NCERT Solutions for Class 10 Maths Chapter 7 Exercise 7.2: NCERT Solutions for Class 10 Maths Chapter 7 Exercise 7.2 help students to understand important concepts related to coordinate geometry. This exercise focuses on the section of the chapter where students learn how to find the area of a triangle using the coordinate geometry formula.

By solving these problems, students can strengthen their understanding of how coordinates work in geometry, enhancing their ability to solve problems in competitive exams and improve their conceptual clarity.

NCERT Solutions for Class 10 Maths Chapter 7 Exercise 7.2 Overview

NCERT Solutions for Class 10 Maths Chapter 7 Exercise 7.2 focuses on finding the area of a triangle when the coordinates of its three vertices are given. In this exercise, students learn how to apply the coordinate geometry formula for calculating the area of a triangle using the determinant method. The exercise provides various problems that guide students step by step to understand the application of the formula.

By practicing this exercise students improve their skills in solving geometric problems involving coordinates, which is essential for their understanding of coordinate geometry.

NCERT Solutions for Class 10 Maths Chapter 7 Exercise 7.2 PDF

The NCERT Solutions for Class 10 Maths Chapter 7 Exercise 7.2 are created to help students understand the concept of finding the area of a triangle when the coordinates of its vertices are known.

This exercise provides detailed solutions that guide students through the step-by-step process of applying the coordinate geometry formula. To access the solutions in PDF format, the link is available below, allowing students to download and use it for their practice and reference.

NCERT Solutions for Class 10 Maths Chapter 7 Exercise 7.2 PDF

NCERT Solutions for Class 10 Maths Chapter 7 Coordinate Geometry Ex 7.2

Below is the NCERT Solutions for Class 10 Maths Chapter 7 Coordinate Geometry Ex 7.2-

Solve the followings Questions.

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

Answer:

Let P(x, y) be the required point. Using the section formula

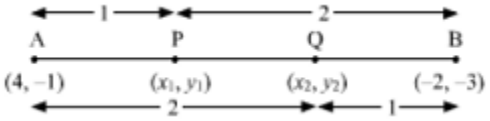
$$x = \frac{2 \times 4 + 3 \times (-1)}{2 + 3} = \frac{8 - 3}{5} = \frac{5}{5} = 1$$

$$y = \frac{2 \times (-3) + 3 \times 7}{2 + 3} = \frac{-6 + 21}{5} = \frac{15}{5} = 3$$

Therefore the point is (1,3).

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

Answer:



Let P (x_1,y_1) and Q (x_2,y_2) are the points of trisection of the line segment joining the given points i.e., AP = PQ = QB

Therefore, point P divides AB internally in the ratio 1:2.

$$x_1 = \frac{1 \times (-2) + 2 \times 4}{1 + 2}, y_1 = \frac{1 \times (-3) + 2 \times (-1)}{1 + 2}$$

$$x_1 = \frac{-2 + 8}{3} = \frac{6}{3} = 2, y_1 = \frac{-3 - 2}{3} = \frac{-5}{3}$$

Therefore P(x_1,y_1) = (2, -5/3)

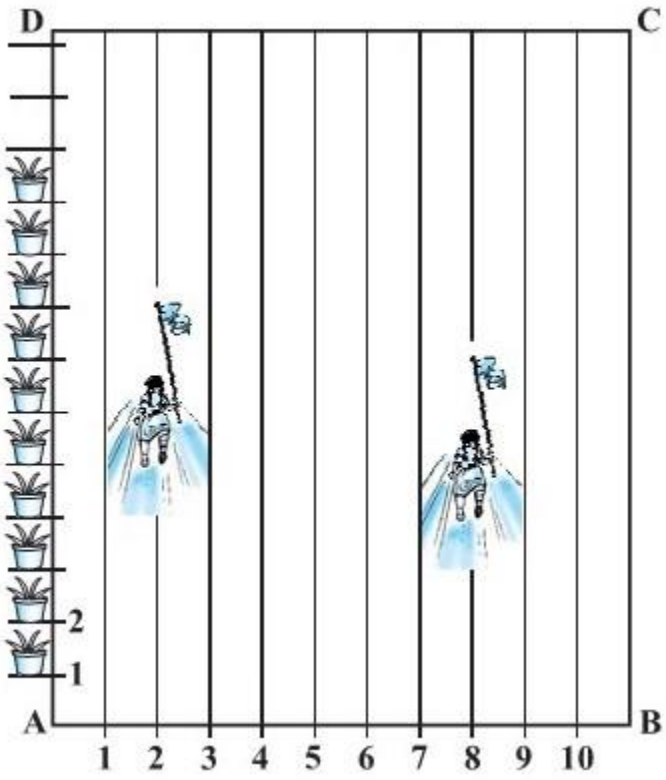
Point Q divides AB internally in the ratio 2:1.

$$x_2 = \frac{2 \times (-2) + 1 \times 4}{2 + 1}, y_2 = \frac{2 \times (-3) + 1 \times (-1)}{2 + 1}$$

$$x_2 = \frac{-4+4}{3} = 0, y_2 = \frac{-6-1}{3} = \frac{-7}{3}$$

Q (x_2 ,y_2) = (0, -7/3)

3. 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 the following figure. Niharika runs 1/4th the distance AD on the 2nd line and posts a green flag. Preet runs 1/5th 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 flagexactly halfway between the line segment joining the two flags, where should she post her flag?



Answer:

From the figure, taking A as (0, 0), x- axis along AB and y- axis along AD, we will obtain the coordinates of the green flag and the red flag.

The green flag is at $\frac{1}{4}$th of the total distance

$$= \frac{1}{4} \times 100 = 25 \text{ m in 2nd line.}$$

$\therefore$ The coordinates of green flag are (2, 25).

Similarly, coordinates of red flag are (8, 20).

Distance between two flags,

$$D = \sqrt{(8-2)^2 + (20-25)^2}$$

$$= \sqrt{(6)^2 + (-5)^2} = \sqrt{36+25} = \sqrt{\mathbf{61}} \text{ m.}$$

Now, blue flag is posted at the midpoint of the distance between two flags

$$\therefore \text{ Coordinates of blue flag} = \left(\frac{2+8}{2}, \frac{25+20}{2}\right)$$

$$= (5, 22.5)$$

Hence, the blue flag will be posted in 5th line at a distance of **22.5 m**.

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

Answer:

Let the ratio in which the line segment joining (-3, 10) and (6, -8) is divided by point (-1, 6) be k:1.

Therefore, -1 = 6k-3/k+1

-k - 1 = 6k -3

7k = 2

k = 2/7

Therefore, the required ratio is 2:7.

5. 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.

Answer:

Let the ratio in which the line segment joining A (1, - 5) and B (- 4, 5) is divided by x-axis be k:1.

Therefore, the coordinates of the point of division is (-4k+1/k+1, 5k-5/k+1).

We know that y-coordinate of any point on x-axis is 0.

∴ 5k-5/k+1 = 0

Therefore, x-axis divides it in the ratio 1:1.

To find the coordinates let's substitute the value of k in equation(1)

Required point = [(- 4(1) + 1) / (1 + 1), (5(1) - 5) / (1 + 1)]

= [(- 4 + 1) / 2, (5 - 5) / 2]

= [- 3/2, 0]

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

Answer:

Let A,B,C and D be the points (1,2) (4,y), (x,6) and (3,5) respectively.

Mid-point of AC = Mid-point of BD

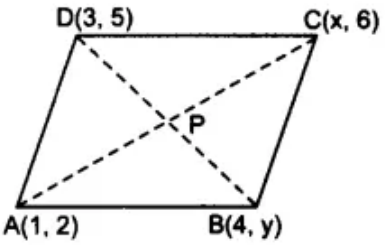
$$\Rightarrow \quad \frac{x+1}{2}, \frac{6+2}{2} = \frac{4+3}{2}, \frac{y+5}{2}$$

$$\Rightarrow \quad \frac{x+1}{2} = \frac{7}{2} \text{ and } \frac{6+2}{2} = \frac{y+5}{2}$$

$$\Rightarrow \quad x + 1 = 7 \text{ and } 8 = y + 5$$

$$\Rightarrow \quad x = 7 - 1 \text{ and } y = 8 - 5 = 3$$

$$\Rightarrow \quad x = 6 \quad \text{and } y = 3$$



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

Answer:

Let (x,y) be the coordinate of A.

Since AB is the diameter of the circle, the centre will be the mid-point of AB.

now, as centre is the mid-point of AB.

x-coordinate of centre = (2x+1)/2

y-coordinate of centre = (2y+4)/2

But given that centre of circle is (2,−3).

Therefore,

(2x+1)/2=2⇒x=3

(2y+4)/2=−3⇒y=−10

Thus the coordinate of A is (3,−10).

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.

Answer:

As given the coordinates of A(−2,−2) and B(2,−4) and P is a point lies on AB.

And AP = 3/7 AB

∴BP = 4/7

Then, ratio of AP and PB = $m_1:m_2$ = 3:4

Let the coordinates of P be (x,y).

∴ $x = (m_1x_2 + m_2x_1) / (m_1 + m_2)$

⇒ $x = (3 \times 2 + 4 \times (-2)) / (3 + 4) = (6 - 8) / 7 = -2 / 7$

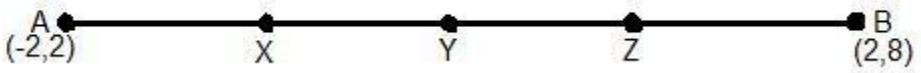
And $y = (m_1y_2 + m_2y_1) / (m_1 + m_2)$

⇒ $y = ((3 \times (-4) + 4 \times (-2)) / (3 + 4) = (-12-8) / 7 = -20 / 7$

∴ Coordinates of P = −2 / 7, −20 / 7

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

Answer:



From the figure, it can be observed that points X,Y,Z are dividing the line segment in a ratio 1:3,1:1,3:1 respectively.

Using Sectional Formula, we get,

Coordinates of X = ((1 × 2 + 3 × (−2)) / (1 + 3), (1 × 8 + 3 × 2) / (1 + 3))

= (−1, 7/2)

Coordinates of Y = (2 − 2) / 2, (2 + 8) / 2 = (0,5)

Coordinates of Z = ((3 × 2 + 1 × (−2)) / (1 + 3), (3 × 8 + 1 × 2) / (1 + 3)

= (1, 13/2)

10. 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)]

Answer:
Let (3, 0), (4, 5), (- 1, 4) and (- 2, - 1) are the vertices A, B, C, D of a rhombus ABCD.

Length of the diagonal AC=

$$\sqrt{(3-(-1))^2+(0-4)^2}=\sqrt{16+16}=4\sqrt{2}$$

Length of the diagonal BD=

$$\sqrt{(4-(-2))^2+(5-(-1))^2}=\sqrt{36+36}=6\sqrt{2}$$

Area of rhombus ABCD = 1/2 X 4√2 X 6√2= 24 square units.
Therefore, the area of a rhombus if its vertices are (3, 0), (4, 5), (-1, 4) and (-2,-1) taken in order, is 24 square units.

Benefits of Solving NCERT Solutions for Class 10 Maths Chapter 7 Exercise 7.2

- **Concept Clarity**: The exercise helps students grasp the concept of coordinate geometry, particularly focusing on finding the area of a triangle when the coordinates of its vertices are given. Understanding these concepts is essential for solving real-life problems.
- **Step-by-Step Solutions**: The solutions are broken down into simple steps, making it easier for students to understand and apply formulas correctly. This approach boosts their confidence and problem-solving skills.
- **Improves Accuracy**: Practice with this exercise enhances accuracy in applying formulas for calculating areas and understanding geometric properties of figures in coordinate geometry.
- **Helps in Exam Preparation**: By practicing these problems, students can strengthen their foundation for upcoming exams and improve their performance in both school assessments and competitive exams.

- **Boosts Problem-Solving Skills**: The exercise challenges students to think analytically and solve problems by applying the concepts learned, fostering critical thinking and problem-solving skills.
- **Time Management**: Regular practice helps students manage time efficiently, enabling them to attempt questions with speed and accuracy during exams.
- **Confidence Building**: As students practice and solve a variety of problems, they gain more confidence in their ability to tackle similar questions in exams, reducing exam anxiety.