Chapter 04

Motion and Time

Slow and Fast Motion:

On road, we see different vehicles with different speeds. Few vehicles move fast and few vehicles move slow.

How can we decide one object is moving faster or slower than the other object?

An object that takes long time to cover a certain distance, said to be slow and an object that takes short time to cover the same distance is said to be fast.

Hence, the distance travelled by an object in a given interval of time can help us decide which one is faster and which one is slower.

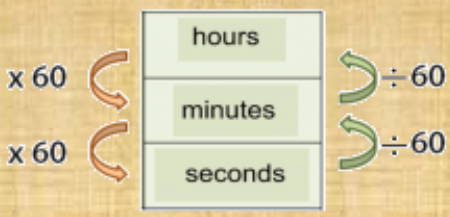
Time:

You may say time is what a clock reads! Right.

They are just one of many possible instruments of time measurement.

Time is a calculable measure of motion with respect to before and afterness.

The measurement of time involves different units. Like seconds, minutes, hours, days, month, year are the units used to measure time in our life. The smaller basic unit is second.



1000 milliseconds	1 second
60 seconds	1 minute
60 minutes	1 hour
24 hours	1 day
7 days	1 week
28-31 days	1 month
365 or 366 days	1 year
12 months	1 year
10 years	1 decade
100 years	1 century
1000 years	1 millennium

Units of time:

In the beginning, people used sundials and hourglass to keep track of time. Now a day we use clocks and watch to measure the time accurately.

Today clocks do not just tell us the time of the day, they are also used as timers in ovens, in stopwatches, in various athletic events etc.

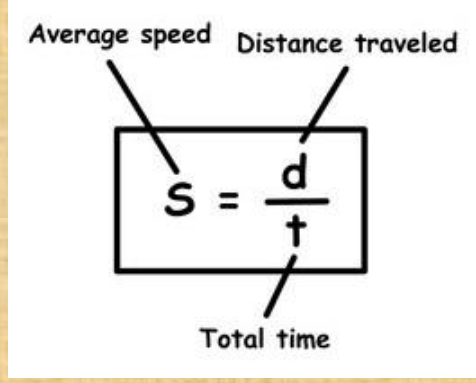
Speed:

The distance covered per unit time is speed. Speed tells

us how fast or slow an object moves.

Speed, described as the distance travelled by an object divided with the time taken to cover that distance.

Speed = Distance/Time



In vehicles to measure the speed, speedometers are used and to measure the distance covered, odometers are used.

$$\text{Average speed}(v) = \frac{\text{Distance travelled}(s)}{\text{Time taken}(t)}$$

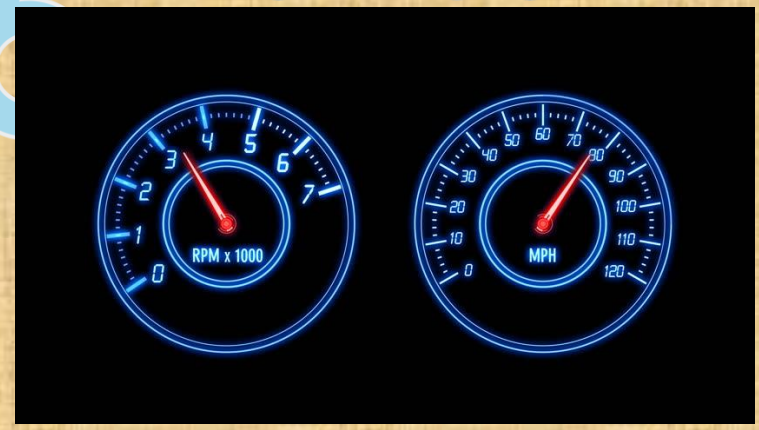


Fig. Speedometer and Odometer

To express the speed of an object we consider its average speed. Average speed is defined as the uniform speed given by the ratio of total distance travelled by an object to the total time taken by an object.

Average speed =

Total distance travelled/Total time taken to travel the distance.

SI unit of speed is meters per second or m/sec.

Commonly used unit of speed is kilometer per hour (kmph or km/h).

1 km / h = 5/18 m/s

Do you know how we got this?

1 km = 1000 m

1 h = 3600s

1 km / h = 1000 m / 3600s = 5/18 m/s

If we travel 1 km in 1 hour, it means we travelled 5 meters in 18 seconds.