

11

Our Solar System

We are able to observe planets with naked eye and can distinguish the stars different from planets. Let us play a game to have a space walk in our solar system.

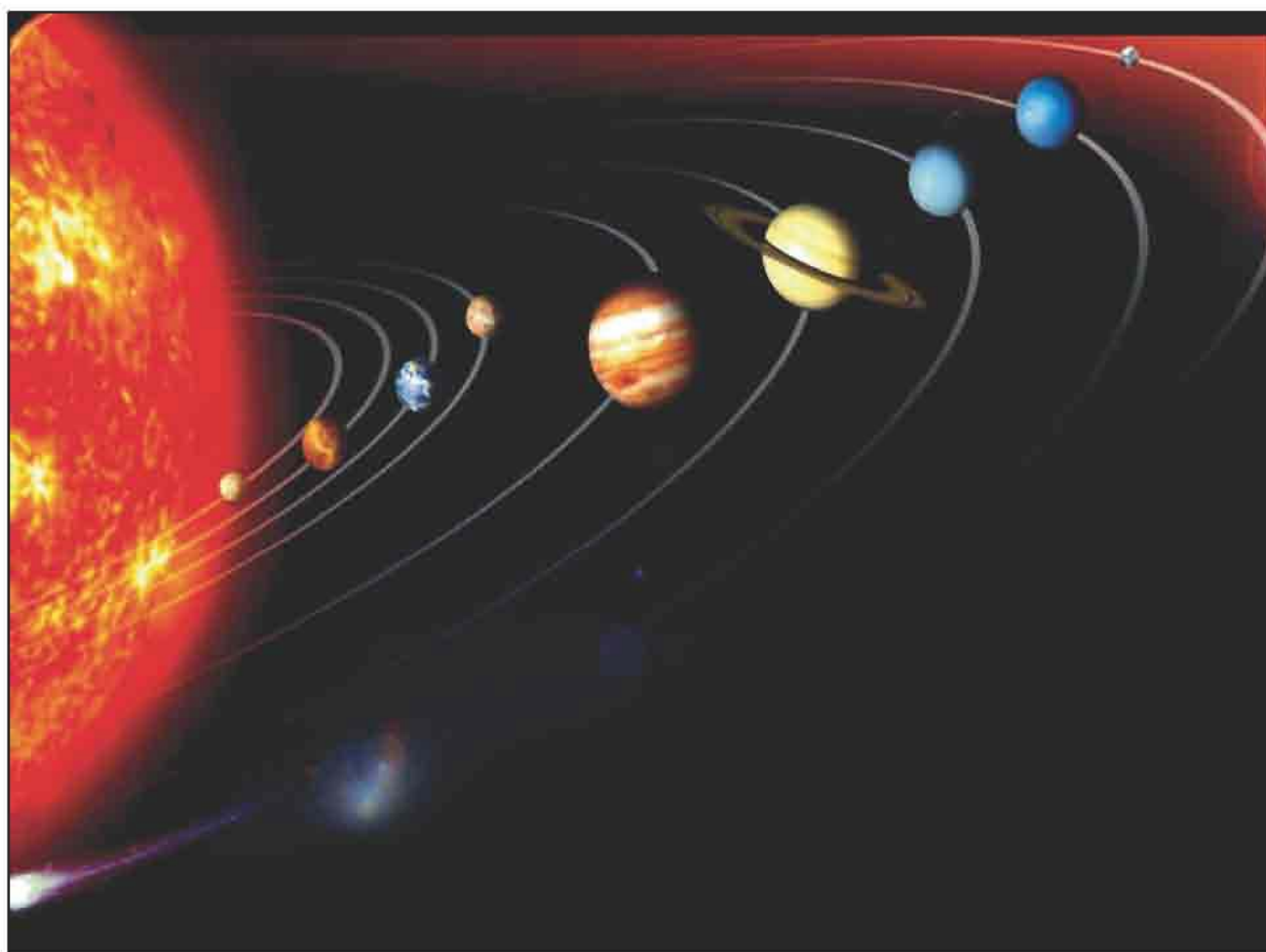


Figure 11.1



What is required? Nine different big cards written with the name of nine planets on them, which can give brief details, thread

What to do?

- Select ten (volunteers) students and request them to stand at the orbital position of Sun, Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune and Pluto

- Request the student named Sun at the centre and others at different orbital positions accordingly around him.
- Tell them to spin along with orbital motion.
- Give the card of introduction to each student according to their planetary identity. Thus Sun and others will give their introductions (on the cards).

Sun : My name is Sun. I am a star. There are planets and satellites, meteorites, comets in my family.

- Each member of my family orbits around myself. It is orbital motion.
- Each member rotates around their own axis, it is known as spinning motion
- Out of nine planets family members, you can observe five namely Mercury, Venues, Mare, Jupiter and Saturn by naked eye from the Earth. To see other telescope is required. I call the members of my family to talk with you, one by one, talk with them.

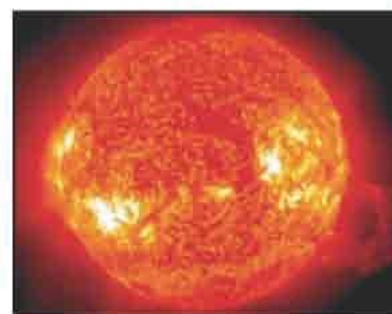


Figure 11.2

Mercury : I am nearest planet to the sun

- I have no atmosphere
- The nights and days are longer here.
- My spinning motion is very slow.

Venus : I am the brightest planet in my solar family.

- You can observe me in the east before the sunrise and in the west after sunset from the Earth.
- I have atmosphere.
- Water is observed in gaseous form here.
- People call me morning star on the Earth.



Figure 11.3



Figure 11.4

Earth : It is rare that I am unknown to any body. I am also a planet of the solar system.

- I am such a planet where life exists.
- Oxygen, Nitrogen, Hydrogen, Carbon dioxide and other gases exist in my atmosphere.
- Water, mainly in liquid form is observed here.
- The planets which have smaller orbits (of motion) but my orbits are known as internal planets. Mercury and Venus are internal planets. The planets having bigger orbits than that of mine are known as external planets. Mars, Jupiter, Saturn, Uranus, Neptune and Pluto are external planets.



Figure 11.5

Mars : I am a red coloured planet

- I possess atmosphere similar to Earth but it is less dense.
- There is large difference observed in temperature at night and during day time here.



Figure 11.6

Jupiter : I have highest volume among all the planets of solar system.

- I am 1317 times bigger than the Earth.
- The gravitational force observed here is the highest in comparison to that of on the other planets.
- My diameter is 11 times more than that of the Earth.
- My mass is 318 times than that of the Earth.
- My mass is 2.5 times higher than total mass of all the remaining planets.



Figure 11.7

Saturn : I am the most beautiful planet.

- My colour is yellowish.
- There are blue iced rings around me. See Fig.
- I have volume size next to Jupiter.



Figure 11.8



Figure 11.9

Uranus

- There are thin rings around myself.
- There is presence of hydrogen and ammonia gases.

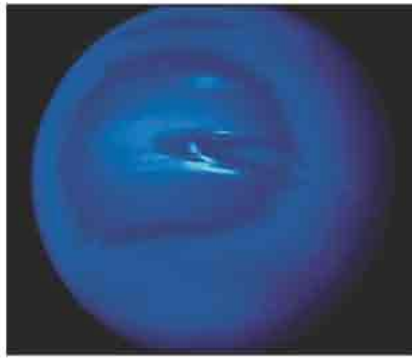


Figure 11.10

Neptune

- There are very thin rings around myself.
- There exists hydrogen and Helium gas.



Figure 11.11

Pluto

- I am the farthest family member of solar system.
- There is almost darkness here.



Think what would happen if the Earth was at a higher or lower distance from the Sun than that of what it is today.

Study the following table

	Internal Planets		Our planets	External planets					
	1	2	3	4	5	6	7	8	9
	Mercury	Venus	Earth	Mars	Jupiter	Saturn	Uranus	Neptune	Pluto
Sun	Nearest to sun	the brightest of all	Have life	Red colour	Biggest of all	Beautiful	Thin rings around it	Very thin rings around it	Dark planet

In addition to those characteristics, there are some of the natural satellites and some planets.

Satellites

- As planets revolve around the sun, similarly some celestial bodies orbit around planets, they are called natural satellites.
- The way the planets spin their own axis of rotation, some of the satellites do have spin motion, They revolve around the planets also. They are not self shining objects like stars.



Figure 11.12

11 ♦ Our Solar System

- Except Venus and Mercury, all planets have natural satellites.
- Moon is natural satellite of the earth.

Meteorites :

- The big rocks (many of them are bigger than that of our moon in size) which failed to become planet at the time of formation of solar system, and which do orbit around the sun, are known as meteorites.
- There is a big belt of such meteorites between the orbits of Mars and Jupiter. They also revolve around the Sun.



Figure 11.13

Comets :

- Due to appearance of a tail, these are also known as “Tailed stars”. They do not have tails in reality.
- Comets are not self-shined objects, but their shining is due to reflection of the sun light from them (comets).
- Majority of comets are of celestial objects detached from a big cloud nearing solar system known as “Cloud of Urt”.



Figure 11.14



A comet named Halley has a periodicity of 76 yrs.

The photograph of Halley's comet shown in fig. 11.14 was clicked in the year 1910. This comet was seen again in 1986.

The astronomical unit to measure the distance between celestial objects is 'light year'. 'Light year' is a distance travelled by light in one year.

$$1 \text{ Light year} = 9.46 \times 10^{12} \text{ Kilometer}$$

As the distances between celestial objects are too large, a measuring unit like km is very small and hence the astronomical unit like light year is used for the measurement.

Shooting starts :

These are basically not the stars but celestial objects. When any object with very high speed approaches very near to the atmosphere of earth, they get exhausted and start burning while passing through the atmosphere and turn to pieces during motion, due to the burning of the object and due to very high friction these objects shine and appear like shooting stars.

Many of such objects do not completely burn out to ashes but some of the pieces of such objects do reach upto the surface of the earth. These are known as shooting stones.

**Figure 11.16****Figure 11.17****Q.1 Write the names of the objects having the following characteristic :**

- (1) Nearest planet in the solar system : _____
- (2) The biggest planet in the solar system : _____
- (3) The most beautiful planet in the solar system _____
- (4) Satellite of the earth : _____
- (5) Darkest planet of the solar system : _____

Q.2 Prepare a collection book by collecting articles from periodicals, newspapers books, etc. about the information of celestial activities taking place periodically.