

# Preliminary Physics

Week 1

Name:

Summary Notes

Class:

Tutor:

## 1. Describe uniform straight-line (rectilinear) motion and uniformly accelerated motion through:

- The use of scalar and vector quantities
- A scalar is a quantity, such as mass, length, or speed, that is completely specified by its ..... and has no.....
- A vector is any quantity that has a .....and .....

[Insert a graph]

### Distance ( $m$ ) and Displacement ( $m + direction$ )

- Distance is a ..... quantity. It refers to the length of the entire path travelled
- Displacement is a ..... quantity. It refers to the ..... relative to the .....
- Displacement can be ..... if the particle return to the original position
- Distance and Displacement are equal only if the particle travel in the ..... direction

**Speed ( $ms^{-1}$ ) and Velocity ( $ms^{-1}$  + *direction*)**

- Speed is a ..... quantity which measures how fast or slow an object is moving
- Velocity is an example of a ..... quantity that has both size and direction

The common unit of speed is  $km\ h^{-1}$  where as the SI unit is  $m\ s^{-1}$ . It follows that:

**Average Speed** is the rate at which ..... changes during a ..... of time.

$$\text{Average Speed} = \frac{\text{change in distance}}{\text{time}} = \frac{s}{t}$$

**Average velocity** is the rate at which ..... changes during a period of time.

$$\text{Average velocity} = \frac{\text{change in displacement (m)}}{\text{time (s)}} = \frac{\vec{s}}{t}$$

**Instantaneous speed**

Instantaneous speed describes the speed at a particular .....

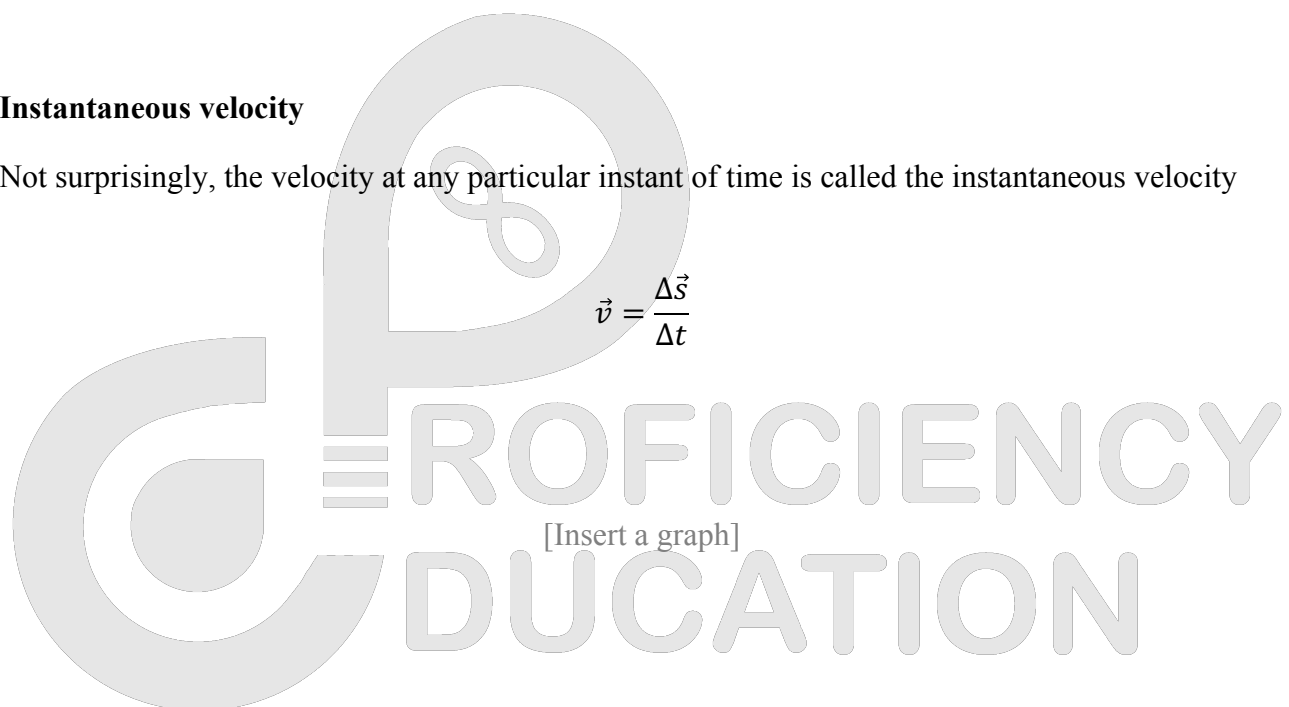
$$v = \frac{\Delta s}{\Delta t}$$

Where  $\Delta$ (delta) means ‘a change in...’ that is, the instantaneous speed is equal to the change in distance divide by the corresponding small change in time

**Instantaneous velocity**

Not surprisingly, the velocity at any particular instant of time is called the instantaneous velocity

$$\vec{v} = \frac{\Delta \vec{s}}{\Delta t}$$



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