MATHS WITHOUT GUESSWORK · BOARD BOOSTER

Coordinate Geometry

LOCK THE SURE MARKS.
STRETCH FOR THE TOP.
PRACTISE THE BOARD WAY.

A board-exam practice companion for **CBSE Class 10 Mathematics**
Syllabus session 2026–27 · Standard (041)

🛡️ Secure Track | 🚀 Stretch Track | ~55 questions + 3 mini-mocks

Two formulas — that's the whole chapter

Distance	Section	Midpoint
$\sqrt{((x_2-x_1)^2+(y_2-y_1)^2)}$	divide a segment m : n	the 1 : 1 special case

Original questions and solutions. Answers kept separate. Not a substitute for the NCERT textbook or your teacher.

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Coordinate Geometry in the board paper

Know exactly how many marks are really at stake here — so you spend your effort where the paper pays.

◆ UNDERSTAND THE OFFICIAL NUMBER This chapter is its own **Unit III — Coordinate Geometry, worth 6 marks**. It is a **reliable 4–6 marks** — typically a **2-mark distance** question and a **3-mark section-formula** question, sometimes a case study. One of the most **scoring** chapters: two formulas, careful substitution. CBSE publishes weightage per unit.

Where those marks usually fall (PYQ trend — based on past papers, not official)

Form it takes	Typical marks	What it tests
1–2 MCQ / Assertion-Reason	1–2	A distance, a midpoint, the section-formula pairing
A VSA or SA	2–3	Distance between two points; a point dividing a segment
A 5-mark LA	5	A square/parallelogram proof; a ratio; a missing vertex
A case study	4	A map, a garden, seats on a grid — distances and midpoints

★ SPOT THE CLUE WHAT'S IN THE 2026–27 SCOPE In scope: the **distance formula** and its applications, and the **section formula (internal division)** including the **midpoint**. **Out of scope (deleted):** the **area of a triangle from coordinates**. So check collinearity with the distance method (AB + BC = AC), not with "area = 0".

Q7 The midpoint of (−1, 4) and (5, −2) is: A. (2, 1) B. (3, 3) C. (4, 6) D. (2, 3)

1 PART-GUIDED ★

Q8 The point dividing (1, 2) and (4, 8) in the ratio 1 : 2 internally is: A. (2, 4) B. (3, 6) C. (2.5, 5) D. (5, 10)

1 PART-GUIDED ★

Q9 The distance of (6, 8) from the origin is: A. 10 B. 14 C. 48 D. 2

1 GUIDED ★

Q10 A point P(x, 0) lies on the: A. x-axis B. y-axis C. origin D. line y = x

1 GUIDED

Q11 The distance between (2, 3) and (2, 7) is: A. 4 B. 2 C. 5 D. √10

1 PART-GUIDED ★

Q12 The midpoint of a segment divides it in the ratio: A. 1 : 2 B. 2 : 1 C. 1 : 1 D. 1 : 3

1 GUIDED ★

Q13 If the distance between (0, 0) and (x, 0) is 7, then x is: A. 7 B. −7 C. ±7 D. 49

1 PART-GUIDED ★

Q14 The triangle with vertices (0, 0), (4, 0), (0, 3) is: A. equilateral B. isosceles C. right-angled D. none

1 INDEPENDENT ★

Q15 A point equidistant from (2, 0) and (−2, 0) lies on the: A. x-axis B. y-axis C. line y = x D. line y = −x

1 INDEPENDENT ★

Q16 The centroid of a triangle with vertices (1, 2), (3, −4), (5, 8) is: A. (3, 2) B. (9, 6) C. (3, 6) D. (2, 3)

1 INDEPENDENT ★

Assertion–Reason (Q17–Q20)

➤ CHOOSE THE METHOD THE 4-OUTCOME ROUTINE — JUDGE EACH LINE SEPARATELY

(a) Both true, R is the correct explanation · **(b)** Both true, R is NOT the explanation · **(c)** A true, R false · **(d)** A false, R true

Q17 **A:** The midpoint of (2, 3) and (6, 7) is (4, 5). **R:** The midpoint is the average of the two x-coordinates and of the two y-coordinates.

1 PART-GUIDED ★

Q18 **A:** Finding the area of a triangle from its vertices is part of the 2026–27 syllabus. **R:** The area is $\frac{1}{2}\,|x_1(y_2-y_3) + x_2(y_3-y_1) + x_3(y_1-y_2)|$.

1 INDEPENDENT ★

Q19 **A:** The distance of (x, y) from the origin is $\sqrt{(x^2 + y^2)}$. **R:** The origin is the point (0, 0).

1 PART-GUIDED ★

Q20 **A:** In the section formula, m is paired with the first point. **R:** The dividing point is $((mx_2 + nx_1)/(m+n), (my_2 + ny_1)/(m+n))$.

1 INDEPENDENT ★

1 2 3 4 5 6 Secure

Very Short Answer (2-mark) set

8 two-mark questions. Write the formula, substitute, simplify. Worked solutions in the Answer Key.

Q1 Find the distance between (−5, 7) and (−1, 3).

2 PART-GUIDED ★

Q2 Find the midpoint of the segment joining (−1, 4) and (5, −2).

2 GUIDED ★

Q3 Find the point dividing the segment joining (−1, 3) and (4, −2) in the ratio 2 : 3 internally.

2 PART-GUIDED ★

Q4 Find the distance of the point (8, 15) from the origin.

2 GUIDED ★

Q5 If the midpoint of (a, 4) and (6, 8) is (5, 6), find a.

2 PART-GUIDED

Q6 Find the distance between (2, −1) and (10, 14).

2 PART-GUIDED ★

Q7 Find the midpoint of the segment joining (3, 0) and (0, 4).

2 GUIDED

Q8 In what ratio does the midpoint divide a segment? Hence find the midpoint of (2, 3) and (6, 7).

2 GUIDED

Case studies (4-mark)

4 source-based cases, each 1 + 1 + 2 marks. Read off the coordinates, then use distance or the section formula. Solutions in the Answer Key.

Case 1 — The park map

4 marks

On a park map, the gate is at A(2, 3) and the fountain at B(6, 6) (units in metres).

(i) Write the distance formula.

1

(ii) Find the distance between the gate and the fountain.

1

(iii) A lamp is to be placed at the midpoint of A and B. Find its coordinates.

2

Answer Key

Kept at the back on purpose — so a parent needn't teach. The recurring methods are written out once; the drills get the key step, the answer and the likely slip.

The core formulas (learn these once)

Distance. PQ = $\sqrt{((x_2 - x_1)^2 + (y_2 - y_1)^2)}$. Take the differences, square (sign gone), add, root, simplify the surd. Distance from the origin: $\sqrt{(x^2 + y^2)}$. **The formula with values substituted is the first mark.**

Section (internal). P dividing $A(x_1,y_1)$, $B(x_2,y_2)$ in $m : n$ is $((mx_2 + nx_1)/(m+n), (my_2 + ny_1)/(m+n))$ — m with the *second* point. Midpoint is the $1 : 1$ case: $((x_1+x_2)/2, (y_1+y_2)/2)$.

Shapes from lengths. All sides equal ⇒ equilateral (or, with diagonals, rhombus); two equal ⇒ isosceles; longest² = sum of the other two squares ⇒ right-angled; all sides equal + equal diagonals ⇒ square. Collinear if AB + BC = AC.

Axis & diameter tricks. On the x-axis a point is (x, 0); on the y-axis (0, y). Equidistant-from-two-points ⇒ set the two distances equal and solve. The centre of a circle is the **midpoint of a diameter**. (Area from coordinates is deleted for 2026–27.)

Section 6 — MCQ & Assertion-Reason

Q	Ans	Why
Q1	**C**	$\sqrt{(3^2 + 4^2)} = 5$.

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- **Very Short Answer.** 8 two-mark questions
- **Short Answer.** 8 three-mark questions
- **Long Answer.** 6 five-mark questions
- **Case studies.** 4 four-mark source-based cases
- **HOTS and trickiest variations.** 6 questions
- **Timed mini-mocks and Answer Key.** 3 single-chapter mini-mocks; every question has its answer, kept at the back

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