7th ICSE – Physics
Measurements and Types of Motion – In a nutshell

DEFINITIONS:

- Length – It is the *distance* between two points. SI unit – metre (m)

- Mass – It is the *quantity of matter* contained in the body. SI unit – kilogram (kg)

- Time – It is the *interval of occurrence* of an event. SI unit – second (s)

- Temperature – It is the quantity which measures the *hotness and coldness* of a body. SI unit – Kelvin (K)

- Volume – The *space occupied* by an object is called its volume.

- Density – The density of a substance is defined as *the mass of a unit volume* of that substance.

- Speed – The *distance* covered or travelled by a body *in unit time* is called the speed of the body.

- Motion – When the position of a body with respect to its surrounding changes with time, the body is said to be in motion.

Distinguish

Rotatory Motion	Circular Motion
1) Different parts of the object cover different distances.	1) The entire object rotates as a whole around a fixed unit.
2) The axis of rotation passes through the object.	2) The axis of rotation lies outside the object.
3) Eg. Moon rotating around itself.	3) Eg. Moon revolving around the Earth

Oscillatory Motion	Vibratory Motion
1) The entire object moves to and fro from its rest position.	1) A part of the object moves to and fro about its mean position.
2) The entire object oscillates.	2) Either one end or both the ends of the object are fixed and the rest of the object vibrates.

3) The shape of the object remains unchanged during the motion.	3) The shape of the object changes during the motion.
4) Eg. Pendulum of a clock	4) Eg. String of a guitar when plucked.

Average speed

Steps to solve these sums:
1) ADD all the distances that are given
2) ADD all the times that are given
3) Use the formula - Speed $= \dfrac{\text{Total distance travelled}}{\text{Total time taken}}$

Mass and Weight

- Mass of an object = Weight of the object in kgf

- Weight of the object in N (on Earth) = 10 x Weight of the object in kgf

- Weight of the object in N (on Moon) = $\dfrac{5}{3}$ x Weight of the object in kgf