NCERT Solutions for Class 10 Maths Chapter 7 Exercise 7.3: NCERT Solutions for Class 10 Maths Chapter 7 Exercise 7.3 focuses on solving problems related to the distance formula in coordinate geometry. This exercise helps students understand how to calculate the distance between two points on a coordinate plane using the distance formula.

The questions in this exercise involve applying the formula to find the length of a line segment connecting two given points, strengthening the conceptual understanding of coordinate geometry. By practicing this exercise, students can enhance their problem-solving skills and gain confidence in using the distance formula effectively.

NCERT Solutions for Class 10 Maths Chapter 7 Exercise 7.3 Overview

NCERT Solutions for Class 10 Maths Chapter 7 Exercise 7.3 is based on the concept of the distance formula in coordinate geometry. The exercise includes problems that require students to calculate the distance between two given points on a Cartesian plane.

This exercise helps students strengthen their understanding of how to apply the distance formula in various geometrical scenarios. Through the practice questions, students will learn to find the distance between two points in different coordinate planes, thus improving their grasp on basic coordinate geometry concepts. This exercise is essential for building a solid foundation for more advanced topics in geometry and algebra.

NCERT Solutions for Class 10 Maths Chapter 7 Exercise 7.3 PDF

The NCERT Solutions for Class 10 Maths Chapter 7 Exercise 7.3 PDF is available for download below. This exercise focuses on the distance formula in coordinate geometry, where students can practice problems related to finding the distance between two points on the Cartesian plane. You can download the PDF and use it to strengthen your understanding and practice more problems from this chapter.

NCERT Solutions for Class 10 Maths Chapter 7 Exercise 7.3 PDF

NCERT Solutions for Class 10 Maths Chapter 7 Coordinate Geometry Exercise 7.3

Below is the NCERT Solutions for Class 10 Maths Chapter 7 Coordinate Geometry Ex 7.3-

Solve the following Questions.

1. Find the area of the triangle whose vertices are:

(i) (2, 3), (–1, 0), (2, –4)

(ii) (–5, –1), (3, –5), (5, 2)

Answer:

(i) (2, 3), (–1, 0), (2, –4)

Area of Triangle is given by

Area of Triangle = $\frac{1}{2}\{x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)\}$

Area of the given triangle = ½[2 {0 − (−4)} − 1 (−4 − 3) + 2 (3 − 0)]

=½ (8 + 7 + 6) = 21/2 sq. units

(ii) (–5, –1), (3, –5), (5, 2)

Area of the given triangle = ½ [−5 (−5 − 2) + 3 {2 − (−1)} + 5 {−1 − (−5)}]

= ½(35 + 9 + 20)

= 32 sq. units

2. In each of the following find the value of 'k', for which the points are collinear.

(i) (7, –2), (5, 1), (3, k)

(ii) (8, 1), (k, –4), (2, –5)

Answer:

(i) (7, –2), (5, 1), (3, k)

Since, the given points are collinear, it means the area of triangle formed by them is equal to zero.

Therefore, for points (7, -2) (5, 1), and (3,k), area = 0

⇒ ½[7 (1 − k) + 5 {k − (−2)} + 3 (−2 − 1)]

= ½(7 − 7k + 5k + 10 − 9) = 0

⇒ ½(7 − 7k + 5k + 1) = 0

⇒ ½(8 − 2k) = 0

⇒ 8 − 2k = 0

⇒ 2k = 8

⇒ k = 4

(ii) (8, 1), (k, −4), (2, −5)

Since, the given points are collinear, it means the area of triangle formed by them is equal to zero.

Therefore, for points (8, 1) (k, -4), and (2,-5), area = 0

⇒ ½[8 {−4 − (−5)} + k (−5 − 1) + 2 {1 − (−4)}]

= ½(8 − 6k + 10) = 0

⇒ ½(18 − 6k) = 0

⇒18 − 6k = 0

⇒ 18 = 6k

⇒ k = 3

3. Find the area of the triangle formed by joining the mid–points of the sides of the triangle whose vertices are (0, –1), (2, 1) and (0, 3). Find the ratio of this area to the area of the given triangle.

Answer:
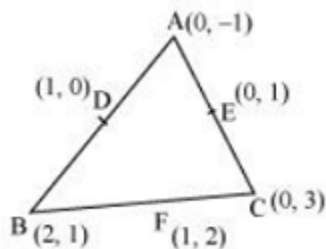
Let the vertices of the triangle be A (0, -1), B (2, 1), C (0, 3).

Let D, E, F be the mid-points of the sides of this triangle. Coordinates of D, E, and F are given by

D = (0+2/2 , -1+1/2) = (1,0)

E = (0+0/2 , -3-1/2) = (0,1)

Area of a triangle = 1/2 {x_1 (y_2 - y_3) + x_2 (y_3 - y_1) + x_3 (y_1 - y_2)}
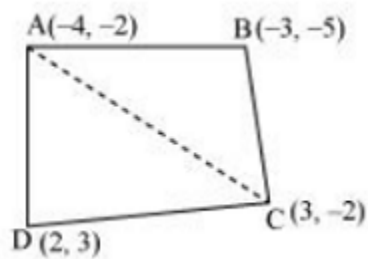
Area of ΔDEF = 1/2 {1(2-1) + 1(1-0) + 0(0-2)}

= 1/2 (1+1) = 1 square units

Area of ΔABC = 1/2 [0(1-3) + 2{3-(-1)} + 0(-1-1)]

= 1/2 {8} = 4 square units

Therefore, the required ratio is 1:4.

4. Find the area of the quadrilateral whose vertices taken in order are (–4, –2), (–3, –5), (3, –2) and (2, 3).

Answer:

A(–4, –2)   B(–3, –5)
C (3, –2)
D (2, 3)

Let the vertices of the quadrilateral be A (- 4, - 2), B (- 3, - 5), C (3, - 2), and D (2, 3). Join AC to form two triangles ΔABC and ΔACD.

Area of a triangle = 1/2 {x_1 (y_2 - y_3) + x_2 (y_3 - y_1) + x_3 (y_1 - y_2)}

Area of ΔABC =1/2[−4 (−5 − 2) − 3 {-2 − (−2)} + 3 {−2 − (−5)}]

=1/2 [12 + 0 + 9]

= 21/2 sq. units

Again using formula to find area of triangle:

Area of △ACD = [−4 (−2 − 3) + 3 {3 − (−2)} + 2 {−2 − (−2)}]

= 1/2 [20 + 15 + 0]

= 35/2 sq. units

Area of ▭ABCD = Area of ΔABC + Area of ΔACD

= 21/2 + 35/2 = 28 sq. units

5. We know that median of a triangle divides it into two triangles of equal areas. Verify this result for △ABC whose vertices are A (4, –6), B (3, –2) and C (5, 2).

Answer:
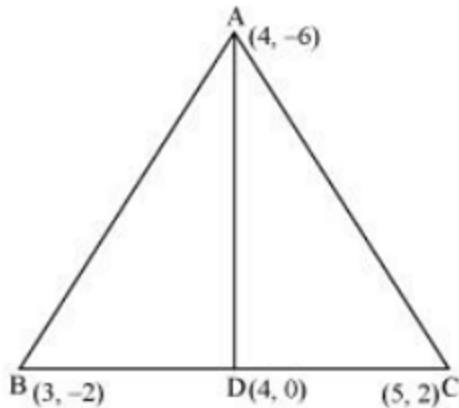
Let the vertices of the triangle be A (4, -6), B (3, -2), and C (5, 2).

Let D be the mid-point of side BC of ΔABC. Therefore, AD is the median in ΔABC.

Coordinates of point D = (3+5/2, -2+2/2) = (4,0)

Area of a triangle = $1/2 \{x_1 (y_2 - y_3) + x_2 (y_3 - y_1) + x_3 (y_1 - y_2)\}$

Area of △ABD = 1/2[4 (−2 − 0) + 3 {0 − (−6)} + 4 {−6 − (−2)}]

=1/2(−8 + 18 −16)

=1/2 (−6) = −3 sq units

Area cannot be in negative.

Therefore, we just consider its numerical value.

Therefore, area of △ABD = 3 sq units

Again using formula to find area of triangle:

Area of △ABD = 1/2 [4 (0 − 2) + 4{2 − (−6)} + 5 {−6 −0)}]

= 1/2 (- 8 + 32 −30) = ½ (-6) = -3 sq units.

However, area cannot be negative. Therefore, area of ΔABD is 3 square units.

The area of both sides is same. Thus, median AD has divided ΔABC in two triangles of equal areas

Hence Proved.

Benefits of Solving NCERT Solutions for Class 10 Maths Chapter 7 Coordinate Geometry Exercise 7.3

Clear Conceptual Understanding: The solutions provide step-by-step explanations of the problems, helping students understand how to apply the distance formula to different coordinate geometry problems.

Practice for Exam Preparation: This exercise is created to build students' problem-solving skills. By practicing the questions, students can improve their accuracy and speed, which is important for exams.

Boosts Confidence: As students work through the exercises and solve the problems, their confidence increases in handling similar questions in the exams.

Strengthens Problem-Solving Skills: By solving various types of problems in this exercise, students enhance their ability to tackle complex geometry questions.

Comprehensive Coverage: The solutions cover all important types of questions related to coordinate geometry, ensuring students have a well-rounded understanding of the chapter.