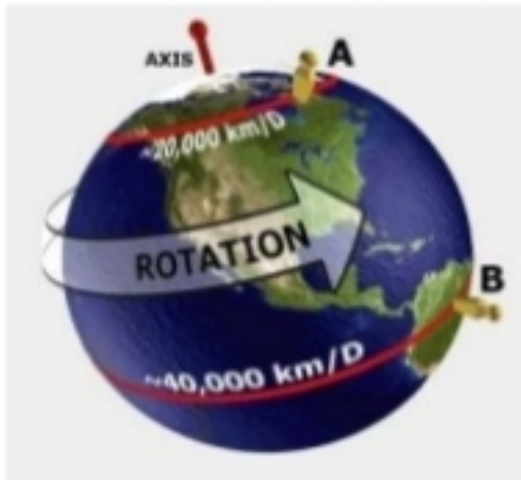




ROTATORY MOTION

- When a body undergoes translatory motion in such a way that its parts cover different distances in a given time it is said to have rotatory motion.



Examples of rotatory motion :

- The blades of a ceiling fan are fixed to the body of the fan and rotate around its axis.
- Similarly, the **rotatory motion** of Earth on its own axis which causes day and night.
- Rotation of a spinning top.
- **Motion** of wheels of a bicycle or a motorcycle.
- **Motion** of merry-go round.

CIRCULAR MOTION

An object is said to be in circular motion when it moves around a fixed point called axis.



CIRCULAR MOTION EXAMPLES



Sun and Planets



Earth and Moon



Atom and
electrons



Circular track



Circular ride

Examples of
circular motion all

Circular Motion is Periodic

The earth takes 365 days to complete a circular motion around the sun while the moon takes nearly 27.3 days to complete a circular motion around the earth. The circular motion is, thus, periodic and repetitive.

OSCILLATORY MOTION

- When a body moves to and fro about a fixed point it is said to be oscillatory motion.



Examples of the oscillatory motion

- The clock, The tuning fork, The spring, The stretched string, The motion of the swing, The rotary bee.
- The movement of the Earth's crust during the earthquakes.
- The movement of the atoms in the molecules.

VIBRATORY MOTION

- Sometimes the whole object does not show to and fro motion but a part of it shows motion, such a motion is called vibratory motion. This motion is actually a very fast to and fro motion.
- All musical instruments show vibratory motion. During this motion a change in shape and size takes place.

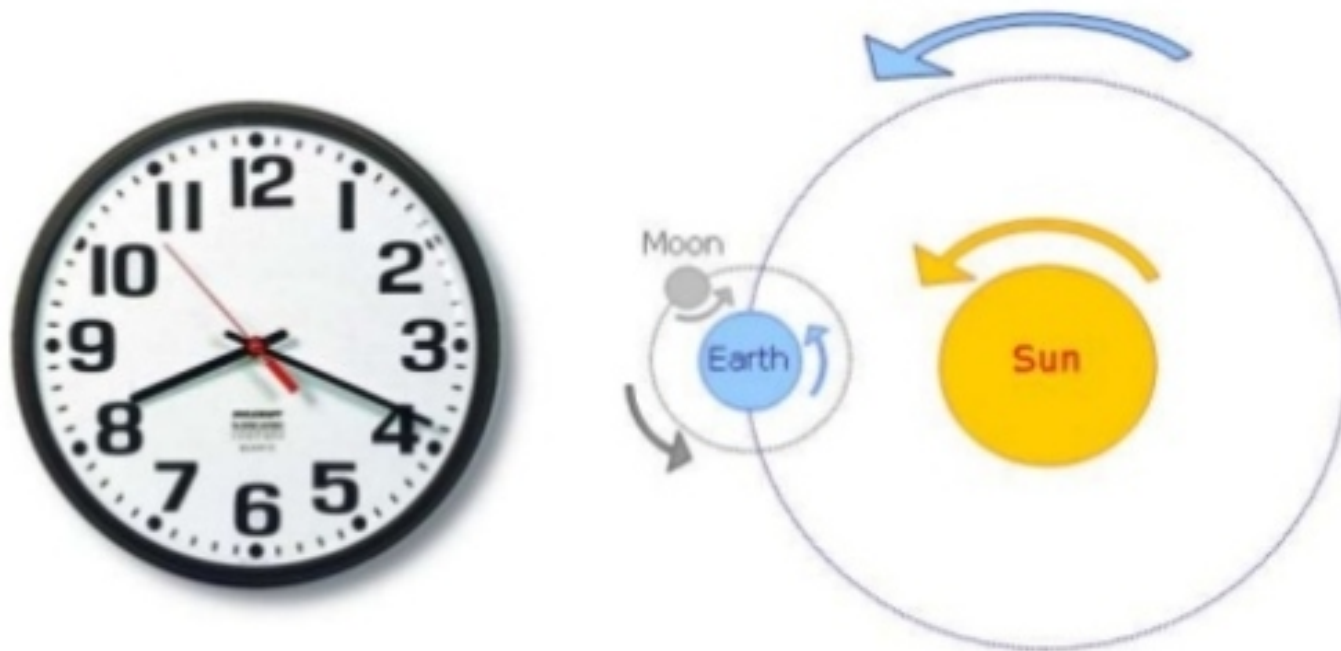


Examples of vibratory motion:

- Movement of simple pendulum .
- Movement of swing.
- Movement of vocal chords.
- Sound waves travels in the form of longitudinal waves which forms vibratory motion.
- Movement of string in stringed instruments like Guitar, sitar etch.
- Movement of cell phone in vibration mode.

PERIODIC MOTION

- When the same motion repeats itself after equal intervals of time ,we call it periodic motion.



"List of ten examples of periodic motion:

1. The "**rotation of earth**" about its axis with period of one day
2. The phase of moon
3. The rotation of "**moon**" around the "**earth**" with a time period 27.3 days
4. Revolution of "**earth**" around the "**sun**" with period of 1 year
5. The beating of our heart
6. The ticking of clock
7. The Bob of the pendulum
8. A "**vibrating**" tuning fork
9. A bouncing ball
10. A rocking chair"

Non-Periodic Motions

- A motion is said to be non-periodic if it either does not repeat itself or does the repetitions in a random irregular manner.



Examples of non-periodic motion:

- Swaying of the branches of a tree.
- **Motion** of a bouncing ball under the action of gravity and friction.
- The running of a batsman between the wickets.

Difference Between Periodic and Non-periodic Motion

Periodic motion : A motion which gets repeated after regular intervals of time is called a periodic motion.

Examples : The earth moving around the sun takes 365 days to complete one revolution and this motion gets repeated after every 365 days.

Non-periodic motion : The motion which does not repeat itself after regular interval of time is called non-periodic motion.

Examples : A footballer running on a field, application of brakes in a moving vehicle, a ball rolling down the ground gradually slows down and finally stops, motion of tides in the sea, etc

RANDOM MOTION

Irregular motion of a body in which the direction is not fixed is called Random Motion



the 10 examples of random motion are :

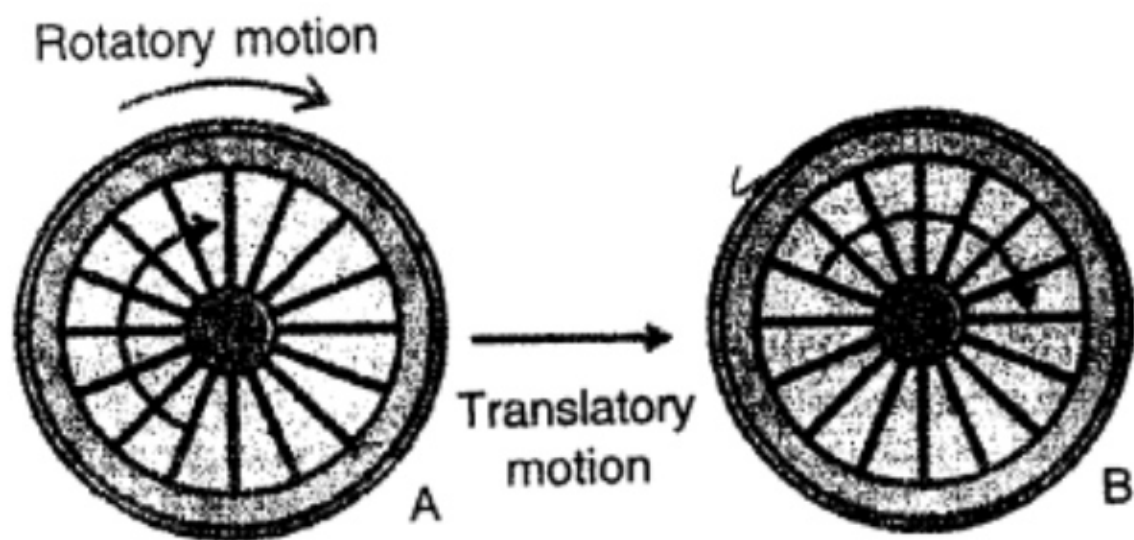
- a football moving while playing.
- a insect or bug flying.
- a child running.
- a **movement** of an butterfly while flying.
- the **movement** of the fish in water.
- the bird flying.
- the **movement** of the ball in an unusual floor.
- the bat flying.

Mixed Motion

Sometime a body can have more than one type of motion. Such a motion is called the mixed motion.

Example :

(i) The wheels of a moving train have both the translatory as well as the rotatory motions as it moves from position A to position B while rotating.



(ii) The earth rotates about its axis (rotatory motion) and at the same time it revolves around the sun in a curved path (curvilinear or circular motion) in a fixed time interval (periodic motion).

MANY TYPES OF MOTION

- Motion of Earth: Earth revolves around the sun, thus showing circular motion. It rotates around the axis showing rotatory motion. Both the above motions are repeated after a fixed interval of time, so it shows periodic motion too.
- Bicycle : When a person rides a bicycle, the cycle and the rider show translatory motion whereas the wheels show translatory motion.
- Screw: When a screw is screwed into a box it shows both rectilinear and rotatory motion

Objects/Actions having more than one type of motion

- Drawing water from well : In this case the pulley on which rope is put has circular motion and bucket has linear motion
- Frisbee: In this the frisbee has rotational motion as well as linear motion in the direction it moves
- Sewing machine : Needle of the sewing machine oscillates and the wheel rotates in circular motion.



Home Work

What is rotatory motion? Give *two* examples.

What is meant by circular motion? Give *one* example.

How does rotatory motion differ from circular motion?

Explain oscillatory motion by giving *one* example.

What is vibratory motion? Give *one* example

Differentiate between periodic and non-periodic motions by giving an example of each.

What is random motion? Give an example.