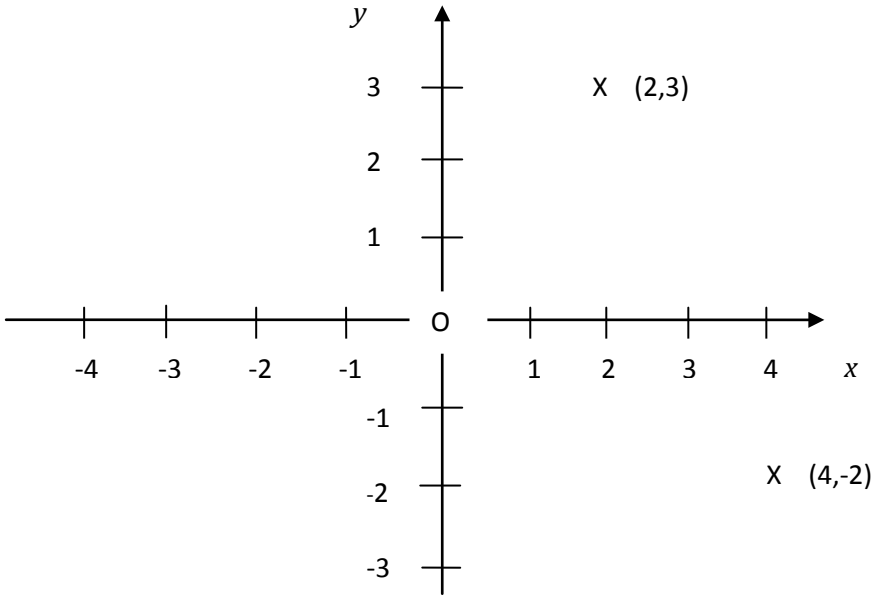
Cartesian Coordinates

Cartesian coordinates provide a means of referencing each point on a plane (2D) or a volume (3D) and on to higher dimensions (if required).

Two-dimensional system

A two-dimensional plane is given two perpendicular axes, generally referred to as the *x* and *y* axes, which are enumerated. On paper the *x*-axis is normally horizontal and the *y*-axis is normally vertical. Any point on the plane can be determined by its own *x* and *y* coordinates and is written (*x* , *y*). Often the axes cross when *x=0* and *y=0* and the point (0,0) is also called the *origin*.

For example the points (2,3) and (4,-2) can be plotted as follows:



Three-dimensional system

A three-dimensional volume is given three perpendicular axes, generally referred to as the *x* and *y* axes, which are enumerated. On paper the *x*-axis and *y*-axis represent the horizontal plane and the *z* – axis is normally vertical. Any point on the plane can be determined by its own *x,y* and *z* coordinates and is written (*x* , *y, z*). Often the axes cross when *x=0*, *y=0* and *z=0* and the point (0,0,0) is also called the *origin*.

For example the point (3,1,4) may be plotted as follows