NCERT Solutions Class 10 Maths
Chapter 7: Coordinate Geometry
Exercise 7.1

Quick Summary: In NCERT Solutions Class 10 Maths Chapter 7 Exercise 7.1, students learn to apply the Distance Formula to find distances between points in coordinate geometry. This exercise covers fundamental concepts like calculating distances between two points, checking collinearity of points, and identifying properties of geometric shapes, which are essential topics frequently tested in CBSE Class 10 board exams.

Key Takeaways:

- Master the Distance Formula: $d = \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$ to find distance between any two points
- Learn to verify if three points are collinear by checking if the sum of two distances equals the third distance
- Apply distance calculations to identify types of triangles (equilateral, isosceles, scalene) using side lengths
- Solve real-world coordinate geometry problems involving positions and distances on a coordinate plane

Complete Solutions

Question 1

QUESTION

Find the distance between the following pairs of points:

1. (2, 3), (4, 1)
2. (−5, 7), (−1, 3)
3. (a, b), (−a, −b)

SOLUTION

(1)

The given points are and .

We use the distance formula: .

Substituting the values: .

This becomes: .

Thus, the distance is .

(2)

The given points are and .

Apply the distance formula: .

Simplifying inside the brackets gives: .

Then: .

So, the distance is .

(3)

The given points are and .

Using the formula: .

This simplifies to: .

Compute squares: and .

Thus: .

Therefore, the distance is .

ANSWER

(1) 2√2

(2) $4\sqrt{2}$

(3) $2\sqrt{a^2 + b^2}$

Question 2

QUESTION

Find the distance between the points (0, 0) and (36, 15). Can you now find the distance between the two towns A and B discussed in Section 7.2?

SOLUTION

The given points are and .

We use the distance formula between two points and : .

Here, .

Substituting these values: .

This becomes: .

Now calculate the squares: and .

So, .

Since , we get .

Therefore, the distance between the points is 39 units.

In Section 7.2, the towns A and B were represented by the same pair of points, so the distance between towns A and B is also 39 km.

ANSWER

39; 39 km

Question 3

Determine if the points (1, 5), (2, 3) and (−2, −11) are collinear.

SOLUTION

To check whether the three points are collinear, we find the slopes of any two pairs of points.

First, consider the points and . The slope is given by .

Substituting values: .

Next, consider the points and . Using the slope formula again:

.

Since and are not equal, the slopes between the points are different.

If the points were collinear, all slopes would be equal. Because they differ, the points are not collinear.

ANSWER

No

Question 4

QUESTION

Check whether (5, −2), (6, 4) and (7, −2) are the vertices of an isosceles triangle.

SOLUTION

To check if the given points are vertices of an isosceles triangle, we find the lengths of all three sides and see if any two are equal.

Let the points be , , and .

First, find the length of side using the distance formula: .

Here, from to : .

Next, find the length of side from to : .

Now, find the length of side from to : .

We observe that and , so two sides are equal.

Since a triangle with two equal sides is an isosceles triangle, the points do form an isosceles triangle.

ANSWER

Yes

Question 5

In a classroom, 4 friends are seated at the points A, B, C and D as shown in Fig. 7.8. Champa and Chameli walk into the class and after observing for a few minutes Champa asks Chameli, "Don't you think ABCD is a square?" Chameli disagrees. Using the distance formula, find which of them is correct.

SOLUTION

From the grid we read the coordinates of the four friends as , , and .

To decide whether is a square, we first find the lengths of all four sides using the distance formula between two points and : .

Side : .

Side : .

Side : .

Side : .

Thus all four sides are equal in length, each being .

Next, we check the diagonals.

Diagonal : .

Diagonal : .

Both diagonals are equal, and all four sides are equal, so is a square. Therefore, Champa is correct.

ANSWER

Champa is correct.

Question 6

Name the type of quadrilateral formed, if any, by the following points, and give reasons for your answer:

1. (−1, −2), (1, 0), (−1, 2), (−3, 0)
2. (−3, 5), (3, 1), (0, 3), (−1, −4)
3. (4, 5), (7, 6), (4, 3), (1, 2)

SOLUTION

(I)

Let the points be , , and .

Using the distance formula , find the side lengths.

.

.

.

.

So all four sides are equal.

Now find diagonals: and .

All sides are equal and both diagonals are equal, so is a square.

(II)

Let the points be , , and .

Find slopes to check collinearity. Slope of : .

Slope of : .

Slope of : .

Since , the points lie on the same straight line.

Three collinear points cannot form a quadrilateral, so these four points do not determine a quadrilateral.

(III)

Let the points be , , and .

First, find the slopes of opposite sides.

Slope of : .

Slope of : , so .

Slope of : .

Slope of : , so .

Now check lengths: and .

Also, and .

Opposite sides are equal and parallel, so is a parallelogram.

Question 7

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

SOLUTION

Let the required point on the x-axis be . A point on the x-axis has y–coordinate 0.

This point must be equidistant from and . So we set their distances equal.

Distance from to : .

Distance from to : .

Equating the two distances (squaring both sides to remove the square roots):

.

Expand both sides: .

Simplify: .

Cancel : .

Bring variables together: .

So, .

Thus, .

The required point on the x-axis is .

ANSWER

(−7, 0)

Question 8

Find the values of y for which the distance between the points P(2, −3) and Q(10, y) is 10 units.

SOLUTION

We are given two points: and , and their distance is 10 units.

Use the distance formula: .

Substitute the values: .

Compute the square: .

So the equation becomes: .

Square both sides to remove the square root: .

Subtract 64 from both sides: .

Take square roots: or .

So the solutions are: or .

ANSWER

−9, 3

Question 9

If Q(0, 1) is equidistant from P(5, −3) and R(x, 6), find the values of x. Also find the distances QR and PR.

SOLUTION

We are given that Q(0, 1) is equidistant from P(5, −3) and R(x, 6). This means the distances QP and QR are equal.

First, find QP using the distance formula between and : .

For Q(0, 1) and P(5, −3): .

Now find QR in terms of x for Q(0, 1) and R(x, 6): .

Since QP and QR are equal: .

Squaring both sides: .

So, which gives .

Next, find QR using or . In both cases, .

Now find PR when . Then R is (4, 6). Distance between P(5, −3) and R(4, 6): .

When , R is (−4, 6). Distance between P(5, −3) and R(−4, 6): .

Thus, , , and or for the two positions of R.

ANSWER

x = ±4

QR = √41

PR = √82, 9√2

Question 10

QUESTION

Find a relation between x and y such that the point (x, y) is equidistant from the point (3, 6) and (−3, 4).

SOLUTION

Let the point be equidistant from the points and .

Distance from to is .

Distance from to is .

Since the point is equidistant from both, these distances are equal: .

Squaring both sides, we get: .

Expand each term: .

Combine like terms: .

Cancel and from both sides to get: .

Bring all terms to one side: , which simplifies to .

Divide the whole equation by : .

Thus, the required relation between and is .

ANSWER

3x + y - 5 = 0

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📑 Key Formulas

Important Formulas for Exercise 7.1

Formula / Concept	Description
Distance Formula	To find the distance between two points $P(x_1, y_1)$ and $Q(x_2, y_2)$ in a plane. $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
Distance from Origin	To find the distance of a point $P(x, y)$ from the origin $O(0, 0)$. $d = \sqrt{x^2 + y^2}$
Collinear Points	Three points A, B, and C are collinear if the sum of the lengths of any two line segments is equal to the length of the third. For example, $AB + BC = AC$.
Section Formula (Internal Division)	To find the coordinates of a point $P(x, y)$ that divides the line segment joining $A(x_1, y_1)$ and $B(x_2, y_2)$ internally in the ratio $m_1 : m_2$. $P(x, y) = \left((m_1x_2 + m_2x_1)/(m_1 + m_2), (m_1y_2 + m_2y_1)/(m_1 + m_2) \right)$
Midpoint Formula	A special case of the section formula where the ratio is 1:1. It is used to find the coordinates of the midpoint of a line segment joining points $P(x_1, y_1)$ and $Q(x_2, y_2)$. $M(x, y) = \left((x_1 + x_2)/(2), (y_1 + y_2)/(2) \right)$

⁇ Top FAQs

Q1. How many questions are in NCERT Solutions Class 10 Maths Chapter 7 Coordinate Geometry Exercise 7.1 for CBSE board exam 2025-26?

NCERT Solutions for Class 10 Maths Chapter 7 Coordinate Geometry Exercise 7.1 contains exactly 10 questions. All these questions are based on the Distance Formula and help students prepare for the CBSE board exam 2025-26. Step by step solutions for all 10 questions are available with detailed explanations to strengthen your understanding of coordinate geometry concepts.

Q2. Where can I download free PDF of NCERT Solutions for Class 10 Maths Chapter 7 Coordinate Geometry Exercise 7.1 with step by step solutions?

Free PDF download of NCERT Solutions for Class 10 Maths Chapter 7 Coordinate Geometry Exercise 7.1 is available on various educational websites and the official NCERT portal. These PDFs contain step by step solutions for all questions following the latest CBSE syllabus 2025-26. You can access detailed solutions with diagrams and explanations to prepare effectively for your board exams.

Q3. How many marks does Coordinate Geometry Chapter 7 carry in CBSE Class 10 Maths board exam 2025-26 syllabus?

Coordinate Geometry (Chapter 7) carries 6 marks weightage in CBSE Class 10 Maths board exam 2025-26 under Unit III. Exercise 7.1 focuses on Distance Formula which is crucial for scoring full marks in this unit. Students must practice all NCERT Solutions for Class 10 Maths Chapter 7 thoroughly as questions from this chapter frequently appear in board examinations.

Q4. Which is the most difficult question in Exercise 7.1 of NCERT Solutions Class 10 Maths Chapter 7 Coordinate Geometry for board exam preparation?

Question 10 is generally considered the most difficult in Exercise 7.1 of NCERT Class 10 Maths Chapter 7 Coordinate Geometry as it involves complex application of Distance Formula with multiple coordinate points. This question requires strong conceptual understanding and analytical skills. Step by step solutions help students break down this challenging problem and master the Distance Formula for CBSE board exam 2025-26.

Q5. What is Distance Formula in NCERT Solutions Class 10 Maths Chapter 7 Coordinate Geometry Exercise 7.1 explained with examples?

The Distance Formula in NCERT Class 10 Maths Chapter 7 Exercise 7.1 is used to calculate the distance between two points (x_1, y_1) and (x_2, y_2) as $\sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$. This fundamental formula is applied in all 10 questions of Exercise 7.1 and is essential for CBSE board exam 2025-26. Step by step solutions demonstrate various applications including finding distances, verifying triangle types, and solving coordinate geometry problems.

📖 More Exercises

Visit all exercises from Chapter 7:

Exercise 7.1 ✓ →

Exercise 7.2 →

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