

## Chapter - 7

# MOTION

### → Rest and Motion

- If the position of an object does not change as time passes, then it is said to be at rest. If the position of an object changes as time passes, then it is said to be in motion.
- An object can be at rest with respect to one thing and in motion with respect to some other thing at the same time. So, the states of rest and motion are relative only.
- To locate the position of an object, we have to choose some suitable reference point called the origin.

### → Distance and Displacement

- The distance travelled by an object is the length of the



- When the velocity of a body is changing at a uniform rate over a period of time, the average velocity for that time period is given by the arithmetic mean of the initial and final velocity of the body.

$$\text{Average velocity} = \frac{\text{Initial velocity} + \text{Final velocity}}{2}$$

or  $\vec{V}_{av} = \frac{u + v}{2}$

where 'u' is initial velocity, 'v' is final velocity and  $\vec{V}_{av}$  is average velocity.

## ➔ Acceleration

- Acceleration of a body is defined as the rate of change of its velocity with time.

$$\text{Acceleration} = \frac{\text{change in velocity}}{\text{Time taken}}$$