Important Questions for Class 9 Maths Chapter 3: Important Questions for Class 9 maths chapter 3 Coordinate Geometry introduces the concept of representing points in a two-dimensional plane using an ordered pair of numbers (x, y). The chapter covers the Cartesian coordinate system, where the x-axis and y-axis intersect at the origin (0,0). Students learn to plot points, determine their coordinates, and understand the significance of quadrants.

The chapter emphasizes the distance formula to calculate the distance between two points, the section formula for dividing a line segment in a given ratio, and the midpoint formula for finding the midpoint of a line segment. Overall, it lays the foundation for advanced geometry concepts.

Important Questions for Class 9 Maths Chapter 3 Overview

Chapter 3 of Class 9 Mathematics, Coordinate Geometry, is crucial as it forms the basis for understanding geometric concepts in a two-dimensional plane. It equips students with the skills to represent and analyze spatial relationships through coordinates, enhancing their ability to solve problems visually and analytically.

Mastery of concepts like plotting points, using the distance and midpoint formulas, and understanding the Cartesian plane prepares students for higher-level mathematics, including algebra and calculus. Additionally, it fosters logical reasoning and critical thinking, essential skills in mathematics and various real-life applications, making this chapter foundational for future studies in both mathematics and science.

Important Questions for Class 9 Maths Chapter 3 Coordinate Geometry

Below is the Important Questions for Class 9 Maths Chapter 3 Coordinate Geometry -

Question 1: Point (–3, 5) lies in the

1. **third quadrant**
2. **second quadrant**
3. **first quadrant**
4. **fourth quadrant**

Solution 1: (B) Second Quadrant

Explanation:

(-3,5) is in the form of (-x,y).

In the given point (-3, 5), the abscissa is negative, and the ordinate is positive. So, it lies in the second quadrant.

Question 2: Signs of abscissa and ordinate of any given point in the second quadrant are respectively

1. **+, –**
2. **–, –**
3. **–, +**
4. **+, +**

Solution 2: (C) –, +

Explanation:

The signs of the abscissa and ordinate of a given point in the second quadrant are negative and positive respectively.

Question 3: Point (0, –7) lies

1. **on the x-axis**
2. **in the fourth quadrant**
3. **on the y-axis**
4. **in the second quadrant**

Solution 3: (C) on the y-axis

Explanation: Since the abscissa of the Point is 0, Point (0, –7) lies on the y-axis.

Question 4: Point (– 10, 0) will lie

1. **in the negative direction of the x-axis**
2. **in the negative direction of the y-axis**
3. **in the fourth quadrant**
4. **in the third quadrant**

Solution 4: (A) on the negative direction of the x-axis

Explanation: Point (– 10, 0) predominantly lies in the negative direction of the x-axis.

Question 5: Abscissa of all the given points on the x-axis is

1. **1**
2. **0**
3. **2**

4. **any number**

Solution 5: (D) any number

Explanation: The abscissa of the points on the x-axis can be any number.

Question 6: Predict whether the given statements are True / False? Give justification for your answer.

(i) Point (3, 0) lying in the first quadrant.

(ii) Points (1, –1) and (–1, 1) lying in the same quadrant.

(iii) The coordinates of a point whose ordinate is – ½ and abscissa is 1 are – ½ , 1.

(iv) A point lying on *the y*-axis at 2 units distance from the *x*-axis. Its coordinates are (2, 0).

(v) (–1, 7) is a point lying in the II quadrant.

Solution:

(i) The Point (3, 0) lies in the first quadrant.

False

Explanation:

The ordinate of the given Point (3, 0) is given zero.

Hence, the Point must lie on the x-axis

(ii) Points (1, –1) and (–1, 1) lie in the same quadrant.

False

Explanation:

(1, -1) lies in IV quadrant

while (-1, 1) lies in II quadrant.

(iii) The coordinates of a point for which ordinate is – ½ and abscissa is 1 are – ½ , 1.

False

Explanation:

The coordinates of a point for which ordinate is – ½ and abscissa is 1 is (1, -1/2).

(iv) A point is lying on *the y*-axis at a distance of 2 units from the *x*-axis. Its coordinates are (2, 0).

False

Explanation:

A point is lying on *the y*-axis at a distance of 2 units from the *x*-axis. Thus its coordinates are (0, 2).

(v) (–1, 7) is a point lying in the II quadrant.

True

Explanation:

(–1, 7) is a point in the II quadrant.

Question 7:

In which quadrant or axis on the following points will lie?

(-3, 5), (2,0), (2, 2), (-3,-6),(4,-1),

Solution:

(i) For point (-3, 5), the x-coordinate is negative while y-coordinate is positive, so it is lying in II quadrant.

(ii) For point (4,-1), the x-coordinate is positive while the y-coordinate is negative, so it lies in the IV quadrant.

(iii) In Point (2,0), the x-coordinate is positive while the y-coordinate is zero, so it lies on the X-axis.

(iv) In Point (2,2), both x-coordinate and y-coordinate are positive, so it lies in the I quadrant.

(v) In Point (-3, – 6), x-coordinate and y-coordinate both are negative, so it lies in III quadrant.

Question 8: Write the coordinates of the points P, Q, R, S, T and O from the figure given below.

Solution:

The coordinates of points P, Q, R, S, T and O are as follows:

P = (1, 1)

Q = (-3, 0)

R = (-2, -3)

S = (2, 1)

T = (4, -2)

O = (0, 0)

Question 9: Without plotting the points find the quadrant in which they will lie, if

(i) ordinate is 5 while abscissa is – 3

(ii) abscissa is – 5 while ordinate is – 3

(iii) abscissa is – 5 while ordinate is 3

(iv) ordinate is 5 while abscissa is 3

Solution:

(i) The Point is (-3,5).

Hence, the Point is lying in the II quadrant.

(ii) The Point is (-5,-3).

Hence, the Point is lying in the III quadrant.

(iii) The Point is (-5,3).

Hence, the Point is lying in the II quadrant.

(iv) The Point is (3,5).

Hence, the Point is lying in the I quadrant.

Question 10: How will you describe the table lamp position on your study table to another person?

Solution:

We use two lines, a perpendicular and a horizontal line, to describe the location of the table lamp on the study table. Using the horizontal and perpendicular lines as the X and Y axes of the table, respectively, and the perpendicular line as the Y axis. Consider the intersection of the X

and Y axes in one of the table's corners as the origin. The table's length is now its Y axis, and its width is its X axis. Create a point by connecting the line from the origin to the table light. It is necessary to compute the Point's separation from the X and Y axes before expressing the results in terms of coordinates.

The table lamp will be in the coordinates (x, y) because the Point is separated from the X- and Y-axis by x and y, respectively.

Here, (x, y) = (15, 25)

Question 11: Write the answer for the following questions:

(i) What is the name of the lines that are drawn horizontally and vertically to represent the positions of all points in the Cartesian plane?

(ii) What are the names of the various components of the plane that these two lines form?

(iii) Indicate the name of the intersection location of these two lines.

Solution:

(i) The x-axis and y-axis are the names of the horizontal and vertical lines drawn to calculate the position of any point in the Cartesian plane.

(ii) The quadrants are the names of each section of the plane created by the x-axis and y-axis.

(iii)The origin is the location where these two lines intersect.

Question 12: Without plotting any of the points, indicate the quadrant in which they will lie, if

(i) the ordinate is 5 while abscissa is – 3

(ii) the abscissa is – 5 while the ordinate is – 3

(iii) the abscissa is – 5 while ordinate is 3

(iv) the ordinate is 5 while abscissa is 3

Solution:

(i) The Point is (-3,5).

Therefore, the Point lies in the II quadrant.

(ii) The Point is (-5,-3).

Therefore, the Point lies in the III quadrant.

(iii) The Point is (-5,3).

Therefore, the Point lies in the II quadrant.

(iv) The Point is (3,5).

Therefore, the Point lies in the I quadrant.

Question 13: Write the coordinates of any points marked on the axes in the figure given below.

Solution: Part 1

You can see that :

(i) The Point A is at + 4 units distance from the y – axis and at zero distance from the x-axis. Thus, the x – coordinate of A is 4, and the y – coordinate will be 0. Hence, the coordinates of Point A are (4, 0).

(ii) The coordinates of point B are (0, 3).

(iii) The coordinates of point C are (– 5, 0).

(iv) The coordinates of point D are (0, – 4).

(v) The coordinates of E are (23,0).

The y coordinate of any point situated on the x-axis is always zero because every Point on the x-axis is at zero distance from the x-axis. Any point on the x-axis, therefore, has coordinates of the form (x, 0), where x represents the distance of the Point from the y-axis. Similar to the x-axis, any point's coordinates on the y-axis are of the form (0, y), where y is the Point's distance from the x-axis.

Part 2: What are the coordinates of the origin O?

Its abscissa and ordinate are both zero since it is at zero distance from both axes. Consequently, the origin's coordinates are (0, 0).

It is possible that you have noticed the correlation between a point's coordinate sign and the quadrant in which it is located.

(i) Since the first quadrant is bounded by the positive x-axis and the positive y-axis, a point in the first quadrant will have the form (+, +).

(ii) Because the second quadrant is bounded by the negative x-axis and the positive y-axis, a point in the second quadrant will have the form (-, +).

(iii)Because the third quadrant is bounded by the negative x-axis and the negative y-axis, a point in the third quadrant will have the form (-, -).

(iv) Given that the fourth quadrant is bounded by the positive x-axis and the negative y-axis, a point in the fourth quadrant will have the form (+, -).

Question 14: Write the answer to the following questions:

(i) What are the names of the lines that are drawn horizontally and vertically to represent the positions of every Point in the Cartesian plane?

(ii) What are the names of the various components of the plane that these two lines form?

(iii) Indicate the name of the intersection location of these two lines.

Solution:

(i) The x-axis and y-axis are the names of the horizontal and vertical lines drawn to calculate the position of any point in the Cartesian plane.

(ii) Each section of the plane created by the x- axis and y-axis is referred to as a quadrant.

(iii) The Point where these two lines converge is called the origin.

Question 15: Name each part of the given plane formed by the Vertical and horizontal lines.

Solution: The vertical line is called the y-axis and the horizontal line is called the x-axis. And these form four quadrants.

Question 16: Write the mirror image of the given Point (2, 3) and (-4, -6) with respect to the x-axis.

Solution: The mirror image of the given Point (2, 3) is (2, -3) with respect to the x-axis.

The mirror image of the Point (-4, -6) is (-4,6) with respect to the x-axis.

Benefits of Solving Important Questions for Class 9 Maths Chapter 3

Solving important questions for Class 9 Maths Chapter 3, Coordinate Geometry, offers several benefits:

Concept Reinforcement: Practicing Important Questions for Class 9 Maths Chapter 3 helps solidify fundamental concepts, such as plotting points, understanding the Cartesian plane, and using formulas.

Problem-Solving Skills: Engaging with various problems enhances analytical and critical thinking skills, enabling students to approach complex mathematical challenges with confidence.

Exam Preparation: Familiarity with key questions prepares students for exams, ensuring they understand the types of problems they may encounter.

Real-Life Application: Understanding coordinate geometry principles aids in visualizing and solving real-world problems, such as navigation and architecture.

Foundation for Advanced Topics: Mastery of these concepts lays the groundwork for future studies in higher mathematics, including algebra and calculus.