SCIENCE

Motion and Measurement of Distances

Story of Transport

- Man learnt to domesticate animals and ride them for hunting and to move from one place toanother.

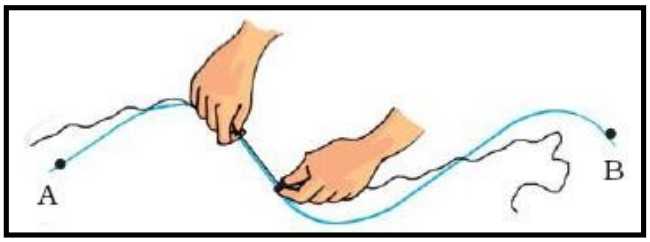
- The wheel was invented around 3,500 BC. This led to the discovery of the modern transportsystem.
- By using horses and wheels, the early man discovered the chariot which was the cheapest mode of road transport.
- Early man hollowed tree trunks and used them to cross rivers and streams. This gave rise to waterways.
- Slowly, the modern transport system was developedfurther.

Measurement

- Measurement means the comparison of an unknown quantity with some known quantity. This known fixed quantity is called aunit.
- The result of a measurement is expressed in twoparts:
  i. Anumber.
  ii. A unit ofmeasurement.
- The units of measurement used in ancient times were: Length of the foot, width of the finger, cubit and handspan.
- Measurements done with body parts of different human beings differed because of differing sizes of the bodypart.
- Therefore, for the sake of uniformity, the International System of Units (SI units) was adopted as the most widely used system ofmeasurement.

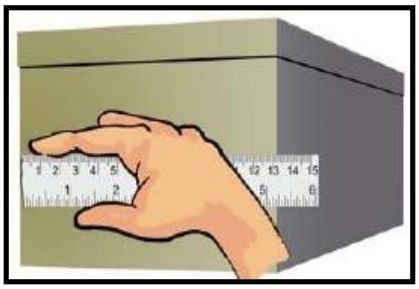
Measurement of Length

- The SI unit of length ismetre.
- Each metre (m) is divided into 100 equal divisions called centimetre(cm).
- Each centimetre has 10 equal divisions called millimetre(mm).
- Thus,
  1 m = 100 cm
  1 cm = 10 mm
  1 km = 1000 m
- The length of a straight line is measured by a metre scale or a measuringtape.
- The length of a curved line can be measured using athread.



Precautions while Measuring Lengths using a MetreScale

- Place the scale in contact with the object along itslength.

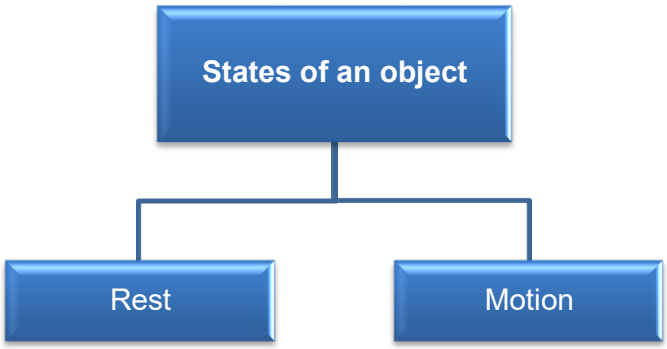


- If the zero mark is not clear, use any other full mark of the scale and then subtract the reading of this mark from the reading at the other end. The difference is the length of theobject.

- Your eye must be exactly in front of the point from where the measurement is to betaken.

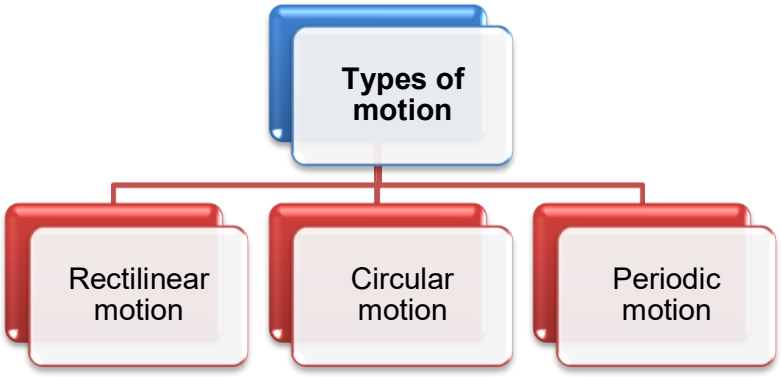
Motion

- Motion refers to the change in the position of an object with respect totime.
- Objects are at rest or inmotion.
- There are two states of anobject:



Rest	Motion
When the body does not change its position with respect to time, then it is said to be at rest, or it is said to be motionless or stationary.	When the body changes its position with respect to time, then it is said to be in motion.
Example: Chairs of the dining table, a flower vase, the table and the blackboard are all at rest.	Example: The blades of a rotating fan, the hands of a working wall clock, a moving car, a spinning top and satellites are all in motion.

Types ofMotion



RectilinearMotion

- Rectilinear motion is the motion of an object which moves in a straightline.
- Examples: A train moving on a track, a parade and coins tossed in theair.

Circular Motion

- Circular motion is the motion in which an object moves continuously at a fixed distance from a fixed point.
- It is a motion in which the body traverses a circularpath.
- Examples: The hands of a clock, a merry-go-round, the blades of a fan, the wheels of a moving vehicle, satellites and a spinningtop.

Periodic Motion

- Periodic motion is the motion which repeats itself at regular intervals oftime.
- Examples: The pendulum of a wall clock, the bells in a church, a bouncing ball, a vibrating string and a swingingcradle.

Combinations of different types of Motion

- A moving car which moves straight on the road displays rectilinear motion, but at the same time, the wheels of the car which are moving in circles display circular motion. So, a moving car displays both, rectilinear and circularmotions.
- In a sewing machine, the needle is in periodic motion, whereas the wheels of the sewing machine are in circular motion. So, a sewing machine displays both, circular and periodicmotions.