

**SUBJECT:- PHYSICS**

**CLASS:- IXTH**

**DATE:-12/04/XXI**

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**CHAPTER 1. (MOTION)(BASED ON NCERT PATTERN)**

**Velocity (v):-**

- Speed of an object in a particular direction is named as velocity, i.e., it is the displacement of body in unit time.
- It is represented as:

$$v^2 = u^2 + 2as$$

**Derivation:**

From second equation of motion, we have:

$$s = ut + \frac{1}{2}at^2 \quad \dots(i)$$

Also, from first equation of motion, we have:

$$v = u + at$$

Above equation can be rearranged as:

$$at = v - u$$

$$\Rightarrow t = \frac{v-u}{a}$$

Putting this value of  $t$  in equation (i), we get:

$$s = u\left(\frac{v-u}{a}\right) + \frac{1}{2}a\left(\frac{v-u}{a}\right)^2$$

- It is a vector quantity.