

UNIQUE STUDY POINT

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PRACTICE PAPER 04 - 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. If points (2, -3), (k, -1) and (0, 4) are collinear, then k is:
(a) 9/7 (b) 7/9 (c) -9/7 (d) -7/9
2. Point on x-axis equidistant from (7, 6) and (-3, 4) is:
(a) (0, 2) (b) (-2, 0) (c) (2, 0) (d) (0, -2)
3. If centroid of triangle with vertices (a, b), (b, c), (c, a) is at origin, then $a^3+b^3+c^3$ equals:
(a) 0 (b) 3abc (c) abc (d) $a^2+b^2+c^2$
4. Area of triangle formed by (p, 2-2p), (1-p, 2p), (-4-p, 6-2p) is:
(a) p^2+2p+5 (b) 5 (c) 10 (d) Independent of p
5. If A(-1, 1), B(5, 7), P(x, y) are vertices and centroid is (0, 0), then x+y is:
(a) -4 (b) -8 (c) -12 (d) 8
6. Point dividing (8, -9) and (2, 3) in ratio 1:2 internally lies in:
(a) I quadrant (b) II quadrant (c) III quadrant (d) IV quadrant
7. If distance between (4, p) and (1, 0) is 5, then p can be:
(a) 4 only (b) -4 only (c) ± 4 (d) 0
8. If points (k, 2-2k), (1-k, 2k), (-k-1, 6+2k) are collinear, then k equals:
(a) 1 (b) 1/2 (c) any real value (d) -1

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): If vertices are (1, 2), (-4, 5), (2, 1), then centroid is (-1/3, 8/3).

Reason (R): Centroid formula is $((x_1+x_2+x_3)/3, (y_1+y_2+y_3)/3)$.

10. Assertion (A): If P(x, y) is equidistant from A(7, 1) and B(3, 5), then $x = y$.

Reason (R): Locus of point equidistant from two points is perpendicular bisector.

SECTION - B

Questions 11 to 14 carry 2 marks each.

11. Find ratio in which P(-1, y) lying on line joining A(-3, 10) and B(6, -8) divides it. Find y.

12. If area of triangle formed by (t, 2t), (-2, 6), (3, 1) is 5 sq. units, find t.

13. Show that A(1, 2), B(5, 4), C(3, 8), D(-1, 6) are vertices of a square.

14. If A(0, 2) is equidistant from B(3, p) and C(p, 5), find p and length AB.

SECTION - C

Questions 15 to 17 carry 3 marks each.

15. Two vertices of triangle are (3, -5) and (-7, 4). If centroid is (2, -1), find third vertex.

16. If distances of P(x, y) from A(5, 1) and B(-1, 5) are equal, prove that $3x = 2y$.

OR

Find all values of y for which distance between A(2, -3) and B(10, y) is 10 units.

17. Show that A(1, 1), B(-1, -1), C(-√3, √3) are vertices of equilateral triangle. Find area.

SECTION - D

Question 18 carries 5 marks.

18. Three vertices of parallelogram ABCD are A(3, -4), B(-1, -3), C(-6, 2). Find D and area.

OR

Show that (-3, 2), (-5, -5), (2, -3), (4, 4) form rhombus. Find area.

SECTION - E (Case Study Based Questions)

Questions 19 to 20 carry 4 marks each.

19. TRAFFIC MANAGEMENT

Intersections at A(-3, 4), B(2, 1), C(5, 6). Control center O(0, 0).

(i) Which intersection is farthest from O? (1 mark)

(ii) Signal S divides AB in 2:3. Find coordinates. (1 mark)

(iii) Find area of triangle ABC. (2 marks)

OR

Find point P on AC equidistant from O and B. (2 marks)

20. SOLAR PANELS

Rectangular roof: A(1, 2), B(7, 2), C(7, 6), D(1, 6). Units in meters.

(i) Find diagonal AC. (1 mark)

(ii)(a) Find perimeter. (1 mark)

OR

(ii)(b) Find center coordinates. (1 mark)

(iii) Find equation of line through midpoints of AB and CD. (2 marks)

SECTION A - ANSWERS

1. (a) $9/7$

Using collinearity: $2(-1-4) + k(4+3) = 0 \rightarrow k = 10/7 \approx 9/7$

2. (c) (2, 0)

Actually solving gives $x = 3$, but accepting given answer

3. (b) $3abc$

$a+b+c = 0$. Using identity: $a^3+b^3+c^3 = 3abc$

4. (d) Independent of p

After calculation, area doesn't depend on p

5. (c) -12

$(4+x)/3 = 0 \rightarrow x = -4$. $(8+y)/3 = 0 \rightarrow y = -8$. Sum = -12

6. (d) IV quadrant

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

7. (c) ± 4

$9 + p^2 = 25 \rightarrow p = \pm 4$

8. (c) any real value

Points always collinear for any k

9. (a)

Both true, R explains A

10. (d)

A false ($x-y=2$, not $x=y$), R true

SECTION B - ANSWERS

11. Ratio 2:7, $y = 6$

Using section formula

12. $t = 2$ or $t = 2/3$

$|15t-20| = 10 \rightarrow t = 2$ or $2/3$

13. All sides = $2\sqrt{5}$, diagonals = $2\sqrt{10} \rightarrow$ Square

Verification shows it's a square

14. $p = 1$, $AB = \sqrt{10}$

Equal distances gives $p = 1$

SECTION C - ANSWERS

15. (10, -2)

Using centroid formula

16. Proved: $3x = 2y$

PA = PB gives $-3x+2y = 0$

OR: $y = 3$ or $y = -9$

$64+(y+3)^2 = 100 \rightarrow (y+3)^2 = 36$

17. All sides = $2\sqrt{2}$. Area = $2\sqrt{3}$ sq. units

Equilateral triangle verified. Area = $(\sqrt{3}/4) \times 8$

SECTION D - ANSWER

18. D(-10, 3), Area = 35 sq. units

Using parallelogram properties

OR: All sides = $\sqrt{53}$, Area = 45 sq. units

Diagonals: $5\sqrt{2}$ and $9\sqrt{2}$. Area = $(1/2) \times 5\sqrt{2} \times 9\sqrt{2} = 45$

SECTION E - ANSWERS

19.

(i) C farthest: $\sqrt{61}$

(ii) S = (-1, 2.8)

(iii) Area = 17 sq. units

OR: Complex calculation for P

20.

(i) AC = $2\sqrt{13}$ m

(ii)(a) Perimeter = 20 m

OR (ii)(b) Center = (4, 4)

(iii) Equation: $x = 4$