

Exercise 3.1

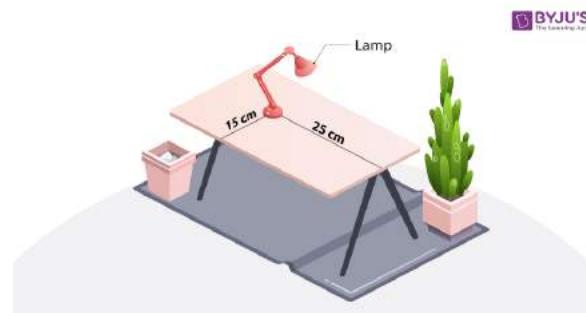
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1. How will you describe the position of a table lamp on your study table to another person?

Solution:

For describing the position of 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 line as Y axis and horizontal as X axis respectively. Take one corner of table as origin where both X and Y axes intersect each other. Now, the length of table is Y axis and breadth is X axis. From The origin, join the line to the table lamp and mark a point. The distances of the point from both X and Y axes should be calculated and then should be written in terms of coordinates.

The distance of the point from X- axis and Y- axis is x and y respectively, so the table lamp will be in (x, y) coordinate. Here, (x, y) = (15, 25)

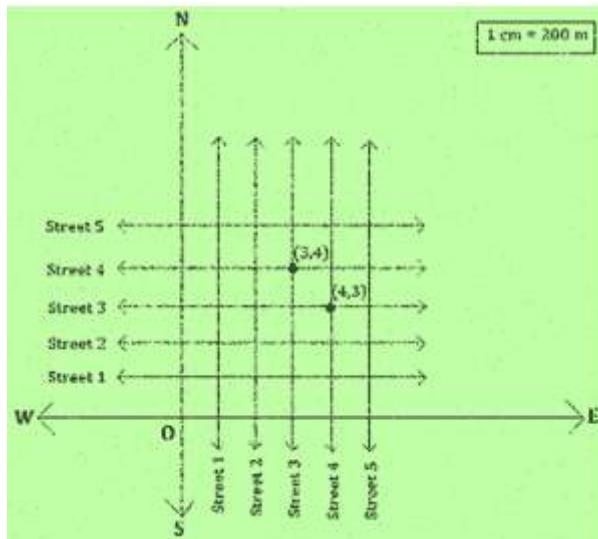


2. (Street Plan): A city has two main roads which cross each other at the centre of the city. These two roads are along the North-South direction and East-West direction. All the other streets of the city run parallel to these roads and are 200 m apart. There are 5 streets in each direction. Using 1cm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

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

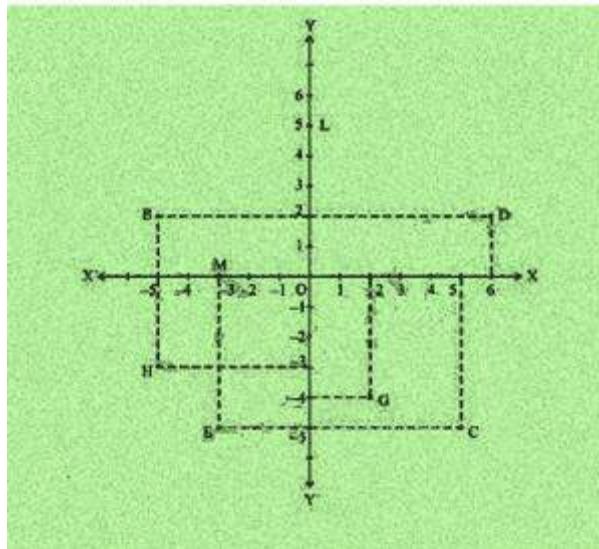
- What is the name of horizontal and the vertical lines drawn to determine the position of any point in the Cartesian plane?
- What is the name of each part of the plane formed by these two lines?
- Write the name of the point where these two lines intersect.

Solution:

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

2. See Fig.3.14, and write the following:

- The coordinates of B.
- The coordinates of C.
- The point identified by the coordinates $(-3, -5)$.
- The point identified by the coordinates $(2, -4)$.
- The abscissa of the point D.
- The ordinate of the point H.
- The coordinates of the point L.
- The coordinates of the point M.



Solution:

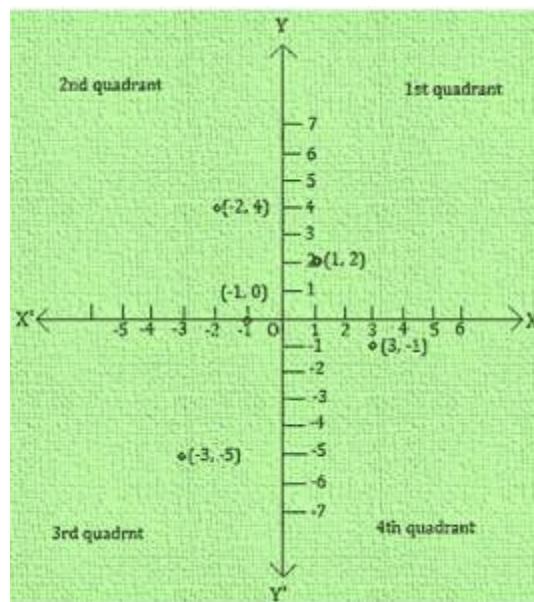
- The co-ordinates of B is $(-5, 2)$.
- The co-ordinates of C is $(5, -5)$.
- The point identified by the coordinates $(-3, -5)$ is E.
- The point identified by the coordinates $(2, -4)$ is G.
- Abscissa means x co-ordinate of point D. So, abscissa of the point D is 6.
- Ordinate means y coordinate of point H. So, ordinate of point H is -3.
- The co-ordinates of the point L is $(0, 5)$.
- The co-ordinates of the point M is $(-3, 0)$.

Exercise 3.3

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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

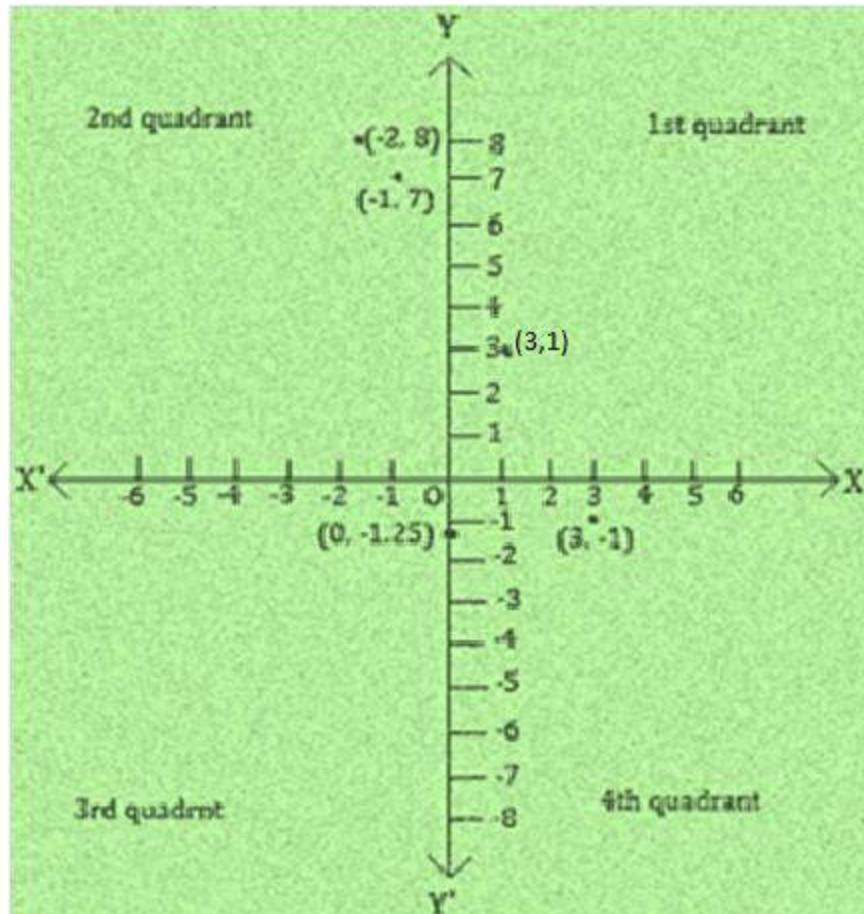
Solution:

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

- $(-2, 8)$
- $(-1, 7)$
- $(0, -1.25)$
- $(1, 3)$
- $(3, -1)$

On the graph mark X-axis and Y-axis. Mark the meeting point as O.

Now, Let 1 unit = 1 cm



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