Physics "Velocity" Summary

Thursday, January 5, 2023 10:06 PM

1. Difference between duration and instant

→ Instant : specific point of time
→ Duration : interval separating 2 instants

2. S.I unit of time and other commonly used units

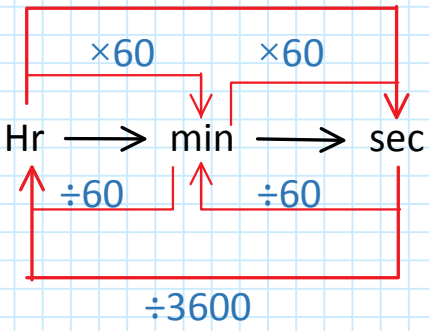
→ S.I unit of time: seconds (sec)
→ Other commonly used units :
- ✓ Hour **(hr)**
- ✓ Minute **(min)**
- ✓ Years , weeks , months , days , centuries

Remark!!!!!!!!!:

→ Chronometer **(stop watch)** is used to measure duration
→ Watch **(clock)** indicates an instant of time

3. Conversion of unit of time

×3600



4. Calculation of the duration

Duration=$\Delta t = t_2 - t_1$

$= t_{final} - t_{initial}$

(speed)

5. Average velocity and Instantaneous velocity:

→ Instantaneous velocity **(speed):**

is the speed at a given instant of time

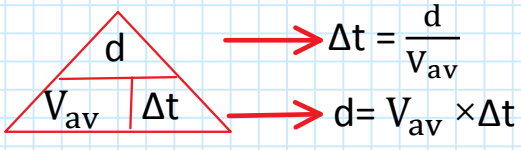
It is measured by speedometer

→ Average velocity **(speed):**

Is the average of all instantaneous speeds during an interval of time .

6. Calculation of Average Velocity :

$$V_{av} = \frac{d}{\Delta t}$$



Where:

→ V_{av}= average velocity in (m/sec)

→ **d** = distance in (m)

→ **Δt** = duration: time needed to cover the distance in (sec)

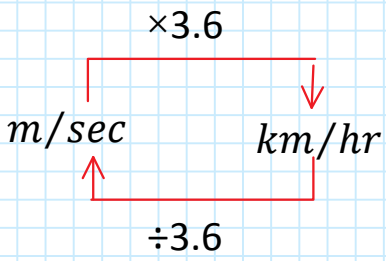
7. Units of velocity:

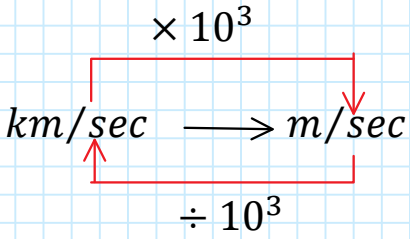
→ S.I unit of V is m/sec

→ Other units of V :
km/hr , km/sec

★ Symbol of velocity (**speed**)

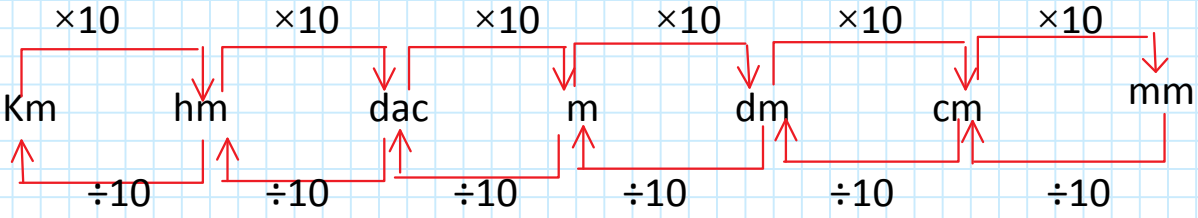
8. Conversion of units of speed :





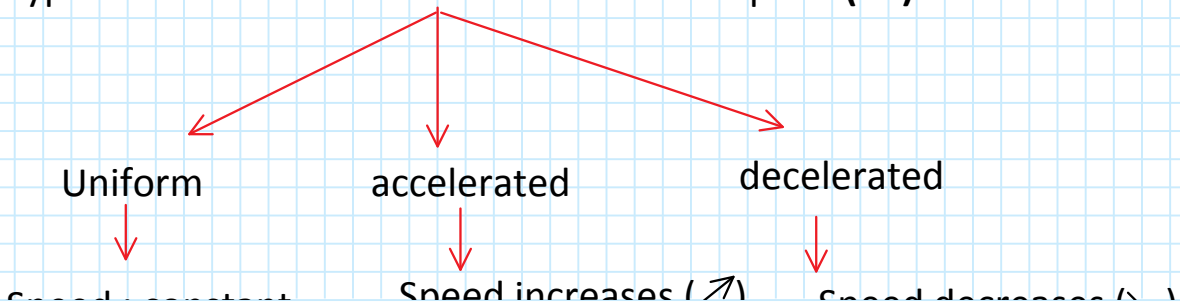
Remark!!!!!

Conversion of units of distance (d):

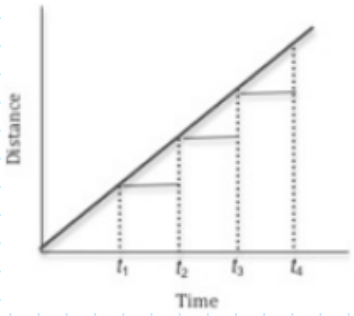


9. Velocity and Motion :

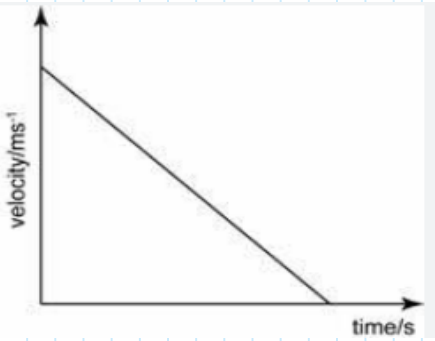
Types of motion based on the variation of speed (V)



Speed : constant



Speed increases (↗)



Speed decreases (↘)