

# The Sun, The Moon And The Stars

# 15



You see the sun, the moon and the stars in the sky. The sun is one. The moon is one. Stars are innumerable. Moon and stars make the night look bright.

## Do You Know ?

The study of heavenly bodies is called Astronomy.



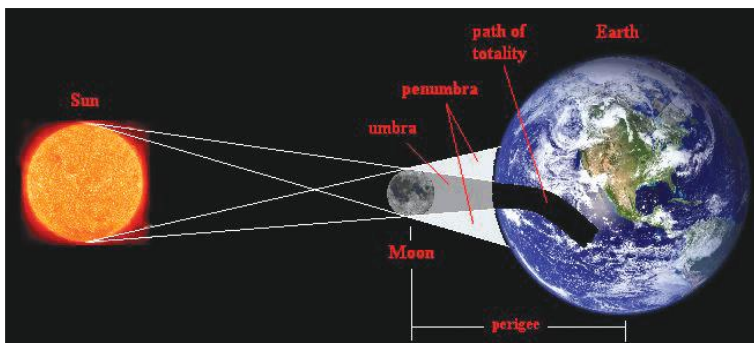
## THE SUN

The sun is a big ball of several hot gases. It is many times bigger than our earth. Why does it look so small ?

The sun looks small because it is 150 million kilometres away from the earth. The sun has its own light. It has its own heat. Planets receive light and heat from the sun.

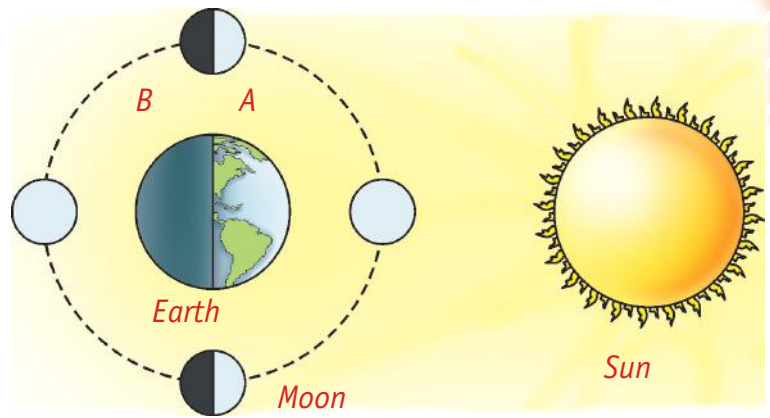
## THE MOON

The moon is a natural satellite of the earth. It is about 3,84,000 kilometres away from the earth. It completes its one rotation around the earth in 27  $\frac{1}{3}$  days. It is much smaller than the earth in size. It is much smaller than the sun. It looks equal to the size of sun because it is much nearer to the earth than the sun. It has craters on it.

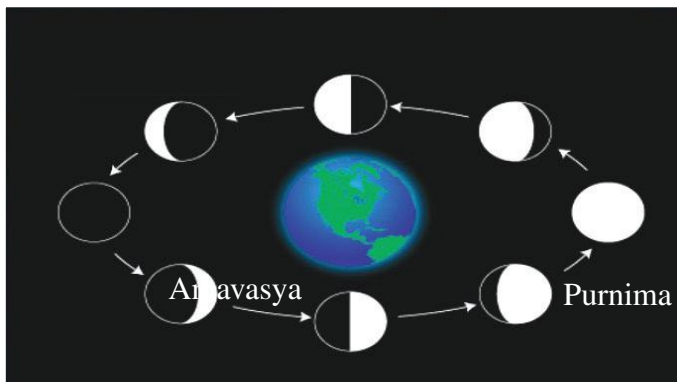


The moon shines by the light of the sun. Its size looks changing because of its movement around the earth. The side of the moon which faces the sun is lighted. The other side is dark.

Look at this picture. In the position A, the moon is between the sun and the earth. Half of the surface of the moon is lighted. Its dark side faces the earth. It does not reflect any light to us. The moon is not visible in the sky on **Amavasya**, the fifteenth night of its waning phase (**Krishna Paksh**). In the position B, the earth is between the sun and the moon. Here also, half the surface of the moon is lighted. As the entire lighted surface of the moon faces the earth, we see full moon on **Purnima**, the fifteenth night of the waxing phase (**Shukla Paksh**).



*Moon orbits arounds earth*



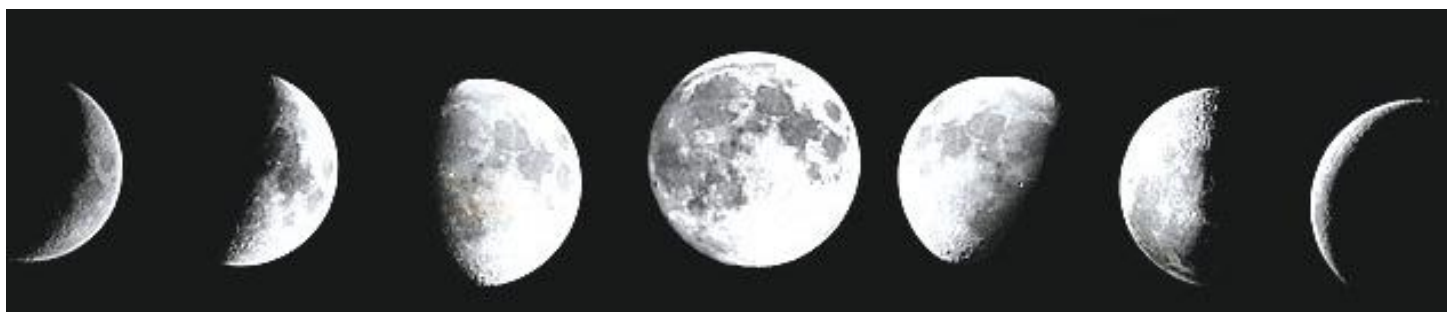
## **DIFFERENT PHASE OF THE MOON**

### 1. New Moon

The new moon is called the crescent (**Dooj Ka Chand**) seen on the second night following Amavasya.

### 2. Crescent Moon

In crescent moon, we see only a part of the lighted face of the moon. The crescent both waxes and wanes according to the phases.



*New Moon*

*Waxing Crescent*

*First Quarter*

*Full Moon*

*Waning Gibbous*

*Last Quarter*

*Waning Crescent*

## Test your Self

- Make a moon diary for a month. Observe the phase of moon every night and note it down in your diary.

When the lighted part of the moon goes on decreasing, it is called the waning phase. Both the waning and the waxing phases of the moon take fourteen days each.

### 3. First and Last Quarter

In the first quarter of the waning phase and in the last quarter of the waxing phase the moon shines in almost half its size.

### 4. Full Moon

On the fourteenth night after the new moon, we see the full moon lighted. This is full moon (Purnima).

## STARS

Look at the sky on a No Moon night. You can see the largest number of stars all over the sky.



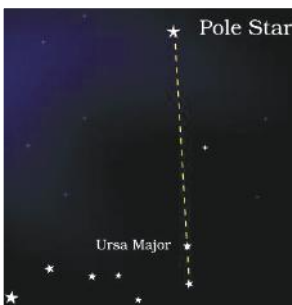
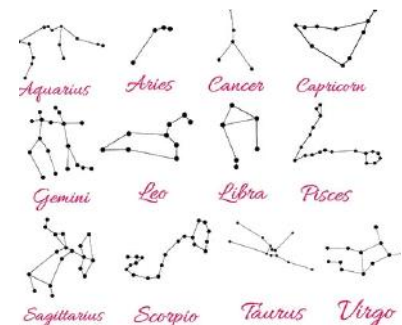
The Star

### Are all the stars same ?

All the stars are not alike. Some are biggest than others. Some are brighter than others. Some are white, yellow or red. Thus, stars differ in size, brightness and colour. Some stars are even bigger than the sun. Why do they look so small? Because the stars are very very far away from the earth.

## Constellations

Stars are seen in groups. Various patterns are formed by different groups of stars. Some famous constellations are Ursa Major (Great Bear). Scorpius (Scorpion), Orient (Hunter) and Leo (Lion).



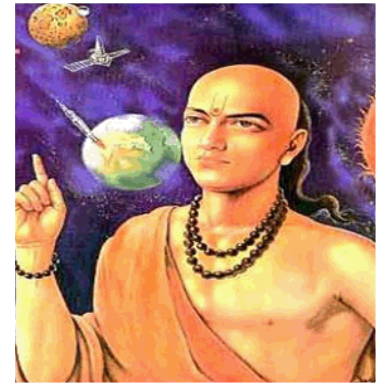
Ursa Minor (Sapta Rishi)

### Sapta Rishi

A famous constellation of stars is known as Sapta Rishi. There are seven stars of which the Pole Star (Dhruva) is very bright. It can be seen in the north direction. In old times, travellers used to find direction with the help of pole star.

## Astronomers

Astronomers are those who study stars, and other celestial bodies. About 1500 years ago, Aryabhata, a famous Indian astronomer, told that the earth is round and it rotates on its axis. He also said that the moon is dark and shines by sun's light. Other famous Indian astronomers were Varahamihira and Bhaskara.



*Aryabhata*



*Jantar Mantar in Delhi*

## Observatories

Stars are observed at observatories with the help of huge microscopes and other instruments. Since ancient times, there were observatories in India.

## Planetariums

Today, we have planetariums in Delhi, Kolkata, Mumbai and other towns. You can see the whole galaxy of stars at a planetarium.



### Know the Keywords :

Sun	: A huge ball of fire and burning gases.
Satellites	: Heavenly or man-made objects that move around a planet.
Constellation	: Groups of stars that seem to be arranged in different patterns in the sky.
Moon	: The natural satellite of the earth.

## Point to Remember

- The sun is a huge ball of burning gases.
- As the moon revolves around the earth, its shape seems to be changing.
- The different shapes of the moon are called phases of the moon.
- Stars are also huge ball of fire. They seem very small because of their great distance from the earth.
- Stars seems to be arranged in groups called constellations.
- The moon has no light of its own. It shines because it reflects the light of the sun.

# EXERCISE TIME

## A. Multiple choice questions (MCQs).

Tick (✓) the correct option :

- \_\_\_\_\_ is the natural satellite of the earth.  
a. Moon  b. Sun  c. Star
- The group of stars having interesting shapes are called \_\_\_\_\_.  
a. Planets  b. Satellites  c. Constellations
- Sun is a big ball of \_\_\_\_\_.  
a. Hot gases  b. Cold gases  c. Air

## B. Tick (✓) the correct and cross (X) the incorrect ones :

- Amavasya is full moon night.
- Purnima is no moon night.
- The sun is not a star.
- Group of stars are called constellations.
- Moon shines of its own light.

## C. Fill in the blanks :

- The moon has no \_\_\_\_\_ of its own.
- Stars seems to be arranged in a group called \_\_\_\_\_.
- The moon goes around the earth in \_\_\_\_\_.
- The moon has no light on \_\_\_\_\_ night.
- The \_\_\_\_\_ goes round the sun.

## D. Answer the following questions :

- What is sun?
- What is moon?
- What are stars?
- What are constellations of stars?
- From where does the moon get light?



Creative Work

- Collect the pictures of two Indian and one American astronomers. Name them :