Class 9 Maths Chapter 1: Orienting Yourself: The Use of Coordinates - Notes, Important Questions and MCQs (2026-27)

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These Class 9 Maths Chapter 1 notes cover “Orienting Yourself: The Use of Coordinates” from the new NCERT textbook Ganita Manjari (Part I, 2026-27): the Cartesian plane, axes and origin, quadrants and sign rules, plotting points, distances along horizontal and vertical lines, and the distance between any two points using the Baudhāyana–Pythagoras theorem – with formula tables, solved examples, Q&A, 10 MCQs and a free PDF.

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Chapter Overview

To locate a point on a flat surface we need two reference lines that are perpendicular to each other – a horizontal x-axis and a vertical y-axis meeting at the origin O. Every point is then described by an ordered pair (x, y): its distance from the y-axis and from the x-axis.

The axes divide the plane into four quadrants with fixed sign patterns. Distances between points that share a coordinate are simple differences, and the distance between any two points comes from the Baudhāyana–Pythagoras theorem. These ideas are used in maps, seating plans, games and later chapters on lines and graphs.

Important Topics and Concepts

The Cartesian Plane

- Two perpendicular number lines – the horizontal x-axis and the vertical y-axis – meet at the origin O(0, 0).
- The plane is called the Cartesian plane, coordinate plane or xy-plane.
- The x-coordinate (abscissa) is the distance of the point from the y-axis; the y-coordinate (ordinate) is the distance from the x-axis.
- Coordinates are written as an ordered pair (x, y): (2, 5) and (5, 2) are different points unless x = y.

Quadrants and Signs

- The axes divide the plane into four quadrants, numbered anticlockwise from the top right.
- Quadrant I: (+, +); Quadrant II: (–, +); Quadrant III: (–, –); Quadrant IV: (+, –).
- Points on the x-axis have the form (x, 0); points on the y-axis have the form (0, y).
- Points on the axes do not belong to any quadrant.

Plotting Points

- Start at the origin; move x units along the x-axis (right if positive, left if negative).
- Then move y units parallel to the y-axis (up if positive, down if negative).
- Mark and label the point; join points in order to form shapes.
- Choose a suitable scale on graph paper so all points fit.

Distance Along Horizontal and Vertical Lines

- Points (x_1, y) and (x_2, y) lie on a horizontal line; distance = $|x_2 – x_1|$.
- Points (x, y_1) and (x, y_2) lie on a vertical line; distance = $|y_2 – y_1|$.
- Example: distance between (–3, 4) and (5, 4) = $|5 – (–3)| = 8$ units.
- Absolute value is used because distance is never negative.

Distance Between Any Two Points

- Draw horizontal and vertical lines to form a right triangle with the two points.
- Horizontal leg = $|x_2 – x_1|$, vertical leg = $|y_2 – y_1|$.
- By the Baudhāyana–Pythagoras theorem: $d = \sqrt{[(x_2 – x_1)^2 + (y_2 – y_1)^2]}$.
- Distance from the origin to (x, y) = $\sqrt{(x^2 + y^2)}$.
- Uses: checking whether points are collinear, or whether a triangle is isosceles, right-angled or equilateral.

Solved Examples

Board-pattern practice.

- Find the distance between A(1, 2) and B(4, 6). $d = \sqrt{[(4–1)^2 + (6–2)^2]} = \sqrt{(9 + 16)} = \sqrt{25} = 5$ units.
- Distance of P(–6, 8) from the origin. $\sqrt{(36 + 64)} = \sqrt{100} = 10$ units.
- In which quadrant does (–3, –7) lie? Both negative → Quadrant III.
- Are A(0, 0), B(3, 4), C(6, 8) collinear? AB = 5, BC = 5, AC = 10 = AB + BC, so yes.

- Is the triangle with vertices (0, 0), (4, 0), (0, 3) right-angled? Sides 4, 3, 5; $3^2 + 4^2 = 5^2$, so yes.

Quadrant Sign Rules

Region	Sign of x	Sign of y	Example
Quadrant I	+	+	(3, 2)
Quadrant II	–	+	(–3, 2)
Quadrant III	–	–	(–3, –2)
Quadrant IV	+	–	(3, –2)
x-axis	any	0	(5, 0)
y-axis	0	any	(0, –4)

Important Terms and Formulas

Term	Meaning
Origin	Point (0, 0) where the axes meet
x-axis	Horizontal reference line
y-axis	Vertical reference line
Abscissa	x-coordinate of a point
Ordinate	y-coordinate of a point
Quadrant	One of four regions formed by the axes
Horizontal distance	$\|x_2 – x_1\|$
Vertical distance	$\|y_2 – y_1\|$
Distance formula	$\sqrt{[(x_2 – x_1)^2 + (y_2 – y_1)^2]}$
Distance from origin	$\sqrt{(x^2 + y^2)}$

Short Answer Questions

Q1. What are the coordinates of the origin?

(0, 0).

Q2. In which quadrant does (4, –9) lie?

Quadrant IV, since x is positive and y is negative.

Q3. Write the general form of a point on the y-axis.

(0, y).

Q4. Is (3, 5) the same as (5, 3)? Why?

No. The order matters; they are the same only if x = y.

Q5. Find the distance between (2, 7) and (2, –3).

They lie on a vertical line; distance = |–3 – 7| = 10 units.

$\sqrt{[(3)^2 + (4)^2]} = \sqrt{25} = 5$ units.

Q7. What is the distance of (5, 12) from the origin?

$\sqrt{(25 + 144)} = 13$ units.

Q8. Which theorem gives the distance formula?

The Baudhāyana–Pythagoras theorem.

Long Answer Questions

Q1. Derive the distance formula between two points.

Take $P(x_1, y_1)$ and $Q(x_2, y_2)$ and draw a horizontal line from P and a vertical line from Q meeting at $R(x_2, y_1)$.

$PR = |x_2 – x_1|$ and $QR = |y_2 – y_1|$.

Triangle PRQ is right-angled at R.

By the Baudhāyana–Pythagoras theorem, $PQ^2 = PR^2 + QR^2$.

So $PQ = \sqrt{[(x_2 – x_1)^2 + (y_2 – y_1)^2]}$.

Q2. Show that A(1, 1), B(4, 5) and C(7, 1) form an isosceles triangle.

$AB = \sqrt{[(3)^2 + (4)^2]} = 5$.

$BC = \sqrt{[(3)^2 + (–4)^2]} = 5$.

$AC = \sqrt{[(6)^2 + 0^2]} = 6$.

Two sides are equal (AB = BC).

Hence ABC is isosceles.

Q3. Explain how coordinates divide the plane and how signs help locate points.

Axes are perpendicular and meet at the origin.

They divide the plane into four quadrants.

Signs: I (+, +), II (–, +), III (–, –), IV (+, –).

Points on axes have a zero coordinate.

Knowing signs immediately tells the quadrant of a point.

MCQs with Answers

1. Point (–2, 5) lies in quadrant(a) I (b) II (c) III (d) IVAnswer: (b) II

2. Point (0, –3) lies on the(a) x-axis (b) y-axis (c) origin (d) quadrant IVAnswer: (b) y-axis

3. The abscissa of (6, –1) is(a) –1 (b) 6 (c) 5 (d) 7Answer: (b) 6

4. Distance between (1, 3) and (7, 3) is(a) 4 (b) 6 (c) 8 (d) 10Answer: (b) 6

5. Distance of (3, 4) from origin is(a) 5 (b) 7 (c) 12 (d) 25Answer: (a) 5

6. Points with both coordinates negative lie in quadrant(a) I (b) II (c) III (d) IVAnswer: (c) III

7. Distance between (0, 0) and (–8, 6) is(a) 10 (b) 14 (c) 2 (d) 48Answer: (a) 10

9. The y-coordinate of every point on the x-axis is(a) 1 (b) 0 (c) x (d) undefinedAnswer: (b) 0

10. Distance between (2, –1) and (2, 4) is(a) 3 (b) 5 (c) 4 (d) 6Answer: (b) 5

Quick Revision Points

- Axes meet at origin O(0, 0).
- x-coordinate = distance from y-axis; y-coordinate = distance from x-axis.
- Quadrant signs: I(+,+), II(–,+), III(–,–), IV(+,–).
- On x-axis (x, 0); on y-axis (0, y).
- Horizontal $|x_2–x_1|$; vertical $|y_2–y_1|$.
- $d = \sqrt{[(x_2–x_1)^2 + (y_2–y_1)^2]}$.

Chapter Summary

Coordinates locate points on a plane using two perpendicular axes meeting at the origin. Each point is an ordered pair (x, y), and the four quadrants have fixed sign patterns, while points on the axes have one coordinate zero.

Distances between points on the same horizontal or vertical line are found by subtracting coordinates, and the distance between any two points follows from the Baudhāyana–Pythagoras theorem: $\sqrt{[(x_2–x_1)^2 + (y_2–y_1)^2]}$. This formula helps check collinearity and classify triangles.

Exam Tips and PYQ Pattern

- Always write coordinates in the order (x, y).
- Learn the quadrant sign table by heart.
- Show the right-triangle construction when deriving the distance formula.
- Use the distance formula to classify triangles in long answers.
- Draw neat graphs with a clear scale.

Frequently Asked Questions

Is this chapter in the 2026-27 CBSE syllabus?

Yes. It is part of the new NCERT Class 9 Maths textbook “Ganita Manjari” (Part I), prescribed for the 2026-27 session.

Can I download these notes as a PDF?

Yes. Use the free PDF link at the top of this page – no signup needed.

What is the distance formula in Class 9?

$d = \sqrt{[(x_2 – x_1)^2 + (y_2 – y_1)^2]}$, based on the Baudhāyana–Pythagoras theorem.

How do I find the quadrant of a point?

Look at the signs: (+,+) I, (–,+) II, (–,–) III, (+,–) IV.

Conclusion

The Use of Coordinates builds the base for graphs and lines in later chapters. Learn the sign table and distance formula, practise the solved examples here and save the free PDF for revision.

More Notes: Class 9 Maths Chapter 2: Introduction to Linear Polynomials notes | All Class 9 Maths notes

Author Bio: Written and reviewed by the Nextoper Editorial Team, a group of CBSE mathematics educators who build chapter notes directly from the NCERT textbook and past board paper patterns.

Freshness Note: These notes follow the NCERT Class 9 Maths textbook, Ganita Manjari (Parts I and II, first edition 2026, NCF-SE 2023), and the CBSE syllabus for the 2026-27 session. Last checked on 24 November 2026.