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MY JOYFUL BOOK OF SOCIAL SCIENCE

Textbook CLASS 6

CORDOVA®

CONTENT

Part–I: Geography

Part–II: Civics

Part-III: History

PART-I

GEOGRAPHY

1 Our Universe

KEY TERMS

- collision : an accident involving the crash of two objects
- comets : masses of ice and dust that move around the Sun and look like bright stars with a tail
- gravitational force : (here) the force that pulls objects towards the centre of the space; a force that pulls objects towards the Earth
- infinite : without any end
- meteor : a piece of rock from outer space that makes a bright line across the night sky as it burns up while falling through the Earth's atmosphere
- myth : a story from ancient times, especially one that was told to explain natural events or to describe the early history of the people
- *Saptarishi Mandal* : a group of seven stars
- universe : the whole of space and everything included in it such as the Earth, planets, Sun, the stars

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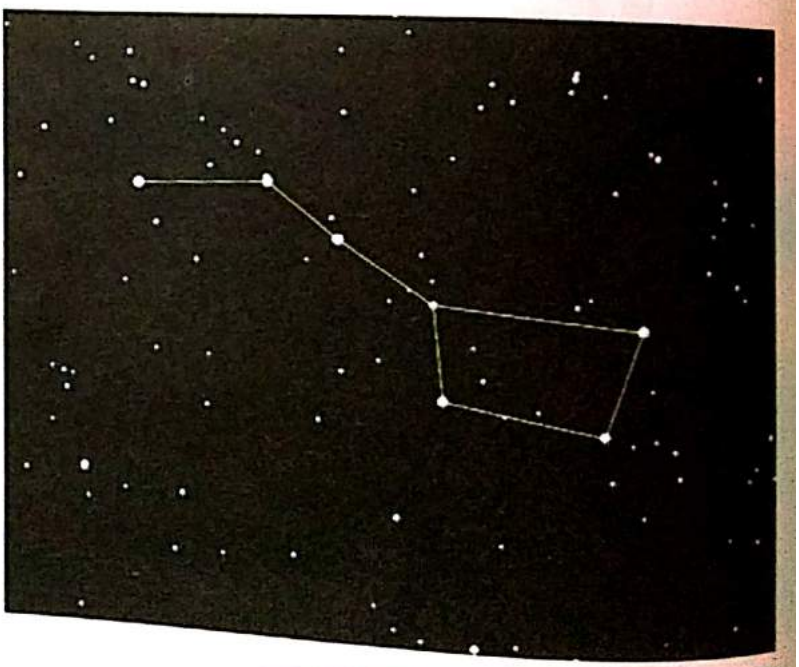
Our Earth is a tiny part of a vast universe and thus, surrounded by infinite space. This space appears blue in the day due to the sunlight but is filled with beautiful twinkling stars at night. For many years, people have tried to solve the mystery behind our universe. What is the distance between stars and the Earth? Why do the stars shine? What are they made up of? This chapter will try to answer these questions.

CONSTELLATIONS

If you concentrate on stars, you can see that several stars cluster together to form various shapes known as **constellations**. These constellations in ancient India were known as *Nakshatra Mandal* (Lamp). They are known by different names throughout the world according to their groups. In India, the group of seven stars as seen in the sky, is recognised as *Saptarishi Mandal* (Big Dipper) because ancient people regarded these stars as seven sages who light up this Earth through their knowledge. In France, it is recognised as a **sauce pan**, in Britain as a **plough**. In other parts of India, the group of four stars of this constellation is known as *Charpai* which is a part of **Ursa Major**.



Saptarishi Mandal

In ancient times, people did not possess advanced technology, so they could not get exact information about these stars. To acquaint themselves, they named these constellations and wove local stories about them.

The Story Of The Pole Star

Once there lived a king called Uttanapada. He had two queens, Suniti and Suruchi. Queen Suniti, the older queen, had a son named Dhruv and Queen Suruchi also had a son named, Uttama.

One day Dhruv went to meet his father in the garden. The king was delighted to see his son and asked him to sit on his lap. Just then, Queen Suruchi came and she was furious to see Dhruv there. She sent him back to his mother.

He was quiet and thoughtful throughout the day long. Finally he asked his mother, "Is there anyone more powerful than the king?"

His mother replied, "Narayan is more powerful than the king." She told him that he lived far away in the mountains.

That night, when his mother was asleep, Dhruv left his house and went to the mountains. Finally, he came to the edge of the Northern Sky, where he met Narada and asked him where he could find Narayan.

Sage Narada told him to remain where he was and to think only of Narayan. So, Dhruv stopped where he was and meditated thinking only of Narayan.

His meditation released such strong forces of energy that it shook the Earth and disturbed the *saptarishis*, the seven sages, who were meditating nearby. They wondered whether it was some great king or God who was releasing such tremendous energy. They were surprised to witness such a small boy meditating. They surrounded the boy and prayed with him as he meditated.

Soon, Indra became worried. He thought that Dhruv was meditating to take his throne as a blessing from Narayan. So, he tried to distract Dhruv. He took the form of Dhruv's mother and begged him to come home. But Dhruv did not listen to him. Indra sent various monsters and tried everything to distract him but he was not successful.

Ultimately, Vishnu came and asked Dhruv for his wish. But Dhruv did not ask him for anything but only smiled at him.

So, Vishnu turned Dhruv into a little star and placed him high in the sky. He turned the seven sages into stars and placed them near Dhruv in a group. This group of stars, today, is known as *Saptarishi* and they always point towards the Dhruv Tara, (according to Hindu mythology), or the Pole Star.

Even now, we can see the little star shining high without moving as Dhruv also never moved from his meditation for Narayan and the seven stars move together protectively around Dhruv the Pole Star. This group of seven stars is known as the Big Dipper in other countries.

Since the ancient people were mostly dependent on agriculture and animal husbandry, these constellations were named after the animals whose images they observed in the group of stars.

These constellations have acquired an important place in the Indian society since the ancient times. These stars were earlier used to determine directions. It was a popular Indian belief that the Pole Star always shines at the North Pole since it points towards the north direction. It was also believed that the first two stars of the *Saptarishi Mandal*, on extention, always pointed towards the Pole Star. However, these stories were often termed as myths as they lacked scientific proof. Among these stories, the story of the Pole Star is the most interesting.

Quick Revision

Fill in the blanks.

1. Our Earth is surrounded by infinite .....
2. A constellation is also known as ..... *Mandal*.
3. The *Charpai* is supposed to be a part of ..... Major.
4. The Pole Star helps in finding the ..... direction.

CELESTIAL BODIES

All the stars, meteors, natural satellites, comets, planets, including our Earth, the Sun and the moon are called **celestial bodies**. Stars which appear to be very tiny from such a long distance are actually huge gaseous bodies. These are formed by the collision of helium and hydrogen and release large amounts of heat and energy. The Sun is the nearest star to the Earth and thus, appears huge. Unlike stars, some of the celestial bodies are made from solid substances and some are made from solid, liquid and gaseous substances.

These celestial bodies are actually huge in size but appear tiny as they are far away from the Earth. Some of these celestial bodies shine brighter and some do not. It is because celestial bodies such as the stars have their own light whereas all planets and satellites reflect light from the Sun. To understand the phenomenon behind the visibility of stars only at night, let us do the following experiment.

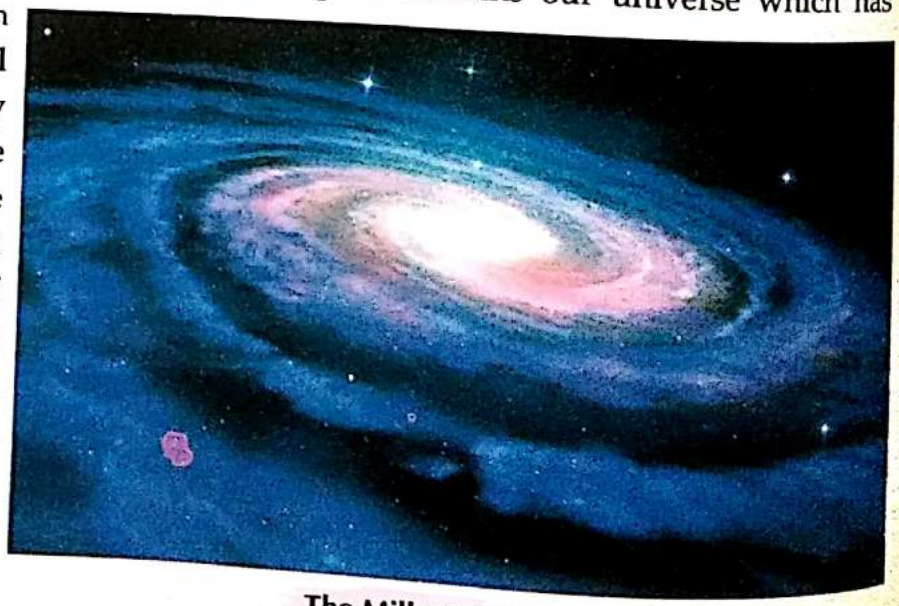
Take a coloured paper and punch a few holes in it with the help of a needle. Then wrap this paper on a torch with the help of a rubber band. Now, light the torch in a dark room. What do you observe? You observe many shining dots on the wall of the room, resembling stars. Now, repeat the exercise with the lights turned on. There are no shining dots on the walls. Likewise, when the Sun rises, other stars also disappear. It means that the Sun, being nearer to the Earth, gives us more light than the other stars. So we cannot see other stars inspite of their presence in the sky.

KNOW More

The Sun is the only star in our galaxy that is not a part of any constellation.

UNIVERSE

All celestial bodies appear to be sculptured and hanging in the sky. This infinite sky is known as **space**. Space contains our universe which has



The Milky Way Galaxy

many celestial bodies found in groups. Different stars, planets, gases, remenants of stars and dust particles are bound together by the force of gravity. They are called **galaxies**. These galaxies take millions of light years to expand. This group of countless galaxies is called **universe**. A small group of stars is called *Nakshatra Mandal* which combines with gases and depositions of dust particles to form galaxies. Different *Nakshatra Mandals* contain *Tarkiya Mandals* and our solar system is one of them.

KNOW More

Light year is the unit used to measure distance. This is used to calculate distance between the heavenly bodies. Light travels at a tremendous speed of about 3,00,000 km per second. The distance that the light travels in a year is called a light year. The light travels 95 billion km in a year, so this distance is known as a light year.

Quick Revision

Write (T) for true and (F) for false statements.

1. All stars, the moon, the Sun, planets and comets are called celestial bodies. ☐
2. Stars are actually very tiny in size. ☐
3. The space contains our universe. ☐
4. Stars can only be seen during daytime. ☐

Origin Of The Universe

The mysteries of the universe have always been a matter of curiosity for humans. There are many stories prevalent regarding the origin of universe. The most acceptable of them is the **Big Bang Theory**. According to this theory, around 13.7 billion years ago, an explosion took place in space which is called the big bang. This explosion led to the formation of the universe and the celestial bodies and since then, the universe has been expanding. Our solar system is a part of the **Milky Way Galaxy**. In ancient India, it was presumed to be a river of light in the sky. That is why it was named *Akash Ganga* which means 'the river flowing in the sky'. Besides Milky Way, there are many other galaxies present in the universe.

Thus, some of the secrets related to our universe have been unveiled by the scientists but some are yet to be discovered.

COMETS

Comets are celestial bodies made up of snow and rocky dust. They also revolve around the Sun in their own orbits. When comets reach near the Sun, they develop a long tail that starts glowing. The tail is thousands of kilometres long. In the past, people considered comets to be bad omens. Scientists believe that there are about 2 billion comets orbiting the Sun.

The most famous comet is the **Halley's Comet**. It can be seen once in every 76 years. It was last seen in 1986. There are some comets that take even more time than Halley's Comet to orbit the Sun.

Quick Revision

Tick (✓) the correct options.

1. The big bang took place ..... billion years ago.
   (a) 14.9 ☐ (b) 13.7 ☐ (c) 12.5 ☐
2. Our universe is still .....
   (a) depleting ☐ (b) expanding ☐
   (c) moving ☐
3. Our solar system is a part of the ..... galaxy.
   (a) Milky Way ☐
   (b) *Nakshatra Mandal* ☐ (c) universe ☐

The Big Bang

Exercise

Use Cordova Smart Class Software on the smart board in class to do these exercises.

1. Choose the correct options.
   (a) A star shines
   (i) through its own light ☐ (ii) through the light of others ☐
   (iii) through the light of the moon ☐ (iv) through the light of the planets ☐
   (b) The direction denoted by the Pole Star is
   (i) North ☐ (ii) South ☐ (iii) East ☐ (iv) West ☐

2. Match the following.

(a) the Sun	(i) a planet
(b) a comet	(ii) a large group of millions of galaxies
(c) the Earth	(iii) a star
(d) the universe	(iv) a larger group of millions of stars
(e) a galaxy	(v) a tailed celestial body

3. Fill in the blanks.
   (a) The group of seven stars is named as ..... in India.
   (b) All the planets and the satellites illuminate due to the light of ..... .
   (c) ..... is the nearest star to the Earth.
   (d) Different ..... are located inside various *Nakshatra Mandals*.
4. What is Halley's comet? Describe its characteristics.
5. What are celestial bodies? What are they formed of?
6. How and when did the universe originate?
7. Define a galaxy.
8. Why can't we see the twinkling stars of night in the day time?
9. Explain the 'Big Bang Theory'.

Additional Questions For Practice

A. Multiple Choice Questions (MCQs) – Tick (✓) the correct options.

1. The group of seven stars in the sky is known as ..... .
   (a) *Charpai* ☐ (b) Scorpius ☐ (c) Great Bear ☐
2. Constellations were named after ..... .
   (a) humans ☐ (b) birds ☐ (c) animals ☐
3. The celestial bodies remain hung in space due to the ..... .
   (a) gravitational force ☐ (b) friction ☐ (c) vacuum ☐
4. Stars produce a large amount of ..... and energy.
   (a) electricity ☐ (b) fire ☐ (c) heat ☐
5. The ..... contains our universe.
   (a) space ☐ (b) galaxy ☐ (c) solar system ☐

B. Fill in the blanks.

1. During night, the sky is fi' ed with ..... stars.
2. The Pole Star can be found with the help of the ..... *Mandal*.
3. Satellites reflect the light of the ..... .
4. The group of countless galaxies is called ..... .

C. Very Short Answer Questions

1. What is the *Saptarishi Mandal* recognised as in Britain?
2. What were the seven stars of the *Saptarishi Mandal* regarded as by ancient Indians?
3. How are stars formed?
4. What is space?

D. Short Answer Questions

1. Why were the constellations named after animals?
2. How can we locate north direction with the help of stars?
3. What is *Akash Ganga*?

E. Long Answer Questions

1. What are constellations? Explain how they came to be known by their present names.
2. Write four features of the celestial bodies.
3. List the heavenly bodies found in our universe.

ACTIVITY

- Collect information about the satellites of Jupiter. Prepare a scrapbook. Do not forget to paste pictures to make your work look beautiful.
- Make a project file on 'The Sun'. Explain its importance to us. Paste pictures to make your project attractive.
- Presence of air, water and sunshine supports life on the Earth. What do you think will happen if these are no longer found on the Earth? Discuss in class.

RECAP

Our Universe

Constellations

- Several stars cluster together to form various shapes called constellations.
- *Saptarishi Mandal*
- Constellations are known by different names in different parts of the world, e.g., *Charpai* in India, Little Bear in Greece.
- Ancient people were dependent on agriculture and animal husbandry, hence constellations were named after animals.
- Earlier stars were used to determine directions.
- Pole Star points towards the north.
- Stories are woven around these stars and constellations.
- These stories are termed as myths as they lack scientific proof.

Celestial Bodies

- All stars, meteors, planets, natural satellites, comets, moon and the Sun are celestial bodies.
- Stars are huge gaseous bodies.
- Stars are formed by collision of helium and hydrogen.
- Some celestial bodies are made from solid and liquid substances.
- Some celestial bodies have their own light.
- Some celestial bodies get light from the Sun, e.g., planets and satellites.

Universe

- space–infinite sky in which all celestial bodies appear to be sculptured and hanging
- Space contains our universe.
- galaxies–stars, planets, gases, remenants of stars and dust particles bound together by the force of gravitation
- Big Bang Theory is the most acceptable theory regarding the origin of universe.
- The explosion took place 13.7 billion years ago in space.
- Our solar system is a part of the Milky Way galaxy.

2 Solar System

KEY TERMS

- asteroids : planet-like large pieces of rocks that revolve around the Sun
- comet : a beautiful heavenly body that has a long tail
- constellations : groups of stars forming various patterns
- galaxy : a group of billions of stars
- meteors : small pieces of rocks that revolve around the Sun
- meteorites : those meteors that reach the surface of the Earth
- orbit : an elliptical path followed by a celestial body around the Sun or planets
- planet : a heavenly body that revolves around the Sun
- *Saptarishi* : a group of seven stars
- satellite : a heavenly body that revolves around a planet
- star : a heavenly body that has its own heat and light

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When we look at the sky, we see different types of objects. During the day, we see the Sun. At night, we see many shining objects in the sky like the stars, the moon and the shooting stars. People have always looked at the sky with curiosity. There have always been some questions in their minds. Why do stars twinkle? Why does the size of the moon change? Where does the Sun hide at night? Let us try to find the answers of these questions in this chapter.

All objects like stars, planets, satellites, comets, asteroids and meteors in the sky are called **celestial** or heavenly bodies and they collectively form the universe.

THE UNIVERSE

The universe is vast and limitless. It is also called **space.** All heavenly bodies as well as dust and gases found in space are included in the universe. Nobody knows exactly how the universe was formed. Most astronomers think that the universe started with a very big explosion called the **big bang** about **13.7 billion years** ago. Our universe has a large number of galaxies. A **galaxy** is a group of billions of stars and clouds of dust and gases. The Sun and the stars form our galaxy. This galaxy is called **Milky Way** or *Akash Ganga*.

KNOW More

Geography, an English word, has its origin in the Greek language. It is made up of two Greek words, 'geo' meaning 'Earth' and 'graphia' meaning 'writing'. It means the description of the Earth.

The Milky Way Galaxy

STARS

Stars are huge heavenly bodies made up of hot gases. They emit their own heat and light. They twinkle at night. They look small because they are very far from us. The Sun is also a star. It looks big because it is very close to the Earth. The second nearest star to the Earth is **Proxima Centauri.**

Celestial or heavenly bodies are very far from each other. The distance between the heavenly bodies and the Earth cannot be measured in ordinary units. Therefore, the distance in space is measured in light years. A **light year** is the distance travelled by light in one year. The distance of **Proxima Centauri** from the Earth is approximately **4.25 light years.**

Clouds of dust and gases in space are called **Nebula**. We can see them when there are stars in or near it.

Quick Revision

Tick (✓) the correct options.

1. The stars, planets, satellites and asteroids are known as ..... bodies.
   (a) celestial ☐ (b) heavenly ☐
   (c) both of these ☐
2. The distance of Proxima Centauri from the Earth is around ..... light years.
   (a) 3.28 ☐ (b) 4.28 ☐
   (c) 5.28 ☐

KNOW More

The speed of light is 300,000 km per second. The light from the Sun reaches the Earth in about 8 minutes.

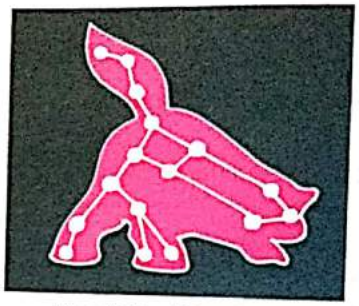
Constellation

When we watch the sky at night, we notice that different groups of stars form various patterns. These groups of stars forming different patterns are called **constellations.**

A group of four stars called *Charpai* or **Little Bear** (Ursa Minor) is one such constellation. It forms a part of the **Ursa Major** or **Great Bear** (Big Bear) constellation. Some other constellations are **Scorpius** (the scorpion), **Leo** (the lion) and **Cygnus** (the swan).

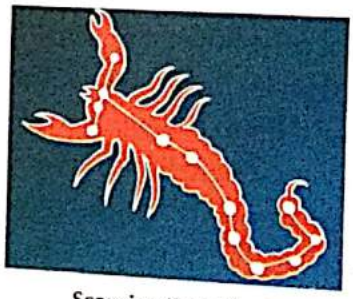
In ancient times, there were no scientific instruments to know the directions during the night. So, people used the stars to determine directions.

The brightest star in the north is the **Pole Star.** It is also called the **North Star.** Its position is fixed in the sky. The first two stars of the *Saptarishi* point towards the **Pole Star.** They are called **pointer stars.** We can easily locate the Pole Star with the help of the *Saptarishi.*



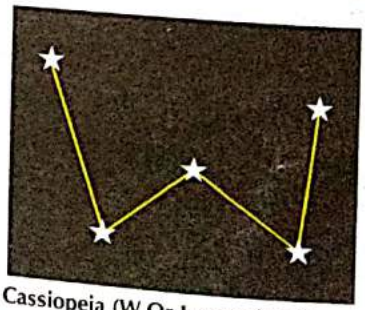
Ursa Major (Great Bear)

Locating The Pole Star



Scorpius (Scorpion)

Leo (Lion)



Cassiopeia (W Or Inverted M Shape)

Some Prominent Constellations

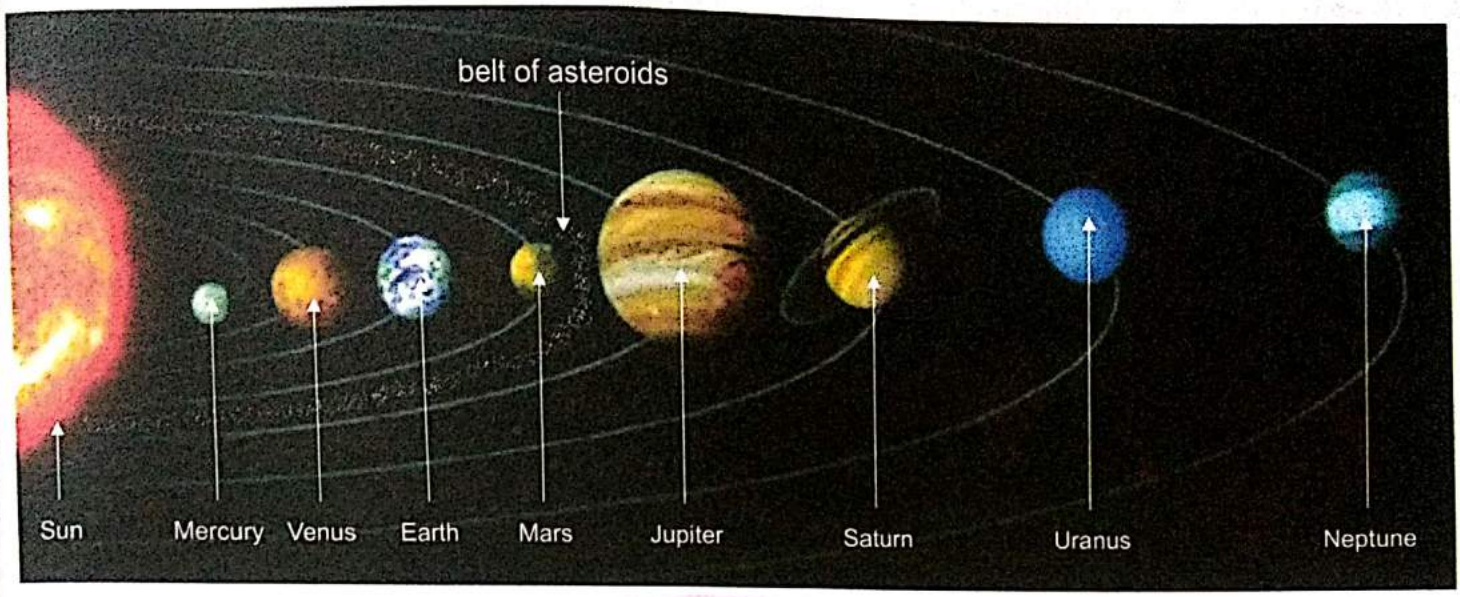
THE SOLAR SYSTEM

According to the modern view of the scientists, our solar system is around 460 crore years old.

The Sun, the eight planets with their satellites, and some other heavenly bodies like asteroids, meteors and comets form the solar system. The Sun is at the centre of the solar system.

THE SUN

The Sun is the largest member of the solar system. All the planets, satellites, asteroids and comets revolve around it. It is called the 'Father of the Solar Family'. It is about 150 million km away from the Earth. It produces a lot of heat and light which is necessary for all forms of life on the Earth. Its gravitational force holds the solar system intact.



The Solar System

The surface temperature of the Sun is about 6,000°C. The Sun is also made up of hot gases. Its gravitational force keeps all the members of the solar system together. All the planets and their satellites shine because they reflect sunlight.

Quick Revision

Fill in the blanks.

1. The brightest star in the north is the .....
2. The largest member of the solar system is the .....
3. The first two stars of the *Saptarishi* are called ..... stars.
4. The Sun is about ..... million km away from the Earth.

THE PLANETS

The planets are celestial bodies that do not have their own heat and light. They are spherical in shape. They revolve around the Sun in their fixed paths called **orbits**. While revolving around the Sun, the planets also rotate on their own axis.

There are eight planets in our solar system. According to their distance from the Sun, they are **Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus** and **Neptune**.

Scientists have categorised planets into two groups:

- The Inner Planets

Mercury, Venus, Earth and Mars are the inner planets. They are closer to the Sun. They are made up of rocks and stones. They are also known as the **terrestrial planets**.

- The Outer Planets

The outer planets are Jupiter, Saturn, Uranus and Neptune. They are made up of gases. Thus, they are also known as **gas giants**.

KNOW More

Two planets, Venus and Uranus, rotate from east to west while all other planets rotate from west to east.

Planets And Their Characteristics

Inner Planets • They are made up of rocks. • Their density is high.		Outer Planets • They are made up of gases and fluids. • Their density is low.	
1.	Mercury – Single revolution – 88 days Rotation on its own axis – 59 days moons – 0	5.	Jupiter – Single revolution – 11 years 11 months Rotation on its own axis – 09 hours and 56 min moons – 69
2.	Venus – Single revolution – 225 days Rotation on its own axis – 243 days moons – 0	6.	Saturn – Single revolution – 29 years and 5 months Rotation on its own axis – 10 hours and 40 min moons – 62
3.	Earth – Single revolution – 365 days Rotation on its own axis – 01 day moons – 1	7.	Uranus – Single revolution – 84 years Rotation on its own axis–17 hours and 14 min moons – approximately 27
4.	Mars – Single revolution – 687 days Rotation on its own axis – 01 day moons – 02	8.	Neptune – Single revolution – approximately 164 years Rotation on its own axis – 16 hours and 7 min moons — 13

THE EARTH– OUR PLANET

The Earth is the fifth largest planet in the solar system and is the third planet from the Sun. It is the only planet in the solar system that supports life.

The Earth is the habitat of many animals and plants. It is a unique planet in many ways. Among all the planets, it is at the most suitable distance from the Sun. Due to this appropriate distance, it has moderate temperature that makes life possible. The presence of water on the Earth also supports life.

When seen from the outer space, the Earth looks blue. It is due to the presence of water on its surface. Therefore, the Earth is also known as the **Watery Planet** or **Blue Planet**. Another unique feature is that due to the temperature which the Earth experiences, water is available in three forms – solid, liquid and gas.

Our Earth is surrounded by a blanket of air called **atmosphere.** It has gases like oxygen, nitrogen and carbon dioxide. These gases are necessary for life.

The air on the Earth is rich in oxygen. This is necessary for survival. The atmosphere protects us from the harmful ultraviolet radiations coming from the Sun.

The Earth As Seen From Space

The atmosphere also traps the heat of the Earth. It stops the heat from escaping into outer space. It also prevents us from the harmful radiations of the Sun. It keeps our planet warm and suitable for living beings.

We live in the uppermost layer of the atmosphere which is called **lithosphere**. Human beings as well as other living organisms get food in one way or the other from the soil present in the lithosphere. A variety of minerals that are essential for our survival and livelihood are found in this layer. Water is present on the Earth in the form of seas, rivers, oceans, lakes, streams and ponds. The water present in seas and oceans is salty and, thus, unfit for consumption.

One or another of life can be found on almost all of the Earth's surface. In the entire solar system, the Earth is the only planet in which **atmosphere**, **hydrosphere** and **lithosphere** can be found. **Biosphere**, in which the flora and fauna can be found, is formed due to the interaction of these three layers. Results of extensive research till date, have shown that the Earth is the only planet in the universe that supports life.

In ancient times, people thought that the Earth was flat. Astronauts who saw the Earth from the space, found it round. But it is not a perfect circle. It is bulging at the equator and flat at the poles. This is the result of rotation of the Earth on its axis.

OTHER PLANETS

Mercury


Mercury

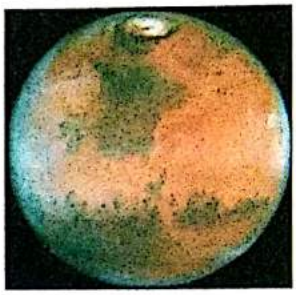
It is the **planet closest to the Sun**. It has no moon. During the day, the temperature of Mercury is 427° C and when it is night, the temperature is –183°C. It takes 88 days to complete one revolution around the Sun. It takes 59 days to rotate on its own axis. It is named after the mythical Roman God, Mercury.

Venus


Venus

It is the brightest and hottest planet of the solar system. It is named after the Roman Goddess of love and beauty. It is the second planet from the Sun. Its size is nearly equal to that of the Earth. Therefore, it is also known as **Earth's twin**. It takes 225 days to complete one revolution around the Sun and 243 days to rotate on its own axis. Like Mercury, it also has no moon.

Mars


Mars

It is the planet next to the Earth in the solar system. It is named after the Roman God of war. It is also known as the **Red Planet** which is because of the presence of iron oxide on its surface that gives it a reddish appearance. It completes a single revolution of the Earth in 687 days and takes one day to complete a rotation on its axis. Its rotation period is almost similar to the Earth. Mars has two known moons, **Photos** and **Deimos**.

Jupiter


Jupiter

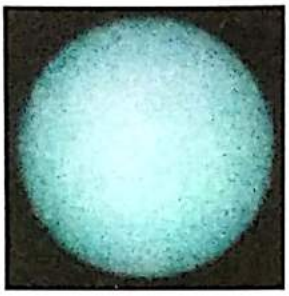
It is the largest planet of the solar system. A large part of it is made up of gaseous material. It is named after the mythical Roman God, Jupiter. It completes a single revolution of the Sun in 11 years and 11 months and it takes 9 hours and 56 minutes to complete one rotation on its axis. It has 69 known moons revolving around it. Therefore, it is also known as a **Mini-Solar System.**

Saturn

Saturn

It is the most beautiful planet of our solar system.There are bright rings around its equator. These rings are made up of icy particles, dust and gases. It takes 29 years and 5 months to complete a single revolution of the Sun and 10 hours and 40 minutes to complete one rotation on its own axis. Saturn has 62 known moons.

Uranus



Uranus

It is the seventh planet from the Sun. It is named after the mythical Greek God of sky. Like Saturn, it also has rings around it.

It completes its revolution around the Sun in 84 years and it takes 17 hours and 14 minutes to complete a rotation on its axis. It has 27 known moons so far. A large part of it is made up of ice. Therefore, it is also known as the **Ice Giant**.

Neptune

Neptune

It is the eighth and the farthest planet from the Sun in the solar system. It is named after the mythical Roman God of sea. It takes 164 years to complete one revolution of the Sun and 16 hours and 7 minutes to complete a single rotation on its axis. It is 17 times the mass of the Earth. It has 13 known moons.

KNOW More

A few years back, Pluto was considered the ninth planet of the solar system. In 2006, the International Astronomical Union (IAU) termed it as a **dwarf planet.** A dwarf planet is a spherical celestial body, much smaller than a planet, that revolves around the Sun.

THE SATELLITES (Moons)

Satellites are celestial or heavenly bodies that revolve around the planets. The word satellite means 'an attendant or a companion'. They are so called because they revolve around the planets.

Satellites rotate on their own axis. Satellites move around the planets from west to east.

Today, we know that there are more than 160 satellites in our solar system. Mercury and Venus are the only planets that do not have any satellites. Like planets, satellites also do not have their own light. They shine because they reflect the light of the Sun.

Quick Revision

Write (T) for true and (F) for false statements.

1. The Earth is also called the Red Planet. ☐
2. A celestial body that revolves around a planet, is called a satellite. ☐
3. Jupiter has 66 moons revolving around it. ☐
4. Uranus has been named after the mythical Roman God of sea. ☐

The Moon

The moon is the only natural satellite of our planet Earth. It is the closest celestial body to the Earth. It is about 3,84,400 km away from the Earth. It has no light of its own. It reflects the light of the Sun.

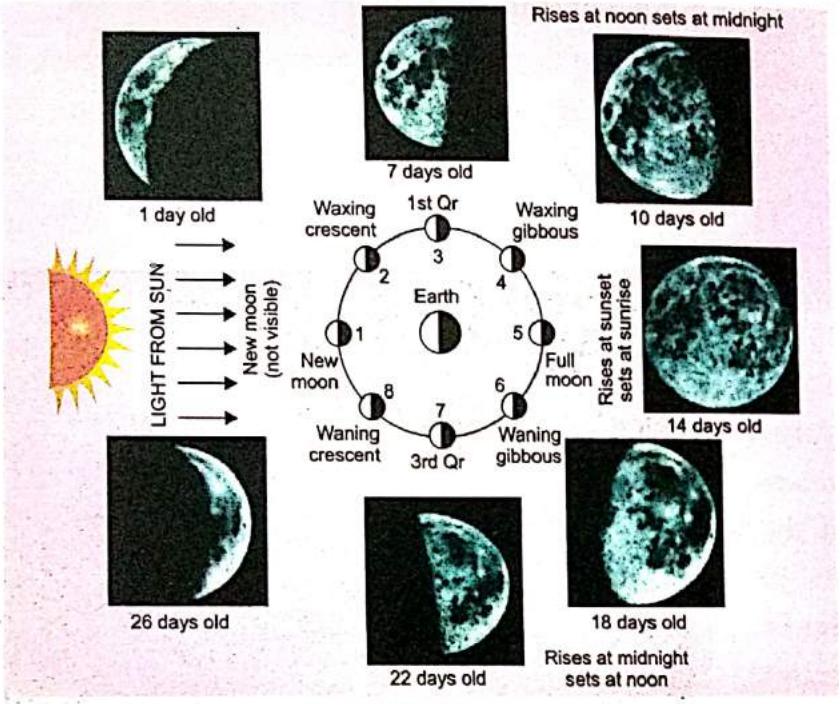
The moon appears to increase and decrease in size. It appears at different positions and in different shapes at different times. These are known as the **phases of the moon.** The **lunar calendar** is based on the phases of the moon. In India, the ascending lunar phases of days are called the *shukla paksha* (for night) and the descending lunar phases are called *krishna paksha*.

Phases are caused due to the revolution of the moon around the Earth. The moon takes 27 days and 8 hours to complete one revolution around the Earth. The visible shape of the moon that reflects sunlight, changes from night to night.

When the moon travels from the new moon to the full moon phase, the visible portion increases. This is called **waxing of the moon**. When the moon journeys from the full moon to the new moon phase, the visible portion decreases and the moon is said to be **waning.**

Actually, the moon is constantly half bright and half dark but the angle of view from the Earth keeps on changing.

When the dark hemisphere of the moon faces the Earth, we call it a **new moon night** or ***Amavasya***.



Phases Of The Moon

When the bright hemisphere of the moon faces us, we call it a **full moon night** or ***Poornima***.

Sometimes, when the moon comes between the Sun and the Earth, it casts its shadow on the Earth. This is called an **eclipse**. When it covers the Sun completely, a **total solar eclipse** occurs. It becomes dark in the day time. When the Earth comes between the Sun and the moon, a **lunar eclipse** occurs.

There is no air and water on the moon. It does not have an atmosphere like our Earth. Thus, there is no life on the moon. The moon is very hot in the day (120°C) and very cold in the night (–120°C).

KNOW More

Human-made satellites are called artificial satellites. INSAT, IRS, EDUSAT are India's artificial satellites.

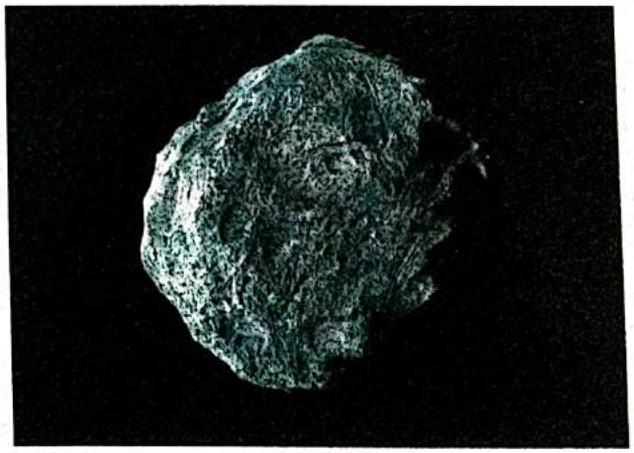
Artificial satellites help us in weather forecasting, telecommunication and various other activities. Because of them, we are able to see cricket matches and other TV programmes in our homes.

On July 21, 1969, two American astronauts, Neil Armstrong and Edwin Aldrin landed on the moon. They explored the surface of the moon.

ASTEROIDS

Asteroids are small planet-like heavenly bodies found in the solar system. They are large pieces of rocks floating in space. Most of them are located between Mars and Jupiter. This area of the space is also known as the **asteroid belt.**

They are also called **planetoids** or **minor planets.** Scientists believe that asteroids are the broken parts of a planet. The main example of an asteroid is **Ceres.**

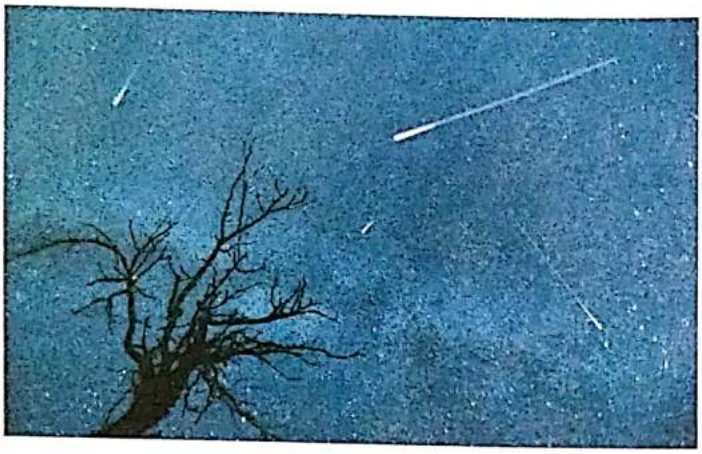


An Asteroid

METEORS

At night, you must have seen some bright streaks of light moving across the sky with great speed. These are called **meteors.** They are also called **shooting stars.**

Meteors are small pieces of rocks. Like many heavenly bodies, they also revolve around the Sun. They cannot be seen as they are very small. Meteors can be seen in the sky only when they enter the Earth's atmosphere. Most of them burn up and become gases. Some big meteors do not burn up completely. They reach the surface of the Earth and are called **meteorites**.



Meteor Shower

When they hit the Earth, they create large depressions known as **craters**. Many such craters are found throughout the world. Some of the famous craters can be seen in Ramgarh in Rajasthan and Arizona in the USA. **The crater in Arizona in the USA, is the largest known crater in the world.**

The Meteor Crater At Arizona (USA)

Many meteorites have been collected by scientists. They are useful in the study of our solar system. Most meteorites contain a large amount of iron.

COMETS

Comets are celestial bodies made up of snow and rocky dust. They also revolve around the Sun in their own orbit. When comets reach near the Sun, they develop a long tail that starts glowing. The tail is thousands of kilometres long. In the past, people considered comets to be bad omens. Scientists believe that there are about 2 billion comets orbiting the Sun.

The most famous comet is the **Halley's Comet**. It can be seen once in every 76 years. It was last seen in 1986. There are some comets that take even more time than Halley's Comet to orbit the Sun.

The Halley's Comet

Quick Revision

Tick (✓) the correct options.

1. ..... are called shooting stars.
   (a) Satellites ☐ (b) Comets ☐
   (c) Meteors ☐
2. The unburnt part of a meteor that reaches the surface of the Earth is a/an .....
   (a) meteorite ☐ (b) nebula ☐
   (c) asteroid ☐

Exercise

Use Cordova Smart Class Software on the smart board in class to do these exercises.

1. Choose the correct options.

   (a) At present the number of planets is .....

   (i) 8 ☐ (ii) 9 ☐ (iii) 10 ☐ (iv) 12 ☐

   (b) The biggest planet of the solar system is .....

   (i) Earth ☐ (ii) Mars ☐ (iii) Jupiter ☐ (iv) Saturn ☐

2. Match the following.

(a) the largest planet	(i) Venus
(b) life planet	(ii) Moon
(c) satellite of the earth	(iii) Earth
(d) the planet with rings	(iv) Jupiter
(e) the most shining planet	(v) Saturn

3. Fill in the blanks.

   (a) The heavenly body nearest the to the earth is.....

   (b) Our earth is the ..... largest planet in the solar system.

   (c) The layer of gases around the earth is its .....

   (d) ..... are the celestial bodies which revolve around the planets.

4. Write the names of all the planets of the solar system.
5. Name the two planets between which our earth is situated.
6. Why is life not found on the moon?
7. What are the lunar phases?
8. Name the two planets between which asteroids are found.
9. Why is the earth said to be an amazing planet?

Additional Questions For Practice

A. Multiple Choice Questions (MCQs) – Tick (✓) the correct options.

1. The universe started with a very big explosion called the .....

   (a) galaxy ☐ (b) big bang ☐ (c) Milky Way ☐

2. Clouds of dust and gas in space are called .....

   (a) Ursa Minor ☐ (b) Ursa Major ☐ (c) Nebula ☐

3. The Sun belongs to the ..... galaxy.

   (a) Hedron ☐ (b) Plume ☐ (c) Milky Way ☐

4. The planet closest to the Sun is .....

   (a) Earth ☐ (b) Mercury ☐ (c) Jupiter ☐

B. Fill in the blanks.

1. A galaxy is a group of billions of ..... and ..... of dust and gases.
2. Stars are huge heavenly bodies made up of hot ..... .
3. Groups of stars forming different patterns are called ..... .
4. Our Earth is surrounded by a blanket of air called the ..... .

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

1. The Earth is the fourth planet from the Sun.
2. Venus is the brightest and hottest planet of the solar system.
3. Phases of moon are caused due to the revolution of the moon around the Sun.
4. Comets are also called shooting stars.

D. Very Short Answer Questions

1. Define universe.
2. Write the name of the star second nearest to the Earth.
3. List the inner planets of the solar system.
4. Write one special feature of Uranus.
5. What are craters?

E. Short Answer Questions

1. Write a short note on the formation of the universe.
2. What are satellites?
3. Which is the most famous comet? What is special about it?
4. What are meteorites?

F. Long Answer Questions

1. Which planet in the solar system supports life? How and why?
2. Discuss the salient features of our planet Earth.
3. What are planets? List all the planets according to their distance from the Sun and write one distinctive feature of each.
4. (a) What do you understand by the terms 'waning' and 'waxing' of the moon?
   (b) When does the solar and lunar eclipse occur?

ACTIVITY

- Make a model of the solar system.
- Organise a discussion in class on the topic 'Possibilities Of Human Settlement On The Moon In Future'.
- Draw a solar system and then answer the following questions.
  (a) Which planet has the most number of satellites?
  (b) Which planet is the farthest from the Sun?
  (c) Which planet takes the longest time to complete one revolution around the Sun?

RECAP

Solar System

The Sun

- largest member of solar system
- All planets, and other heavenly bodies revolve around it.
- produces a lot of heat and light
- surface temperature is 6,000°C
- made up of hot gases
- All planets and heavenly bodies shine because they reflect sunlight.

The Planets

- do not have their own heat and light
- reflect sunlight
- revolve around the Sun in their orbits
- while revolving they also rotate on their own axis
- eight planets
  (a) inner planets – Mercury, Venus, Earth, Mars
    - made up of rocks and stones
    - also called terrestrial planets
  (b) Outer planets – Jupiter, Saturn, Uranus
    - made up of gases
    - also called gas giants

The Moon

- only natural satellite of the Earth
- reflects sunlight
- appears to increase and decrease in size (phases of the moon)
- The lunar calendar is based on phases of the moon.
- Phases are caused due to revolution of moon around the Earth.
- 27 days 8 hours – one revolution
- waxing – new moon to full moon phase
- waning – full moon to new moon phase
- solar eclipse – when moon comes between the Sun and the Earth
- no water or atmosphere on moon
- It is very hot during the day and very cold during the night.

Other Heavenly Bodies

- asteroids—small planet-like bodies in the solar system
- mostly located between Mars and Jupiter
- also called planetoids
- meteors—also called shooting stars
- They are small pieces of rocks that revolve around the Sun.
- They enter the Earth's atmosphere as streaks of light.
- called meteorites when they reach the surface of the Earth
- comets – made up of snow and rocky dust
- When they reach near the Sun, their long tail starts glowing.
- most famous comet – Halley's comet
- Satellites are heavenly bodies that revolve around planets.
  ◊ rotate on their own axis from west to east
  ◊ Mercury and Venus are the only planets that do not have satellites.
  ◊ do not have their own light and reflect the light of the Sun

3 Discovery Of Universe

KEY TERMS

- astronauts : people whose job includes travelling and working in a spacecraft
- astronomical knowledge : knowledge or information related to the position of stars and planets
- erroneous : based on wrong information
- observatories : special buildings from which scientists observe the position of stars, weather, etc.
- remote sensing : the use of satellites to search for and collect information about the Earth
- satellites : electronic devices that are sent to space and that move around the Earth and are used for communication or for providing information

Use **Cordova Smart Class Software** on the **smart board** in class to make learning enjoyable.

Since ancient times humans have been curious about the universe and hence, continuous research has been carried out on heavenly bodies. These researches have proved many ancient accreditions incorrect and erroneous. Humans have gained knowledge about the solar system and other heavenly bodies since ancient times.

ASTRONOMY–ANCIENT HERITAGE

The time and place of origin of astronomy is still a mystery. It is assumed that astronomy might have been a hobby for some but as time progressed, a scientific approach developed for this study and astronomy developed into its modern form. It is said that the pyramids of Egypt established the climax of astrology in 2500 BCE. The Great Pyramid of Giza, aligned straight, represents the position of the Pole Star.

Pyramids

It is gathered from sources that astronomical knowledge was developed in the 6th century BCE.

It is estimated that the table of stars was developed in China in the 4th century BCE.

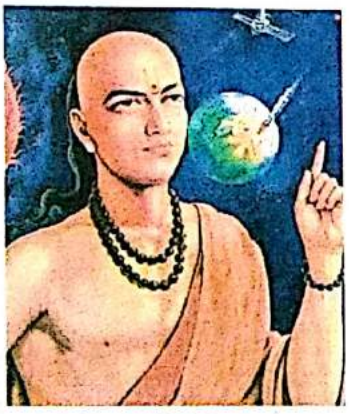
THE DISCOVERY OF THE UNIVERSE

It was in the 4th century BCE that knowledge about space gained importance in Greece. **Pluto, Aristotle** and **Ptolemy** were the main philosophers. During that time it was believed that the Earth was the centre of the solar system and that the Sun revolved around it. It was in the 16th century that **Copernicus** proved that the Sun was the centre of the solar system and the Earth and other planets revolved around it.

Indian astronomers have also contributed towards the discoveries and theories. **Aryabhata, Varahamihira** and **Bhaskaracharya II** were a few main contributors. It was Aryabhata after whom the first satellite sent into space by India was named.

Copernicus

It is said that he calculated the circumference of the Earth to approximately 24835 miles which is almost equal to the modern calculation of approximately 24901 miles. He also helped people know that the effect of the shadow of the Earth on the moon causes the lunar eclipse.



Aryabhata

In the 3rd century BCE, Eratosthenes calculated the correct circumference of the Earth. Bhaskaracharya II, one of the very famous astronomers, wrote *Siddhanta Shiromani*, an anthology, at the age of 36 years.

He put forth two things :

- The Earth is round.
- It attracts everything towards it.

This is due to a force called the **gravitational force.**

Bhaskaracharya II

All these facts can be put together to say that Indian astronomers were already propagating truths and theories way ahead of their time. Bhaskaracharya II explained the concepts of Arithmetic, Algebra and Geometry in his books.

Quick Revision

Fill in the blanks.

1. The Great Pyramid of Giza represents the position of the .....
2. The first Indian satellite was named after .....
3. ..... calculated the correct circumference of the Earth.
4. The Earth has ..... force.

APPARATUS USED FOR ASTRONOMICAL KNOWLEDGE

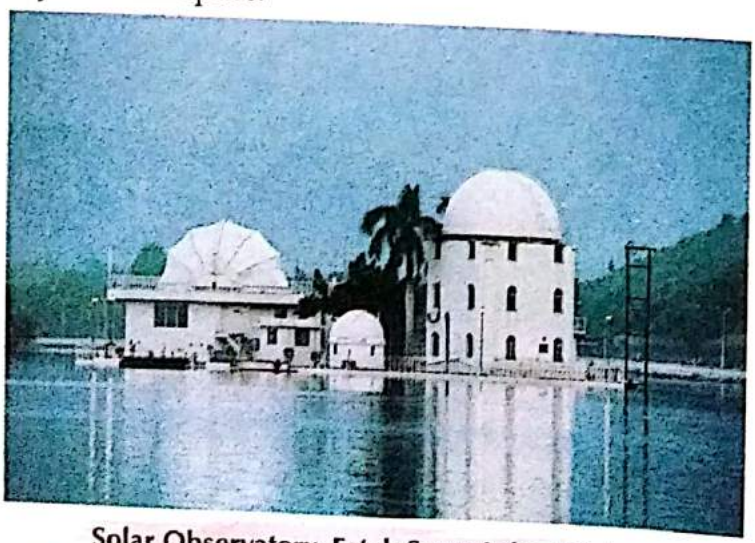
Telescopes

The telescope is an instrument that helps us observe and watch distant things nearer and bigger. The first telescope was invented by **Hans Lippershey** of **Holland**. However, the telescope which could be utilised to view celestial bodies was invented by **Galileo** of Italy in 1610 CE.

Galileo's Telescope

Today, India, Russia, America, China, France and many other countries have developed telescopes that are larger and more sensitive. The biggest telescope in India has been set up in Udaipur (Rajasthan) in the Fateh Sagar Lake. This **Multi Application Solar Telescope**, also known as MAST, is utilised for studies related to the Sun.

Telescopes are being connected to computers by scientists for easy and clear study of celestial bodies. A telescope at the Vainu Bappu Observatory in Kavlur (Tamil Nadu), is used for these studies. Scientists have established **Hubble**, a telescope (in 1990), to study the mysteries of space.



Solar Observatory, Fateh Sagar Lake, Udaipur

KNOW More

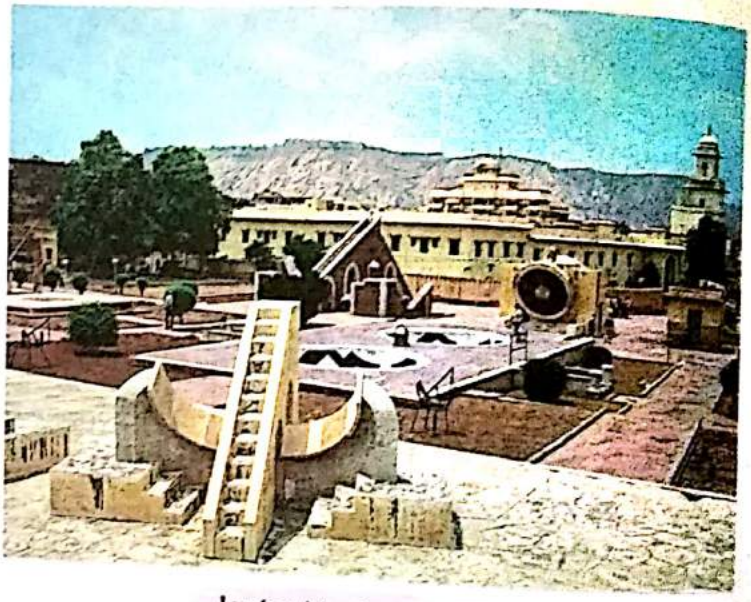
The Jantar Mantar of Jaipur is a complex of nineteen architectural astronomical instruments. It is still running and being used for calculations and teaching.

Observatories

For space research, observatories are a must. It is believed that it was from Pataliputra and Nalanda that the movement of stars was observed. Our country has many observatories. Sawai Jai Singh had an observatory constructed in Delhi in 1724. This is known as the **Jantar Mantar** observatory. It was on the basis of the knowledge that he collected from China, Babylon and Europe that he had the Jantar Mantar constructed. He had two more observatories constructed in Jaipur in 1734. Besides these Benaras, Ujjain and Mathura also have observatories built there. The observatory in Jaipur is the largest one. Sawai Jai Singh also invented three instruments:

- Samrat Yantra
- Jai Prakash Yantra
- Ram Yantra

The Samrat Yantra is the biggest and the highest of the three. It is an equinoctial sundial of enormous size. Another unique feature of



Jantar Mantar, Rajasthan

this Yantra is that it tells time to a precision that had never been achieved before.

Artificial Satellites And Astronauts

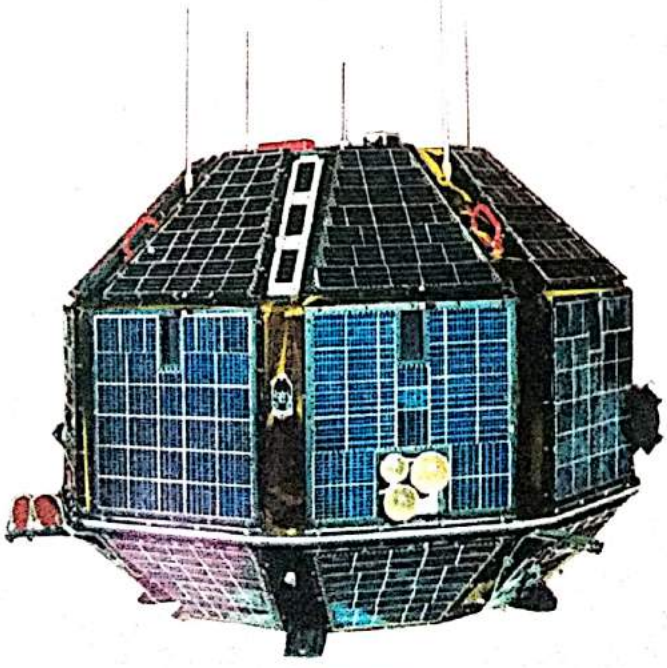
Artificial satellities are bodies sent by scientists into space. These bodies revolve around the Earth and help in research.

Usually any object that goes upwards away from the Earth, falls back due to the Earth's gravitational force. When a satellite is launched through a rocket it does not come back to the Earth. This happens because the rocket is launched with a force greater than the Earth's gravitational force.

KNOW More

To escape from the gravitational force of the Earth the velocity needed is around 11.2 km/sec and it is called the 'escape velocity'.

When we launch any object with a velocity less than escape velocity then it does not cross the region of the force of gravitation of the Earth.



Bhaskara 2

These artificial satellites are used for predicting seasons, spying and other Earth related information. These artificial satellites are very important for us.

They predict natural disasters, that is useful in the management of agriculture, forests and water resource planning. Spectrums of telephone, television and radio are transmitted via these satellites.

Yuri Gagarin

Sputnik-1 was the first artificial satellite launched into space by Russia. It was launched in the year 1957 through a rocket. This period witnessed tough competition between Russia and America in space research. The first living being was sent into space in Sputnik II under the Space Research Programme by Russia. This was a female dog named **Laika.** This launch was not very successful. In the year 1961, four years after the launch of Sputnik II, the first man was sent into space. This man was **Yuri Gagarin**. He travelled to space in the satellite named **Vostok-1.**

Neil Armstrong

In 1969, the world was amazed to hear that America had sent three astronauts into space in a spacecraft named **Apollo-11.** This mission was successful as not only did America complete a successful tour but was also successful in landing two men on the moon. **Neil Armstrong** was the first man to place his foot on the moon.

India took the initiative and in 1984, **Rakesh Sharma** (from Indian Air Force) travelled into space. He travelled in **Soyuz T-II** along with two Russian astronauts. They performed many experiments while staying there for eight days.

Rakesh Sharma

Kalpana Chawla

Kalpana Chawla was a research scientist and a famous astronaut. She was born in the Karnal district of Haryana in the year 1961. Kalpana Chawla was the first Indian woman and the second Indian who travelled into space. She along with six other associates, met with a tragic end in 2003, as the spacecraft Columbia crashed while returning from space.

KNOW More

Kalpana Chawla was obsessed with aircraft. When children of her age played with dolls she made drawings of aircraft and played with them.

Also, Sunita Williams an American citizen of Indian origin has set a record of spending maximum time in space.

Quick Revision

Tick (✓) the correct answers.

1. The first ..... was invented by Hans Lippershey of Holland.
   (a) microscope ☐
   (b) telescope ☐
   (c) binoculars ☐
2. ..... constructed an observatory, Jantar Mantar, in Delhi.
   (a) Sawai Jai Singh ☐
   (b) Akbar ☐
   (c) Maharana Pratap ☐
3. The first living being sent into space was a female dog named ..... .
   (a) Dorothy ☐ (b) Laika ☐ (c) Peanut ☐

INDIAN SPACE RESEARCH ORGANISATION (ISRO)

The Indian Space Research Organisation is an Indian Government space agency with its headquarters in **Bengaluru**. Its aim is to harness

A Space Rocket Launching At ISRO

space technology for national development while pursuing space science research and planetary exploration.

In 1962, the Atomic Energy Department of India set up ISRO under the leadership of the famous scientist **Homi Jehangir Bhabha** in India. Since then, India has made great progress in the field of space science.

The scientist who gave momentum to Indian space research programme for various purposes was **Vikram Sarabhai.** Today, our scientists have launched and established many satellites in the Earth's orbit. The **first artificial satellite** of India was **Aryabhata** which was launched from a space centre, in the then Soviet Union, into space in April 1975. With this India became the 6th country to launch its own satellite. The purpose of this was to study the atmosphere. Since 1975 to this date, India has sent many spacecrafts into space. The main among them are **Bhaskara, Apple, Insat, Rohini, IMS-I, EDUSAT, HIMSAT, Cartosat, Resourcesat-I, Oceansat, Moon-craft** (*Chandrayaan-1*) and **Mars-craft**. With the help of these satellites activities related to broadcast, seasons, telecommunication, environment, remote sensing, mapping, predictions about drought, flood and storm, resource management and many more activities related to defence, public and national interest are being conducted continuously.

KNOW More

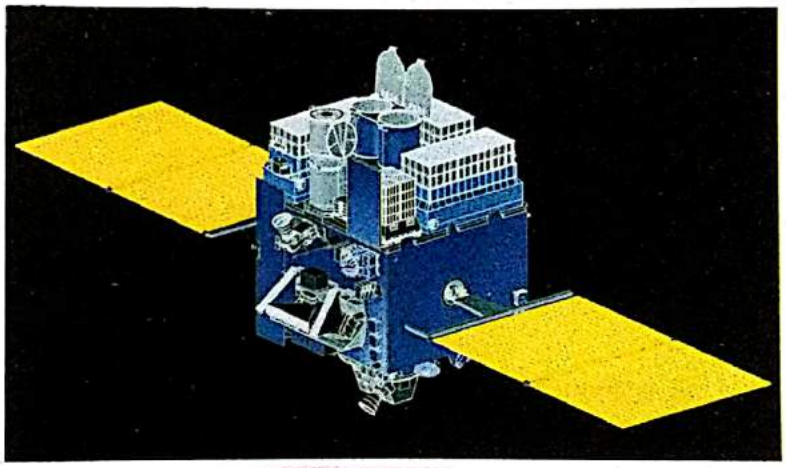
Vikram Sarabhai received the Shanti Swarup Bhatnagar Medal in 1962. He was honoured with Padma Bhushan in 1966 and Padma Vibhushan (posthumously) in 1972.

Mars Orbiter Mission

For collecting information on Mars, India launched a spacecraft named *Mangalyaan* also called **Mars-craft**, from Satish Dhawan Space Centre situated at Sriharikota of Andhra Pradesh in November 2013. It travelled for almost 11 months and in September 2014, entered Mars' orbit. India has become the first country to establish a satellite in Mars' orbit in its first attempt. Likewise, a spacecraft named the **Moon-craft** (*Chandrayaan-1)* was launched to the moon in October 2008 to study the moon.

First Space Observatory

After the successful launch of the Mars-craft, India has joined the list of those countries who have their observatories in space. From Sriharikota the first multi-wavelength space observatory **Astrosat** was launched into space in October 2015. This will help to conduct space research programme. Prior to India, America, Russia, Japan and European Union have established their space observatories.



Space Observatory – Astrosat

Quick Revision

Give one word answers.

1. The headquarters of ISRO is situated here.
2. It was the first Indian artificial satellite.
3. The Satish Dhawan Space Centre is situated in this place.
4. The first multi-wavelength space observatory was launched in this year.
5. This Indian spacecraft was launched to the moon.

Exercise

Use Cordova Smart Class Software on the smart board in class to do these exercises.

1. Choose the correct options.
   (a) When was India's first artificial satellite launched?
   (i) 1960 ☐ (ii) 1975 ☐ (iii) 1947 ☐ (iv) 1985 ☐
   (b) In Rajasthan the ancient Jantar Mantar Observatory is located at
   (i) Udaipur ☐ (ii) Kota ☐ (iii) Jaipur ☐ (iv) Jodhpur ☐
2. Fill in the blanks.
   (a) Aryabhata was ancient India's great ..... .
   (b) The credit of giving momentum to Indian space programme goes to ..... .
   (c) The velocity required to escape the gravitational force of the earth is ..... kms/sec.
   (d) ..... is the name of the first artificial satellite sent into space by India.
3. Write the names of the main astronomers of India.
4. In ancient times from where did the space research begin in the world?
5. When and why were the pyramids of Egypt made?
6. Discuss the contribution of Aryabhata to astronomical researches.
7. What is a telescope? Write about its advantages.
8. Which mathematician and geographer of Greece calculated the actual circumference of the earth for the first time?
9. Mention about the main astronauts of the world along with their work.

Additional Questions For Practice

A. **Multiple Choice Questions (MCQs) – Tick (✓) the correct options.**

1. The table of stars was developed in ..... .
   (a) Saudi Arabia ☐ (b) China ☐ (c) India ☐
2. ..... wrote *Siddhanta Shiromani*.
   (a) Aryabhata ☐ (b) Bhaskaracharya II ☐
   (c) Sushrut ☐
3. Artificial ..... are bodies sent by scientists into space.
   (a) planets ☐ (b) satellites ☐ (c) stars ☐
4. ..... was the first man to place his foot on the moon.
   (a) Rakesh Sharma ☐ (b) Yuri Gagarin ☐
   (c) Neil Armstrong ☐
5. The Atomic Energy Department of India set up ISRO under the leadership of ..... .
   (a) Homi Jehangir Bhabha ☐ (b) Vikram Sarabhai ☐
   (c) Kalpana Chawla ☐

B. Fill in the blanks.

1. ..... proved that the Sun was the centre of the solar system.
2. Aryabhata calculated the circumference of the Earth to approximately ..... miles.
3. The biggest telescope in India is set up in ..... .
4. The ..... is the highest Yantra invented by Sawai Jai Singh.
5. ..... was the first artificial satellite to be launched in space by Russia.
6. The purpose of Aryabhata satellite was to study the ..... .

C. Match the following.

1.	Mars-craft	(a)	circumference of the Earth
2.	Ptolemy	(b)	Soyuz T-II
3.	Eratosthenes	(c)	November 2013
4.	Aryabhata	(d)	Greek philosopher
5.	Rakesh Sharma	(e)	lunar eclipse

D. Very Short Answer Questions

1. Why are telescopes being connected to computers?
2. What is MAST utilised for?
3. Which telescope has been established to study the mysteries of space?
4. Define artificial satellites.
5. Who was Kalpana Chawla?
6. What was special about Sputnik II?

E. Short Answer Questions

1. Write the two things included in *Siddhanta Shiromani*.
2. Name the three instruments invented by Sawai Jai Singh.
3. What is the aim of ISRO?
4. List four functions performed by satellites.

F. Long Answer Questions

1. Why do artificial satellites never come back to the Earth despite gravitational force?
2. Why are artificial satellites important for us?
3. Explain the development of the field of Space Science in India.
4. Write a short note on the 'Mars Orbiter Mission' of India.

ACTIVITY

- Make a chart for your class showing the major achievements of India in the field of space research.
- Identify and write the names of the following Indian astronomers and scientists.

.....

.....

.....

.....

RECAP

Discovery Of Universe

Astronomy

- assumed that it might have started as a hobby
- also gathered from sources that astronomical knowledge was developed in the 6th century BCE

Main Proponents

- Ptolemy, Aristotle and Pluto were main philosophers.
- Copernicus proved that the Sun was at the centre of the solar system and planets revolved around it.
- Aryabhata, Varahamihira, Bhaskaracharya II were main Indian contributors.
- 3rd century BCE, Eratosthenes calculated the circumference of the Earth

Apparatus Used For Astronomical Knowledge

Telescopes

- instrument that helps us to observe and watch distant things nearer and bigger
- Han Lippershey of Holland invented the first telescope.
- Galileo of Italy invented the telescope which could be used to observe celestial bodies.
- Biggest telescope of India is MAST in Udaipur.
- Today telescopes are being connected to computers for study and research.
- Vainu Bappu (in Tamil Nadu) used for study
- 'Hubble' established to study mysteries of space

Artificial Satellites

- bodies sent by scientists into space
- revolve around the Earth and help in research
- launched through rockets
- used for predicting climate, spying, natural disasters
- useful in agriculture, forests and water resource planning
- spectrums of telephone, television and radio transmitted via these satellites
- Sputnik-I was the first artificial satellite launched by Russia (1957).
- First living being was sent in Sputnik-II by Russia.
- in 1961 Russia sent the first man (Yuri Gagarin) into space, in Vostok I.
- In Apollo 11 (by America) two men landed on the moon.
- Neil Armstrong was the first man to place his foot on the moon.
- 1984-Indian astronaut Rakesh Sharma travelled into space in Soyuz T-II.
- Kalpana Chawla was first Indian woman and the second Indian to travel into space.

Observatories

- must for space research
- Sawai Jai Singh had observatory constructed in Delhi in 1724 (Jantar Mantar).
- had two more observatories constructed in Jaipur
- invented three instruments —
  - ◊ Samrat Yantra
  - ◊ Jai Prakash Yantra
  - ◊ Ram Yantra

Space Research

Indian Space Research Organisation (ISRO)

- space agency of the Government of India
- headquarters at Bengaluru
- Atomic Energy Department of India was set up ISRO (in 1962) under leadership of Homi Jehangir Bhabha.
- first artificial satellite of India-Aryabhata
- purpose was to study the atmosphere
- some artificial satellites - Bhaskara, Rohini, IRS, EDUSAT, Moon-craft, Mars-craft

Mars Orbiter Mission

- the Mars-craft launched for collecting information on Mars
- travelled for 11 months and in September 2014 entered Mars' orbit
- Moon-craft was launched to the moon in October 2008.
- First space observatory 'Astrosat' was launched from Sriharikota in October 2015.

PART-II

CIVICS

8 Our Social Environment

KEY TERMS

- **administrative staff** : a group of people who help in running the administration of an institute or a company
- **ethics** : moral principles that guide or influence a person's behaviour
- **integrity** : the quality of being honest and having strong moral principles
- **lifestyle** : the way of living
- **practical knowledge** : knowledge that can be used to solve day-to-day practical problems
- **profession** : a work that a person does to earn a livelihood
- **theoretical knowledge** : knowledge based only on theory or written information

Use **Cordova Smart Class Software** on the **smart board** in class to make learning enjoyable.

One day, Vikram and Suraj saw an old man who was stuck trying to cross the road, due to the rush of the vehicles. Vikram went to him and teased him asking if he wanted to die. However, Suraj went and helped him cross the road. This value of helping those in need was a reflection of the values he had learnt from his family.

Have you ever shown the way to a blind person or helped an elderly in crossing the road? How many times have you played loud music or fought with your neighbours?

The answers to these questions show whether a person possesses social ethics or not. Man is a social animal and these ethics form an integral part of his everyday routine. As is well-known, moral education starts at home. In this chapter, we will learn about our social environment.

FAMILY

Family is the smallest unit of a society. Family is said to be the first school for a child. It is here that a child inculcates qualities of love, affection, kindness, reverence and patience. A child's parents, his siblings and relatives are his first teachers who teach him lessons of cooperation and integrity. Presently, two kinds of families are found in the society.

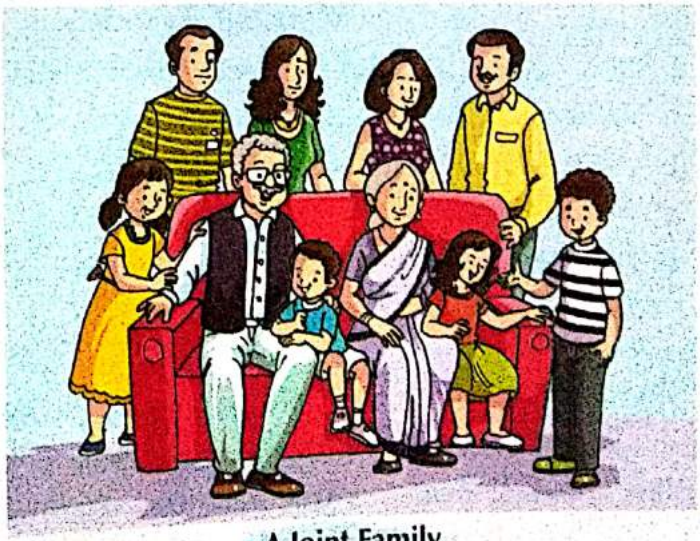
A Nuclear Family

Nuclear Family

In a nuclear or single family, a child lives with his siblings and parents. It includes a married couple and their children.

Joint Family

When a nuclear family is joined by the immediate uncles and aunts, grandparents and cousins, a



A Joint Family

joint family is formed. In a joint family, everybody lives together in a single house.

INTERDEPENDENCE AMONG FAMILY MEMBERS

All the members of a family are dependent on one another. Each family member fulfills some duties and contributes to the family. The elder members, such as parents, uncles and aunts work outside to provide financial stability. The children also help in simple household chores. Thus, family members assist one another to the best of their abilities.

Family members not only provide financial support but emotional stability too. They share happiness as well as troubles. They may have different views and tastes, but they learn to stay together.

Make a list of all the tasks you do at home.

CHANGING FAMILY STATUS

In earlier times, joint family system was prevalent. People lived together and were engaged in the same profession which was passed on from generation to generation.

With the passage of time, the scenario has changed. Nowadays, family members are moving towards other areas in search of occupation, better lifestyle and education. This has given rise to an increased number of nuclear families.

Quick Revision

Fill in the blanks.

1. ..... is the smallest unit of a society.
2. In a ..... family, a child lives with his siblings and ..... .
3. All the family members are ..... on one another.
4. Nowadays, there is a rise in the number of ..... families.

FILLING THE GENERATION GAP

Joint family provides a positive environment to a child. A child learns basic manners, sharing, respect for others while living in a combined family. Grandparents are a constant source of love, affection and morals for the children. In the present times, this rising gap between the elders and the younger generation needs to be covered.

OUR NEIGHBOURS

We live in a society. Apart from our family members, our neighbours also play a vital role in developing our overall personality.

Neighbours are the people who live around us. Good neighbours are a blessing. Neighbours help and support each other during troubled times. They provide emotional, moral and sometimes financial support too. Good and friendly relations need to be maintained with our neighbours.

OUR SCHOOL

The education of a child starts at home and continues in school. Schools are administered by the principal and the administrative staff and the teachers who teach the students. Schools not only provide bookish knowledge but also help in enhancing the academic, co-curricular, physical and overall development of a child.

School

In a school, every person should be engaged in her/his task. Students should also follow rules and maintain discipline in the school. A school should not only provide theoretical but practical knowledge also that a child can apply in her/his daily life. A school should provide a positive environment to a child.

OUR SOCIETY

Our society forms the fourth tier of our surroundings, after family and neighbourhood. Apart from one's family members and neighbours, man also interacts with his society. Now, the question arises, what is a society? All the people around us engaged in different economic, social or academic activities form our **society**.

Teacher

Doctor

Farmer

Police

Electrician

Soldier

Every person is engaged in a different profession according to her/his preference and educational level. A farmer grows crops, police maintains law and order, scientists invent things, teachers impart knowledge, a potter makes utensils, a tailor sews clothes and a jeweller makes jewellery. All these professionals form a part of the society and influence each other. Their combined efforts make our life comfortable and peaceful.

RURAL-URBAN INTERDEPENDENCE

The rural and urban societies are dependent on each other. Farmers grow crops which is then transported to cities where they are turned into finished products in industries. Many industries such as textile and sugar obtain their raw materials from the rural areas such as cotton and sugar cane.

Similarly, finished products such as clothes, sugar, medicines, papers and machines are sold in villages. There is a continuous flow of products and money between rural and urban areas, which makes life comfortable for all.

Without this continuous cycle, both the rural as well as the urban areas will suffer.

CONCLUSION

Society is like the human body wherein every organ works with the cooperation of each other. Similarly, all the members of a society work together in harmony. The social growth of a country depends on the peaceful collaboration between the different stratas of the society, namely the family, the neighbours, the school and the society as a whole.

Quick Revision

Write (T) for true and (F) for false statements.

1. Joint families provide a negative environment to a child. ☐
2. Neighbours help and support each other during troubled times. ☐
3. The education of a child starts in school. ☐
4. The rural and urban society are independent of each other. ☐
5. There is a continuous flow of products and money between rural and urban areas. ☐

Exercise

Use Cordova Smart Class Software on the smart board in class to do these exercises.

1. Select the correct options.

   (a) Our first school is our

   (i) family ☐ (ii) school

   (iii) society ☐ (iv) neighbour

   (b) The smallest unit of a society is the

   (i) school ☐ (ii) hospital

   (iii) family ☐ (iv) caste

   (c) The closest to us after our family are

   (i) relatives ☐ (ii) neighbours

   (iii) friends ☐ (iv) employees

2. What does one learn from a family?
3. What is the difference between a nuclear family and a joint family?
4. What advantages do we get from the elders in the family?
5. Why are our neighbours important to us?

Additional Questions For Practice

A. Multiple Choice Questions (MCQs) – Tick (✓) the correct options.

1. Family members provide financial support as well as ..... stability.

   (a) ethical ☐ (b) usual ☐ (c) emotional

2. Good neighbours are a ..... .

   (a) curse ☐ (b) blessing ☐ (c) problem

3. All the professionals form a part of the ..... .

   (a) country ☐ (b) society ☐ (c) family

4. Society is like the ..... body.

   (a) human ☐ (b) political ☐ (c) civil

B. Fill in the blanks.

1. Family is said to be the first ..... of a child.
2. Schools are administered by the ..... and the administrative staff.
3. Good and ..... relations need to be maintained with our neighbours.
4. A school should not only provide theoretical but ..... knowledge also.
5. All the members of a society work together in ..... .

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

1. Ethics form an integral part of man's routine. ☐
2. The finished products from industries are sold in villages. ☐
3. Family members are independent of one another. ☐
4. Schools help in the overall development of a child. ☐
5. Every person of the society is engaged in the same profession. ☐
6. Industries obtain raw materials from rural areas. ☐

D. Very Short Answer Questions

1. Which family system was prevalent in ancient times?
2. How can grandparents create a positive environment for the children?
3. What kind of support is provided by neighbours?
4. Where does the education of a child start?

E. Short Answer Questions

1. On what does the social growth of a country depend?
2. How are good neighbours a blessing?

F. Long Answer Questions

1. How can a school frame the future of a child?
2. What does rural-urban interdependence mean?
3. Explain the role of society in making our lives comfortable and peaceful.
4. How has family status changed over the passage of time?

ACTIVITY

- Prepare a table of all the professionals of your locality and also find out how they are interdependent on one another.
- Paste pictures of your family members in a scrapbook. Write their names and professions as well.

RECAP

Family

Nuclear Family
includes married couple and their children

Joint Family
includes grandparents, aunts, uncles and cousins who live together in a single house

Social Environment

Our Neighbours
provide emotional, moral and sometimes financial stability too

Our Society
- people around us form our society
- people influence and help each other

Changing Family Status
Migration of people to different towns and cities in search of job and better education has led to rise in nuclear families.

Rural-Urban Interdependence
- Rural and urban societies depend on each other.
- The continuous flow of products and money between the rural and urban regions makes our life comfortable.

Our School
- provides positive environment to a child
- provides theoretical as well as practical knowledge

Interdependence Among Family Members
- provide emotional and financial stability
- share happiness as well as troubles

Filling The Generation Gap
- Joint family provides positive environment.
- gap between elders and younger generation needs to be reduced

PART-III

HISTORY

16 Our Past

KEY TERMS

artefacts	: objects of different kinds made by humans in the past	inscriptions	: written records, engraved on stone tablets or other hard surfaces which provide important information about the kings and their rule
bhojpatra	: dried barks of birch trees or palm leaves used for writing in the past	pressure flaking	: a method of trimming the edge of a stone tool
citadel	: a structure built typically on a high ground to protect it from attacks	Stone Age	: the period when humans depended on stone tools for their survival
granary	: a storehouse for grains		

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WHAT IS HISTORY

We often look at our photo albums to know about the past events of our families. Similarly, when we want to know about the past events of our society or country, we flip through the pages of history.

Thus, history is the study of the past and the people who study the past are called historians.

History provides us information about our rich past – how people lived, what they ate, what they wore, what types of houses they built and many other things. It also tells us about the changes that took place since humans first appeared on the Earth till date. Therefore, history is the window into the past and is the key to understand the present.

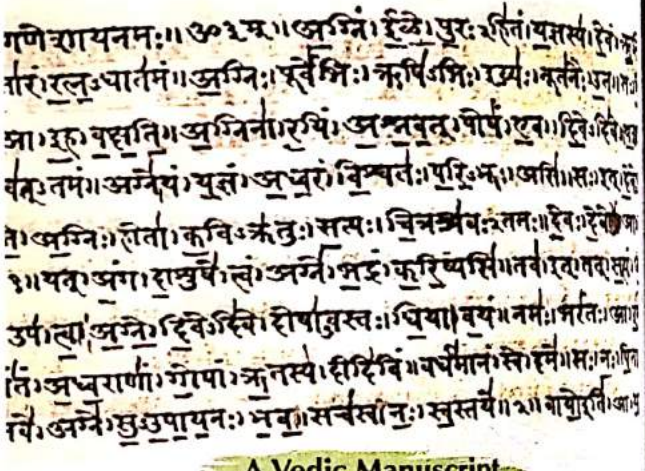
Division Of The Past

The past has been divided into prehistory and history.

Prehistory	History
• writing was not invented • written records were not available • Example—Stone Age	• writing was invented • written records were available • Example—Mauryan Empire

How Do We Know About The Past

There are several ways to learn about the past. One can search and read books that were written long ago. These are called **manuscripts.** These were written on *bhojpatras*, the dried barks of birch trees and on palm leaves. One can also study **inscriptions.** These were written on stones or metals.



A Vedic Manuscript

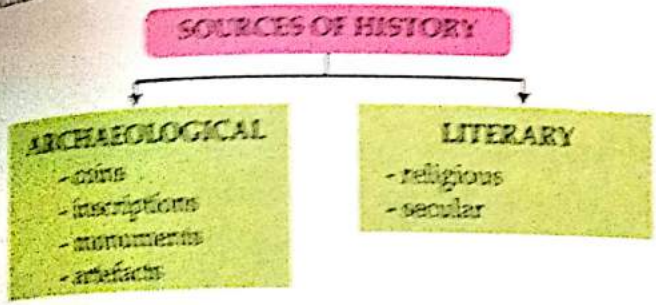
We can also learn from the remains of the past such as monuments, tools, fossils, pottery, coins, weapons and other artefacts. These are studied by people called **archaeologists.** Their study is an account of what might have happened in the past on the basis of these artefacts.

Archaeologists Working On An Excavation Site

SOURCES OF HISTORY

We learn about the past from manuscripts, inscriptions, coins and other material left behind by the people of that period. These are called the sources of history. By studying them, historians and archaeologists tell us about the past.

Sources are divided into two broad groups, i.e., archaeological sources and literary sources.



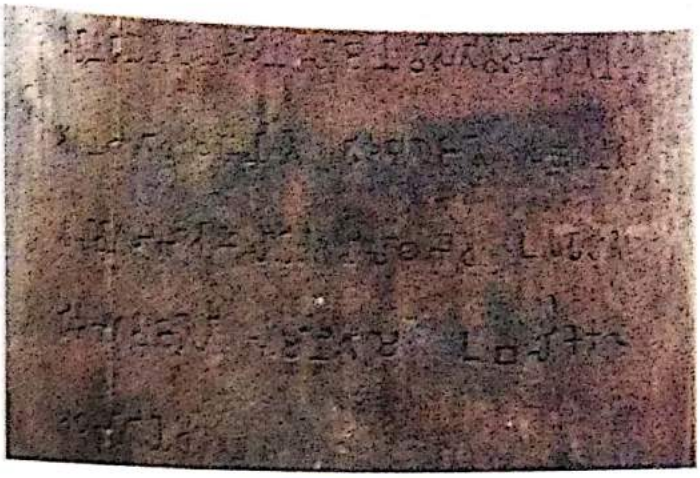
Archaeological Sources

Archaeological sources are direct evidences as they are physical evidences. They have a significant effect on the writing of history. They cannot be changed or altered by human beings.

Coins: They give information about the reign of the king and the extent of his empire, i.e., the areas ruled by the kings. Sometimes, they carry the date of accession or death of a ruler. They carry names and images of the rulers. Coins also tell us about the trade activities, art and religion that flourished during a particular age. The metals used to make coins tell us about the level of scientific advancement of that age.

Old Coins

Inscriptions: The rulers engraved royal orders on rocks, pillars, copper plates and clay tablets. These are called **inscriptions**. The Ashokan edicts are one of the most important inscriptions of India. They are written on stone pillars and rocks. They help in writing the history of the Mauryan Period.



An Ashokan Edict

Monuments: Temples, mosques, palaces, forts and other structures that were built for some special purposes are called **monuments**. They give information about the artistic skills and the occasions on which they were built. For instance, the ruins of Nalanda University in Bihar reveal the ancient system of education.

The Ruins Of Nalanda University

Artefacts: Toys, jewellery, weapons, tools, pottery and sculptures made and used by humans in the

Pottery

past are called **artefacts**. By studying them, historians tell us about the lifestyle of early humans, the arts they had mastered, their social and economic conditions, and their trade relations in different parts of the world.

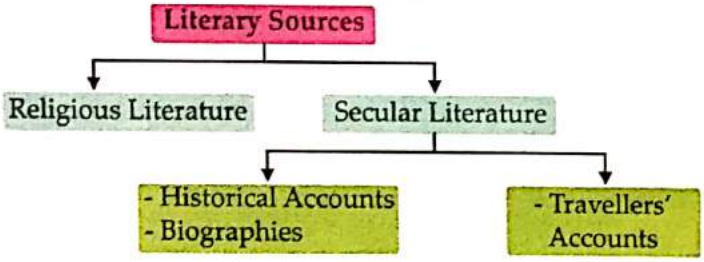
Quick Revision

Give one word answers.

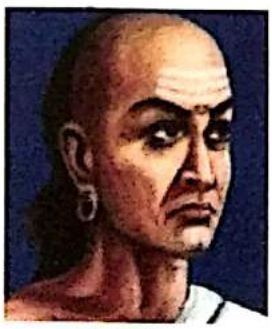
1. Which sources of history are direct evidences? .....
2. Which edicts are one of the most important inscriptions of India? .....
3. What were manuscripts written on? .....

Literary Sources

Literary sources refer to the written records of the past. The oldest literary sources are handwritten documents called manuscripts. Before the invention of paper, people wrote on dried barks or leaves, rocks and stones. Literary sources are divided into two parts – religious and secular.



Religious Literature: Literature that deals with religion is called religious literature. For example, the Vedas, the Tripitakas, the Angas, the Quran, the Bible and many more.


Kautilya

Secular Literature: The literature that does not deal with religion is called secular literature. Secular literature includes historical accounts and biographies.

- *Mudra Rakshasa*, a play written by Vishakhadatta, tells us how Chandragupta, with the help of Chanakya, overthrew the unpopular Nandas. This helps us conclude that people revolted against unpopular kings and even replaced them successfully with better rulers.
- *Arthashastra*, written by Kautilya, gives detailed information about the Mauryan administration and society.

Travellers' accounts are also included in secular literature. A number of foreign travellers, who visited India from time to time, have left written accounts of their travel which act as important sources of information in understanding the past of the country.

- Megasthenes lived in India as the Greek ambassador in the court of Chandragupta Maurya. He wrote *Indika*.

From these sources, we come to know about the life of the people in the past.

Family Tree

A family tree consists of information of important events right from the birth of a person to death. This was a tradition that developed in the past. A family tree writer used to capture the important events through writings and store them in the form of ledgers. This provided valuable information about families that ruled kingdoms and the different religious beliefs they followed.

KNOW More

Some communities such as *Rao, Bhatt, Barot, Jaga, Purohit, Ranimanga, Helwa* and *Panjikar* record every detail about their patrons, who were called *yajmans*, in their ledgers.

THE LIFE OF EARLY HUMANS

The life of early humans was very difficult. They did not know how to produce food grains and build houses. They were always under the threat of wild animals.

They defended themselves by hiding in caves or climbing on trees. Sometimes later, they began killing animals by weapons and tools made of stones, since stones were easily available. These were found in a large number of caves and places

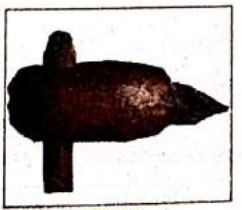
where early humans lived. We know a lot about early humans through these stone tools and weapons. This phase of early humans is known as the **Stone Age**. The Stone Age is divided into three sub-periods on the basis of the development of different stone tools.

- Palaeolithic Age or Old Stone Age
- Mesolithic Age or Middle Stone Age
- Neolithic Age or New Stone Age

Major Sites Of Early Humans In India

Making Of Stone Tools

Initially, early humans searched for stones which could be used as tools, but later on they started making tools on their own. Flint was largely used to make tools as it could easily be chipped to get the desired shape. The main tool of this period was a hand-axe. It was used to cut or chop animals and trees. Therefore, it is also known as a **chopper**. The stone tools were used for cutting trees, killing and skinning animals and also for chopping meat.

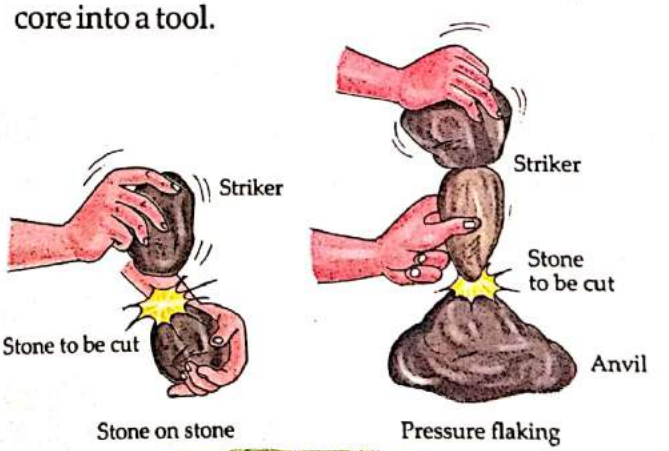


Hand-axe

Techniques Of Making Stone Tools

Probably, two different techniques were used to make stone tools.

- **Stone on stone:** The stone out of which a tool was to be made (called core) was held in one hand. The second stone which was used as a hammer, was held in the other hand. The hammer stone was used to strike off flakes from the core stone till the required shape was obtained.
- **Pressure flaking:** The core was placed on a firm surface. It was struck using the hammer stone to remove flakes in order to shape the core into a tool.



Stone-making Techniques

Over a period of time humans learnt to cut wood with the help of stone tools. They then learnt to make wooden handles for their tools and used them properly. Tools now became more advanced than earlier tools. They sparkled due to polishing.

Hard handles were fixed on them. Bones were used to make needles and blades. Some of the tools of this period are axes, sickles, spears and arrow heads.

Discovery Of Fire

During the Palaeolithic Age, early humans learnt how to light fire. Perhaps, two stones were rubbed together, and accidentally the sparks fell on some dry leaves lying nearby that gave a clue about how to ignite fire. The discovery of fire helped them in many ways. Early humans used fire to scare away wild animals and keep themselves warm in winters. Later, they came to know that the flesh of animals tasted better when heated on fire and thus, they learnt cooking.

Early Humans Using Fire

KNOW More

You will be surprised to know that 99 per cent of human history is covered by the Palaeolithic Period. It is subdivided into three parts on the basis of stone tools used and changes in the climate. These are:

- Lower Palaeolithic
- Middle Palaeolithic
- Upper Palaeolithic

During Lower Palaeolithic period, many parts of the Earth were covered heavily with ice and the climate was extremely cold. Therefore, it is also called the 'Ice Age'. During Upper Palaeolithic Age, the climate changed drastically, from cold, and became warm. Climate of the world changed around 12,000 years ago. Due to this change, grasslands developed and it increased the number of animals that survived on grass, for example deer, sheep, cattle, antelopes and goats.

Quick Revision

Fill in the blanks.

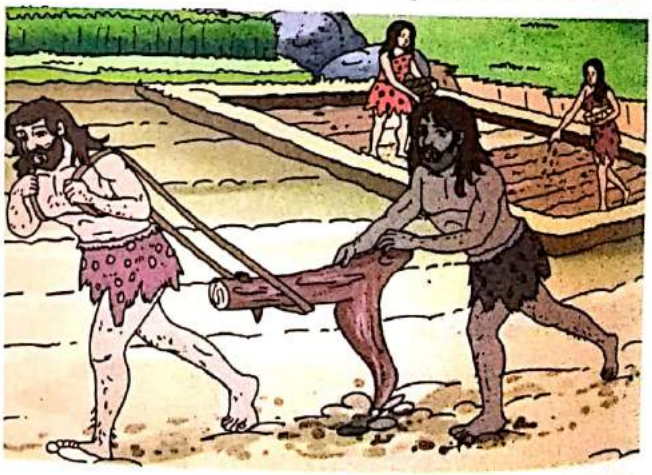
1. ..... gives information about Mauryan administration.
2. Stone on stone is a ..... making technique.
3. Bones were used to make ..... and ..... .
4. Early humans used ..... to scare away animals.

The permanent settlement of the early humans started with the following discoveries:

- Beginning of agriculture
- Domestication of animals
- Invention of the wheel
- Pottery
- Dress

Beginning Of Agriculture

Early humans learnt the techniques of cultivation in the Neolithic Age. Perhaps, they learnt this accidentally. They might have seen that when seeds fell on the ground and received water, they grew into plants. The first cereals to be cultivated were **wheat** and **barley**. Sickles of Neolithic farmers have been found everywhere in India.



Farming By Early Humans

Agriculture was the greatest discovery. It changed their lifestyle completely. They could settle at one place and grow crops. They left their nomadic life and started leading a settled life. They made mud houses near the fields. Families came into

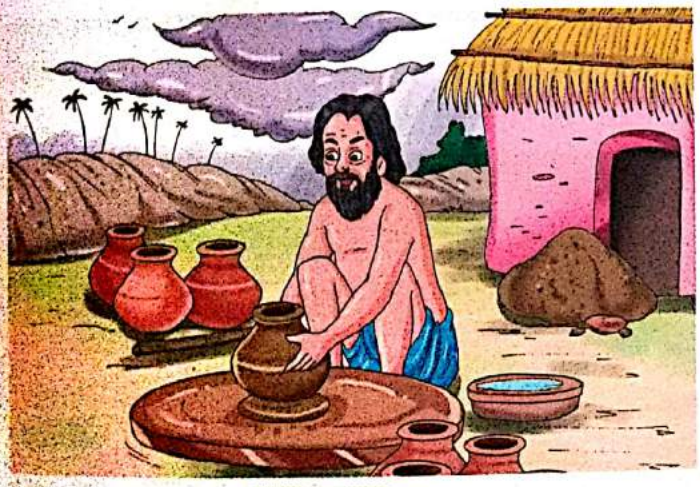
existence, that changed into tribes and villages over a period of time. In this way, the food-gatherers and hunters became settled farmers.

Domestication Of Animals

Early humans began domestication of animals. Animals proved to be helpful for humans in several ways. Dog was the first animal to be tamed. It was useful as a guard and companion. Later, sheep, goats and cattle were also domesticated. They provided milk and meat. The wool and skin of animals were used for clothing in winter season.

Invention Of The Wheel

The Neolithic Period also saw the invention of the wheel. We have little knowledge about how the idea of a wheel occurred to the early humans. Perhaps, a rolling log or stone gave them the idea. They could travel, move heavy loads quickly and in an easier way than before because of the wheel. In fact, today, our life revolves around the wheel.



Early Human Making Pots

Pottery

The wheel also improved the art of pottery. It is during this period that the potter's wheel came into existence.

Earthen pots were needed to store grains till the next cultivation season. They were also used to store milk, water and cook food for daily use. Perhaps, at first, they wove large baskets from wild grass and stored the grains in them. Later, they plastered the baskets with clay and baked them to make them waterproof. **Clay pots** were also used for cooking food.

Neolithic Pottery

Dress

The wheel was also used for spinning and weaving. Early humans began to use cotton and wool to make clothes besides using animal skin, leaves and barks. Cotton cultivation started during this time. Now humans started satisfying their needs. They started worshipping nature. Thus, they progressed from Prehistoric Age to Copper Age.

Quick Revision

Write (T) for true and (F) for false statements.

1. The discovery of agriculture was accidental. ☐
2. The first animal to be tamed was sheep. ☐
3. Early humans could travel more quickly with the discovery of wheel. ☐
4. Earthen pots were used to store water. ☐
5. Clay pots were used to cook food. ☐
6. Early humans wore clothes made of leaves and tree barks in the Neolithic Period. ☐

SINDHU-SARASWATI CIVILISATION

As humans began to settle down in permanent settlements, small villages grew up in many places. Most of these settlements developed in places where there was a continuous supply of water. Humans had started agriculture. Some people began to produce more than they consumed. The surplus produced was exchanged with other essential things, with people who could not produce enough for themselves. This was the beginning of the **barter system**.

Gradually more and more people began to settle in villages. The population grew and villages developed into towns and then cities. People became civilised and civilisations grew up.

One such civilisation developed in the plains of **Sindhu** and **Saraswati**. Excavations in 1922 at Harappa and Mohenjo-daro brought into light the

existence of these civilisations. As excavations commenced many more such places were discovered.

Places Of Importance In Sindhu-Saraswati Civilisation

The Sindhu-Saraswati Civilisation is often referred to as **Harappan Civilisation**. This is so because the things found during excavations are very similar to those found in Harappa. Since this civilisation grew on the banks of River Indus, it is also known as the **Indus Valley Civilisation.**

The extent of this civilisation was vast. It spread across Sindh, Baluchistan, East and West Punjab, Uttar Pradesh, Gujarat and Northern Rajasthan. It is estimated that this civilisation existed from 4500 BCE to 2500 BCE.

KNOW More

In the beginning, it was believed that the Harappan Civilisation was limited to a small area along River Indus. Further excavations suggested that it was spread over large parts of present-day Pakistan and the Indian states of Haryana, Uttar Pradesh, Punjab, Gujarat and Rajasthan. A number of sites have been discovered in these places:
Chanhu-daro, Kot Diji and Amri (all in Pakistan), Ropar (Punjab), Banawali (Haryana), Alamgirpur (Uttar Pradesh), Kalibangan (Rajasthan), Lothal, Rojdi, Dholavira, Rangpur and Gola Dhoro (all in Gujarat).

SPECIAL FEATURES OF THE CIVILISATION

Town Planning

The planned layout was the most impressive feature of all the Indus Valley cities. The cities were divided broadly into two parts – the citadel and the lower town. The structure built on a raised ground was called the **citadel.** It was surrounded by baked brick walls to protect it from floods. It was probably inhabited by the ruling class comprising priests and rich merchants. Outside the citadel at a low height was the **lower town.** It was larger than the citadel. Common people like craftsmen, labourers and merchants inhabited the lower town.

The Citadel

The Citadel – Main Buildings

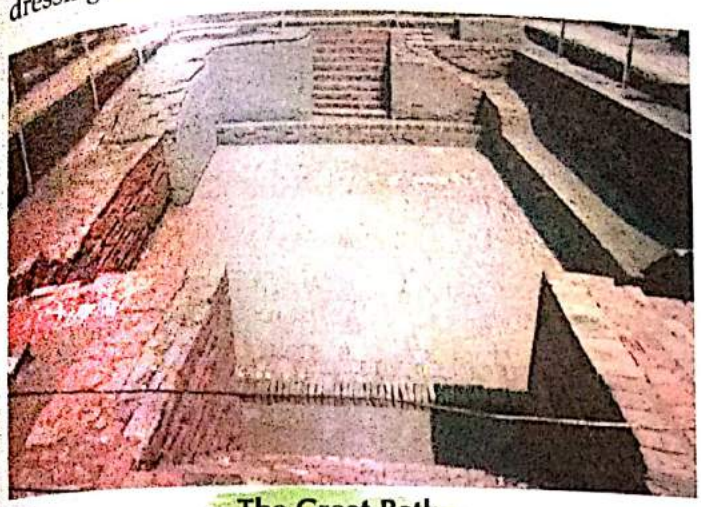
In some cities, special buildings were constructed in the citadel area.

The Great Granary: In the citadel of Harappa, the most remarkable building was the Great Granary. It was used to store surplus grains probably to be used during famines or floods. The granaries here were arranged into two rows of six each. A circular working platform was used for threshing grains. A similar granary was found in Mohenjo-daro. All granaries were located close to the riverbank. Rivers were the best means of transporting food grains on boats from one place to another. It was cheap, required less time and labour.

The Great Granary Of Harappa

The Great Bath: In Mohenjo-daro, a special tank called the Great Bath was discovered. This Great Bath was probably used for bathing on special occasions. It was lined with layers of baked bricks and was made watertight. Water was probably brought in from a well and drained out after use

The Great Bath at Mohenjo-daro resembled a large swimming pool with multiple entrances and dressing rooms around the central pool.



The Great Bath

The Assembly Hall or Town Hall: Another important structure found in the citadel area, in Mohenjo-daro, was the **Assembly Hall** or **Town Hall.** It was a large hall consisting of twenty pillars of baked bricks which were arranged into four rows of five each. It might have been used as a meeting place for a large gathering to discuss important issues or as a prayer hall.

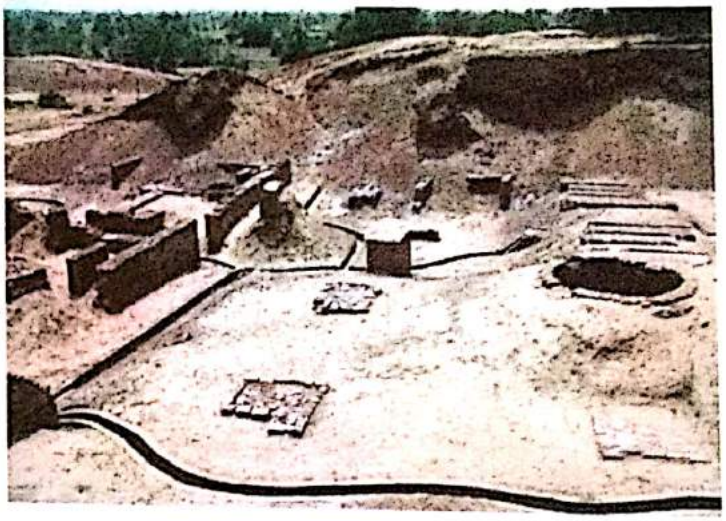
The Plan Of The Lower Town

The lower town was built with a very beautiful plan. The main roads were 8-10 metres wide and ran parallel to each other. The smaller roads crossed the main road at right angles and divided the city into rectangular boxes. This reminds one of the designs of modern towns.

The Lower Town

Most of the buildings in the lower town were residential quarters. The houses were one or two storeys high and built of baked bricks. Most houses had a central courtyard, around which rooms were constructed. The windows opened into the courtyard where all household activities took place. The hearth was normally made in a sheltered corner of the courtyard.

Every house had a bathing area along with a well. Terracotta drain pipes were used for draining water from the roof. The main entrance opened into lanes and not the main street to keep out dust.



Mohenjo-daro Drainage System

Drainage System

The drainage system of the Indus Valley Civilisation is regarded as the best example known to the ancient world. Drains were built on both sides of the road and were connected with each house. They were covered with baked bricks; wooden traps were also fixed to check the passing of solid waste. Each house had its own soak-system. It helped to collect all the sediments. It allowed only the water to flow into the drains.

KNOW More

Our present-day drainage system in metropolitan cities bears a striking resemblance with the Indus Valley Civilisation drainage system. We too have drains along the sides of the roads, manholes at regular intervals, sloping bathroom floors and other similar features of the Indus drainage system.

Quick Revision

Fill in the blanks.

1. The Harappan Civilisation was founded on the banks of River ..... .
2. The Indus Valley cities were divided broadly into two parts – ..... and ..... .
3. The special tank in Mohenjo-daro is called the Great ..... .
4. Most of the buildings found in the lower town were ..... quarters.

Dockyard

A bricked dockyard was found at Lothal. It was connected with a channel to the Gulf of Cambay (Kambhat). The dockyard was probably used for making and repairing ships. This shows that the people were involved in foreign trade, perhaps with the Mesopotamians.

RUINS OF SINDHU-SARASWATI CIVILISATION

Artefacts found in the excavation of Sindhu-Saraswati Civilisation give us an idea about the lifestyle of the people living there at that time. The ruins depict a developed civilisation.

DECLINE OF THE CIVILISATION

The Indus Valley Civilisation lasted for around 1000 years. Its decline began around 1500 BCE. Research is still continuing to find the exact reasons of the weakening and ultimate collapse of this civilisation. Some of the most discussed views are:

- Destruction caused by natural disasters such as floods, earthquakes, or changes in the path of River Indus might have led to the end of this civilisation. Evidence of devastation caused by floods has been found at Mohenjo-daro and Lothal.
- Some scholars say that an attack by a more superior foreign tribe like the Aryans may have led to the end of the Indus settlement.
- Changes in climatic conditions or a sudden change in the course of the River Indus might have led to the reduction of agricultural production. Eventually, people might have migrated further east in search of more favourable living conditions.

Changes were very clear and affected all the cities of the Harappan Civilisation.

Although we do not know the actual reasons of the decline of the Sindhu-Saraswati Civilisation, we know it had a great impact on the people of the later periods.

CONTEMPORARY CIVILISATIONS

Other civilisations also developed on the banks of various rivers at other places in the world. Some of these civilisations are considered contemporary with Sindhu-Saraswati Civilisation by experts. These are:

- **The Nile River Civilisation of Egypt:** This civilisation flourished in north-west Egypt in Africa on both the banks of the River Nile.
- **The Dajla-Farat Civilisation of Mesopotamia:** It flourished in the Doab of present day Iraq, on the banks of the Dajla and the Farat rivers. The Sumerian, the Babylonian and the Assyrian civilisations also developed in this region.
- **The Hwang-Ho Civilisation of China:** In the lower plains of the Hwang-Ho river, where fertile clay loam soil was found, this civilisation developed.

PLACES OF ARCHAEOLOGICAL IMPORTANCE IN RAJASTHAN

Kalibangan: During the year 1961, excavation of two sand dunes in Kalibangan in Hanumangarh district provided remains of articles of pre-historic period. Articles found in excavation on the banks of River Ghaggar are similar to the Harappan Civilisation.

Ahad: Ahad was situated on the banks of River Bedach in Udaipur. It is also known as the **copper town**. Excavation was carried out on the eastern side

hillocks of this habitation and remains of utensils of stone, copper and earthen pots were found.

Gilund: Remains similar to those found in Ahad were found in excavations at Gilund. Both Ahad and Gilund are considered a part of the **Ahad Civilisation**. Gilund is situated about 95 km north of Udaipur in Rajsamand.

Bagore: Bagore is situated on the banks of Kothari river at Bagore in Bhilwara district. Stone Age and Copper Age articles were found here.

Balathal: This is an extension of the Ahad Civilisation. It is situated 42 km in the east of Udaipur. Stone and Copper Age utensils, statues and other remains were found there.

Noah: Artefacts made of copper and bones and iron axes were found here. They are said to be of the Copper Age.

Chandrawati: This was the capital of the Parmar dynasty. Ongoing excavations at Chandrawati near Abu road have provided knowledge about people's life, lifestyle and other activities during the medieval period. The ruins of fort and godowns have also been found.

Pachhamata: During the excavation in Pachhamata, remains similar to Ahad have been found. Pachhamata is 100 km from Udaipur. This is an important place in the **Ahad-Banas Civilisation**. Embellished jars, bangles of oyster shells and green stones, earthen pots and big furnaces have been found here.

Ganeshwar: Ganeshwar is on the banks of River Kantali in Sikar district. Articles of Copper Age have been excavated here.

Bairath: This place is situated in Jaipur district. It has been a very developed place during various eras. It was the capital of Matsya region during Mahabharata period. Stone plaques of Samrat Ashoka's period have also been found here.

Rajasthan has many Harappan and pre-Harappan period places like Karanpura, Bijnaur and Tarkhan wala Dera. Almost 100 archaeological places have been identified out of which excavations at only 6 places have been done till now.

Quick Revision

Fill in the blanks.

1. ..... was situated on the banks of River Bedach.
2. Gilund is situated ..... km from Udaipur.
3. ..... is an extension of the Ahad Civilisation.

Exercise

Use Cordova Smart Class Software on the smart board in class to do these exercises.

1. Choose the correct answers.
   (a) First excavation of Indus Valley Civilisation was done at
   (i) Mohenjodaro ☐ (ii) Harappa ☐
   (iii) Kalibangan ☐ (iv) Lothal ☐
   (b) How old is Indus Valley Civilisation considered as compared to Christ?
   (i) 2000 years ☐ (ii) 5000 years ☐
   (iii) 2500 years ☐ (iv) 4000 years ☐
2. What are the sources of knowing history?
3. How did primitive human beings live?
4. What were the principal arms and tools of primitive human beings?
5. What were the reasons of the development of civilisation in the plains of river banks?

6. What are the important places of Indus Valley Civilisation?
7. Illustrate the town planning during Indus Valley Civilisation.
8. Write brief comments on world civilisation contemporary with Indus Valley Civilisation.
9. Which are the important archaeological places of Rajasthan? Describe.

Activity

1. Collect photos of archaeologically important places of Rajasthan.
2. Collect stones of different shapes and think if any tool can be made from them. Prepare some tools and exhibit them.

Additional Questions For Practice

A. Multiple Choice Questions (MCQs) – Tick (✓) the correct options.

1. Stone plaques of Samrat Ashoka's period have also been found here.
   (a) Ganeshwar ☐ (b) Bairath ☐ (c) Noah ☐
2. *Mudra Rakshasa* is a play written by ..... .
   (a) Vishakhadatta ☐ (b) Tulsidasa ☐ (c) Kalidasa ☐
3. The Stone Age was divided into ..... sub-periods.
   (a) four ☐ (b) three ☐ (c) five ☐
4. ..... was the capital of the Matsya region during the Mahabharata period.
   (a) Bairath ☐ (b) Ahad ☐ (c) Balathal ☐
5. The Town Hall was found in the ..... area of Mohenjo-daro.
   (a) citadel ☐ (b) lower town ☐ (c) great granary ☐

B. Fill in the blanks.

1. ..... is the study of the past.
2. Old buildings which have historical importance are called ..... .
3. Invention of the ..... gave rise to pottery.
4. The Great Bath was probably used for bathing on special ..... .
5. ..... was the capital of the Parmar dynasty.

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

1. Coins are a valuable source of information. ☐
2. *Indika* was written by Kautilya. ☐
3. Pressure flaking was a method of tool making. ☐
4. The Indus Valley Civilisation had a remarkable drainage system. ☐

D. Very Short Answer Questions

1. Who studies history?
2. What are artefacts?

3. Name the two places which are considered to be a part of the Ahad Civilisation.
4. What is a citadel?
5. For how many years did the Indus Valley Civilisation last?

Short Answer Questions

1. Write a short note on the literary sources of history.
2. What is secular literature?
3. Why is Bairath an important archaeological place in Rajasthan?
4. Why was Harappan Civilisation also known as Indus Valley Civilisation?
5. Who lived in the lower town of the Harappan Civilisation?

Long Answer Questions

1. Discuss how the following have a significant effect on the writing of history.
   (a) Coins
   (b) Monuments
2. Write a note on the drainage system of the Indus Valley Civilisation.
3. Explain the techniques of 'stone on stone' and 'pressure flaking' of tool making.
4. Write about two special buildings of the citadel area.
5. Name and write about any three places of archaeological importance in Rajasthan.

ACTIVITY

Make a clay pot and decorate it.

You need clay, ruler, newspaper and an old hand towel.

Roll out long snakes of clay and make a coil pot and smoothen it from outside with the help of a ruler. Dry it in the Sun, then colour and decorate it.

RECAP

History

What Is History
- History is the study of the past.
- People who study the past are called historians.

Division Of The Past

Prehistory
Written records are not available, e.g., Stone Age.

History
Written records are available, e.g., Mauryan Empire.

Sources Of History

Archaeological Sources
- inscriptions
- coins
- monuments
- artefacts

Literary Sources
- manuscripts
- secular literature
- religious literature
- foreign travellers' accounts

Early Humans

Life
- led a normal life
- did not produce food grain or build houses
- lived in caves or climbed on trees
- used stone tools to kill animals
- learnt to cook animal flesh with the discovery of fire

Phases
- Paleolithic Age or Old Stone Age
- Mesolithic Age or Middle Stone Age
- Neolithic Age or New Stone Age

Permanent Settlement
- several discoveries led to permanent settlement
- beginning of agriculture
- domestication of animals
- invention of the wheel
- pottery
- dress

Sindhu - Saraswati Civilisation

Period Of Extent
- It existed from 4500 BCE to 2500 BCE.
- It is often referred to as the Harappan Civilisation.
- It spread across Sindh, Baluchistan, Punjab, Uttar Pradesh, Gujarat and Rajasthan.
- It developed on the banks of River Sindhu.

Contemporary Civilisations
- Nile River Civilisation in Egypt
- Dajla - Farat Civilisation in Mesopotamia
- Hwang - Ho Civilisation in China

Special Features
- Town Planning
- Buildings like Great Granary and Great Bath
- Drainage System
- Dockyard

Places Of Archaeological Importance In Rajasthan
- Kalibangan
- Ahad
- Gilund
- Bagore
- Balathal
- Noah
- Chandrawati
- Pachhamata
- Ganeshwar
- Bairath

Decline
- Its decline began around 1500 BCE.
- Some of the discussed reasons for its decline are, destruction caused by natural disasters, foreign invasions or climatic changes.

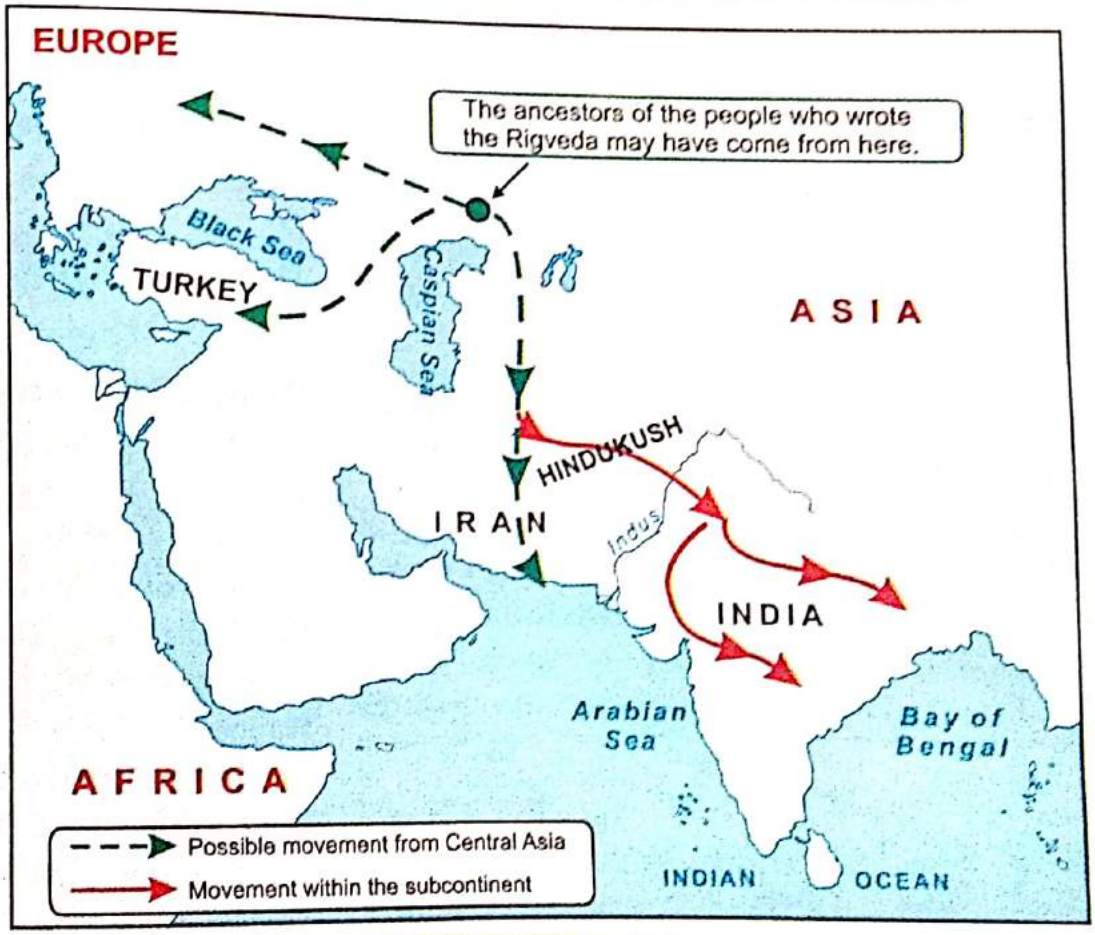
17 Vedic Culture And Civilisation

KEY TERMS

- *caste* : divisions of traditional Indian social system
- *epics* : long poems like the *Mahabharata* and the *Ramayana*
- *gurukul* : residence of the teacher (guru) where students get education
- *hereditary* : passed from one generation to the next; literally means 'by birth'
- *rituals* : long running religious routines
- *tradition* : thought or behaviour passed on from one generation to another
- *tributes* : something that you say, give or do to show respect or affection for someone
- *varna* : used to describe castes in India

Use Cordova Smart Class Software on the smart board in class to make learning enjoyable.

The period that started in 1500 BCE and continued upto 600 BCE is known in history as the **Vedic Civilisation**. This is the earliest civilisation in India to have written records. It is named after the Vedas, the literature of Aryans. The four Vedas are — **Rigveda, Yajurveda, Samaveda** and **Atharvaveda.**



Routes Of Migration Of Aryans

- **The Rigveda:** It is the oldest among the four Vedas. It teaches how one can lead a comfortable life with nature. The *Gayatri Mantra* is a part of the Rigveda.
- **The Yajurveda:** It was written after the Rigveda. It is written in the form of prose and poetry. It consists of *shlokas* and *mantras* spoken during religious ceremonies.
- **The Samaveda:** Some parts of the Samaveda were influenced by the Rigveda. Music and dance are of importance in the writings of the Samaveda and it is said that Indian music had originated from it.
- **The Atharvaveda:** It teaches us about the well-being of human beings and treatment and cure from various diseases.

SOURCES

Our main source of information about the Aryans are the Vedas. 'Veda' is a Sanskrit word derived from the root word *Vid* that means 'knowledge'.

Therefore, the word 'Veda' means 'knowledge'. All the four Vedas are written in Sanskrit and contain hymns in praise of various gods and goddesses. However, in the last few decades, many archaeological evidences have also been found. The history of Vedic Civilisation is written by combining both the sources.

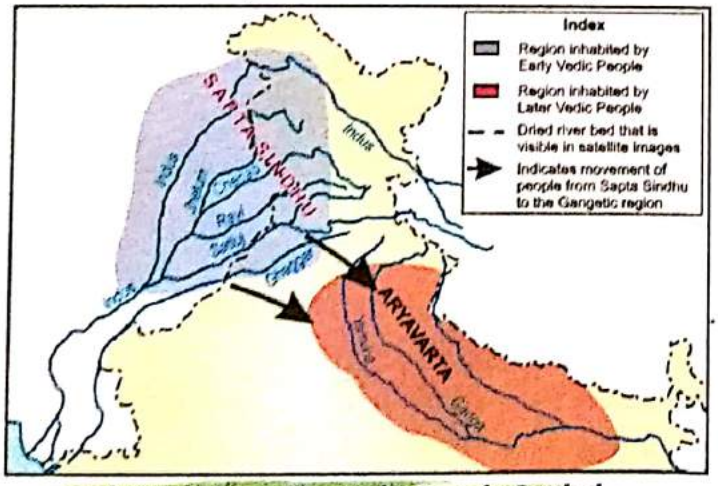
The Vedic Civilisation is divided into two periods:

- Early Vedic Period (Brahmavarta) (1500 BCE – 1000 BCE)
- Later Vedic Period (Aryavarta) (1000 BCE – 600 BCE)

SETTLEMENT

In the Early Vedic Period, Aryans settled in the area called 'Sapta Sindhu' (the land of seven rivers). The area of seven rivers was formed by River Indus and its tributaries. The earlier settlements were confined to the valleys of River Sindhu and its tributaries. In the Later Vedic Period, they moved eastwards and settled in the Ganga-Yamuna plains. They called it 'Aryavarta' (the land of the Aryans).

Most historians believe that the original home of Aryans was in Central Asia around the Caspian Sea. They also believe that Aryans led a pastoral life. Cattle, sheep and horses were central points of their life. They needed fresh and new pastures for their animals. This was the most probable reason for their migration. During migration, some of them moved towards Europe and some turned eastward. They first settled in Iran, then moved towards India. The Aryans in India are called 'Indo-Aryans' or simply 'Aryans'.



Areas Where The Vedic People Settled

KNOW More

One important evidence of Aryans' Central Asian roots is their language, i.e., Sanskrit. It has several similarities with the European languages.

Sanskrit	Latin	English
Matri (mother)	*Mater*	Mother
Satam (hundred)	*Centur*	Century
Tri (three)	*Tres*	Three

This shows the similarity between Sanskrit, Latin and English.

EARLY VEDIC PERIOD (BRAHMAVARTA) (1500 BCE – 1000 BCE)

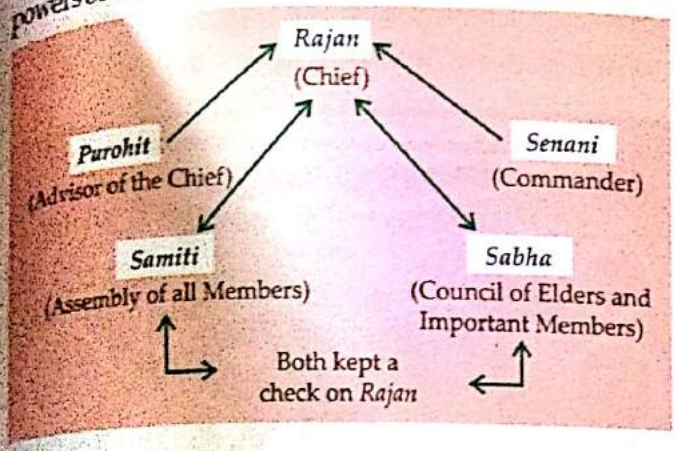
We know about the life, society and achievements of this period mainly through the Rigveda. Therefore, it is also called the **Rigvedic Period** or **Rigvedic Age.**

Political Organisation

The Aryans gave up their nomadic life during this time. They started living settled lives. They were divided into many tribes called *janas*. The *janas* consisted of many villages called *gramas*. *Grama* was the smallest unit. The headman of the *grama* was called *gramani*. A *grama* consisted of a number of families. Each tribe had a chief called *rajan*. He was selected on the basis of ability and potential. The post was not hereditary. His main duties were to defend his *jana* (tribe) from external attacks, to look after people's welfare and to protect their cattle. People offered *bali* (voluntary tribute) for his services.

There were two tribal assemblies, i.e., the *sabha* and the *samiti*. The *sabha* was a council of elders and important members of the tribe. It advised the *rajan* on all important social and political issues. The *samiti* was a general assembly. All members of the tribe took part in it. The people gathered here for business

transac... Both these assemblies checked the powers of the *rajan*.



SOCIAL LIFE

Family System

The Aryans called their family *kula*. They followed the joint family system. Many generations lived together. The oldest male member was the head of the family and was called the *kulap* or *grihapati*.

Status Of Women

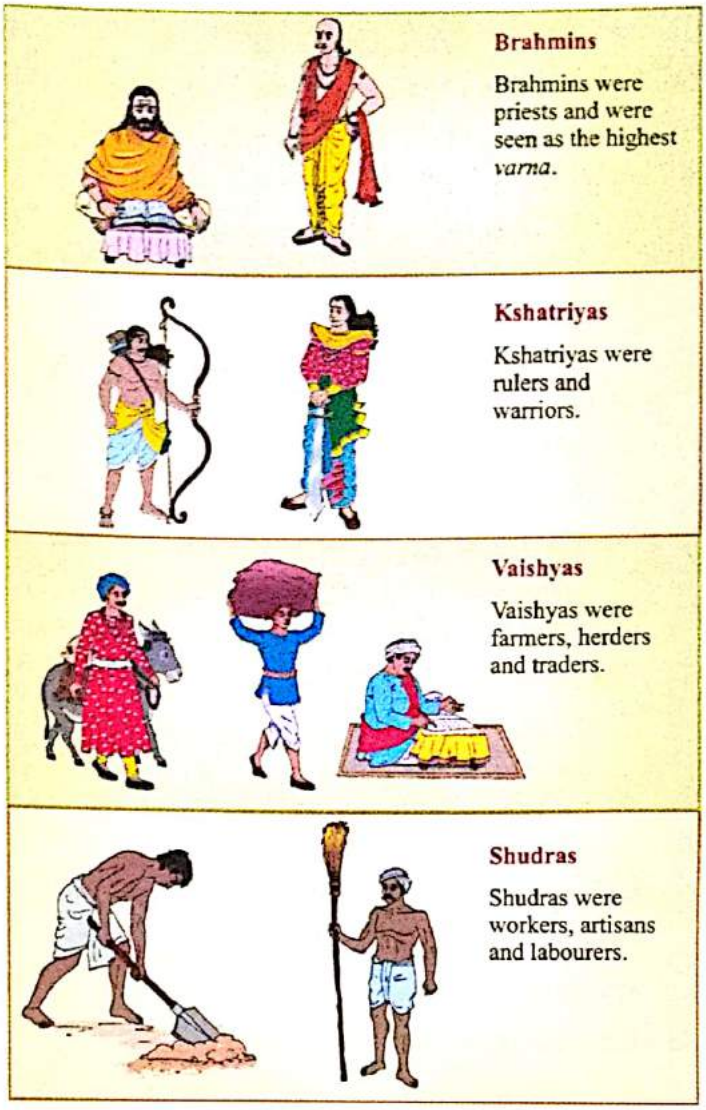
Women held respectful position in the Rigvedic society. Women were respected and they received education. They were also allowed to study the Vedas. They were permitted to attend *samiti* meetings. They also participated in debates. Many women are even known to have composed hymns. **Gargi, Maitreyi, Ghosha** and **Lopamudra** were highly educated women who lived during the Early Vedic Period.

KNOW More

In the Vedic Period, women enjoyed the right to choose their husbands through a ceremony called *swayamvara*. Widows were allowed to remarry and there was no child marriage.

Varna System

The society was divided into four groups called *varnas*. These were **brahmins, kshatriyas, vaishyas** and **shudras**. Each *varna* had a different set of functions. Brahmins belonged to the first *varna* and their duty was to impart the knowledge of the Vedas, to perform sacrifices and to receive gifts.



The *Varna* System

Kshatriyas were the second *varna*. They were the warriors. They fought battles and protected people. Vaishyas formed the third *varna*. They included traders, farmers, artisans and herders. Both vaishyas and kshatriyas could perform sacrifices.

Shudras belonged to the last *varna*. Their duty was to serve the upper three *varnas*.

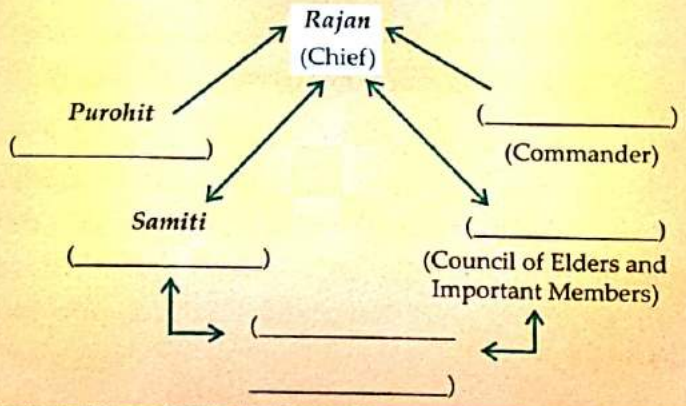
The evils of the caste system were not present in the Early Vedic Age. In fact, it was quite flexible. People were allowed to change their occupation despite being born in a particular class. It is noteworthy to quote a Rigvedic verse here – "I am a poet, my father is a doctor and my mother is a grinder of corn." This shows that there was no rigid caste system during this time.

Quick Revision

A. Tick (✓) the correct options.

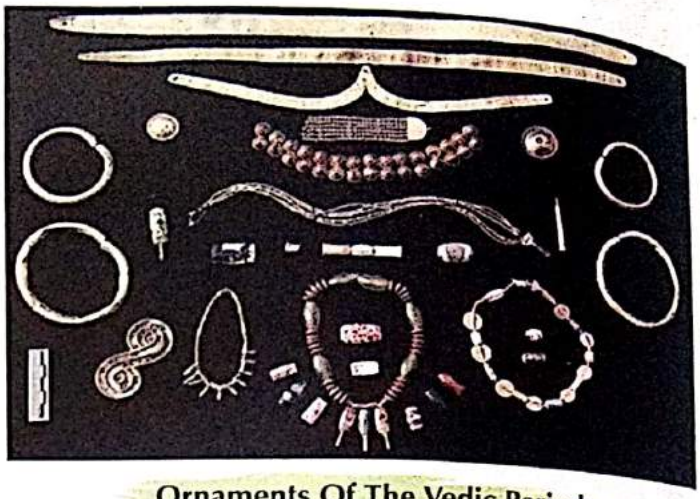
1. The main source of information about the Aryans are the ..... .
   (a) Aryavarta ☐ (b) Brahmavarta ☐
   (c) Vedas ☐ (d) Kalpas ☐
2. The Early Vedic Period (Brahmavarta) extends from ..... .
   (a) 1500 BCE – 1000 BCE ☐
   (b) 1500 BCE – 1100 BCE ☐
   (c) 1000 BCE – 600 BCE ☐
   (d) 1500 BCE – 1200 BCE ☐
3. The Aryans called their family ..... .
   (a) *sabhas* ☐ (b) *kula* ☐
   (c) *varnas* ☐ (d) *janas* ☐
4. The society was divided into four groups called ..... .
   (a) *varnas* ☐ (b) *kulas* ☐
   (c) *gramas* ☐ (d) *sabhas* ☐

B. Complete the web chart.



Lifestyle

The Aryans enjoyed a simple and healthy diet. They ate barley, vegetables, fruits and meat. They were fond of milk and milk products. *Soma* (a Vedic ritual drink from a plant) was very popular among them. It was consumed on special religious ceremonies. Their dress was simple. Men wore *dhotis*. They kept a piece of cloth over their shoulders. They also tied a turban over their heads. The women wore a saree and an upper garment. Ornaments made of gold and silver were popular among both men and women.



Ornaments Of The Vedic Period

The life of Aryans was full of entertainment. Music, dancing, singing, hunting and chariot-racing were popular forms of recreation.

Religion

We know a lot about the religion of Aryans. Early Vedic people worshipped different forces of nature.

On every important occasion, people performed *yajnas* (sacrifices). They pleased the gods by offering ghee, grains and animals. They prayed for health and well being, cattle, children and horses. Gradually, the *yajnas* became very elaborate and complex. They were performed in an open area as the Aryans had no temples or idols.

KNOW More

Indra: The God of Rain and Thunder (His weapon was a thunderbolt. He was the destroyer of enemies.)

Varuna: The God of Oceans
Agni: The God of Fire
Surya: The Sun God
Vayu: The Wind God

Thunderbolt – The Weapon Of Indra

Economic Life

In the beginning of the Early Vedic Period, the Aryans led a nomadic life. Gradually, they started to settle down at one place. A wealthy person in the village was called the *gomat*. Cow was the unit of wealth – prosperity or how wealthy a person was, depended on the number of cows one owned.

It seems the Early Vedic people knew the art of agriculture. The Rigveda mentions the use of *yava* or barley. The villages during the Early Rigvedic Period were self-sufficient units. Agricultural implements during this period were made of wood or copper (use of iron was still unknown to them).

Agriculture and cattle rearing were the main occupations of the people during the period, along with pottery making, metal work, weaving, chariot making and leather work.

Quick Revision

A. Tick (✓) the statements that are true and cross (✗) those that are false.

1. There was no entertainment in the lives of the Aryans. ☐
2. In the beginning of the Early Vedic Period, the Aryans led a nomadic life. ☐
3. Agriculture was known to the Early Vedic people. ☐
4. Horses were the unit of wealth. ☐
5. Villages during the Early Vedic Period were self-sufficient units. ☐

B. Circle the odd ones.

1. barley, vegetables, fruits, leaves
2. dancing, praying, hunting, chariot-racing
3. cooking, agriculture, weaving, cattle rearing
4. agricultural implements, iron, copper, wood

LATER VEDIC PERIOD (ARYAVARTA) (1000 BCE – 600 BCE)

Sources

The main sources of information of this period are the three Vedas – **Yajurveda, Samaveda** and **Atharvaveda.** These are also known as the Later Vedas as they were composed in Later Vedic Period. Therefore, this period is known as the Later Vedic Period. Besides, archaeological findings (painted grey ware pottery) at various sites also help us to complete our knowledge about the period.

Painted Grey Ware Pottery

Two important changes took place during this period. First, the Aryans shifted their base from Sapta Sindhu to Aryavarta. Second, they started using iron. Iron helped the Aryans make tools to cut trees to get more land and move towards the east. Later Vedic texts have referred to iron as the *Shyam Ayas* (black metal). It is a fact that Aryavarta was full of forests before the advent of Aryans.

Political Organisation

Aryans began a more settled life and formed small kingdoms. These were called *janapadas*. The Kuru tribe of Rigveda occupied the region around present-day Delhi. It was named Kurukshetra and Hastinapur became its capital. Two important dynasties of Mahabharata were the Kauravas and the Pandavas. Both dynasties belonged to the Kuru tribe. A battle between them is believed to have been fought for 18 days.

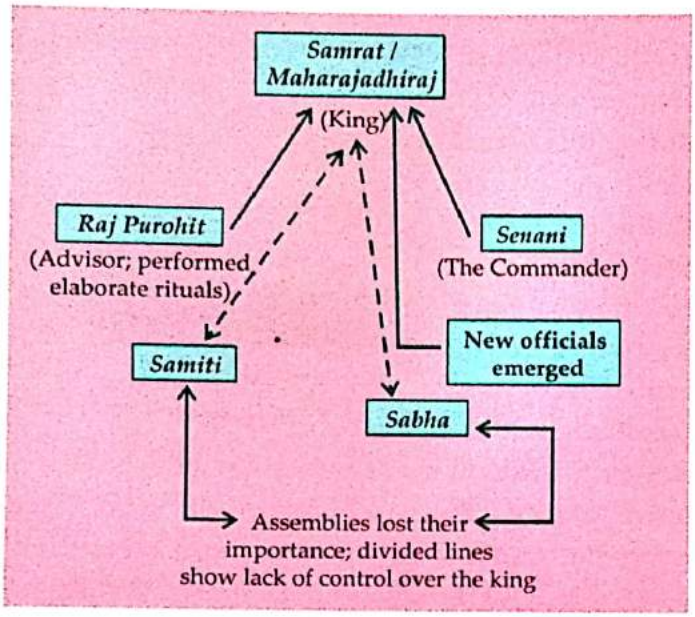
Many other changes took place in the Later Vedic Age.

A village consisted of many families. The village authority was called *Gramani*. A cluster of villages was called a *Vish*. Its authority was called *Vishpati*. A number of *Vishes* constituted a *Jan* which was ruled by *Rajan*.

The king became very powerful by this time. The control was no longer with the *sabha* and the *samiti*.

Kingship became hereditary. The eldest son generally succeeded the king. Kings adopted grand titles such as *Maharajadhiraj* and *Samrat*.

Due to the expansion of territories, the administrative work also increased manifold. The king was assisted by a large number of officials like the *purohit*, *senani* and *gramani*.



The *Raj Purohit* performed elaborate rituals and gave advice. The *senani* became very important as the frequency of wars also increased.

Organise an activity in which your class elects a *Rajan*. What qualities do you feel are required in order to become the *Rajan?* Organise yourselves into groups of six and list those qualities. Discuss about them in class.

Varna System

In the Later Vedic Period, the four *varnas* were determined by birth. Change of caste became difficult though not impossible. The position of women also declined. They were not allowed to take part in public matters. They were no longer allowed to study the Vedas or participate in the *samiti's* meetings. The *Vaishya* class had many of their rights denied and the *shudras* were treated as mere servers of the upper *varnas*.

SOCIAL LIFE

Family System

The **joint family** system continued. The birth of a son was greatly welcomed. Mother and father, brother and sister, uncle and aunt, grandfather and grandmother, all lived together as one family. The able members of the family worked hard and contributed in the livelihood of the family. The eldest male of the family was usually the head who exercised authority and control over the family and his opinions were highly valued during discussions or decision making. Women lost the position of respect they held during the Early Vedic Period.

Gurukul System Of Education

Education in India originated with the *Gurukul* system. In this system, the boy had to stay with his *guru* (teacher) in a *gurukul* till the age of 25. *Gurukuls* were generally situated on the riverbanks or deep in the forest to attain real knowledge. Boys learnt various subjects such as the Vedas, logic, mathematics, grammar and medicine. Oral education was imparted. On completion of education, students offered *guru dakshina* or fee according to their means. This was also voluntary.

The Four Stages Of Life

Aryans divided their lifespan into four stages. These are called *ashramas*. Each stage was divided into 25 years.

- *Brahmacharya Ashrama* – student life (*Gurukul* education) belonged to the *Brahmacharya ashrama*
- *Grihastha Ashrama* – for family life, marriage was the main religious ceremony of this *Ashrama*
- *Vanaprastha Ashrama* – a retired life and for meditation
- *Sanyasa Ashrama* – for prayers and a life of renunciation, devotes all time and energy to the welfare of the society

Vasudhaiva Kutumbakam

It means that all living beings that survive and sustain on the Earth are part of one big family. Each and every person in the Vedic period behaved in the manner of everyone being a part of the same family living in the same world. Even the life of animals and other living organisms on the planet was given importance. Vedic literature is full of writings which depict the lifestyle of the people during the Vedic Period.

KNOW More

We know that arithmetic is not possible without zero. The idea of zero was known to the Vedic people. It was represented by a dot. Later, a small circle was used for it. Several centuries ago, it spread from India to other parts of the globe and contributed to the development of arithmetic.

Literature

Vedas: The Vedas are among the oldest Vedic texts. **Yajurveda, Samaveda** and **Atharvaveda** were composed during this period. Later, the **Upanishads** were composed around 600 BCE. Work on astrology, poetry and grammar also took place during this time.

The two great epics—the **Mahabharata** and the **Ramayana** were also written in this period.

- **The Ramayana:** It is said that this great epic was written by sage Valmiki. It narrates the war between Rama and Ravana.
- **The Mahabharata:** It is said that this epic was written by sage Ved Vyas. It is the longest epic in the world. It tells about the battle between the Pandavas and the Kauravas.

Upanishads: The Upanishads are a collection of texts of religious and philosophical nature written in India.

Puranas: The term 'Purana' literally means 'ancient or old'. There are 18 Maha Puranas (Great Puranas) and 18 Upa Puranas (Minor Puranas). The Puranas are composed primarily in Sanskrit.

Religion

During the Later Vedic Period, the mode of worship also changed. The *yajna* (sacrifices) became even more elaborate and costly. Only the Brahmins were supposed to know the right way to conduct them, so they were given great importance. The kings started performing large community sacrifices in which the entire community took part.

During this period, the Rigvedic gods lost their importance. The trinity of Gods, **Brahma, Vishnu** and **Shiva**, replaced the gods of nature. Some important female deities were also worshipped like **Usha** (Goddess of Dawn) and **Prithvi** (Goddess of Earth).

Rituals related to all aspects of life were performed. The priests who officiated these sacrifices were regarded and given ***dakshinas*** or gifts.

Economic Life

Agriculture remained the most important occupation. Barley, wheat, rice, vegetables, cotton and oil seeds were the main crops. The use of iron plough increased the crop production. More lands were brought under cultivation. People could produce extra than their needs. Therefore, the king demanded regular taxes. The tax was called *bhaga* which means 'share'.

Crafts such as pottery, carpentry, jewellery designing and weaving were popular. There were guilds in this period. **Guilds** were organisations of craftsmen and merchants. These guilds fixed the prices of the different items. The traders were called *Pani*. Profession became hereditary with time. With the growth of civilisation, the barter system was abandoned. Instead, gold and silver coins came into circulation. We get a reference of *Nisk* in Rigveda which was a gold coin, used as currency during that period.

Punch-marked Coins

The earliest coins are called **punch-marked coins**. The symbols were punched on pieces of silver. Symbols of animals, hills, trees and humans were usually marked on them. These were issued either by the king or the guilds. These coins did not have any writing on them. The volume of trade and commerce had increased by leaps and bounds. People became familiar with navigation of seas.

Rivers of Rigvedic Period

Old name	Present name
Kubha	Kabul
Kurmuda	Kurrum
Gomati	Gomal
Suvastu	Swat
Sindhu	Sindh
Vitasta	Jhelum
Ashkani	Chenab
Parushni	Ravi
Vipasha	Beas
Shatudri	Satluj
Dwashdwati	Saraswati

Quick Revision

A. Fill in the blanks.

1. The main source of information about the Later Vedic Period are the three Vedas – ....., ... and ..... .
2. During the Later Vedic Period, the Aryans started using ..... to make tools to cut trees.
3. Education in India originated with the .... system.
4. *Gurukul* education belonged to the ..... *ashrama* .
5. Since people produced extra grains, the king demanded ....

B. Match the following.

1. *Shyam Ayas*	(a) king
2. *janapadas*	(b) share
3. *Samrat*	(c) iron
4. *bhaga*	(d) epics
5. *Sanyasa ashrama*	(e) small kingdoms
6. The *Mahabharata* and the *Ramayana*	(f) for prayers and a life of renunciation

C. Identify the pictures.

1. 

.....

2. 

.....

Exercise

Use Cordova Smart Class Software on the smart board in class to do these exercises.

1. Choose the correct answers.

(a) The number of Vedas are

(i) two ☐ (ii) three ☐

(iii) four ☐ (iv) five ☐

(b) The ancient name of river Saraswati is

(i) Vipasha ☐ (ii) Sindhu ☐

(iii) Gomati ☐ (iv) Dwashdwati ☐

2. Write the names of two Vedic period political entities.
3. Briefly describe the family system during the Vedic period.
4. What do the terms *Pani* and *Nisk* mean?
5. Name the oldest Veda.
6. Write a short note about crafts of the Vedic Period.
7. Briefly describe the peculiarities of the Vedic period.
8. Illustrate the importance of education during the Vedic era.
9. Explain the Ashram system during the Vedic period.
10. Comment on trade during the Vedic period.
11. Describe the four Vedas.

Activity

1. Prepare a list of the Vedic period traditions and ceremonies (rituals) which are being practised during the present days also.
2. Enact selected stories of Vedic period on stage during students' meetings.

Additional Questions For Practice

A. Multiple Choice Questions (MCQs) — Tick (✓) the correct options.

1. The Vedic Civilisation started in ..... BCE.
   (a) 1500 ☐ (b) 1900 ☐ (c) 1600 ☐
2. In the Later Vedic Period, the area where the Aryans settled is also known as .....
   (a) Brahmavarta ☐ (b) Aryavarta ☐ (c) Sapta Sindhu ☐
3. The ..... fought battles and protected people.
   (a) *brahmins* ☐ (b) *shudras* ☐ (c) *kshatriyas* ☐
4. A wealthy person in village was called the .....
   (a) *gomat* ☐ (b) *yava* ☐ (c) *kulap* ☐

B. Fill in the blanks.

1. The word 'Veda' means .....
2. The Aryans settled in the area called .....
3. The duty of the ..... was to serve the upper three *varnas*.
4. There are ..... Maha Puranas and ..... Upa Puranas.
5. The priests who officiated sacrifices were given .....
6. The earliest coins are called ..... coins.

C. Match the following.

1.	Vedas	(a)	*Rigveda*
2.	*brahmins*	(b)	*Samaveda*
3.	Later Vedic Period	(c)	organisations of craftsmen
4.	Early Vedic Period	(d)	Sanskrit language
5.	guilds	(e)	performed sacrifices

D. Very Short Answer Questions

1. When did the Vedic Civilisation end?
2. What were the Aryans in India called?
3. Name two highly educated women of the Early Vedic Period.
4. What was the unit of wealth in the Vedic Age?

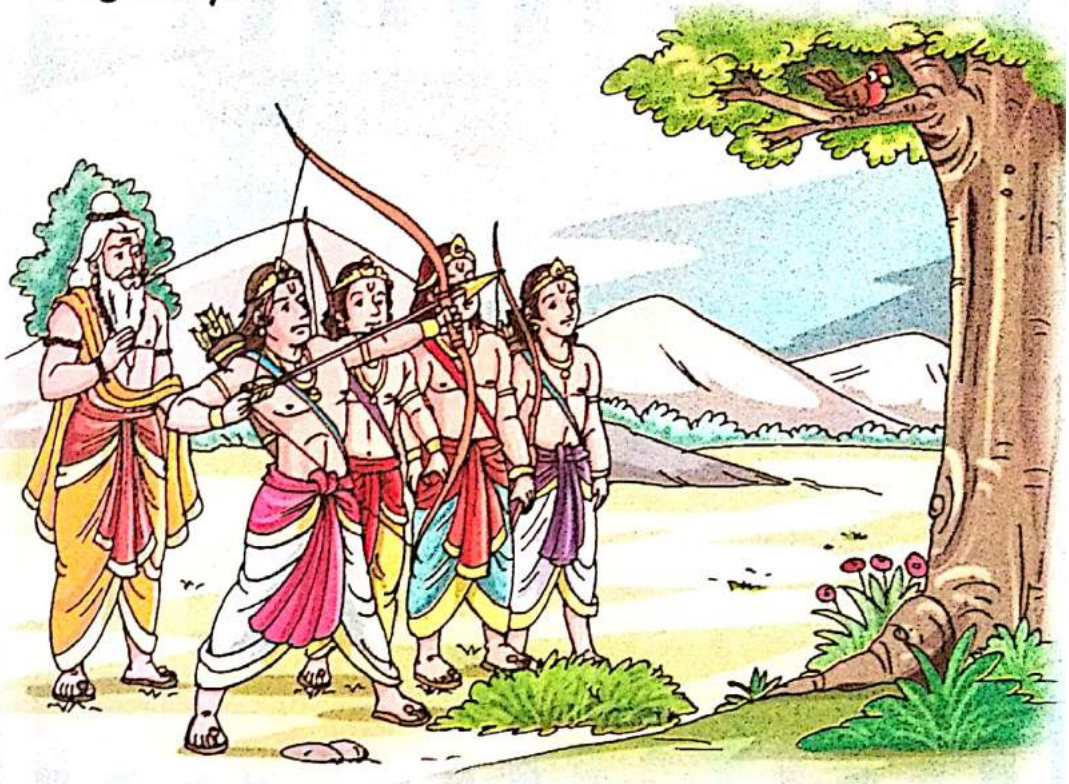
E. Short Answer Questions

1. Name the four Vedas.
2. Write a short note on settlement of Aryans in India.
3. Write about the family system of Aryans.
4. List the occupations of the people in the Early Vedic Period.
5. Write about the *Mahabharata* and the *Ramayana*.

F. Long Answer Questions

1. What changes took place in the political organisation of the Later Vedic Period?
2. Give a brief account of the *Gurukul* system of education.
3. How did the following change with the transition from the Early Vedic Period to the Later Vedic Period?
   (a) *varna* system
   (b) religion
   (c) position of women
4. Mention the position and function of each *varna* during the vedic period.
5. Write about the economic life of the Later Vedic Period.

Read and enjoy the following story.



Guru Dronacharya wanted to test his students, the Pandavas and Kauravas, in archery. He took them into a forest, walked a long way and reached a stream. Across the stream, he set up a small wooden bird on a tree. Guru Drona looked at all of them and said, "Look at the wooden bird on that tree. One by one, aim your arrows and hit the eye of the bird."

Yuddhishtra was the first to be called. He pulled out his arrow and aimed at the bird. Before he let the arrow off his bow, Drona looked at him and asked, "What do you see Yuddhishtra? Name all the things you see." Yuddhishtra kept aiming at the bird and replied, "I see the wooden bird, the leaves and branches of the tree, the stream, the birds, the sky, the Sun, other trees....."

Drona shook his head and said, "Stand back Yuddhishtra, put your bow down. You cannot hit the target." Yuddhishtra was confused but he walked quietly to his brothers.

One by one, all the princes were called and asked the same question. Each came up with similar answers. Finally, Arjuna was left. As Arjuna aimed at the bird, Drona asked him "Tell me, what do you see there?"

"I can see only the eye of the bird," replied Arjuna.

"Can you not see the trees and the stream?" asked Drona

Arjuna said "No sir, I can see only the eye of the bird." Drona was very pleased with the answer. He glanced at other princes, who seemed to have understood what the Guru wanted to convey. Finally, Drona permitted Arjuna to shoot.

Arjuna shot the eye of the wooden bird. The boys were amazed. It was a perfect shot.

Dronacharya turned to the princes and said "Young princes, I hope you have learnt a lesson. Focus your attention on your task, only then you will get perfection. This is called the power of concentration."

RECAP

Vedic Civilisation

- earlier settlements in the area called Sapta Sindhu while the later ones moved towards Ganga-Yamuna Plains
- It is the earliest civilisation in India to have written records.
- It is divided into Early Vedic Period and Later Vedic Period.
- It started in 1500 BCE and continued up to 600 BCE.
- Main sources of this period are Vedas, and some archaeological evidences.
- The four vedas, Rigveda, Yajurveda, Samaveda and Atharvaveda were written during this period.
- It is believed that Aryans led a pastoral life and were originally from Central Asia.

Early Vedic Period (1500 BCE - 1000 BCE)

Political Life

- There were many tribes called as *Janas*.
- *Rajan* was the head of the tribe.
- *Sabha* and *Samiti*, the two assemblies, helped and assisted the head.

Social Llife

- They followed the joint family system.
- Women enjoyed respectable position.
- The society was divided into four *varnas*.
- The evils of caste system were not present.
- They enjoyed a simple life and healthy diet.

Religious Life

- They worshipped different forces of nature.
- They performed *yajnas*.

Economic Life

- Agriculture and cattle rearing were the main occupations.
- Cow was the unit of wealth.
- Pottery making, metal work, weaving, etc., were common.

Literature

- The Rigveda was composed during this period.
- Hence this period is also known as Rigvedic Period or Rigvedic Age.

Later Vedic Period (1000 BCE - 600 BCE)

Political Life

- Small kingdoms were formed known as *Janapadas*.
- King was the head and was assisted by a large number of officials.

Social Life

- Joint family system continued.
- Women lost their position of respect.
- System of education originated in the form of *Gurukuls*.
- The four *varnas* were determined by birth.
- They divided their life span in four stages known as *ashramas*.

Religious Life

- The trinity of god Brahma, Vishnu and Shiva replaced the gods of nature.
- The *yajnas* became more elaborate.

Economic Life

- Agriculture was the main occupation.
- Crafts, such as pottery, carpentry, jewellery, were popular.
- Punch - marked coins came to be in use.
- The volume of trade and commerce increased.

Literature

- Literature composed during this period were -
  - ◊ Yajurveda, Samaveda and Atharvaveda
  - ◊ Upanishads
  - ◊ Puranas
  - ◊ Epics—the Mahabharata and the Ramayana