Motion :

A body is said to be in motion if it changes it's position with respect to it's immediate surrounding.

Q. We are in motion or Rest?

Motion

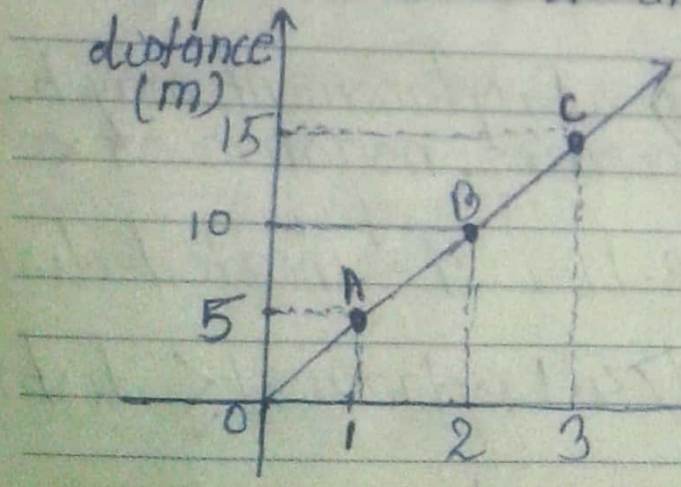
↓ Uniform

↓ Non-Uniform.

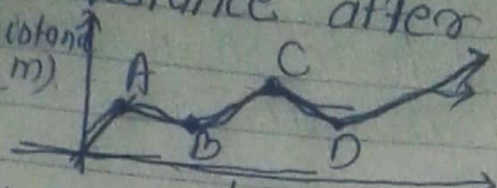
Uniform :- If a body covers equal distance after an equal interval of time then the body is said to be uniform motion.

Note :- In this motion we found a straigh line.

Representation of uniform motion on graph :



Non-Uniform motion :- A body is said to be in Non-Uniform motion if the body will not covers equal distance after unequal interval of time.



Q. What do you mean by motion in one direction?

→ The motion of a body is said to be in one dimension if it moves along a straight line path.

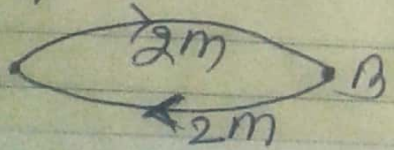
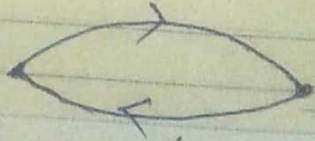
Q. Define displacement. State it's unit.

→ The shortest distance between two points.

Note :- It is the unique path which can take the body from it's initial to final position.

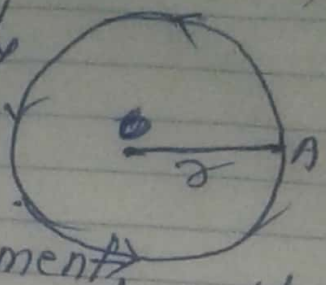
Unit - S.I unit metre (m) / C.G.S - unit - cm.

Q. Differentiate between distance and displacement.

Distance	Displacement
1. It is a scalar quantity	1. It is a vector quantity
2. Distance travelled is always positive.	2. Displacement may be positive, negative or zero
3. It is the actual length.	3. It is the shortest distance
4. Distance $\geq$ displacement	4. Displacement $\leq$ distance
5. $\frac{\text{Distance}}{\text{displacement}} \geq 1$	5. $\frac{\text{Displacement}}{\text{Distance}} < 1$
6.  distance = 2m + 2m = 4m	6.  Displacement = 0

7. Can displacement be zero even if distance is not zero? Give one example to Explain your answer.

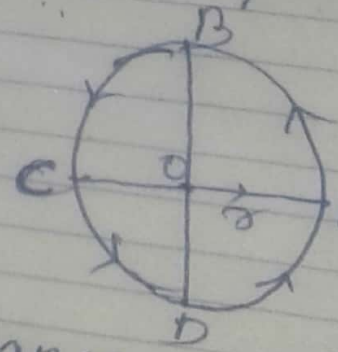
→ Yes, displacement of a body can be zero even if the distance covered by it is not zero. For example, if a body moves in a circle, then displacement of the body in one rotation is zero but the distance covered by it in one rotation = $2\pi r$, where (r) is the radius of the circle in which the body is moving.



8. When is the magnitude of displacement equal to the distance?

→ The magnitude of displacement is equal to the distance when the body moves along a fixed direction.

9. Calculate the distance and displacement of a body when, body moving along a circular path with radius (r). See Fig.



(a) Distance and displacement b/w points.
(a) A to B (b) A to C
(c) A to D (d) A to A

Answer in Next class.