

UNIQUE STUDY POINT

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PRACTICE PAPER 01 - CHAPTER 07 COORDINATE GEOMETRY (2025-26)

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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 the distance between points $(4, p)$ and $(1, 0)$ is 5 units, then the value of p is:
(a) ± 4 (b) ± 3 (c) 4 only (d) 0
2. The coordinates of the centroid of a triangle whose vertices are $(0, 6)$, $(8, 12)$ and $(8, 0)$ is:
(a) $(4, 6)$ (b) $(16, 6)$ (c) $(8, 6)$ (d) $(16/3, 6)$
3. If $A(5, 2)$, $B(2, -2)$ and $C(-2, t)$ are the vertices of a right angled triangle with $\angle B = 90^\circ$, then the value of t is:
(a) 1 (b) 2 (c) 3 (d) 4
4. The ratio in which the point $P(3/4, 5/12)$ divides the line segment joining the points $A(1/2, 3/2)$ and $B(2, -5)$ is:
(a) 1 : 4 (b) 1 : 5 (c) 2 : 3 (d) 3 : 4
5. If the points $(2, 1)$ and $(1, -2)$ are equidistant from the point (x, y) , then:
(a) $x + 3y = 0$ (b) $3x + y = 0$ (c) $x - 3y = 0$ (d) $3x - y = 0$
6. The area of triangle formed by the points $(a, b+c)$, $(b, c+a)$ and $(c, a+b)$ is:
(a) 0 (b) $a+b+c$ (c) $ab+bc+ca$ (d) abc
7. If the point $C(-1, 2)$ divides internally the line segment joining $A(2, 5)$ and B in ratio 3 : 4, then the coordinates of B are:
(a) $(-5, -2)$ (b) $(5, 2)$ (c) $(-5, 2)$ (d) $(5, -2)$
8. If three points $(0, 0)$, $(3, \sqrt{3})$ and $(3, \lambda)$ form an equilateral triangle, then λ is equal to:
(a) 2 (b) -3 (c) $-\sqrt{3}$ (d) $-2\sqrt{3}$

In questions 9 and 10, a statement of assertion (A) is followed by a statement of reason (R). 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):** Mid-point of a line segment divides line in the ratio 1 : 1.

Reason (R): The ratio in which the point $(-3, k)$ divides the line segment joining $(-5, 4)$ and $(-2, 3)$ is $1 : 2$.

10. Assertion (A): The origin is the only point equidistant from $(2, 3)$ and $(-2, -3)$.

Reason (R): The origin is the mid-point of the line joining $(2, 3)$ and $(-2, -3)$.

SECTION - B

Questions 11 to 14 carry 2 marks each.

11. The line segment AB joining $A(3, -4)$ and $B(1, 2)$ is trisected at points $P(p, -2)$ and $Q(5/3, q)$. Find the values of p and q .

12. Find the point on x-axis which is equidistant from the points $(2, -5)$ and $(-2, 9)$.

13. Find the value of x such that $PQ = QR$ where the coordinates of P, Q and R are $(6, -1), (1, 3)$ and $(x, 8)$ respectively.

14. Find the coordinates of the points of trisection of the line segment joining $(1, -2)$ and $(-3, 4)$.

SECTION - C

Questions 15 to 17 carry 3 marks each.

15. Show that the points $A(3, 5), B(6, 0), C(1, -3)$ and $D(-2, 2)$ are the vertices of a square ABCD.

16. In what ratio does the line $x - y - 2 = 0$ divide the line segment joining $(3, -1)$ and $(8, 9)$?

17. Show that points $A(7, 5), B(2, 3)$ and $C(6, -7)$ are the vertices of a right triangle. Also find its area.

OR

Find the ratio in which the point $(2, y)$ divides the line segment joining the points $A(-2, 2)$ and $B(3, 7)$. Also find the value of y .

SECTION - D

Question 18 carries 5 marks.

18. Find the centre of a circle passing through $(5, -8), (2, -9)$ and $(2, 1)$.

OR

If the points $(10, 5), (8, 4)$ and $(6, 6)$ are the mid-points of the sides of a triangle, find its vertices.

SECTION - E (Case Study Based Questions)

Questions 19 to 20 carry 4 marks each.

19. GPS NAVIGATION

In a GPS system, three locations are marked: Lucknow $L(4, 10)$, Bhuj $B(2, 6)$, and Puri $P(10, 6)$. Distances represent 150 km per unit.

(i) Find the distance between Lucknow and Bhuj. (1 mark)

(ii) If Kota K divides line LB in ratio $3:2$, find coordinates of K . (1 mark)

(iii) Find the type of triangle formed by L, B and P . (2 marks)

OR

Find a point on y-axis equidistant from L and P . (2 marks)

20. FIELD PLANNING

A field is shaped as right triangle AQC with square $PQRS$ inside. $P(-200, 0), Q(200, 0)$, and $A(200, 800)$.

(i) What are coordinates of R and S ? (1 mark)

(ii)(a) What is area of square $PQRS$? (1 mark)

OR

(ii)(b) What is length of diagonal PR ? (1 mark)

(iii) If S divides CA in ratio $K:1$, find K . (2 marks)

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SECTION A - ANSWERS

1. (a) ± 4

Distance = $\sqrt{[(4-1)^2 + p^2]} = 5 \rightarrow 9+p^2 = 25 \rightarrow p = \pm 4$

2. (d) $(16/3, 6)$

Centroid = $((0+8+8)/3, (6+12+0)/3) = (16/3, 6)$

3. (a) 1

For $\angle B=90^\circ$: $AB^2+BC^2=AC^2$. After calculation, $t = 1$

4. (a) 1 : 4

Using section formula and solving, ratio = 1:4

5. (a) $x + 3y = 0$

Equidistant means equal distances. Solving gives $x+3y=0$

6. (a) 0

Area calculation shows points are collinear, so area = 0

7. (a) $(-5, -2)$

Using section formula: $B = (-5, -2)$

8. (c) $-\sqrt{3}$

For equilateral triangle, all sides equal. Solving gives $\lambda = -\sqrt{3}$

9. (a)

Both true and R explains A

10. (a)

Both true and R explains A

SECTION B - ANSWERS

11. $p = 7/3, q = 0$

Trisection divides in 1:2 and 2:1. Calculate accordingly.

12. $(-7, 0)$

Let point be $(x,0)$. Equal distances give $x = -7$

13. $x = -4$

$PQ = QR$. Distance formula gives $x = -4$

14. $(1/3, 0)$ and $(-5/3, 2)$

Trisection points at ratios 1:2 and 2:1

SECTION C - ANSWERS

15. All sides equal, diagonals equal → Square

$$AB=BC=CD=DA=\sqrt{34}, AC=BD=\sqrt{68}$$

16. 2:3

Solve using section formula with line equation

17. Right triangle at B, Area = 32 sq units

$$AB^2+BC^2=AC^2. \text{ Area} = (1/2) \times AB \times BC = 32$$

OR: Ratio 4:1, $y = 6$

Using section formula: ratio 4:1, $y = 6$

SECTION D - ANSWER

18. Centre: (3, -4)

Equidistant from all three points. Solve system of equations.

OR: Vertices: (12, 3), (6, 7), (8, 5)

Use midpoint formulas to find original vertices

SECTION E - ANSWERS

19.

(i) $LB = \sqrt{[(4-2)^2+(10-6)^2]} = \sqrt{20} = 2\sqrt{5}$ units = $300\sqrt{5}$ km

(ii) $K = ((3 \times 2 + 2 \times 4)/5, (3 \times 6 + 2 \times 10)/5) = (14/5, 38/5)$

(iii) Isosceles triangle (two equal sides)

OR: Point (0, 8) on y-axis

20.

(i) R(200, 400), S(-200, 400)

(ii)(a) Area = $400^2 = 160,000$ sq units

OR (ii)(b) PR = $400\sqrt{2}$ units

(iii) K = 1