ODM EDUCATIONAL GROUP
Changing your Tomorrow

MOTION

CHAPTER NO.8

SUB: PHYSICS

MOTION

Website: www.odmegroup.org
Email: info@odmps.org
Toll Free: **1800 120 2316**
Sishu Vihar, Infocity Road, Patia, Bhubaneswar- 751024

LEARNING OBJECTIVE

The students will be able to

Define uniform and non-uniform motion

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Scalar and Vector Quantities

A physical quantity which has only magnitude but no specific direction is called a **scalar quantity**.

- Examples: length, distance, area, mass, time, energy, etc.

A physical quantity which has both magnitude and direction is called a **vector quantity.**

- Examples: displacement, velocity, acceleration, force, weight, etc.

Types of Motion

1. **Translatory Motion:**

The motion in which all the particles of a body move through the same distance in the same time is called translatory motion.

This is further classified into rectilinear (straight path) and curvilinear (curved path) motions.

Example: An athlete running on a straight path, a car running on a curved road.

2. **Rotatory Motion:**

The motion in which a body moves about a fixed axis without changing the radius of its motion is called rotatory motion.

Example: A ceiling fan.

3. **Oscillatory Motion:**

The to and fro motion described by an object as a whole, along the same path, without any change in the shape of the object is called oscillatory motion.

Example: The pendulum of a clock, a child on a swing.

4. **Vibratory Motion:**

This is a kind of oscillatory motion in which the moving object undergoes a change in shape or size. In this motion, the body does not move as a whole.

Example: The plucked string of a guitar.

5. Periodic Motion:

A repetitive motion which repeats itself at regular intervals of time is called the periodic motion.

Example: Earth revolving around the Sun.

Every object executing uniform circular motion can be said to be executing periodic motion.

6. Non-periodic motion:

A repetitive motion which repeats itself at irregular intervals of time is called non-periodic motion.

Example: Tides in a sea.

7.Multiple Motion:

Sometimes an object can display combinations of different types of motion.

Example

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 circular motion.

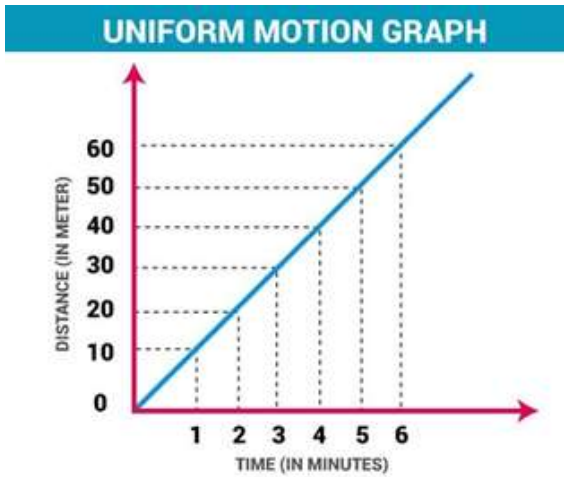
In a sewing machine, the needle is in periodic motion whereas the wheels of the sewing machine are in circular motion. So a sewing machine displays circular and periodic motions.

Uniform Motion: A body is said to have a uniform motion if it covers equal distances in equal intervals of time.

This uniform motion is defined as the motion of an object in which the object travels in a straight line and its velocity remains constant along that line as it covers equal distances in equal intervals of time, irrespective of the duration of the time.

Example of Uniform Motion:

- If the speed of a car is 10 m/s, it means that the car covers 10 meters in one second. The speed is constant in every second.
- Movement of blades of a ceiling fan.

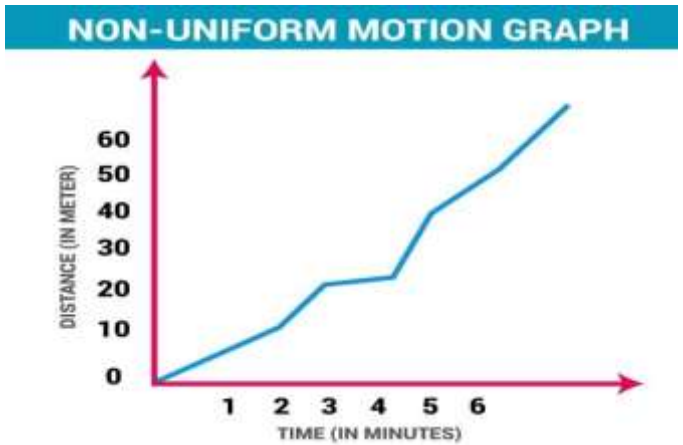


Non-uniform Motion: A body is said to have a non-uniform motion if it covers unequal distances in equal intervals of time.

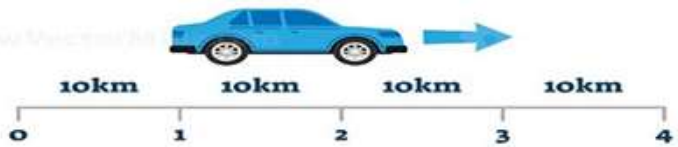
This non uniform of motion is defined as the motion of an object in which the object travels with varied speed and it does not cover same distance in equal time intervals, irrespective of the time interval duration.

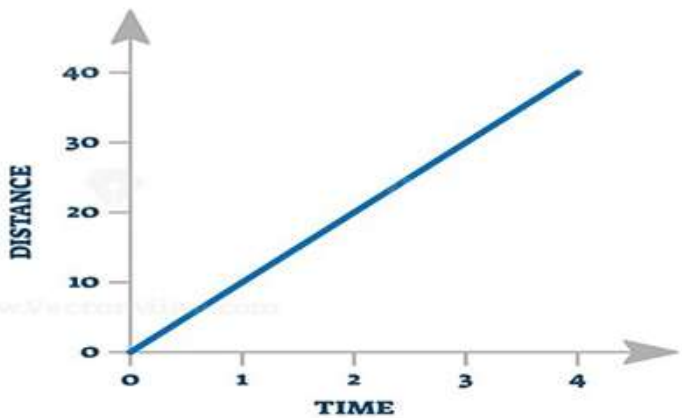
Example of Non Uniform Motion:

- If a car covers 10 meters in first two seconds, and 15 meters in next two seconds.

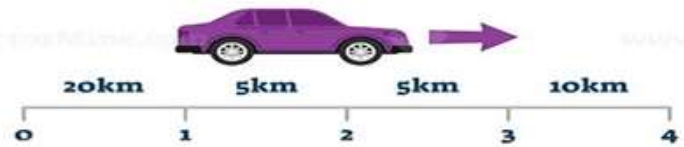


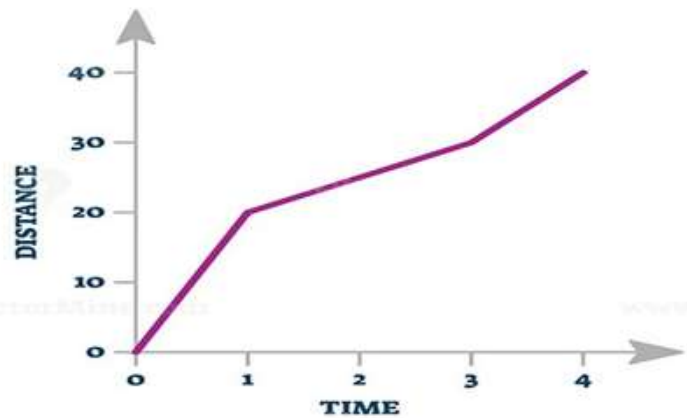
UNIFORM MOTION





NON-UNIFORM MOTION





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Uniform and non uniform motion

https://www.youtube.com/watch?v=VFfF3F-G9Uk&t=65s

HOME ASSIGNMENT

- What is uniform motion?
- What is non uniform motion ?

THANKING YOU
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