

Coordinate GeometryExercise 3.1 Page: 53

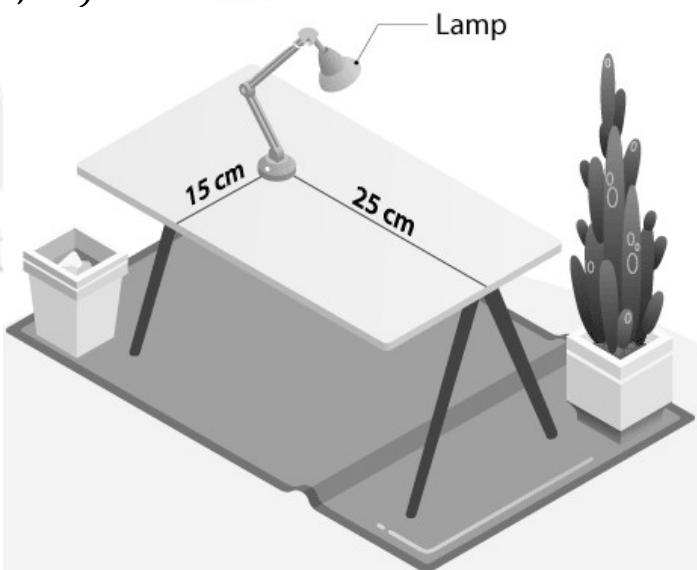
1. How will you describe the position of a table lamp on your study table to another person?

Solution:

To describe the position of the table lamp on the study table, we take two lines, a perpendicular and a horizontal line. Considering the table as a plane (x and y axis) and taking perpendicular lines as the Y axis and horizontal as the X axis, respectively, take one corner of the table as the origin, where both X and Y axes intersect each other. Now, the length of the table is the Y-axis, and the breadth is the X-axis. From the origin, join the line to the table lamp and mark a point. The distances of the point from both the X and Y axes should be calculated and then should be written in terms of coordinates.

The distance of the point from the X-axis and the Y-axis is x and y, respectively, so the table lamp will be in (x, y) coordinates.

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

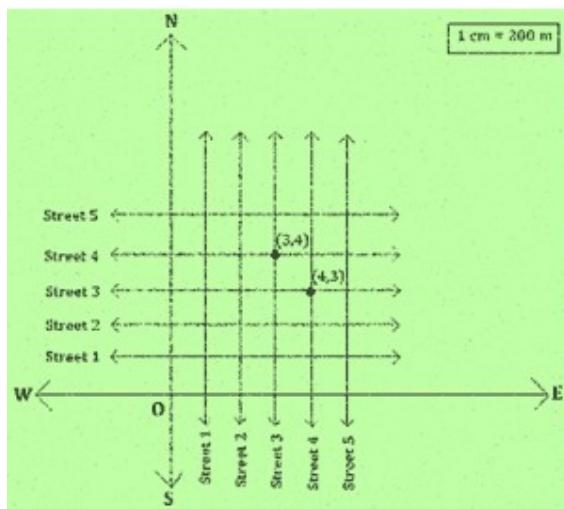


2. (Street Plan): A city has two main roads which cross each other at the centre of the city. These two roads are along the North-South direction and East-West direction. All the other streets of the city run parallel to these roads and are 200 m apart. There are 5 streets in each direction. Using 1cm = 200 m, draw a model of the city in your notebook. Represent the roads/streets by single lines.

There are many cross-streets in your model. A particular cross-street is made by two streets, one running in the North-South direction and another in the East-West direction. Each cross street is referred to in the following manner: If the 2nd street running in the North-South direction and 5th in the East-West direction meet at some crossing, then we will call this cross-street (2, 5). Using this convention, find:

- how many cross-streets can be referred to as (4, 3)?
- how many cross-streets can be referred to as (3, 4)?

Solution:



- Only one street can be referred to as (4,3) (as clear from the figure).
- Only one street can be referred to as (3,4) (as we see from the figure).

Exercise 3.2 Page: 60

1. Write the answer to each of the following questions.

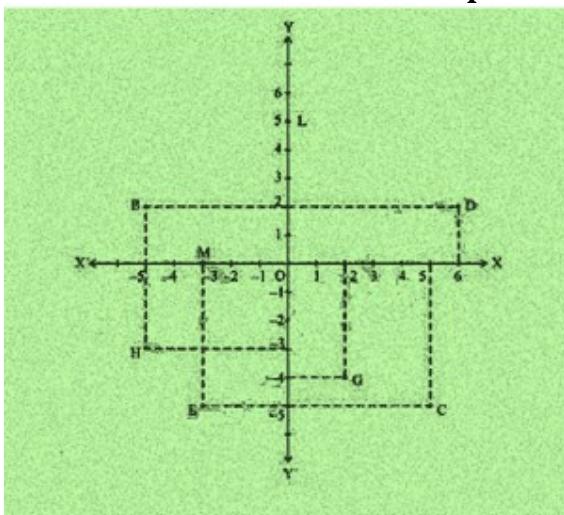
- What is the name of the horizontal and vertical lines drawn to determine the position of any point in the Cartesian plane?
- What is the name of each part of the plane formed by these two lines?
- Write the name of the point where these two lines intersect.

Solution:

- The name of horizontal and vertical lines drawn to determine the position of any point in the Cartesian plane is the x-axis and the y-axis, respectively.
- The name of each part of the plane formed by these two lines, the x-axis and the y-axis, is quadrants.

(iii) The point where these two lines intersect is called the origin.2. See Fig.3.14, and write the following.

- i. The coordinates of B.
- ii. The coordinates of C.
- iii. The point identified by the coordinates $(-3, -5)$.
- iv. The point identified by the coordinates $(2, -4)$.
- v. The abscissa of the point D.
- vi. The ordinate of the point H.
- vii. The coordinates of the point L.
- viii. The coordinates of the point M.



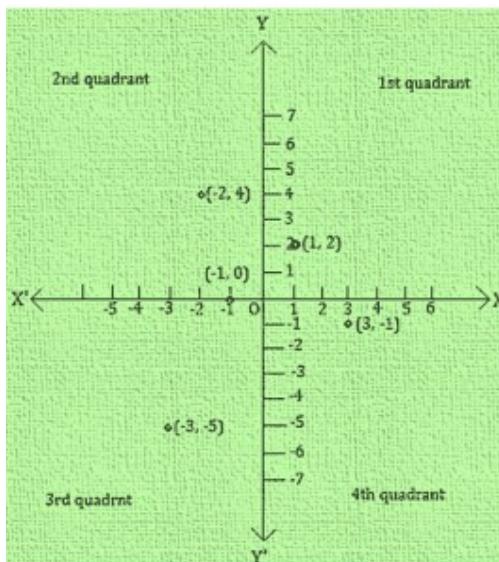
Solution:

- i. The coordinates of B are $(-5, 2)$.
- ii. The coordinates of C are $(5, -5)$.
- iii. The point identified by the coordinates $(-3, -5)$ is E.
- iv. The point identified by the coordinates $(2, -4)$ is G.
- v. Abscissa means x coordinate of point D. So, abscissa of point D is 6.
- vi. Ordinate means y coordinate of point H. So, the ordinate of point H is -3.
- vii. The coordinates of point L are $(0, 5)$.
- viii. The coordinates of point M are $(-3, 0)$.

Exercise 3.3 Page: 65

1. In which quadrant or on which axis do each of the points $(-2, 4)$, $(3, -1)$, $(-1, 0)$, $(1, 2)$ and $(-3, -5)$ lie? Verify your answer by locating them on the Cartesian plane.

Solution:



- $(-2, 4)$: Second Quadrant (II-Quadrant)
- $(3, -1)$: Fourth Quadrant (IV-Quadrant)
- $(-1, 0)$: Negative x-axis
- $(1, 2)$: First Quadrant (I-Quadrant)
- $(-3, -5)$: Third Quadrant (III-Quadrant)

2. Plot the points (x, y) given in the following table on the plane, choosing suitable units of distance on the axes.

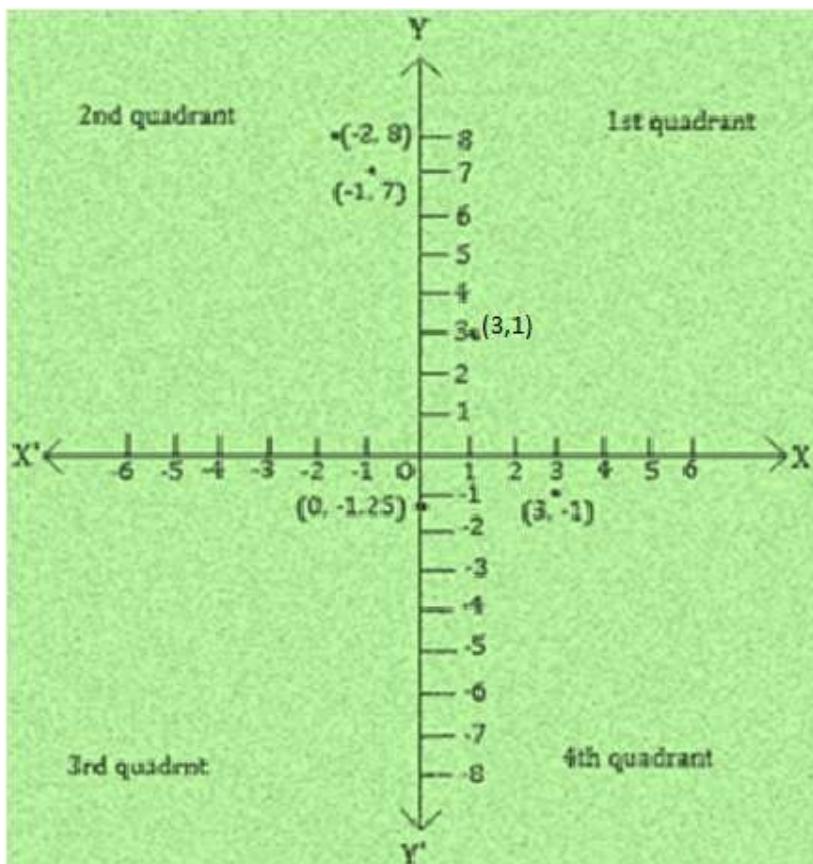
x	-2	-1	0	1	3
y	8	7	-1.25	3	-1

Solution:

The points to be plotted on the (x, y) are

- i. $(-2, 8)$
- ii. $(-1, 7)$
- iii. $(0, -1.25)$
- iv. $(1, 3)$
- v. $(3, -1)$

On the graph, mark the X-axis and the Y-axis. Mark the meeting point as 0. Now, let 1 unit = 1 cm



- i. $(-2, 8)$: II- Quadrant, Meeting point of the imaginary lines that starts from 2 units to the left of origin 0 and from 8 units above the origin 0.
- ii. $(-1, 7)$: II- Quadrant, Meeting point of the imaginary lines that starts from 1 unit to the left of origin 0 and from 7 units above the origin 0.
- iii. $(0, -1.25)$: On the x-axis, 1.25 units to the left of the origin 0.
- iv. $(1, 3)$: I- Quadrant, Meeting point of the imaginary lines that starts from 1 unit to the right of origin 0 and from 3 units above the origin 0.
- v. $(3, -1)$: IV- Quadrant, Meeting point of the imaginary lines that starts from 3 units to the right of origin 0 and from 1 unit below the origin 0.

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