**BEFORE WE START, LET'S CHECK****What you already know**

Look at the pictures and name the following.

**What you will know**

What are the earth's neighbours in space?



What is the sun and the solar system?



Why does the moon appear to have different shapes?

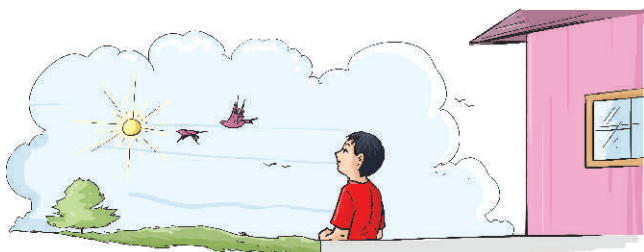


What are stars and constellations?



Go to the terrace, balcony or an open area in your house on a clear night. Look at the sky carefully. You will see many tiny specs of light twinkling all over the sky. They are **stars**. Some stars are quite bright and some are dim. Some specs of light do not twinkle. They are the **planets**.

Besides these, you will also see the silver **moon** shining in the sky.



Now go to the same place during a clear day. You will find that all the stars, planets and the moon have disappeared and there is a huge disc-like object shining brightly in the sky. It is the **sun**.

The sun, moon, stars and planets are our neighbours in space. Let us know more about them.

THE SUN



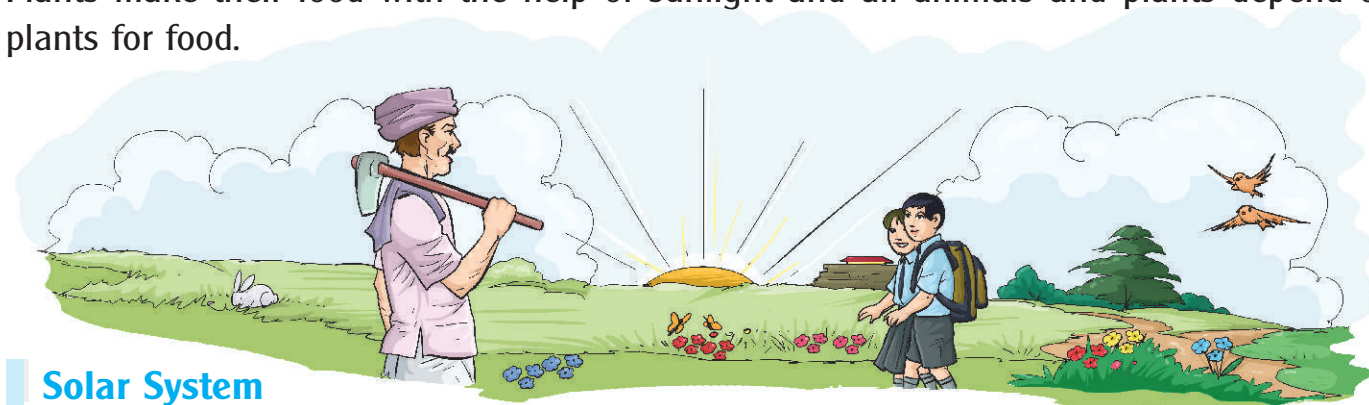
The sun is a huge ball of fire. It consists of many gases, which are burning continuously.

The sun is in fact a star. It is the nearest star to the earth.

The sun is very big in size. Though the earth seems very big to us, the sun is much bigger than the earth. It is so big that it can hold about ten lac earths in it. But the sun appears small because it is very far from us. The sun is about 1,500 lacs km away from the earth.

The sun is very hot. The temperature of its surface is about 5,500°C.

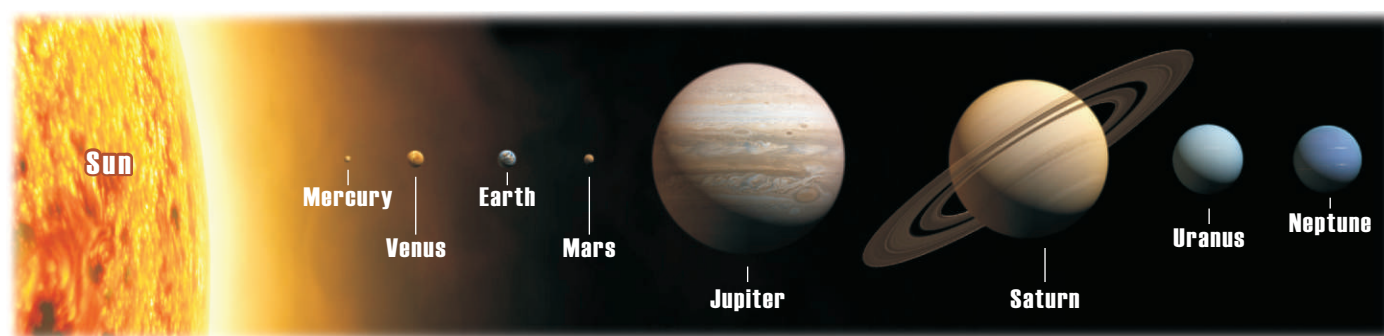
The sun is very important to us as there would be no life on the earth without the sun. Plants make their food with the help of sunlight and all animals and plants depend on plants for food.



Solar System

As the day passes, it seems that the sun has moved across the sky. In reality, the sun does not move. It appears to change its position due to the rotation of the earth.

The earth also revolves around the sun in a fixed orbit. But the earth is not alone. There are eight such bodies which move around the sun. They are called **planets**. The sun and its eight planets together form the **solar system**. Look at the picture given below and learn the names of the eight planets. Also observe the relative size of each planet.



the solar system

THE MOON



The moon is our nearest neighbour in space. The moon moves around the earth in the same way as the earth moves around the sun. The moon completes one revolution in about 27 days.

A body which moves around a planet in a fixed orbit is called a **natural satellite**. The moon is the natural satellite of the earth. Five other planets also have their own natural satellites. Some of them have more than one satellite.

KNOW A FACT

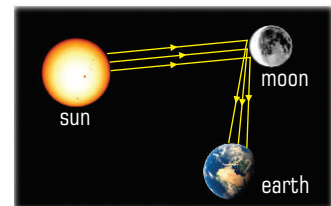
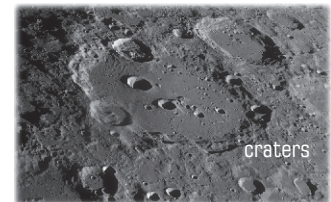


Man has also sent many artificial satellites in the space. Because of these satellites, we can talk to our friends and relatives living in different countries and watch international events 'live' on TV.

The moon is also a very large body. But it is much smaller than the earth. Look at the picture given here and compare their relative sizes.

Some astronauts have already visited the moon. The moon has rocky mountains and sand-covered plains. There are huge holes, called **craters**, on its surface. It is dusty and dry and there is no air.

Though the moon shines brightly at night, it has no light of its own. The moonlight that we get is actually the sunlight that gets reflected off the surface of the moon. We cannot see the moon during the day because of the bright light of the sun.



Phases of the moon

The moon is round in shape, but it appears to change its shape every day. These different shapes are known as the **phases of the moon**.

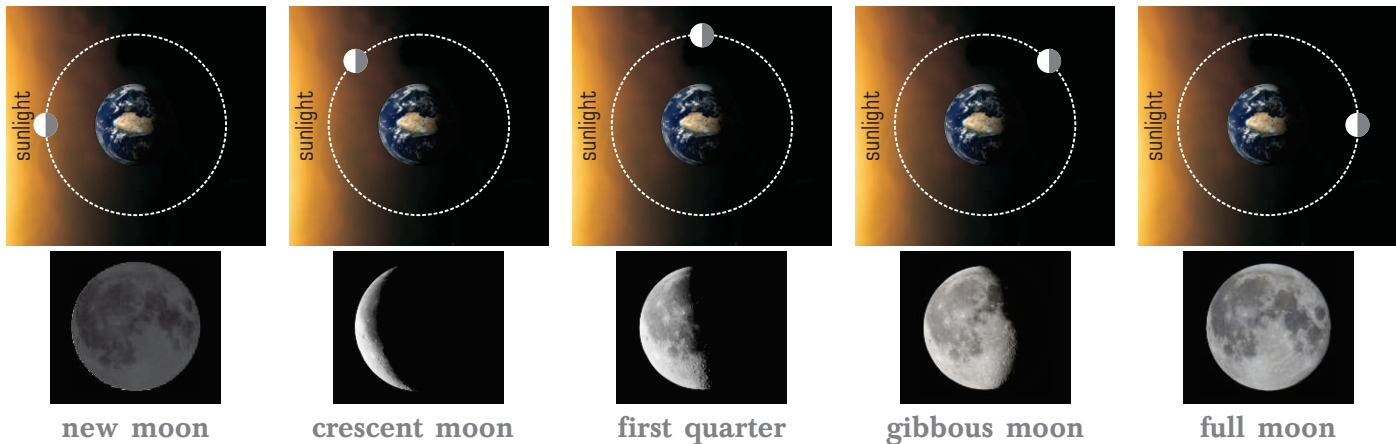


phases of the moon

Let us now study why this happens.

Besides revolving around the earth, the moon also rotates on its axis. The time taken by the moon to complete one rotation is exactly equal to the time taken to complete one revolution. That is why, by looking from any point on the earth, we always see the same side of the moon.

The relative positions of the sun, the earth and the moon keep changing.



When the moon is between the sun and the earth, the earth-facing side of the moon does not get any sunlight. We do not see the moon at all. We call it the **new moon**.

After two or three days, we see only a part of the lighted face. It is called the **crescent moon**.

Within a week, we see moon as a half disk. It is called the **first quarter**.

Then after two or three days, we see moon as more than half disk. It is called the **gibbous moon**.

In two week's time, the earth is between the sun and the moon. Now, the entire earth-facing side of the moon gets sunlight. So the moon looks like a bright round disk. It is called the **full moon**.

STARS

We see innumerable stars twinkling in the sky. They look tiny but actually they are very huge. They are many times bigger than the earth. They look like tiny dots because they are very far from us.

The sun is also a star. Like the sun, all other stars are huge balls of burning gases. They have their own light.

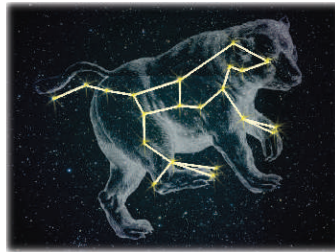
Stars differ greatly in size. They may be small, medium or large in size. The sun is a medium-sized star.

You can use an instrument to look at the stars clearly. This instrument is called the telescope. For thousands of years, people have enjoyed watching the stars.

Some groups of stars seem to form different shapes and patterns in the sky. These groups of stars are called **constellations**. The constellations that can be easily seen in the sky on a clear night are the Ursa Major or Great Bear and the Orion or Hunter.



telescope



Ursa Major



Orion

Words to Remember

stars	– huge balls of burning gases in space
planet	– a body that moves around the sun in a fixed orbit
moon	– the natural satellite of the earth
sun	– the closest star to the earth
solar system	– the sun along with its planets, their natural satellites and other bodies
satellite	– a body that moves around a planet in a fixed orbit
craters	– large holes on the surface of the moon
phases of the moon	– different shapes of the moon as seen from the earth
constellation	– a group of stars forming a certain shape or pattern

Points to Recall

- * The sun, the moon, stars and planets are the earth's neighbour in space.
- * The sun is a hot ball of burning gases.
- * The sun is much bigger than the earth and does not show any movement
- * The sun and the eight planets form the solar system.
- * The moon is a natural satellite of the earth, that is, it moves around the earth in a fixed orbit
- * The moon does not have any light of its own, it reflects the light of the sun.
- * The moon's surface is dusty and dry and has deep holes called craters.
- * Seen from the earth, the moon appears in different shapes called the phases of the moon.
- * The phases of the moon are seen due to the continuous change in the relative positions of the sun, the earth and the moon.
- * Like the sun, all other stars are also huge balls of burning gases.
- * Some groups of stars, called constellations, form different shapes and patterns in the sky.

Exercises

A. Tick (✓) the correct option.

1. What is not seen in the sky?

(a) sun

☐

(b) moon

☐

(c) earth

☐

(d) stars

☐

2. Which of these is the biggest?
 (a) earth ☐ (b) sun ☐ (c) moon ☐ (d) none of these ☐
3. The sun is a _____ star.
 (a) large ☐ (b) medium-sized ☐ (c) small ☐ (d) very small ☐
4. How many planets are there in the solar system?
 (a) six ☐ (b) seven ☐ (c) nine ☐ (d) eight ☐
5. Which of the following is our nearest neighbour in space?
 (a) sun ☐ (b) moon ☐ (c) stars ☐ (d) planets ☐
6. The _____ moon is seen as more than half disk.
 (a) new ☐ (b) crescent ☐ (c) gibbous ☐ (d) first quarter ☐

B. Read the clues and fill in the blank boxes.

1. The nearest star to the earth.
2. The nearest neighbour of the earth in space.
3. This heavenly body has its own light.
4. The constellation having the shape of a hunter.
5. It moves around the sun in a fixed orbit.
6. A large hole on the surface of the moon.
7. It moves around a planet in a fixed orbit.

C. Write 'T' for true statements and 'F' for false ones.

1. The temperature of the sun's surface is about 2,000°C. ☐
2. The sun moves on its axis from the east to the west. ☐
3. The moon shows two movements—revolution and rotation. ☐
4. We always see the same side of the moon. ☐
5. The Ursa Major constellation has the shape of a hunter. ☐

D. Fill in each blank with the correct word.

1. The sun can hold about ten _____ (*thousand / lac*) earths in it.
2. There would be no life on the earth without the _____ (*sun / moon*).
3. The _____ (*Jupiter / Neptune*) is the farthest planet from the sun.
4. The moon is _____ (*an artificial / a natural*) satellite of the earth.
5. Only the _____ (*stars / planets*) twinkle in the sky.

E. Answer in one or two words only.

1. Which is the closest planet to the sun?

Very Short Answer Questions

2. Which is the largest planet in the solar system? _____
3. Who have visited the moon? _____
4. What do we call the huge holes on the surface of the moon? _____
5. Name the instrument used for watching the stars. _____

F. Answer in one sentence only.

1. How far is the sun from the earth?
2. Name all the planets in the solar system.
3. How much time does the moon take to complete one revolution?
4. When can we not see the moon at all?
5. What is a telescope?

G. Answer in two or three sentences.

1. What are artificial satellites? How are they useful to us?
2. Describe the physical features of the moon.
3. Why do we always see the same side of the moon?
4. Write a few lines on the size of stars.
5. What are constellations? Give some examples.



BRAINSTORM

1. The moon is almost as near to the sun as our earth. But there is no life on the moon. Why?
2. Out of Mercury, Earth and Neptune, which planet is the hottest and which is the coldest, and why?



TELL YOUR TEACHER

You have read about the earth's neighbours. We also have neighbours living around us. We should be nice to them.

Read the following activities and tell your teacher what right or wrong thing each child does or is doing.

- Raghu never forgets to greet his neighbours whenever he meets them.
- Pinki lives in Shubhi's neighbourhood. Yesterday Pinki fell ill. Now Shubhi is going to Pinki's house to ask about her health.
- Amit and Raj are playing cricket in the courtyard of Raj's house. Amit hits the ball hard with his bat. The ball flies and breaks the windowpane of his neighbour. Amit gets scared and runs away.
- Ravi and Rinki are neighbours. Today Ravi is very happy because his exams are over. But Rinki's exams will be over after a week. Ravi promises Rinki that he will not listen the music in loud volume till her exams are over.

FIND OUT



She was a female dog from a country which is now known as Russia. In 1959, she became the first living thing to go into space and orbit the earth. Find out her name.



He was an American astronaut. In 1965, he became the first man to walk on the moon. Find out his name.



He is a former Indian Air Force pilot. In 1984, he became the first Indian to go into space. Find out his name.

Project

Take a large sheet of chart paper. Make a table on it as shown below.

1st day	3rd day	5th day	7th day	9th day	11th day	13th day	15th day

Now, go out in the open every alternate night. Observe the moon in the sky and draw its shape in the boxes given in the second row. When the table is complete, write your name at the bottom of the chart and submit it to your teacher.



Activity Time



The Ursa Minor or Little Bear is a constellation of seven stars that you can easily find in the sky. In Hindi, it is known as *saptarishi*. On the north side of this constellation, there is a very bright star called the *pole star*. The pole star always remains in the north direction.

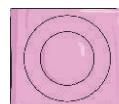
Making a constellation scope



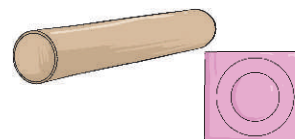
Take a hollow cardboard tube.



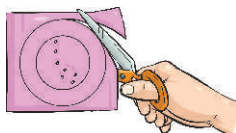
Write the name of the constellation on it.



Draw two circles on a sheet of paper as shown.



The size of the inner circle should be equal to the rim of the tube.



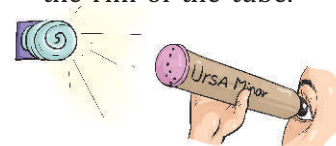
Now draw the constellation and cut the circle out.



Paste the cut-out circle on one end of the tube.



With a pencil point, poke small holes into the stars.



Now hold the scope, towards a source of light and look through it.

Virtual Tour

For more information visit:

- <http://www.sciencekids.co.nz/sciencefacts/space/solarsystem.html>
- <http://www.primaryhomeworkhelp.co.uk/moon/phases.html>

Revision Exercise 2

(Based on chapters 8 to 14)

A. Tick (✓) the correct option.

- Which of the following causes floods?
(a) cold wind ☐ (b) hot wind ☐ (c) heavy rain ☐ (d) none of these ☐
- Which of these is a hard rock?
(a) coal ☐ (b) granite ☐ (c) slate ☐ (d) chalk ☐
- Which of the following has a fixed shape and size?
(a) solid ☐ (b) liquid ☐ (c) gas ☐ (d) all of these ☐
- The earth completes one revolution in about a
(a) day ☐ (b) week ☐ (c) month ☐ (d) year ☐
- The shadow of a red balloon is
(a) orange ☐ (b) pink ☐ (c) red ☐ (d) black ☐
- Which of the following is not an ancient unit of length?
(a) cubit ☐ (b) hand span ☐ (c) foot span ☐ (d) head span ☐
- How many planets are there in the solar system?
(a) eight ☐ (b) seven ☐ (c) nine ☐ (d) six ☐
- Ice can be converted into water by
(a) freezing ☐ (b) heating ☐ (c) cooling ☐ (d) melting ☐

B. Write 'T' for true statements and 'F' for false ones.

- Cloudy nights are cooler than clear nights. ☐
- Measuring length in cubits gives the most accurate results. ☐
- Humus is the lightest constituent of the soil. ☐
- A shadow is formed on the same side as the source of light. ☐
- The earth rotates from the west to the east. ☐

C. Fill in each blank with the correct word.

- Matter exists in _____ (*three / four*) states.
- Friction is _____ (*less / more*) between smooth surfaces.
- _____ (*Jupiter / Neptune*) is the farthest planet from the sun.
- _____ (*Spring / Autumn*) is the season in which trees shed their leaves.
- One litre is _____ (*smaller / bigger*) than one millilitre.

D. Identify the pictures and write their names.

1.



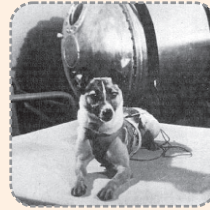
2.



3.



4.



5.



E. Answer in one or two words only.

1. Name one non-measurable property of a thing.
2. Which season has shorter nights and longer days?
3. Name the imaginary line around which the earth rotates.
4. During a solar eclipse, which heavenly body is in the middle?
5. What does coal turn into when heated?

F. Answer in one sentence only.

1. What are the main constituents of soil?
2. What is evaporation?
3. Name all the planets in the solar system.
4. Name three kinds of thermometres.
5. Why do we not feel the movement of the earth?

G. Answer in two or three sentences.

1. How does a cloud form?
2. Write two differences between sandy soil and loam.
3. What kind of objects do not cast shadows and why?

H. Think and answer.

1. 'Sneeze' is a word that refers to a sound that people make. Write four more words that refer to sounds made by people.

or

Why do we have to drink a lot of water on a hot summer day?

2. The moon is almost as near to the sun as our earth. But there is no life on the moon. Why?

or

Why do we need containers to store liquids?