

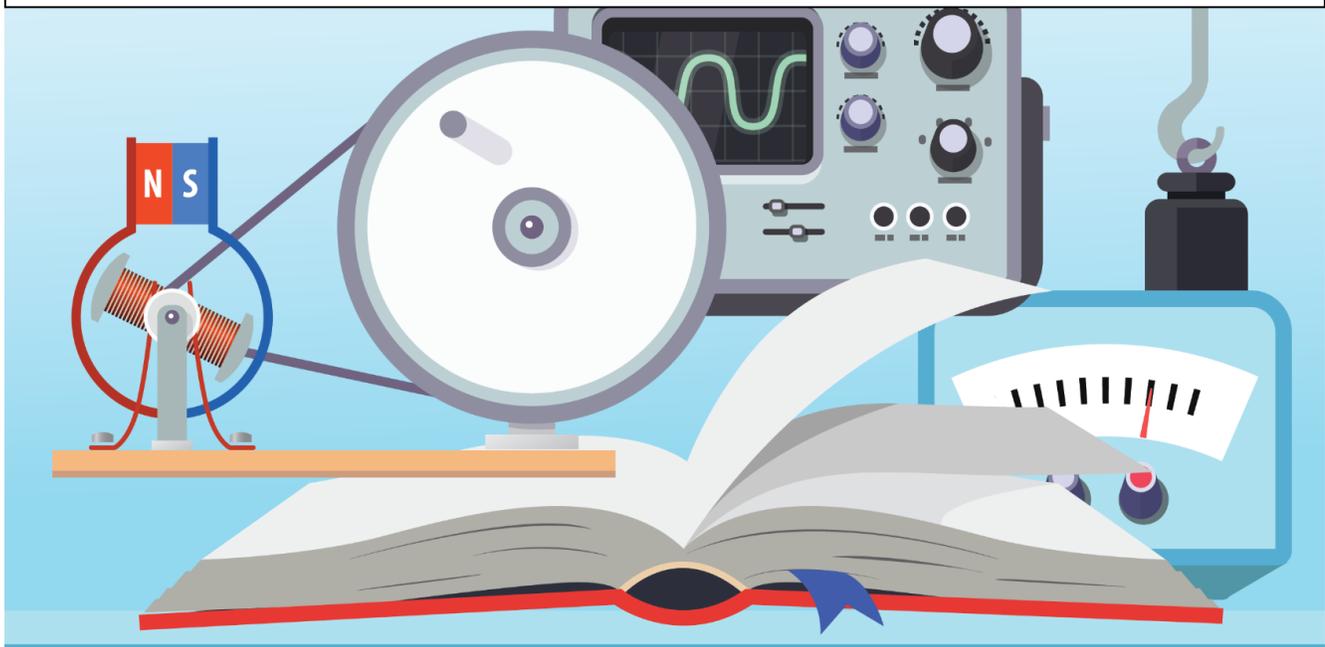
**Subject – Science**

**Grade -8**

**Competency - 4.0**

**Competency Level - 4.1 / 4.2**

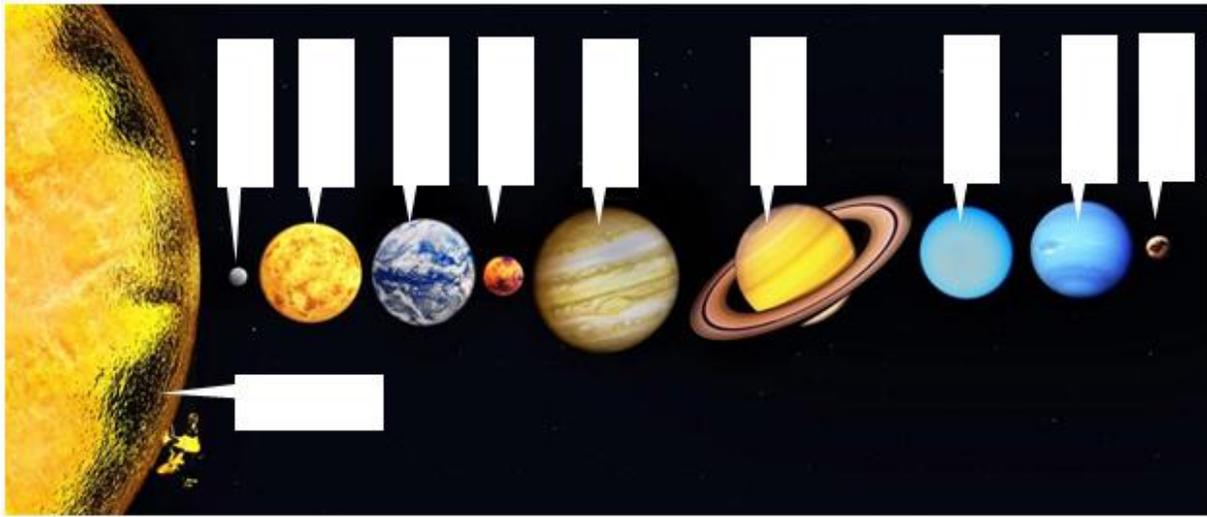
**Lesson –14, Phenomena and  
exploration associated with the solar  
system**



# Exploring the phenomena associated with the solar system

- Set of planets revolving around sun is .....
- Path of planets travelling around the sun is .....and the rotational axis of every planet is inclined perpendicular to its orbital plane.
- Rotation of planets around its own axis is known as ..... and moving around the sun is known as .....

Name following planets in the solar system.

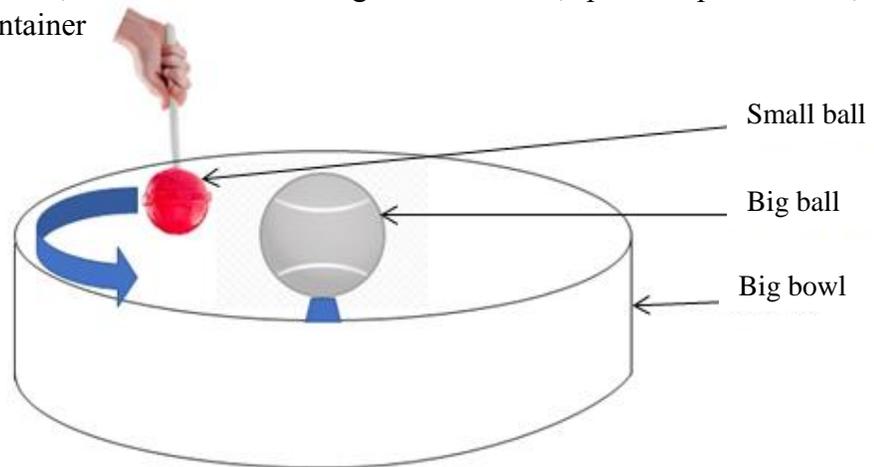


## Activity 1

Needed materials -

Small Rubber or Styrofoam ball, Iron wire with the length about 6 inch, spherical plastic bowl, relatively large ball, Tin container

Method -



- Send iron wire through small ball
- Place large ball on empty tin as given in the picture
- Move the
- ball connected to iron wire around the inner edge of basin

**Observation -**

- When moving the ball around the inner edge of the basin, small ball also rotates around its axis.
- Large ball represent the sun and small ball represent a planet.

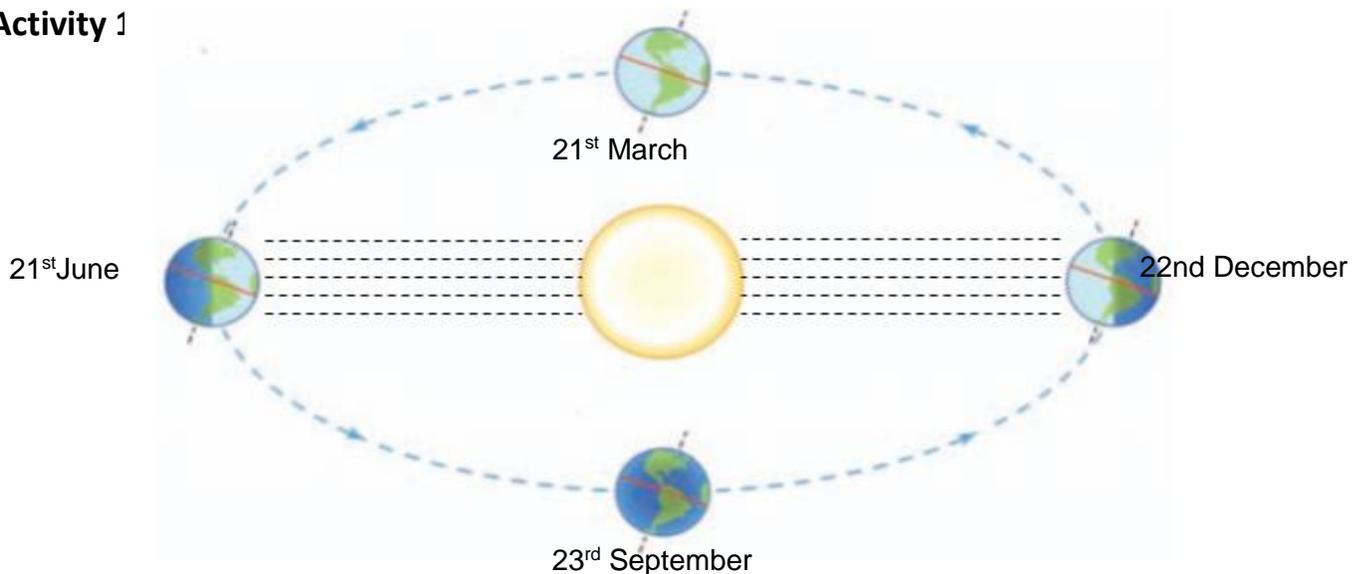
**What incident relevant to solar system illustrates by following activities.**

- i Moving ball around inner edge of the basin.....
- ii Time taken by the small ball to complete one round in the inner edge of the basin  
.....
- iii Moving the small ball around the iron wire  
.....
- iv Time taken by small ball to complete one round around iron wire .....
- v What is similar to the movement of the small ball in the inner edge of the basin.  
.....

**Occurrence of seasonal changes**

Following picture shows four positions of earth around sun.

**Activity 1**



Pay attention for placements on June 21<sup>st</sup> and December 22<sup>nd</sup>

- Draw light rays coming from sun to earth in given lines.
- What is the hemisphere of the earth, that higher amount of perpendicular light rays, are falling .....
- The hemisphere with higher amount of perpendicular light rays falling witnesses ..... season.
- The hemisphere with falling light rays inclined witnesses.....season.
- Reasons for seasonal changes are.....

## Occurring the phases of moon.

Moon is a non – illuminated object. Moon is illuminated due to the falling of sun light on moon. Different illuminated portions of moon can be seen to the earth. Let's do a simple activity to illustrate the above.

## Activity 2

### Materials needed -

Styrofoam ball having about 3cm diameter. Thin wire and Torch

### Method-

- Mark 8 directions in a dark room floor

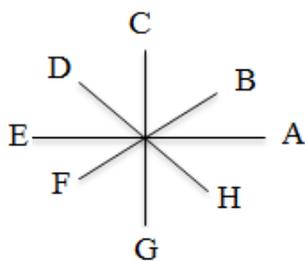


Diagram 1



Diagram 2

- Light up a bulb about 3m from the center of the marked directions.
- Move Styrofoam ball around your head in main 8 directions marked on the floor. Then observe and draw illuminated portions of the ball seen to us.

A	B	C	D	E	F	G	H

- Changing of the illuminated portions of the moon seen to the earth is .....
- **Phenomena associated with solar system**
- Earth take .....to complete one round around sun.
- This process is known as.....
- Time taken by moon to complete one revolution around Earth.....
- What is the incident occur when the moon, the sun and the earth are situated in same line.

### Activity 3

#### Needed material -

Battery torch, Styrofoam balls having the diameter about 1cm and 4cm, A wooden board having the length about 2m.

#### Method -



- Keep large Styrofoam ball and torch on same wooden board.
- Observe the way of illuminating the large styrofoam ball.
- Now keep small Styrofoam ball between torch and large Styrofoam ball.
- Then observe the way of falling the image of small Styrofoam ball on large ball. When considering torch as sun, small ball as moon and large ball as the earth,

- What is the incident shown by the above activity? .....
- What are the names used for very dark and less dark shadows in the above picture?  
.....
- Draw a simple ray diagram to illustrate above phenomena.

### Activity 4



- Keep torch and small styrofoam ball on the board.
- Light up torch. Observe the way of illuminating the small Styrofoam ball
- Place the large styrofoam ball as displayed in the above image.
- Observe the way of falling shadow of large styrofoam ball on small styrofoam ball.
- You can observe that shadow of large ball covers the small ball.
- What is the incident shown by the above activity? .....
- Draw a ray diagram for the above.
- What are the protective measures of observing solar eclipse?

### Exploring universe

- Prepare a small booklet regarding “Let’s explore universe.”

#### Artificial satellites

- What are known as artificial satellites?  
.....
- What are the importance of artificial satellites?  
.....
- What is the time period of observing artificial satellites?  
.....

- How they are observed  
.....
- Prepare a water rocket using the instructions given in the text book.

Make different changes to increase the height of moving it.

Write your observations.

## Star patterns

- How the stars and planets are distinguished?
- What is a star pattern?
- What are the main star patterns seen in different periods of the year? Draw the positions of those star patterns.
- Identify special stars in them and collect information and make notes.

## Activity 5

### Material needed -

Black paper, Bristol board

### Method

Cut a 30cm X 30cm piece of Bristol board.

- Paste a black paper on it.
- Mark the positions of stars.
- Mark small holes in those places and large holes for very bright stars.
- Now go to a lighted bulb and observe star patterns through the holes of board.
- What are the uses of star patterns?  
.....
- What is known as zodiac signs?  
.....
- Explain the dawn of new year using zodiac signs. (Take the help of an adult if needed)