, if the distance between the points $P(2, -3)$ and $Q(10, y)$ is 10.

Reason (R): Distance between two points is given by $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

10. **Assertion (A):** The point $(-1, 6)$ divides the line segment joining the points $(-3, 10)$ and $(6, -8)$ in the ratio $2 : 7$ internally.

Reason (R): Given three points, i.e. A, B, C form an equilateral triangle, then $AB = BC = AC$.

SECTION – B

Questions 11 to 14 carry 2 marks each.

11. Find the point on y -axis which is equidistant from the points $(5, -2)$ and $(-3, 2)$.

12. The centre of a circle is $(2\alpha - 1, 7)$ and it passes through the point $(-3, -1)$. If the diameter of the circle is 20 units, then find the value of α .

13. Points $A(3, 1)$, $B(5, 1)$, $C(a, b)$ and $D(4, 3)$ are vertices of a parallelogram $ABCD$. Find the values of a and b .

14. If the point $C(-1, 2)$ divides the line segment AB in the ratio $3 : 4$, where the coordinates of A are $(2, 5)$, find the coordinates of B .

SECTION – C

Questions 15 to 17 carry 3 marks each.

15. Show that the points $A(1, 2)$, $B(5, 4)$, $C(3, 8)$ and $D(-1, 6)$ are the vertices of a square.

16. Point P divides the line segment joining the points $A(2, 1)$ and $B(5, -8)$ such that $\frac{AP}{AB} = \frac{1}{3}$. If P lies on the line $2x - y + k = 0$, find the value of k .

17. If point $\left(\frac{1}{2}, y\right)$ lies on the line segment joining the points $A(3, -5)$ and $B(-7, 9)$, then find the ratio in which P divides AB . Also find the value of y .

SECTION – D

Questions 18 carry 5 marks.

18. Find the vertices of a triangle, the mid-points of whose sides are $(3, 1)$, $(5, 6)$ and $(-3, 2)$.

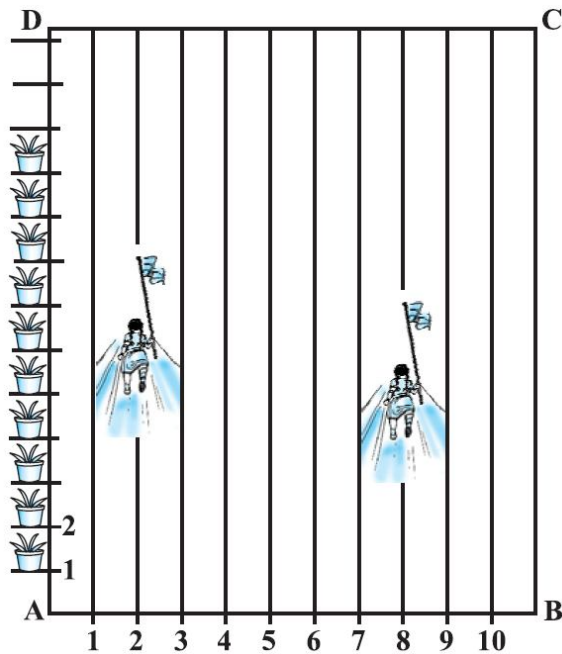
SECTION – E (Case Study Based Questions)

Questions 19 to 20 carry 4 marks each.

19. In order to conduct sports day activities in your school, lines have been drawn with chalk powder at a distance of 1 m each in a rectangular shaped ground $ABCD$. 100 flower pots have been placed at the distance of 1 m from each other along AD , as shown in the following figure.

Niharika runs $\left(\frac{1}{4}\right)$ th distance AD on the 2nd line and posts a green Flag. Preet runs $\left(\frac{1}{5}\right)$ th

distance AD on the eighth line and posts are red flags. Taking A as the origin AB along x -axis and AD along y -axis, answer the following questions:

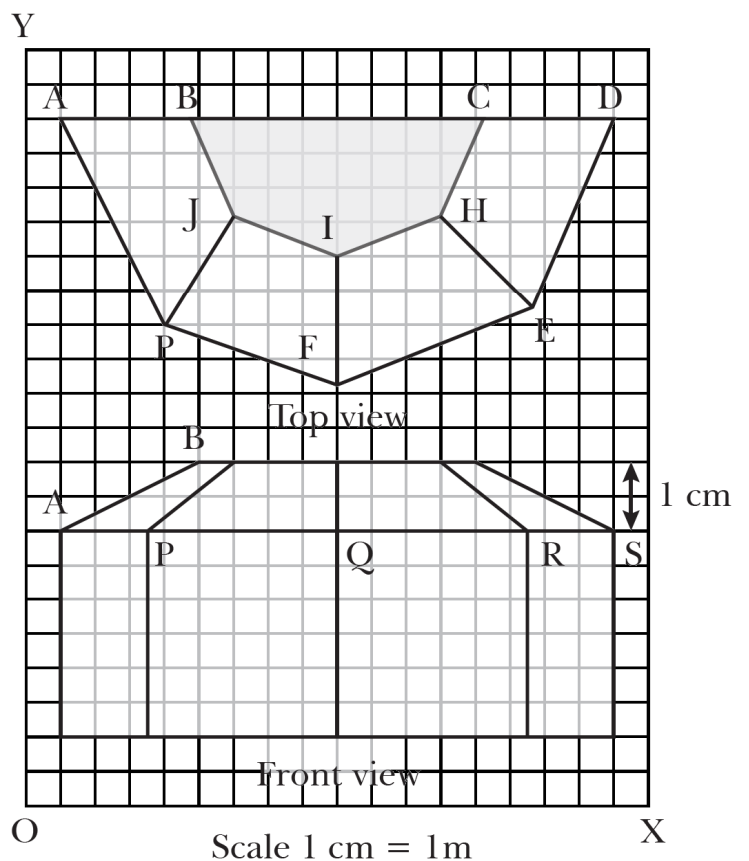
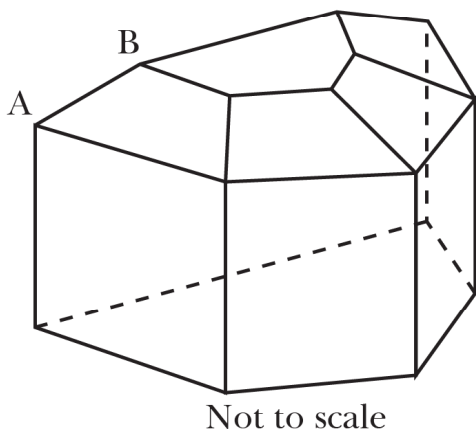


- (i) Find the coordinates of the green flag. (1)
- (ii) Find the distance between the two flags. (1)
- (iii) If Rashmi has to post a blue flag exactly halfway between the line segment joining the two flags, where should she post her flag? (2)

OR

- (iii) If Joy has to post a flag at one fourth distance from the green flag, in the line segment joining the green and red flags, then where should he post his flag? (2)

- 20.** The diagrams show the plans for a sun room. It will be built onto the wall of a house. The four walls of the sunroom are square clear glass panels. The roof is made using
- Four clear glass panels, trapezium in shape, all the same size
 - One tinted glass panel, half a regular octagon in shape



Refer to Top View for (i) only:

(i) Find the mid-point of the segment joining the points J (6, 17) and I (9, 16). (1)

Refer to Front View for (ii) to (iii):

(ii) Find the distance between the points A and S. (1)

(iii) Find the co-ordinates of the point which divides the line segment joining the points A and B in the ratio 1:3 internally. (2)

OR

(iii) If a point (x,y) is equidistant from the Q(9,8) and S(17,8), then find the relation between x and y. (2)

