9. motion and types of motion

- Objects are either at rest or in motion.
- **Types of motion**:
- When an object moves along a straight line, it possesses **rectilinear motion**.
- Object moving in a curve is called a **curvilinear motion**.
- When a body moves about a fixed axis with out changing its position it is **rotatory motion**.
- When the distance of the object from a fixed point remains constant, it possesses **circular motion**.
- When an object moves to and fro about a fixed point, it possesses **periodic motion**.
- Other motions are **Oscillatory** and **vibratory motion** and **multiple motions** and **Random motion.**

- Motion of an object is the **change in its position with time**.
- **Types of motion**:
    - If the object moves in a line such that each point of the object covers equal distance in equal time, the object is said to posses **translatory motion**.
    - When an object moves along a straight line, it possesses **rectilinear motion**. For example- Motion of car moving on straight road.
    - An object moving in a curve path is said to posses **curvilinear motion**. For example - A car moving in a curvy path
    - When there is a change in speed of object moving in a straight line, it is called **non-uniform rectilinear motion** (for example a launching rocket) and when there is no change in the speed of the object, it is called **uniform linear rectilinear motion**(for example a moving convoy).
    - When the distance of the object from a fixed point remains constant, it possesses **circular motion**. For example- Motion of electric fan.
    - When an object repeats its motion after a fixed time, it possesses **periodic motion**. For example - Motion of a pendulum.
    - The motion which does not repeat itself after regular interval of time is called **non-periodic motion.** For example-An athele running on a field
    - When the movement of object swings about a mean position, it possesses **oscillatory motion**. For example - Motion of a swing.
    - Vibratory motion is a kind of oscillatory motion in which a part of body always remains fixed and the rest part moves to and fro about the fixed position. Also, in vibratory motion, the shape and size of the body changes. For example- Expansion and contraction of our chest.
    - When the motion of path does not follow any path and its speed and direction changes continuously, it possesses **random motion.** For example- the movement of fishes.
- The motion of a ball rolling on the ground is a combination of rectilinear as well as rotational motion.
- The fastness or slowness of the movement of an object is determined by measuring the distance traveled with time.

1. Speed space equals space fraction numerator Total space distance space covered over denominator Total space time space taken end fraction
2. If speed is the same throughout a journey, then the motion is uniform.
3. If speed varies, then the motion is non-uniform.
4. Speed is measured by a speedometer.
5. Distance moved by a vehicle is measured by an odometer.
6. Distance covered = Speed × Time

7. For equal distance, less travel time means higher speed.
8. For equal time interval, greater distance covered means higher speed.