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Coordinate Geometry — CBSE Class 10 Mathematics Chapter Test

FREE CHAPTER TEST · CLASS X · MATHEMATICS (041) · PATTERN OF THE CBSE SAMPLE QUESTION PAPER 2026-27

TIME ALLOWED	MAXIMUM MARKS	QUESTIONS	NAME / ROLL NO.
1½ hours	40	19 (A 10 · B 3 · C 2 · D 2 · E 2)	

GENERAL INSTRUCTIONS

Read the following instructions very carefully and strictly follow them:

1. This question paper contains 19 questions. All questions are compulsory.
2. This question paper is divided into five sections: A, B, C, D and E.
3. In Section A, Questions 1 to 8 are multiple choice questions (MCQs) and Questions 9 and 10 are assertion-reason based questions of 1 mark each.
4. In Section B, Q11–13 are very short answer (VSA) type questions, carrying 2 marks each.
5. In Section C, Q14–15 are short answer (SA) type questions, carrying 3 marks each.
6. In Section D, Q16–17 are long answer (LA) type questions, carrying 5 marks each.
7. In Section E, Q18–19 are case study based questions, carrying 4 marks each, with sub-parts of the values of 1, 1 and 2 marks.
8. There is no overall choice. However, an internal choice has been provided in 1 question of Section B, 1 question of Section C, 1 question of Section D and in the 2-mark sub-part of each question of Section E.
9. Use of calculators is not allowed.
10. This chapter test follows the section structure, question types and marks per question of the CBSE Class X Mathematics (Standard, 041) Sample Question Paper 2026-27, at half the length of the 80-mark board paper: 40 marks in 1½ hours.
11. The answer key and the marking scheme are at the end of this booklet. Attempt the paper in 1½ hours before you look at them.

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Chapter: Coordinate Geometry · **Topics:** Distance formula · Section formula (internal division) · Mid-point · Points equidistant from given points · Shapes from coordinates

SECTION A

This section comprises 10 questions of 1 mark each: 8 multiple choice questions (MCQs) and 2 assertion-reason based questions.

1. The distance between the points (2, 3) and (4, 1) is 1

(A) $2\sqrt{2}$ (B) 4

(C) 2 (D) $\sqrt{2}$

2. The distance of the point (−6, 8) from the origin is 1

(A) 6 (B) 10

(C) 8 (D) 14

3. The mid-point of the segment joining (−1, 7) and (3, −3) is 1

(A) (2, 4) (B) (1, −2)

(C) (1, 2) (D) (2, 5)

4. The point that divides the join of (−2, 5) and (8, −5) internally in the ratio 2 : 3 is 1

(A) (4, −1) (B) (3, 0)

(C) (−1, 2) (D) (2, 1)

5. If the distance between (x, 3) and (5, 7) is 5 units, then x is 1

(A) 2 only (B) 2 or 8

(C) 8 only (D) −2 or 8

6. The point on the x-axis equidistant from (5, −2) and (−1, 4) is 1

(A) (−1, 0) (B) (0, 1)

(C) (1, 0) (D) (0, −1)

7. The y-axis divides the join of (4, −3) and (−2, 5) in the ratio 1

(A) 2 : 1 (B) 1 : 2

(C) 4 : 3 (D) 3 : 4

8. The points A(1, 7), B(−4, 4) and C(4, 2) are the vertices of 1

(A) an equilateral triangle (B) a scalene triangle

(C) no triangle (they are collinear) (D) an isosceles right triangle

9. **Assertion (A):** The point (0, 4) lies on the y-axis. 1

Reason (R): The x-coordinate of every point on the y-axis is 0.

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

(C) Assertion (A) is true, but Reason (R) is false.

(D) Assertion (A) is false, but Reason (R) is true.

10. **Assertion (A):** The mid-point of the segment joining (2, 3) and (4, 7) is (6, 10). 1

Reason (R): The mid-point of the segment joining (x_1, y_1) and (x_2, y_2) is $(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2})$.

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

(C) Assertion (A) is true, but Reason (R) is false.

(D) Assertion (A) is false, but Reason (R) is true.

SECTION B

This section comprises 3 very short answer (VSA) type questions of 2 marks each.

11. (a) Find the point on the y-axis which is equidistant from A(5, 2) and B(−3, 6). 2

OR

(b) Find the ratio in which the point (1, 3) divides the line segment joining A(−3, 7) and B(7, −3).

12. Show that the points (2, 1), (5, 3), (3, 6) and (0, 4), taken in order, are the vertices of a square. 2

13. Find the coordinates of the points of trisection of the segment joining (−4, 5) and (5, −1). 2

SECTION C

This section comprises 2 short answer (SA) type questions of 3 marks each.

14. (a) Find a relation between x and y such that the point (x, y) is equidistant from (2, 5) and (−4, 3). 3

OR

(b) Find the ratio in which the x-axis divides the segment joining (2, −6) and (−3, 4). Also find the point of division.

15. A(−3, −2), B(a, −1), C(5, b) and D(1, 3) are the vertices of a parallelogram ABCD, taken in order. Find a and b. 3

SECTION D

This section comprises 2 long answer (LA) type questions of 5 marks each.

16. (a) (i) Find the ratio in which $P(\frac{1}{2}, 2)$ divides the segment joining A(−1, 5) and B(3, −3). (ii) Find the points that divide the segment joining A(−4, 1) and B(4, 9) into four equal parts. 5

OR

(b) Show that A(1, 2), B(5, 5) and C(−2, 6) are the vertices of an isosceles right triangle. Show also that the mid-point of the hypotenuse is equidistant from the three vertices.

17. Find the centre and the radius of the circle that passes through the points (5, 5), (2, −4) and (−2, 4). 5

SECTION E

This section comprises 2 case study based questions of 4 marks each, with sub-parts of 1, 1 and 2 marks.

18. On a city map drawn on a grid (1 unit = 1 km), a school is at S(2, 3) and a library at L(8, 11).

(i) Find the distance between the school and the library. [1]

(ii) Two friends start from S and L and meet half-way. Find the meeting point. [1]

(iii) A bus stop B lies on SL with SB : BL = 1 : 3. Find B. [2]

OR

(iii) A park is at P(5, −1). Find the distance of the park from the school. [2]

19. In a school garden, straight rows of plants are 1 m apart. Meena walks 12 m along the 3rd row and places a red marker; Kabir walks 4 m along the 9th row and places a blue marker. Take a corner of the garden as the origin, with the x-axis across the rows and the y-axis along them.

(i) Write the position of the red marker. [1]

(ii) Write the position of the blue marker. [1]

(iii) Find the distance between the two markers. [2]

OR

(iii) Anu places a yellow marker exactly half-way between the two markers. Find its position. [2]

END OF THE QUESTION PAPER

ANSWER KEY — SECTION A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
(A)	(B)	(C)	(D)	(B)	(C)	(A)	(D)	(A)	(D)

MARKING SCHEME AND WORKED SOLUTIONS

Marks for each step are shown in brackets, as in the CBSE marking scheme. Any correct alternative method earns full marks.

Q1. Answer (A). $\sqrt{(2^2 + 2^2)} = \sqrt{8} = 2\sqrt{2}$.

Q2. Answer (B). $\sqrt{(36 + 64)} = 10$.

Q3. Answer (C). $((-1 + 3)/2, (7 - 3)/2)$.

Q4. Answer (D). $((2 \times 8 + 3 \times (-2))/5, (2 \times (-5) + 3 \times 5)/5) = (2, 1)$.

Q5. Answer (B). $(x - 5)^2 + 16 = 25$, $x - 5 = \pm 3$.

Q6. Answer (C). $(x - 5)^2 + 4 = (x + 1)^2 + 16$ gives $-12x = -12$, $x = 1$.

Q7. Answer (A). $(-2k + 4)/(k + 1) = 0$ gives $k = 2$.

Q8. Answer (D). $AB^2 = 34$, $AC^2 = 34$, $BC^2 = 68 = AB^2 + AC^2$.

Q9. Answer (A). R explains A. Answer (A).

Q10. Answer (D). The mid-point is (3, 5): A is false, R is true. Answer (D).

Q11. (2 marks) Answer: (a) (0, 2); (b) 2 : 3.
(a) Let P(0, y): $25 + (y - 2)^2 = 9 + (y - 6)^2$. [1] $29 - 4y = 45 - 12y$, so $y = 2$: P(0, 2). [1]
OR (b) Let the ratio be k : 1: $(7k - 3)/(k + 1) = 1$ [1], $6k = 4$, $k = 2/3$: the ratio is 2 : 3 (the y-coordinate $(-6 + 21)/5 = 3$ checks). [1]

Q12. (2 marks) Answer: sides $\sqrt{13}$, diagonals $\sqrt{26}$.
Each side: $\sqrt{(9 + 4)} = \sqrt{13}$. [1] Diagonals: $\sqrt{(1 + 25)} = \sqrt{26}$ each. Four equal sides and equal diagonals: a square. [1]

Q13. (2 marks) Answer: (−1, 3) and (2, 1).
Ratio 1 : 2: $((5 - 8)/3, (-1 + 10)/3) = (-1, 3)$. [1] Ratio 2 : 1: $((10 - 4)/3, (-2 + 5)/3) = (2, 1)$. [1]

Q14. (3 marks) Answer: (a) $3x + y = 1$; (b) 3 : 2, (−1, 0).
(a) $(x - 2)^2 + (y - 5)^2 = (x + 4)^2 + (y - 3)^2$. [1] $-4x + 4 - 10y + 25 = 8x + 16 - 6y + 9$ [1], so $12x + 4y = 4$, i.e. $3x + y = 1$. [1]
OR (b) Let the ratio be k : 1. On the x-axis the y-coordinate is 0: $(4k - 6)/(k + 1) = 0$ [1], so $k = 3/2$: the ratio is 3 : 2. [1] The point is $((3 \times (-3) + 2 \times 2)/5, 0) = (-1, 0)$. [1]

Q15. (3 marks) Answer: $a = 1$, $b = 4$.
The diagonals of a parallelogram bisect each other: mid-point of AC = mid-point of BD. [1] $(1, (b - 2)/2) = ((a + 1)/2, 1)$. [1] So $a = 1$, $b = 4$. [1]

Q16. (5 marks) Answer: (a) 3 : 5; (−2, 3), (0, 5), (2, 7); (b) shown.
(a) (i) Let the ratio be k : 1: $(3k - 1)/(k + 1) = 1/2$ [1], $6k - 2 = k + 1$, $k = 3/5$: the ratio is 3 : 5 (y: $(3 \times (-3) + 5 \times 5)/8 = 2$ checks). [1] (ii) The points divide AB in 1 : 3, 1 : 1 and 3 : 1: (−2, 3), (0, 5), (2, 7). [3]
OR (b) $AB^2 = 16 + 9 = 25$, $AC^2 = 9 + 16 = 25$, $BC^2 = 49 + 1 = 50$. [2] AB = AC, and $AB^2 + AC^2 = BC^2$, so the triangle is isosceles and right-angled at A. [1] Mid-point of BC: (3/2, 11/2); its distance from A, B and C is $\sqrt{50}/2 = 5/\sqrt{2}$ each. [2]

Q17. (5 marks) Answer: centre (2, 1), radius 5.
Let the centre be (x, y). From (5, 5) and (2, −4): $(x-5)^2+(y-5)^2=(x-2)^2+(y+4)^2$, which gives $x+3y=5$. [2] From (−2, 4) and (2, −4): $(x+2)^2+(y-4)^2=(x-2)^2+(y+4)^2$, which gives $x=2y$. [1] Then $5y=5$: $y=1$, $x=2$, centre (2, 1). [1] Radius $=\sqrt{((5-2)^2+(5-1)^2)}=5$. [1]

Q18. (4 marks) Answer: (i) 10 km; (ii) (5, 7); (iii) (3.5, 5), or 5 km.
(i) $\sqrt{(36+64)}=10$ km. [1]
(ii) (5, 7). [1]
(iii)(a) $((1\times 8+3\times 2)/4, (1\times 11+3\times 3)/4)$ [1] = (3.5, 5). [1]
OR (iii)(b) $\sqrt{(9+16)}$ [1] = 5 km. [1]

Q19. (4 marks) Answer: (i) (3, 12); (ii) (9, 4); (iii) 10 m, or (6, 8).
(i) (3, 12). [1]
(ii) (9, 4). [1]
(iii)(a) $\sqrt{(6^2+8^2)}$ [1] = 10 m. [1]
OR (iii)(b) $((3+9)/2, (12+4)/2)$ [1] = (6, 8): on the 6th row, 8 m along it. [1]

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