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**Class 6<sup>th</sup>**

**Chapter – 7<sup>th</sup>**

# **MOTION AND MEASUREMENT OF DISTANCE**

## **DEFINITION OF MOTION**

**An object is said to be in motion if it changes its position with time.**

## **DEFINITION OF REST**

**When the object or body does not change its position with respect to time it is said to be at rest.**

## **STANDARD SCALE OF MEASUREMENT**

**Standard scale means a scale of measurement which do not vary from place to place or person to person.**

**In ancient times, people used different body parts such as arms, hand and foot as units for measuring length. The distance between the end of an outstretched arm and the chin was a yard. The length from the elbow till the tip of the middle finger was a cubit. A foot was also a common unit of measuring length. Some of these units may still be in use in some parts of the world. Different people might have body part of different sizes. Therefore, a given length will have different measure for different people. This leads to inconsistencies.**

**To overcome the inconsistencies of measurement, people felt the need for standard units of measurement. In 1960, scientists from all over the world, for the sake of uniformity adopted an internationally acceptable system of standard units at the General Conference of Weights and Measures. This standard system of units is known as the SI system ('Système International d'Unités' in French). The SI units for measuring length, mass and time are metre (m), kilogram**

**(kg) and second (s), respectively. It also includes units for many other quantities such as kelvin for temperature, ampere for current, volt for voltage and so on.**

**Today, almost all countries follow the SI system.**

### **Advantages of the SI system**

**The SI system is recommended for the following reasons.**

- 1. It is a universally accepted standardised set of units.**
- 2. Even very small measurements are possible in this system.**
- 3. Calculations are easy.**
- 4. The units do not change with time.**

**Take the following precautions while measuring the length.**

## **PRECAUTION WHILE MEASURING LENGTH**

**1. Place the scale exactly along the length that is being measured. If this is not done, the measured length will not be correct.**

**2. The position of the eye is very important while making the measurement. The eye should be vertically above the point at which the measurement is being taken.**

**3. If the markings near the zero mark are worn out, do not use the 0 mark. Instead, take any other full mark on the scale as the initial mark.**

## **TYPES OF MOTION**

**TRANSLATIONAL MOTION: - A motion in which all parts of body move in the same direction and cover equal distance in a given interval of time. Two types of Translational motion are (i) Rectilinear and (ii) curvilinear motion**

**Rectilinear motion: An object is said to undergo rectilinear motion when it travels along a straight line path.  
Eg. A car moving along a straight road.**

**Curvilinear motion:** - When an object moved along a curved path, then it is said to be curvilinear motion. Eg. A car taking a turn on a curved road.

**Rotational motion:** An object is said to undergo rotational motion when it spins on its axis. Eg. Motion of a bicycle wheel.

**Circular motion:** When an object moves along a circular path, it is said to be in circular motion. Eg motion of earth around the sun.

**Periodic motion:** Motion that repeats itself after a fixed interval of time.

**Random motion:** - When a body move in different direction and does not have fixed path.

**Vibratory motion:** - A type of motion in which a particle vibrates about a fixed point.

**Oscillatory motion:** - A type of motion in which a particle moves to and fro about a fixed point.

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