

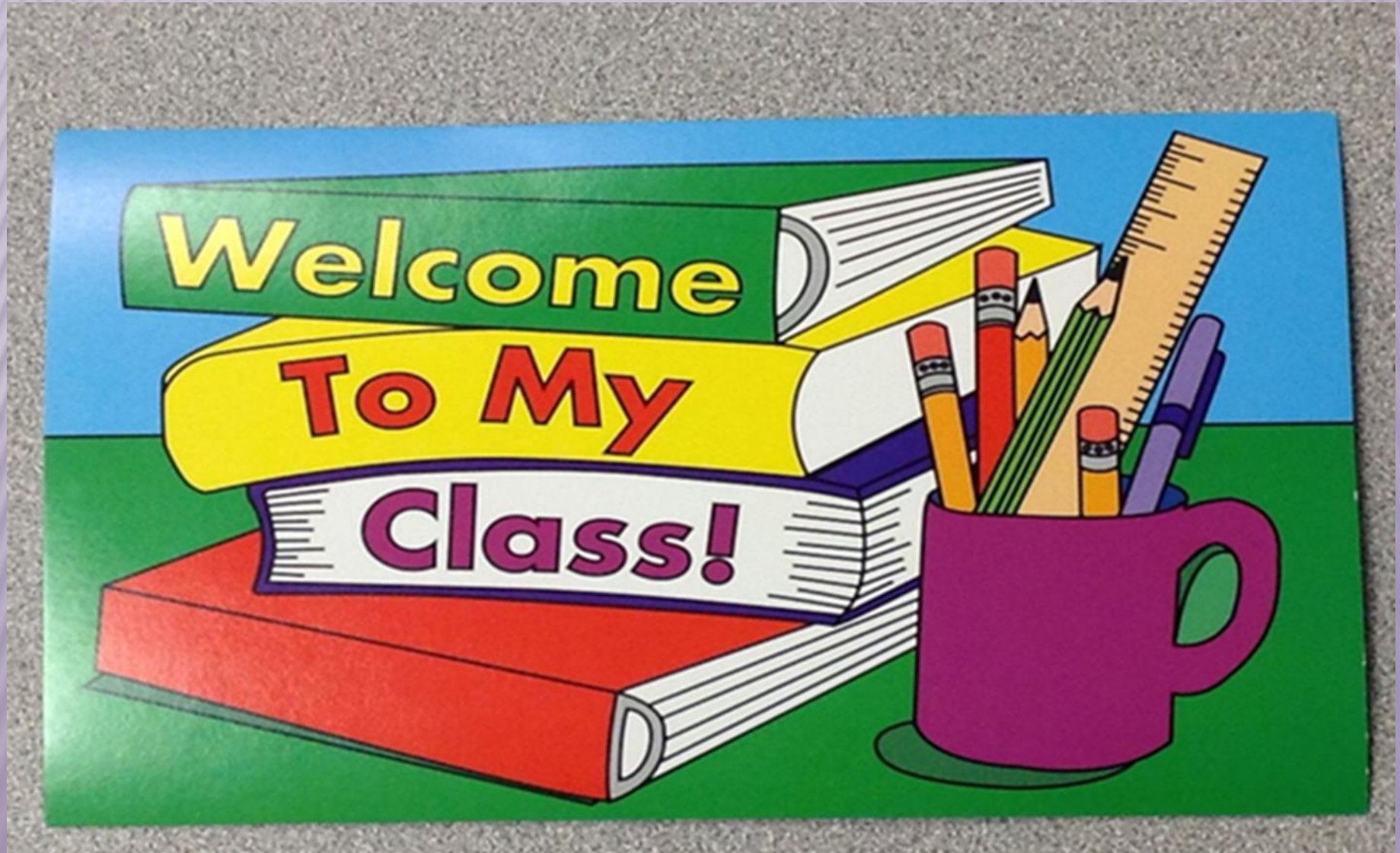


Pakistan School
Kingdom of Bahrain



CLASS : 9

SUBJECT : PHYSICS



Engaging starter

- ▶ Differentiate between these two sides of picture:



TOPIC

× Types of

OBJECTIVE

- ✘ At the end of this lesson students will be able to :
- ✘ Differentiate between different types of motion.

REST

- ✖ Definition: “A body is said to be at rest, if it does not change its position with respect to its surroundings”.
- ✖ Example: 1. A book on a table.
- ✖ 2. A tree beside a road.



MOTION

- ✖ Definition: “A body is said to be in motion, if it changes its position with respect to its surroundings”.
- ✖ Example: 1. A car moving on a road
- ✖ 2. A boy playing football.



SURROUNDINGS:

- ✖ Surroundings are the places in its neighborhoods where various objects are present”.
- ✖ Q. Is State of Rest or Motion relative? Explain with example that rest or motion of a body is relative.
- ✖ The state of rest or motion of a body is relative.
- ✖ For Example:
- ✖ A passenger sitting in a moving bus is at rest because he/she is not changing his/her position with respect to other passengers or objects in the bus. But to an observer outside the bus, the passengers and the objects inside the bus are in motion.



TYPES OF MOTION:

- ✕ Everything in the universe is in motion. However, different objects move differently. Some objects move along a straight line, some move in a curved path, and some move in some other way.
- ✕ There are three types of motion.
 - Translatory motion
 - Rotatory motion
 - Vibratory motion

1. TRANSLATORY MOTION:

- ✗ “In translational motion, a body moves along a line without any rotation. The line may be straight or curved”.
- ✗ For Example:
 - A car moving in a straight line has translational motion.

Examples on translational motion



A person's motion



A bicycle's motion



A car's motion



Train's motion

TYPES OF TRANSLATORY MOTION:

- ✖ Translatory motion can be divided into three types:
 - Linear motion
 - Circular motion
 - Random motion

LINEAR MOTION:

- ✗ “Straight line motion of a body is known as its linear motion”.
- ✗ For Example:
- ✗ We come across many objects which are moving in a straight line.
 - + A car moving on a straight and level road is linear motion.

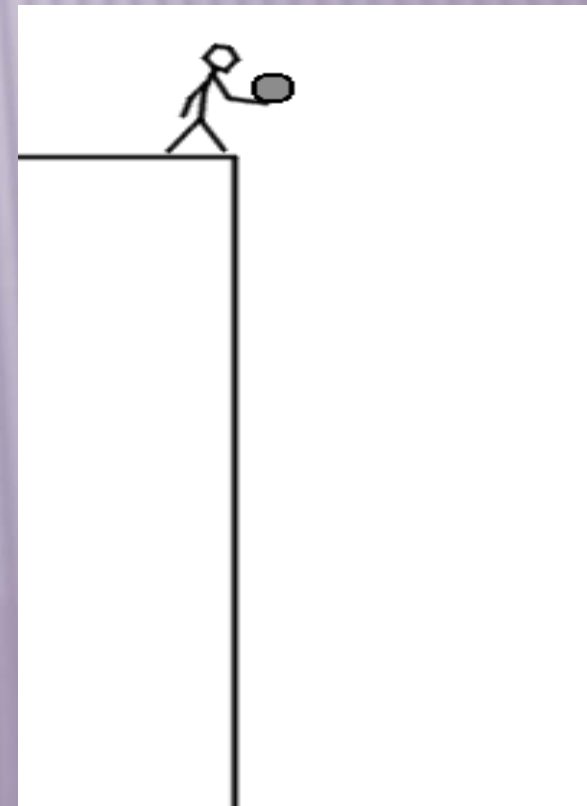
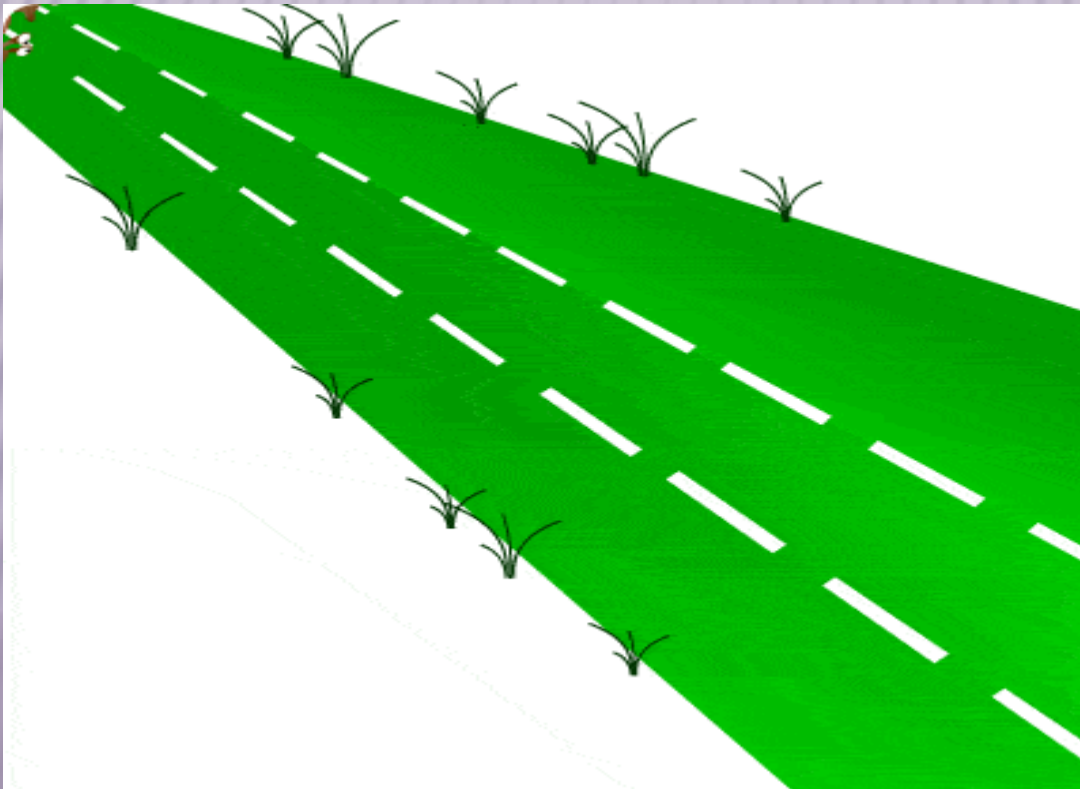


ng straight in air.

vertically down are also the
ear motion.

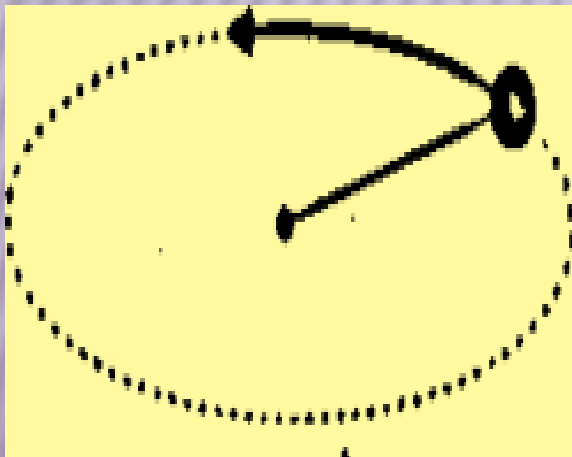
EXAMPLES OF LINEAR MOTION

- ✖ Race on a straight road



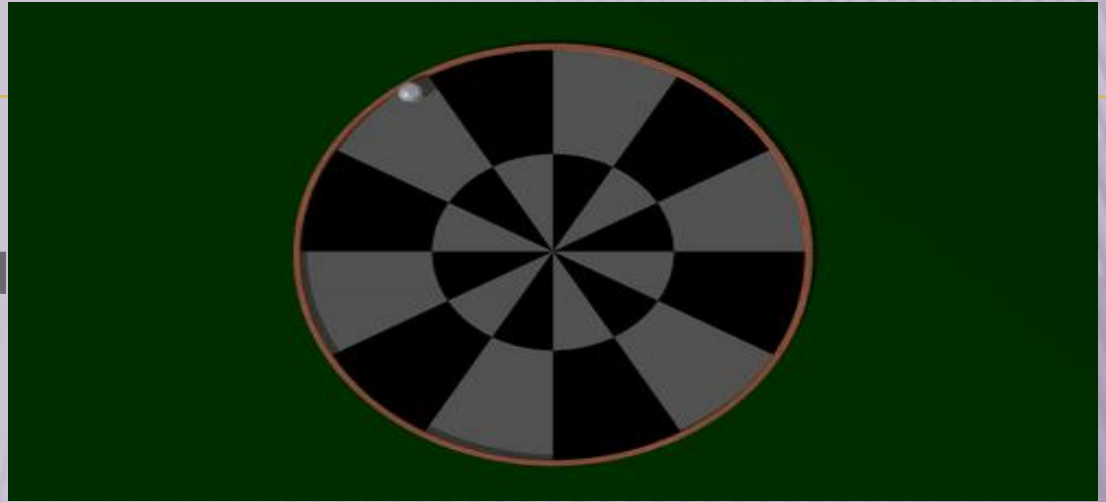
CIRCULAR MOTION:

- ✗ “The motion of an object in a circular path is known as circular motion”.
- ✗ For Example:
 - + A stone tied at the end of a string can be made to whirl. The stone moves in a circle and thus has circular motion.
 - + A bicycle or a car moving along a circular track possesses circular motion.
 - + Motion of the Earth around the Sun and motion of the moon around the Earth are also the examples of circular motions.

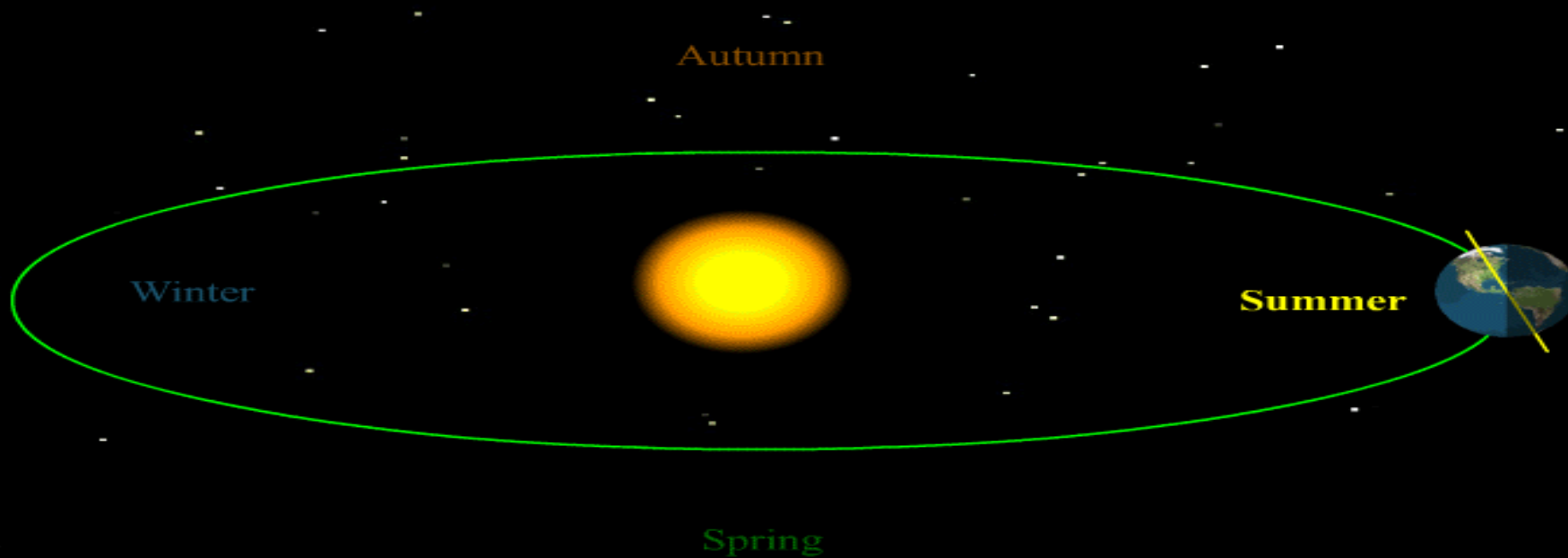


EXAMPLES

✕ Objects moving u



Season designations are for Northern Hemisphere



RANDOM MOTION:

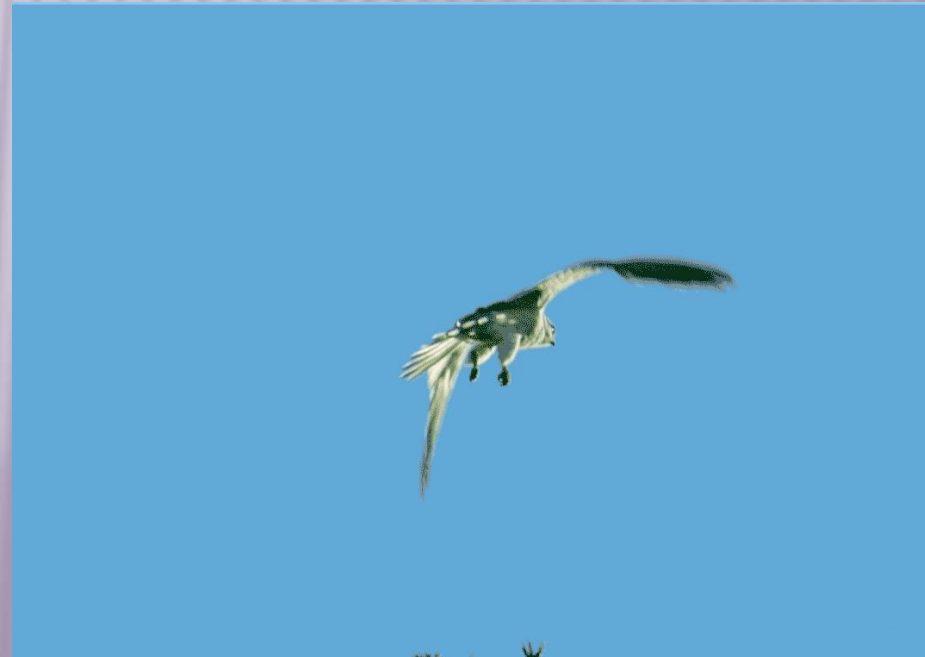
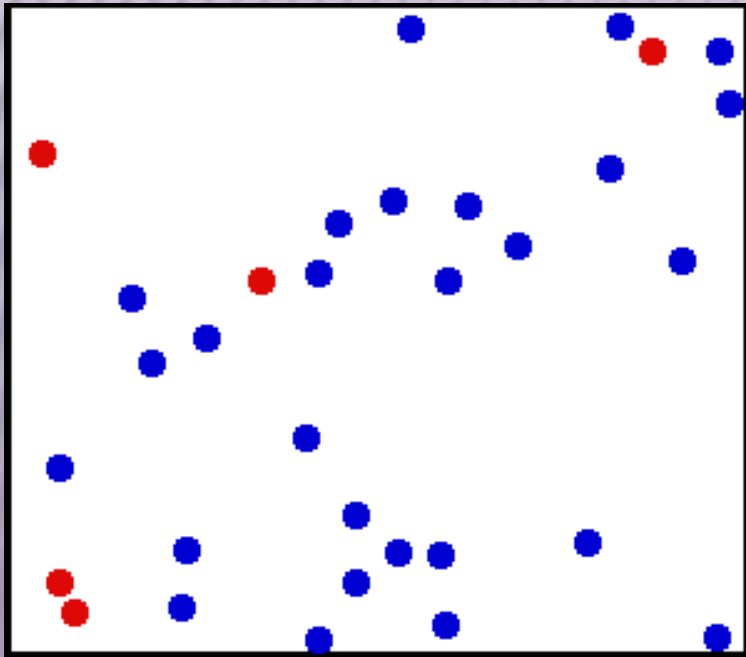
- ✗ “The disordered or irregular motion of an object is called random motion”.
- ✗ For Example:
 - + The motion of insects and birds are irregular. Thus, motion of insects and birds is random motion.
 - + The motion of dust or smoke particles in the air is also random motion.



an motion of a gas or liquid molecules
zig zag path is also an example of random

EXAMPLES OF RANDOM MOTION

✕ Motion of molecules



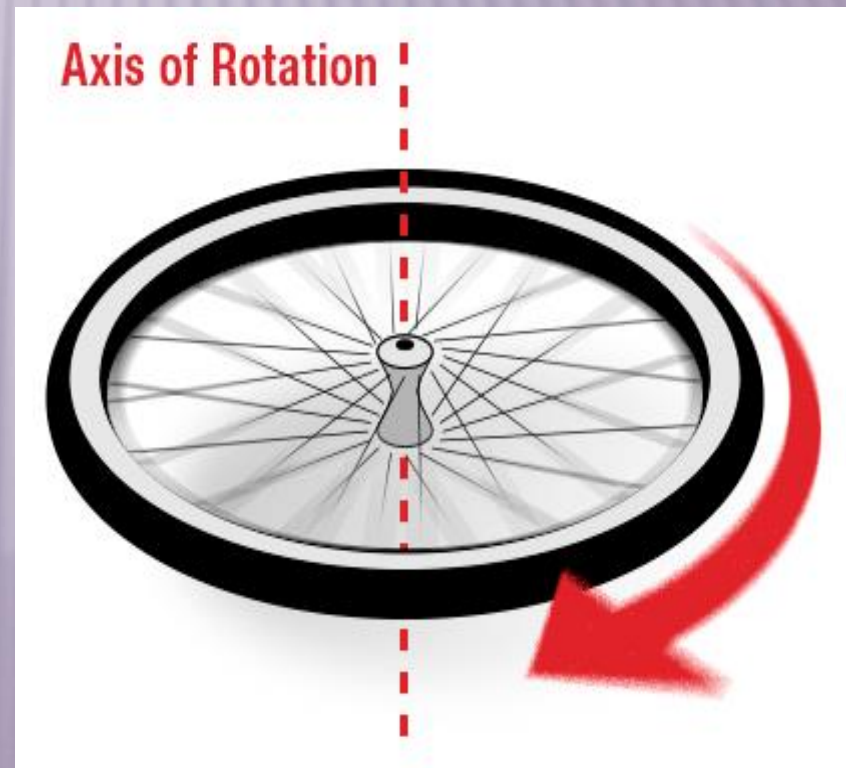
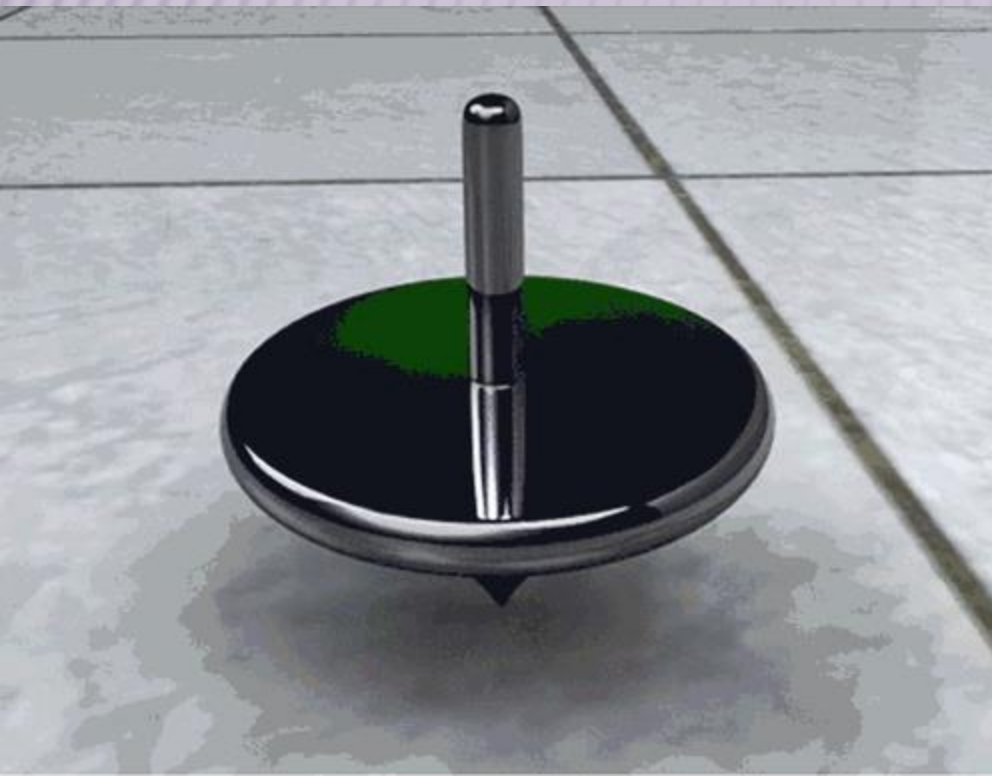
ROTATORY MOTION:

- ✖ The spinning motion of a body about its axis is called its rotatory motion”.
- ✖ Axis: “An axis is a line around which a body rotates”.
- ✖ For Example:
 - The top spins about its axis passing through it and thus it possesses rotatory motion.
 - The motion of a wheel about its axis and that of a steering wheel are the examples of rotatory motion.
 - The motion of the Earth about its geographic axis that causes day and night is rotatory motion.



EXAMPLES OF ROTATORY MOTION

✖ Motion of top



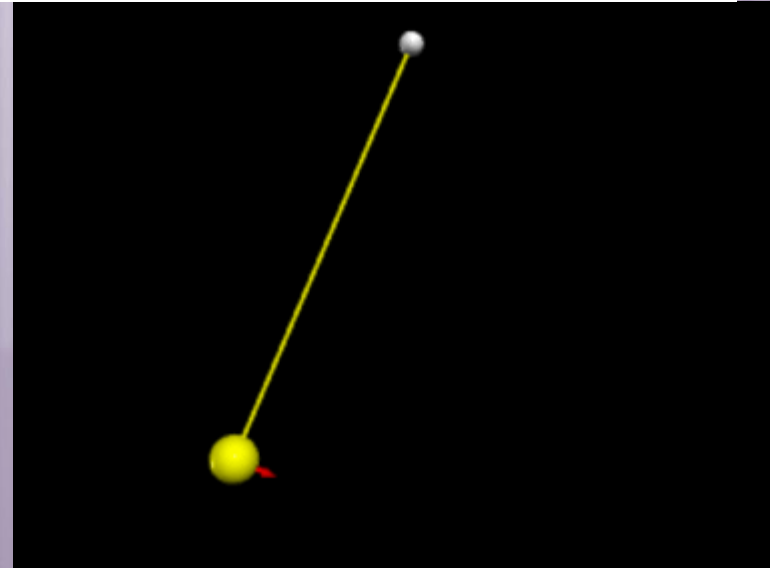
VIBRATORY MOTION:

- ✗ “To and fro motion of a body about its mean position is known as vibratory motion”.
- ✗ For Example:
 - Consider a baby in a swing as it is pushed, the swing move back and forth about its mean position. The motion of the baby repeats from one extreme to the other extreme with the swing.
 - To and fro motion of the pendulum of a clock about its mean position, it is called vibratory motion.
 - A baby in a cradle moving to and fro motion.
 - To and fro motion of the hammer of a ringing electric bell.



EXAMPLES OF VIBRATORY MOTION

- ✖ Motion of pendulum in clock



PLENARY

- In rest the body isaccording to its surroundings.
- Describe three types of motion. (names)
- In linear motion , the body will move in a straight line.
T/F
- Motion of moon around earth is example of
- Give one example of random motion.
- In rotatory motion body will move about its(axis /side) .
- Describe vibratory motion with example.



HOME WORK

- ✖ Describe the difference between rotatory and vibratory motion with the help of examples.



**STAY HOME!
STAY SAFE!**



✕ Allah

Hafiz