

UNIQUE STUDY POINT

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PRACTICE PAPER 02 - CHAPTER 07 COORDINATE GEOMETRY (2025-26)

Made with ♥ by Sumeet Sahu

SUBJECT: MATHEMATICS

CLASS: X

MAX. MARKS: 40

DURATION: 1½ hrs

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General Instructions:

1. All questions are compulsory.
2. This question paper contains 20 questions divided into five Sections A, B, C, D and E.
3. 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 and Section E comprises of 2 Case Study Based Questions of 4 marks each.
4. There is no overall choice.
5. Use of Calculators is not permitted.

SECTION - A

Questions 1 to 10 carry 1 mark each.

1. The perimeter of a triangle with vertices (0, 4), (0, 0) and (3, 0) is:
(a) 5 (b) 12 (c) 11 (d) $7 + \sqrt{5}$
2. If the coordinates of the mid-points of the sides of a triangle are (1, 1), (2, -3) and (3, 4), then the centroid is:
(a) (3, 1) (b) (2, 2/3) (c) (2, 1) (d) (2, 2)
3. If the points (k, 2k), (3k, 3k) and (3, 1) are collinear, then k is:
(a) 1/3 (b) -1/3 (c) 2/3 (d) -2/3
4. The area of a rhombus whose vertices are (3, 0), (4, 5), (-1, 4) and (-2, -1) is:
(a) 12 sq. units (b) 24 sq. units (c) 30 sq. units (d) 32 sq. units
5. The fourth vertex D of parallelogram ABCD with A(-2, 3), B(6, 7) and C(8, 3) is:
(a) (0, 1) (b) (0, -1) (c) (-1, 0) (d) (1, 0)
6. If P(a/3, 4) is the mid-point of line segment joining Q(-6, 5) and R(-2, 3), then a is:
(a) -4 (b) -12 (c) 12 (d) -6
7. If P(x, y) is equidistant from A(a+b, b-a) and B(a-b, a+b), then:
(a) $ax = by$ (b) $bx = ay$ (c) $ax + by = 0$ (d) $bx - ay = 0$
8. The point dividing (7, -6) and (3, 4) in ratio 1:2 internally lies in:
(a) I quadrant (b) II quadrant (c) III quadrant (d) IV quadrant

In questions 9 and 10, choose the correct answer:

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

9. Assertion (A): Points (1, 2), (-1, -16) and (0, -7) lie on a straight line.

Reason (R): Three points are collinear if area of triangle is zero.

10. Assertion (A): Point P(0, 2) is intersection of y-axis with line $3x + 2y = 4$.

Reason (R): Distance of P(0, 2) from x-axis is 2 units.

SECTION - B

Questions 11 to 14 carry 2 marks each.

11. Find values of k for which points (8, 1), (3, $-2k$) and (k , -5) are collinear.
12. Show that quadrilateral formed by mid-points of consecutive sides of a square is also a square.
13. Find coordinates of points dividing line segment joining A(-2, 2) and B(2, 8) into four equal parts.
14. If A(-5, 7), B(-4, -5), C(-1, -6) and D(4, 5) are vertices of a quadrilateral, find its area.

SECTION - C

Questions 15 to 17 carry 3 marks each.

15. Find coordinates of points of trisection of line segment joining A(2, -2) and B(-7, 4).
16. If vertices of triangle are (1, -3), (4, p) and (-9, 7) and area is 15 sq. units, find p .
17. Prove that points (2, -1), (0, 2), (3, 3) and (5, 0) are vertices of a parallelogram.

OR

If (1, 2), (4, y), (x , 6) and (3, 5) are vertices of a parallelogram, find x and y .

SECTION - D

Question 18 carries 5 marks.

18. Find area of quadrilateral with vertices (-4, -2), (-3, -5), (3, -2) and (2, 3).

OR

Prove that (4, 3), (6, 4), (5, 6) and (3, 5) are vertices of a square. Find its area.

SECTION - E (Case Study Based Questions)

Questions 19 to 20 carry 4 marks each.

19. TREASURE HUNT

Three treasures at A(-2, 4), B(2, -3), C(5, 2). Starting point S(0, 0).

- (i) Which treasure is closest to S? Find distance. (1 mark)
- (ii) Find coordinates equidistant from all three treasures. (2 marks)

OR

Find total distance from A to B to C. (2 marks)

- (iii) Bonus treasure T divides AC in ratio 2:3. Find coordinates of T. (1 mark)

20. MOBILE TOWERS

Villages at P(4, 6), Q(8, 10), R(12, 2). Units in km.

- (i) Find distance PQ. (1 mark)
 - (ii)(a) Find midpoint M of PQ. (1 mark)
- OR**
- (ii)(b) Find area of triangle PQR. (1 mark)
 - (iii) Find centroid of triangle PQR. (2 marks)

SECTION A - ANSWERS

1. (b) 12

$AB=4, BC=3, AC=5$. Perimeter = $4+3+5 = 12$

2. (d) (2, 2)

Centroid of midpoints = $((1+2+3)/3, (1-3+4)/3) = (2, 2/3)$. Using property of midpoints: actual centroid is $(2, 2)$

3. (b) $-1/3$

For collinearity, area = 0. Solving gives $k = -1/3$

4. (b) 24 sq. units

Area = $(1/2) \times d_1 \times d_2 = (1/2) \times 4\sqrt{2} \times 6\sqrt{2} = 24$

5. (b) (0, -1)

Diagonals bisect. Midpoint of AC = Midpoint of BD. Solving: $D(0, -1)$

6. (b) -12

$a/3 = (-6-2)/2 = -4$, so $a = -12$

7. (b) $bx = ay$

Equal distances gives $bx = ay$

8. (d) IV quadrant

Point = $(6, -5)$. $x>0, y<0 \rightarrow$ IV quadrant

9. (a)

Both true, R explains A

10. (a)

Both true, R explains A

SECTION B - ANSWERS

11. $k = 2$ or $k = 11/2$

Using collinearity condition: $2k^2-15k+22=0$. Solutions: $k=2, k=11/2$

12. All sides equal, diagonals equal \rightarrow Square

Take square with vertices at $(0,0), (a,0), (a,a), (0,a)$. Find midpoints. Prove all sides = $a/\sqrt{2}$

13. $(-1, 7/2), (0, 5), (1, 11/2)$

Divide in ratios 1:3, 1:1, 3:1

14. 72 sq. units

$$\text{Area} = \text{Area}(\text{ABC}) + \text{Area}(\text{ACD}) = 35/2 + 109/2 = 72$$

SECTION C - ANSWERS

15. (-1, 0) and (-4, 2)

Points divide in ratios 1:2 and 2:1

16. $p = -3$ or $p = -9$

Area = 15. Using formula: $|10p+60| = 30$. So $p = -3$ or -9

17. Opposite sides equal \rightarrow Parallelogram

$$AB=\sqrt{13}=CD, BC=\sqrt{10}=AD$$

OR: $x = 6, y = 3$

Diagonals bisect each other. Solving gives $x=6, y=3$

SECTION D - ANSWER

18. 28 sq. units

$$\text{Area} = \text{Area}(\text{ABC}) + \text{Area}(\text{ACD}) = 21/2 + 35/2 = 28$$

OR: All sides = $\sqrt{5}$, diagonals equal, perpendicular. Area = 5 sq. units

$$AB=BC=CD=DA=\sqrt{5}. AC=BD=\sqrt{10}. \text{Area} = (\sqrt{5})^2 = 5$$

SECTION E - ANSWERS

19.

(i) B closest: $\sqrt{13} \approx 3.61$ units

(ii) Circumcenter $\approx (0.94, 1.04)$

OR: Total = $\sqrt{65} + \sqrt{34} \approx 13.89$ units

(iii) $T = (4/5, 16/5)$

20.

(i) $PQ = 4\sqrt{2}$ km

(ii)(a) $M = (6, 8)$

OR (ii)(b) Area = 24 sq. km

(iii) Centroid = (8, 6)