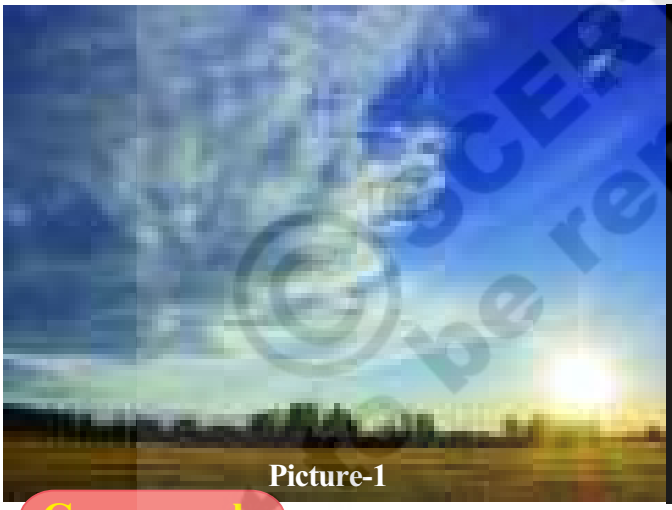
10 SUN AND PLANETS

It was the month of June that day, the weather was very sultry. Nithya and Radhika went to the terrace to sleep. They started talking to each other and looked at the magnificient night sky. Oh! How beautiful the sky is!' said Nithya.

Think and say

- Why did Nithya say that the sky was beautiful? Think and give an answer.
- What are the heavenly bodies that you can see at night in the sky?
- Are these objects visible at day time?
- What are the objects which you can see in the sky during day time?

Observe the following figures



Picture-1

Picture-2

Group work

- Which picture depicts day time?
- Which one do you like more, the day or the night? Why?
- Along with the sun, moon and stars do you observe any other heavenly objects in the sky? Observe and tell.

10.1. Solar system

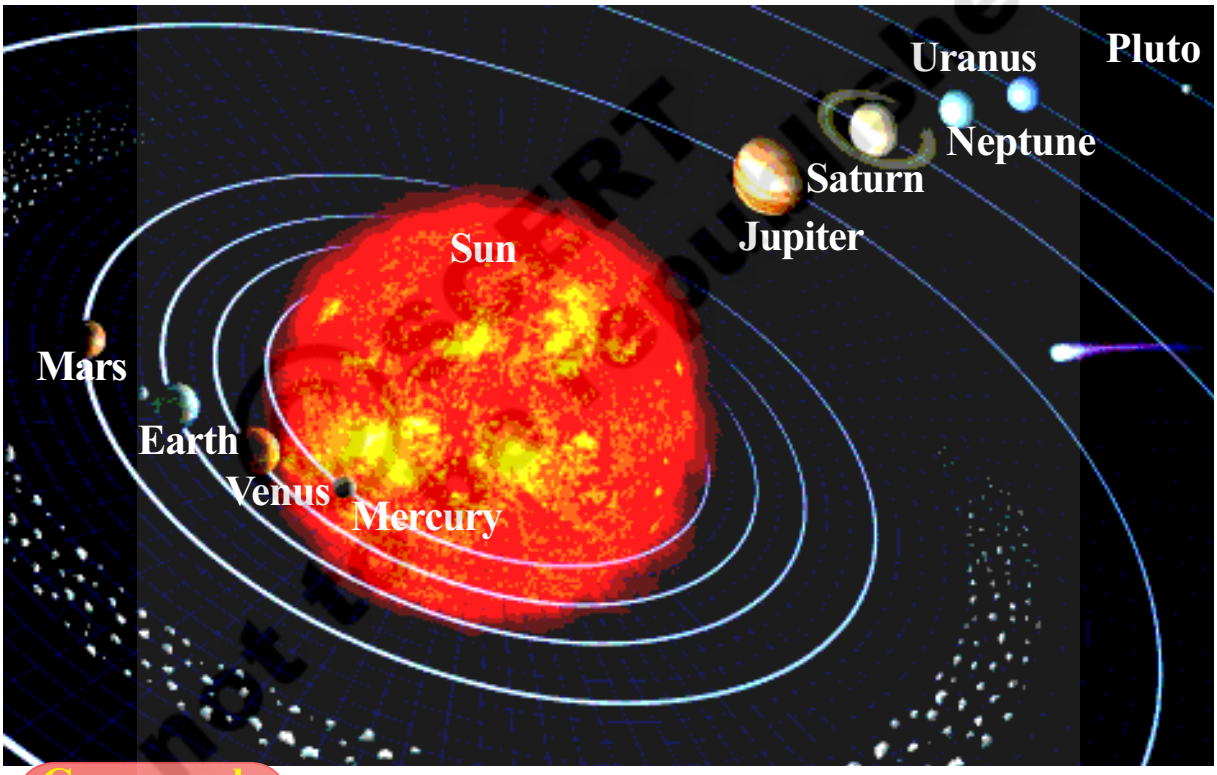
Along with the clouds, sun, moon, stars and our galaxy called the milky way we also have planets in the sky. Some can be seen easily but some cannot be seen without a telescope. The stars which twinkle in the sky at night appear small because they far away from us. Every star is actually a sun. The aeroplane which can accommodate 250-500 passengers looks very small when it flys in the sky. Why? Think.

Do you know?

Sun is a star. It is nearer to the earth when compared to all the other starts in the sky, hence it appears bigger. It constantly emits light and heat. Sun appears like a burning ball of fire. Sun is the only star in the solar system. Sun's rays travel in all directions. It is the main source of energy for all the planets in the solar system. Some portion of this energy in the form of light and heat reaches the earth's surface. Earth and other seven plancts revolve round the sun, in elliptical orbits.

10.2. Sun-Nine planets

Observe the following figure:



Group work

- Which of the objects is the largest in the figure?
- When compared to the sun what is the size of the earth? Which is the biggest planet?
- Which planet is nearest to the sun?
- What is the position of earth from the sun?
- Apart from the sun what are the other objects which you can observe in the figure? What are they called?

The objects that revolve around the sun are called planets. Earth is also a planet. Including the earth there are eight planets in all revolving around the sun. The sun and the planets put together form the solar system. "Pluto" which is seen in the figure was also considered a planet previously. But now it is not considered as a planet. Previously there were nine planets, but now there are only eight of them.

Do this

- Write the word "The sun" on one card and write the names of the eight planets on eight other cards.
- Place the cards on the table with the names facing down, and ask your friends to pick up one card each.
- Read the names and arrange the cards that contain the names of sun and planets according to their order.

Think and say

- What is the position of venus from the sun?
- Which is the biggest planet?
- Which planets are nearer to the earth on its either sides.
- Which planet has rings around it?
- Which planet is farthest from the sun?
- Is mercury hotter than Earth? Why?
- Which planet takes maximum time to revolve round the sun and which planet takes minimum time?

Do you know?

Never look at the sun directly. It will harm your eyes severely.

10.3. Day, night

By looking at the sky Nithya got some doubts

- Why is the dark night always dark?
- How are days and nights caused?

Look at the figure given, and give the answers

Think and say

- Observe the part with 'x' in the figure.
- What is the difference you observe in the parts with 'x'.

Earth is almost spherical in shape though its shape is not like a perfect sphere. It rotates about an imaginary straight line passing through the north and south poles, once in 24 hours, causing day and nights. It is day time on the side of the earth which faces sun and the opposite side has night.

The movement of earth around itself is called "Rotation". Earth rotates at a speed of 30 km. pr second in the universe. No other planet of the solor system has the same mean orbital spped. Earth not only rotates around itself but also, re-volves round the sun. This is called "Revolution".

Earth takes 24 hours for one rotation. This 24 hours is called a day. The 24 hours in a day is divided roughly into 12 hours of day time and 12 hours of night time.

Think and say

- What is the position of the sun when it is afternoon time for us?
- Why the appears to be hotter than the evenings?

The Globe in your school is also in the shaped of a sphere and like the earth.

Do this

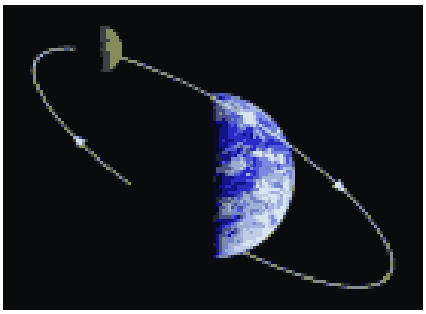
With the help of your teacher demonstrate how day and night is caused using a Globe and a candle. Day is caused in the side A, which is facing the candle and for the B which is on the opposite side it is night. Torch light can also be used instead of acandle.

Earth rotates from west to east that is why the sun rises in the east and sets in the west. This also can be shown with the help of the Globe and the torch light. Focus the torch light on the rotating Globe for this activity.

Group work

- With the help of your teacher demostrate the sun rise and sun set using a globe.

10.4. Earth - moon



Moon is the natural satellite of the earth. An object which revolvs around a planet is called its satellite. Moon rotates in a fixed circular orbit around the earth. It takes 28 days for one revolution. Moon is a non-luminous body and moon takes reflect the

light of the sun falling on its surface. When the moon is orbiting its illuminated half is towards the sun. Only on full moon day we can see the whole of moon, on other days only a part of it is vissable. Moon takes 28 days to orbit the earth taking different shapes. Like earth, moon and other planets also rotates around themselves. Moon revolves around Earth and Earth revolves around the sun.

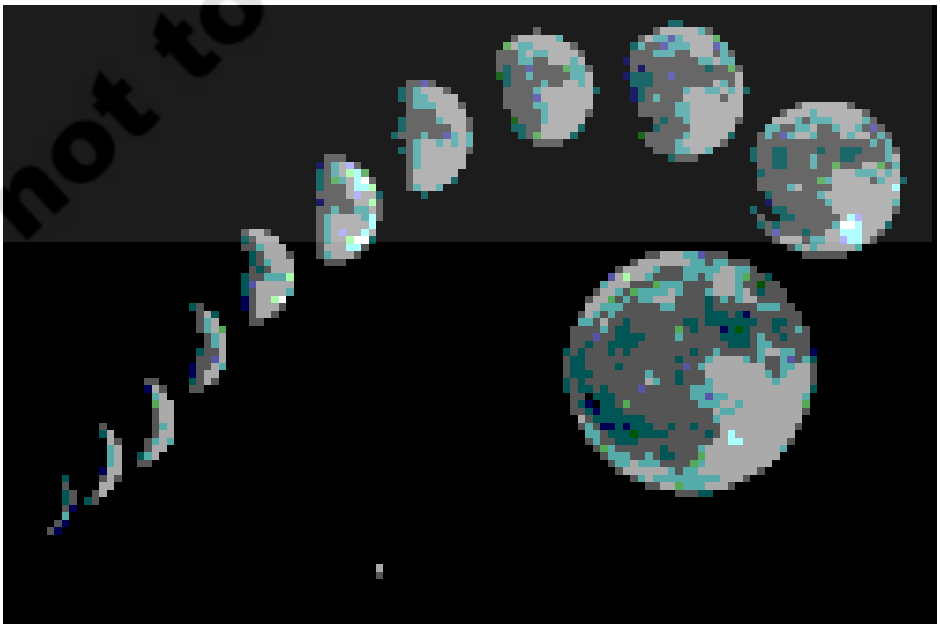
Do This

Observe the moon for one month and record your observations

- On how many days do you find the moon with perfect round shape.
- On which day did the moon appear completely spherical?
- Why moon is not on some visible days?
- When is the moon not seen at all?
- Find which festivals are celebrated when the moon is seen fully and when it is not seen at all.

10.5. Shapes of the moon

When the moon is revolving round the earth it appears that the moon is changing its shape frequently. It appears from the earth that moon takes its shape according to the changes in the absorption of sunlight by the moon's surface.



Keywords

Sky	Night	Sunrise
Stars	Planets	Sunset
Orbit	Satellites	Earth's rotation
Day	Solar System	

What have we learnt?

1. Conceptual understanding

a) Collect information about the solar system and write a note.

b) Compare and contrast the objects which you observe in the sky during the day and during the night?

c) Compare and contrast the sun and the moon?

d) Compare and contrast sunrise and sunset?

2. Questioning and hypothesis

a) What happens if the earth does not rotate?

b) What happens when there is no rainy season?

c) What questions would you ask in the meteorological department to know about the atmosphere.

3. Experiments - field observations

a) Take a bucket of water and stir it in a circular motion using your hand and observe how the water is moving.

b) Observe the moon for a month every day and record your observations.

4. Information skills, projects

a) Collect information regarding the time of sunrise and sunset for a week, and discuss the information gathered.

b) Collect information on minimum and maximum temperatures for a week and discuss the information collected.

c) Observe the sky for one week. Note down the number of days on which moon is seen in the sky and the duration for which it is visible?

5. Communication through mapping skills, drawing pictures and making models

a) Draw a painting to show sunrise.

b) Prepare a model to show the sky at night.

c) Draw the different shapes of the moon that you see in the sky for 15 days.

d) Prepare a model of the solar system and display in the classroom.

6. Appreciation, values and creating awareness towards bio-diversity

a) What kind of atmosphere at night makes you feel happy?

b) What is the importance of sun in our lives?

c) Why do some people worship sun and moon?

d) Observe the sky at nights and write your experiences.

Can I do this?

1.	I can explain about atmosphere?	Yes / No
2.	I can tell the reasons for changes in the atmosphere.	Yes / No
3.	I can draw a diagram to show the formation of day and night.	Yes / No
4.	I can analyse the information collected regarding sunrise and sunset for a week.	Yes / No
5.	I can draw the shapes of clouds, sky, sun and moon.	Yes / No
6.	I can prepare a model of solar system and display in the class room.	Yes / No
7.	I can explain about the rotation of the earth.	Yes / No
8.	I can say why the nights are dark.	Yes / No
9.	I can explain the importance of sun in human life.	Yes / No