

Mathematical Tools

Co-ordinates

An ordered set of numbers used to describe position of a point is known as COORDINATE.

Notes:

- * Set means collection. In coordinate there can be one or two or three numbers. Ex: (1), (2,4), (4,-3,0)
- * Ordered means in a sequence. same numbers but in different sequences do not make same set.
 $(1, 2) \neq (2, 1)$
- * A point is a geometrical thing which has no length or breadth or thickness. It is represented by a dot (•)
- * Position means whereabouts of an object or thing.

Finding Coordinates

To find coordinates we need three mutually perpendicular lines meeting at a point.

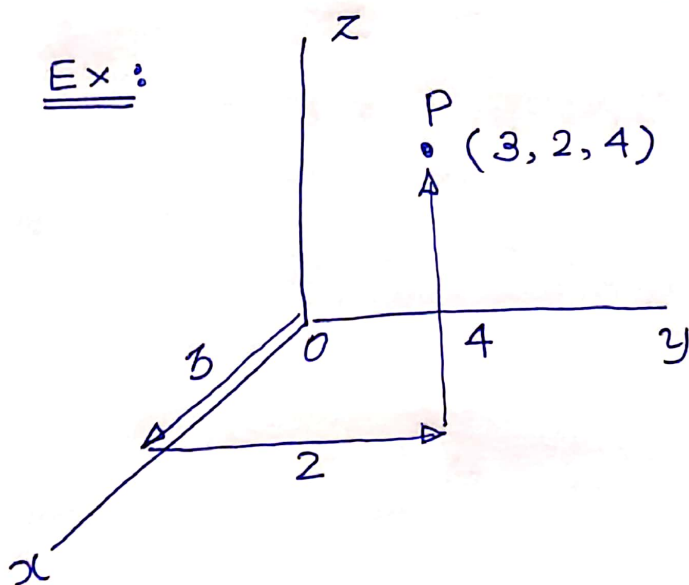
These lines are known as axes.
And, the point is called ORIGIN.

Lines (axes) are given different names like x -axis, y -axis, z -axis etc.

The origin divides every axis in two parts (+ve part and -ve part)

Once, we have set-up this system we move from origin to the point by moving parallel to either of these axis or axes.

The net distance moved parallel to an axis is called the coordinate related to that axis.



In the above figure coordinate of point P is $(3, 2, 4)$.

Thus coordinate is a relative thing which depends on choice of origin and the axis.

NOTES:

- * Coordinates are expressed as (x, y, z)
- * The first axis is generally taken as x -axis.
- * We need:
 - Only one co-ordinate is all the points under consideration are collinear
 - Two coordinates if points are coplanar
 - Three coordinates in all other cases.
- * Axis represents direction also, as:
 - x -axis : right/left, east/west
 - y -axis : up/down, north/south
 - z -axis : front/back, up/down

