

MIND MAP

- Rest and motion are relative terms. An object may be at rest with respect to one surroundings but may be in motion with respect to another surroundings.
- The actual length of the path covered by an object is called distance. It is a scalar. It can not decrease with increase in time.
- The shortest distance between initial and final position of a body is called displacement. It is a vector. It may increase or decrease with increase in time.
- For uniform motion along a straight line displacement-time as well as distance time graphs are straight lines inclined to time axis. Its slope gives magnitude of uniform velocity.
- There are three equations of motion for uniformly accelerated motion

$$v = u + at \quad S = ut + \frac{1}{2}at^2 \quad 2as = v^2 - u^2$$
- An object is said to have uniform velocity, if it covers equal displacements in equal intervals of time, howsoever small the time interval may be
- Rate of change of velocity is called acceleration.
 - If the velocity is increasing, acceleration is positive.
 - If the velocity is decreasing acceleration is negative and known as retardation.
- For uniform motion velocity-time graph is a straight line parallel to time axis. The area under the graph gives magnitude of displacement.
- For uniformly accelerated motion velocity time graph is a straight line inclined to time axis. Its slope gives acceleration.
- For uniformly accelerated linear motion, the area under v-t graph for a given time interval gives the magnitude of displacement in that interval
- If an object moves in a circular path with uniform speed, its motion is called uniform circular motion. Though speed is constant but velocity is continuously changing due to change in direction of motion.
- An object is said to be in motion if it changes its position with time with respect to the surroundings
- Displacement covered in unit time is called velocity. It is a vector. It may be positive or negative
- Average velocity is the ratio of total displacement covered to the total time taken.
- If the velocity of an object is changing at a constant rate, the average velocity is the arithmetic mean of initial and final velocity.
- Distance covered per unit time is called speed. It is scalar. It is always positive.