

The observer is considered to be present at the origin of the Frame of Reference.

The coordinates (x, y, z) of an object describe the **position** of the object with respect to this coordinate system (**frame of reference**).

Rest : An object is said to be at rest if it does not change its position with time, with respect to an observer. A book lying on a table, a person sitting in a chair are the examples of rest.

Motion : An object is said to be in motion if it changes its position with time, with respect to an observer.

Example : A bird flying in air, a train moving on rails, a ship sailing on water, a man walking on road are some of the examples of motion, visible to the eye. Motion of gas molecules is an example of motion, invisible to the eye.

NOTE : *If one or more coordinates of an object change with time, we say that the object is in motion. Otherwise, the object is said to be at rest with respect to this frame of reference.*

Types of motion

1. One dimensional motion : When a body moves in a straight line, its motion is called one dimensional motion. This is because to describe its position only one co-ordinate is sufficient. It is also called **rectilinear motion**.

[To describe motion along a straight line, we can choose an axis, say X-axis, so that it coincides with the path of the object. We then measure the position of the object with reference to a conveniently chosen origin, say O.