NCERT Solutions Class 10 Maths
Chapter 7: Coordinate Geometry
Exercise 7.2

Quick Summary: In NCERT Solutions Class 10 Maths Chapter 7 Exercise 7.2, students learn the Section Formula to find points dividing line segments in given ratios. This exercise covers coordinate geometry applications including internal and external division of line segments, which are essential for CBSE board exams and help build foundation for advanced geometry concepts.

Key Takeaways:

- Section Formula for internal division: $\left((mx_2 + nx_1)/(m + n), (my_2 + ny_1)/(m + n)\right)$ where point divides in ratio m:n
- External division formula: $\left((mx_2 - nx_1)/(m - n), (my_2 - ny_1)/(m - n)\right)$ when point divides externally in ratio m:n
- Midpoint formula is a special case where m = n = 1, giving coordinates $\left((x_1 + x_2)/(2), (y_1 + y_2)/(2)\right)$
- Applications include finding points on coordinate axes, solving real-world positioning problems, and determining division ratios given coordinates

Complete Solutions

Question 1

QUESTION

Find the coordinates of the point which divides the join of (−1, 7) and (4, −3) in the ratio 2 : 3.

SOLUTION

We use the section formula to find the point dividing the segment between two points in a given ratio.

The given points are and , and the ratio is .

For internal division, the coordinates of the point dividing in the ratio are:
and .

Here, , , , , , .

Substitute in the formula:

.

Similarly,

.

So the required point is .

ANSWER

(1, 3)

Question 2

QUESTION

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

SOLUTION

Let the endpoints of the line segment be and .

The points of trisection divide the line segment into three equal parts. Hence, they divide the segment internally in the ratios and .

Using the section formula, a point dividing the line segment joining and internally in the ratio has coordinates:

First trisection point (ratio)

Here, , , , .

So, the first trisection point is .

Second trisection point (ratio)

Here, , , , .

Thus, the second trisection point is .

Therefore, the points of trisection of the given line segment are and .

ANSWER

$\left(2, -(5)/(3)\right)$ and $\left(0, -(7)/(3)\right)$

Question 3

QUESTION

To conduct Sports Day activities, in your rectangular shaped school ground ABCD, lines have been drawn with chalk powder at a distance of 1 m each. 100 flower pots have been placed at a distance of 1 m from each other along AD, as shown in Fig. 7.12. Niharika runs \tfrac(1)/(4)th the distance AD on the 2nd line and posts a green flag. Preet runs \tfrac(1)/(5)th the distance AD on the eighth line and posts a red flag. What is the distance between both the flags? If Rashmi has to post a blue flag exactly halfway between the line segment joining the two flags, where should she post her flag?

SOLUTION

Let us choose a coordinate system on the ground with as the origin , AD along the x-axis and AB along the y-axis. The flower pots are kept 1 m apart on AD and the chalk lines are also 1 m apart, so the length of AD is 100 m.

Niharika runs of AD on the 2nd line. So the distance she runs along AD is m. The 2nd line is 2 m above AD. Therefore, the coordinates of the green flag are .

Preet runs of AD on the 8th line. So the distance he runs along AD is m. The 8th line is 8 m above AD. Therefore, the coordinates of the red flag are .

Now, the distance between the flags is found using the distance formula between and :

To find the position where Rashmi should post the blue flag, we need the midpoint of the line segment joining the two flags. The midpoint of and is

Thus, Rashmi should post the blue flag on the 5th line at a distance of 22.5 m from A along AD.

> **ANSWER**
>
> Distance between the flags = √61 m.
>
> Rashmi should post the blue flag on the 5th line at a distance of 22.5 m.

Question 4

Find the ratio in which the line segment joining the points (−3, 10) and (6, −8) is divided by (−1, 6).

SOLUTION

Let the point divide the line segment joining and in the ratio .

Using the section formula for internal division, the coordinates of the dividing point are

Here, , , , , and the dividing point is .

So for the x-coordinate:

.

Cross-multiplying gives: → .

Rearranging: → .

Thus, → .

This ratio also satisfies the y-coordinate equation, so the division ratio is .

ANSWER

2 : 7

Question 5

QUESTION

Find the ratio in which the line segment joining A(1, −5) and B(−4, 5) is divided by the x-axis. Also find the coordinates of the point of division.

SOLUTION

The point dividing the line segment AB and lying on the x-axis must have y–coordinate 0. Let this point be .

Points A and B are and .

The y–coordinate of a point dividing AB in the ratio is given by the section formula: .

Since the point lies on the x-axis, its y–coordinate is 0. So we set

Multiplying both sides by , we get:

Simplifying:

Thus, the required ratio is .

Now we find the coordinates of the midpoint (since the ratio is 1:1). Using the midpoint formula:

Therefore, the point of division is .

ANSWER

Ratio = 1 : 1

Point of division = $\left(-\frac{3}{2}, 0\right)$

QUESTION

If (1, 2), (4, y), (x, 6) and (3, 5) are the vertices of a parallelogram taken in order, find x and y.

SOLUTION

Let the vertices of the parallelogram taken in order be , , and .

Property used: The diagonals of a parallelogram bisect each other. Therefore, the midpoint of diagonal is equal to the midpoint of diagonal .

Midpoint formula: The midpoint of the line segment joining and is given by

Step 1: Find the midpoint of diagonal

Coordinates of and are and .

Midpoint of = .

Step 2: Find the midpoint of diagonal

Coordinates of and are and .

Midpoint of = .

Step 3: Equate the midpoints

Since the diagonals bisect each other, the corresponding coordinates of the midpoints are equal.

Equating x-coordinates:

.

Equating y-coordinates:

.

Conclusion: The values of the variables are and .

ANSWER

x = 6,\ y = 3

Question 7

Find the coordinates of a point A, where AB is the diameter of a circle whose centre is (2, −3) and B is (1, 4).

SOLUTION

Let the endpoints of the diameter be and .

Property used: The centre of a circle is the midpoint of its diameter.

Hence, the midpoint of is given as .

Midpoint formula: The midpoint of the line segment joining and is

Substitution: Here, and .

So, midpoint of = .

This midpoint is equal to the given centre .

Equating the corresponding coordinates:

Conclusion: The coordinates of point are .

ANSWER

A = (3, −10)

Question 8

If A and B are (−2, −2) and (2, −4), respectively, find the coordinates of P such that AP = (3)/(7) AB and P lies on the line segment AB.

SOLUTION

Let the coordinates of A and B be and . We are told that point P lies on segment AB and that .

This means P divides AB internally in the ratio , because the whole length AB is split into 3 parts from A to P and 4 parts from P to B.

Using the section formula, if a point P divides the line segment joining and internally in the ratio , then its coordinates are .

Here, and . So

.

.

Therefore, the coordinates of P are .

ANSWER

P = \left(-(2)/(7), -(20)/(7)\right)

Question 9

Find the coordinates of the points which divide the line segment joining A(−2, 2) and B(2, 8) into four equal parts.

SOLUTION

We are given the endpoints of the line segment as and . We need three internal points that divide into four equal parts.

If the segment is divided into four equal parts, then the first point from divides in the ratio , the second point in the ratio (the midpoint), and the third point in the ratio .

Using the section formula, a point dividing the segment joining and in the ratio internally has coordinates

First point (ratio) from : , . So the first point is

Second point (midpoint, ratio): , . So the second point is

Third point (ratio) from : , . So the third point is

Therefore, the points which divide the segment joining and into four equal parts are

ANSWER

$\left(-1, \frac{7}{2}\right), (0, 5), \left(1, \frac{13}{2}\right)$

Question 10

QUESTION

Find the area of a rhombus if its vertices are (3, 0), (4, 5), (−1, 4) and (−2, −1) taken in order. (Hint: Area of a rhombus = (1)/(2) × product of its diagonals.)

SOLUTION

Let the vertices of the rhombus taken in order be , , and .

In a rhombus, the area is given by , so we first find the lengths of the diagonals and .

Diagonal joins and . Using the distance formula, .

Diagonal joins and . Then .

Now, area of the rhombus .

Compute the product: . So the area is .

Therefore, the area of the rhombus is square units.

ANSWER

24 sq. units

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🧮 Key Formulas

Important Formulas for Exercise 7.2

Formula / Concept	Description
Section Formula (Internal Division)	Used to find the coordinates of a point P(x, y) that divides the line segment joining points A(x_1, y_1) and B(x_2, y_2) internally in the ratio m_1 : m_2.
x = (m_1x_2 + m_2x_1)/(m_1 + m_2) y = (m_1y_2 + m_2y_1)/(m_1 + m_2)	The coordinates of the point P are calculated using these formulas.
Midpoint Formula	A special case of the section formula where the point is the midpoint of the line segment, dividing it in the ratio 1:1.
P(x, y) = \left((x_1 + x_2)/(2), (y_1 + y_2)/(2) \right)	Formula to find the coordinates of the midpoint of the line segment joining points (x_1, y_1) and (x_2, y_2).
Distance Formula	Used to calculate the distance between two points (x_1, y_1) and (x_2, y_2) in a plane.
d = $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$	The formula to find the length of the line segment connecting the two points.

🔧 Top FAQs

Q1. How many questions are in NCERT Solutions Class 10 Maths Chapter 7 Coordinate Geometry Exercise 7.2 for CBSE board exam 2025-26?

Exercise 7.2 of NCERT Solutions for Class 10 Maths Chapter 7 Coordinate Geometry contains exactly 10 questions. These questions primarily focus on the Section Formula and applications of the Distance Formula, which carry significant weightage in the CBSE Class 10 board exam 2025-26.

Q2. Where can I download free PDF of NCERT Solutions for Class 10 Maths Chapter 7 Coordinate Geometry Exercise 7.2 with step by step solutions?

You can download the free PDF of NCERT Solutions for Class 10 Maths Chapter 7 Coordinate Geometry Exercise 7.2 from the official NCERT website or various educational portals offering step by step solutions. These PDFs are updated as per the latest CBSE syllabus 2025-26 and include detailed explanations for all 10 questions covering the Section Formula and Distance Formula concepts.

Q3. How many marks does Coordinate Geometry Chapter 7 Exercise 7.2 carry in CBSE Class 10 Maths board exam 2025-26?

Coordinate Geometry (Unit III) carries 6 marks in the CBSE Class 10 Maths board exam 2025-26. Questions from Exercise 7.2 based on Section Formula and Distance Formula frequently appear as 2-mark, 3-mark, or part of 5-mark questions in the examination.

Q4. Which is the most difficult question in Exercise 7.2 of NCERT Solutions Class 10 Maths Chapter 7 Coordinate Geometry?

Question 10 of Exercise 7.2 in NCERT Solutions Class 10 Maths Chapter 7 Coordinate Geometry is generally considered the most difficult as it involves finding the ratio in which a line segment is divided using the Section Formula. Students should practice this question with step by step solutions to master the concept for CBSE board exam 2025-26.

Q5. What is the Distance Formula in NCERT Solutions for Class 10 Maths Chapter 7 Coordinate Geometry Exercise 7.2?

The Distance Formula in NCERT Class 10 Maths Chapter 7 states that the distance between two points (x_1, y_1) and (x_2, y_2) is $\sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$. This formula is used in Exercise 7.2 along with the Section Formula to solve problems involving coordinate geometry for CBSE board exam 2025-26.

🏛 More Exercises

Visit all exercises from Chapter 7:

Exercise 7.1 →

Exercise 7.2 ✓ →

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