

SPEED AND VELOCITY**SPEED:**

The time rate of covering distance by body is known as its speed.

Average speed is defined as the total path length travelled divided by the total time interval during which the motion has taken place. So,

$$\text{Average Speed} = \frac{\text{Total Path Length (Distance)}}{\text{Total Time Interval}} \dots\dots\dots[2]$$

The SI unit for speed is m/s or m s^{-1} , although km h^{-1} is used in many everyday applications.

VELOCITY:

Displacement per unit time is velocity. OR ‘The time rate of change of position of a body is known as its velocity’

- Velocity actually tells how fast the position is changing with time and in what direction.
- **Average velocity** is defined as the change in position or displacement (Δx) divided by the time intervals (Δt), in which the displacement occurs.

$$\text{Average Speed} = \frac{\text{Total Displacement}}{\text{Total Time Interval}} \dots\dots\dots[3]$$

Or
$$V_{av} = \bar{V} = \frac{x_2 - x_1}{t_2 - t_1} = \frac{\Delta x}{\Delta t} \dots\dots\dots[4]$$

where x_2 and x_1 are the positions of the object at time t_2 and t_1 , respectively. Here the bar over the symbol for velocity is a standard notation used to indicate an average quantity.