SOCIAL SCIENCE

(GEOGRAPHY)

Part-02

The Earth : Our Habitat

Class 6



2021-2022

State Council of Educational Research and Training Chhattisgarh, Raipur

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Preface

It is clearly stated in the Nation at Education Policy that it is important to (i) over come time quality (ii) ensure that everyone gets education as per the national needs (iii) improve the quality of education (iv) give due importance to arts science and technology. Keeping in view these fundamental aspects, educationists have prepared a syllabus in public interest for all fields of education. The syllabus is to be implemented in all states to that the coming generations get similar education. Thus all students will facing competition will be coming with similar educational background. They will develop positive attitude towards the state and their educational dreams will be fulfilled.

In this context, NCERT has laid out common learning outcomes for elementary education; so Chhattisgarh has adopted their social science textbooks of classes 6 to 8 named Geography part-2.The government of Chhattisgarh has put in effect these textbooks for classes 6-8.

Unity in diversity has been the tradition of our county. To keep up this tradition and to be at par with other countries it is has been the intention since long to have similar syllabus for all states and to use the NCERT textbooks in all states. Conducting a common medical entrance text in 2018 was also an effort in this direction.The admission process for all technical courses is likely to be planned in a similar manner. Most competitive examination after class - 12 are conducted by CBSE and questions are asked from NCERT textbooks. Hence it is necessary to use similar learning materials for all national level examinations.

Chhattisgarh state has adopted the NCERT textbooks (English and Hindi medium). The lay-out design and printing of these books has been done by the Chhattisgarh State Textbook Corporation. The NCERT books adopted by Chhattisgarh state will be useful for the present and future generations. We are grateful to the Director NCERT for permitting and guiding us to adopt the NCERT textbooks for Chhattisgarh state.

We sincerely hope and believe that this textbook will be of great utility for the students. Since there in always scope for improvement, the State Council of Educational Research and Training always welcomes comments and suggestions from students, parents, teachers and educationists. Thus our humble efforts will be helpful in securing a high position for our state in the field of education in our country.

Director
State Council of Educational Research and Training
Chhattisgarh, Raipur

THE CONSTITUTION OF INDIA

PREAMBLE

WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a [1][SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC] and to secure to all its citizens :

JUSTICE, social, economic and political;

LIBERTY of thought, expression, belief, faith and worship;

EQUALITY of status and of opportunity; and to promote among them all

FRATERNITY assuring the dignity of the individual and the [2][unity and integrity of the Nation];

IN OUR CONSTITUENT ASSEMBLY this twenty-sixth day of November, 1949 do HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION.

---

1. Subs. by the Constitution (Forty-second Amendment) Act, 1976, Sec.2, for "Sovereign Democratic Republic" (w.e.f. 3.1.1977)
2. Subs. by the Constitution (Forty-second Amendment) Act, 1976, Sec.2, for "Unity of the Nation" (w.e.f. 3.1.1977)

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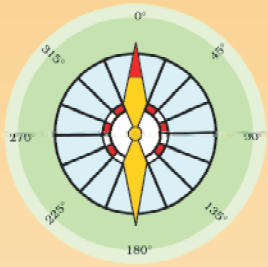
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The following are applicable to all the maps of India used in this book

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1. The responsibility for the correctness of internal details rests with the publisher.
2. The territorial waters of India extend into the sea to a distance of twelve nautical miles measured from the appropriate base line.
3. The administrative headquarters of Chandigarh, Haryana and Punjab are at Chandigarh.
4. The interstate boundaries amongst Arunachal Pradesh, Assam and Meghalaya shown on this map are as interpreted from the "North-Eastern Areas (Reorganisation) Act.1971," but have yet to be verified.
5. The external boundaries and coastlines of India agree with the Record/ Master Copy certified by Survey of India.
6. The state boundaries between Uttaranchal & Uttar Pradesh, Bihar & Jharkhand and Chhattisgarh & Madhya Pradesh have not been verified by the Governments concerned.
7. The spellings of names in this map, have been taken from various sources.

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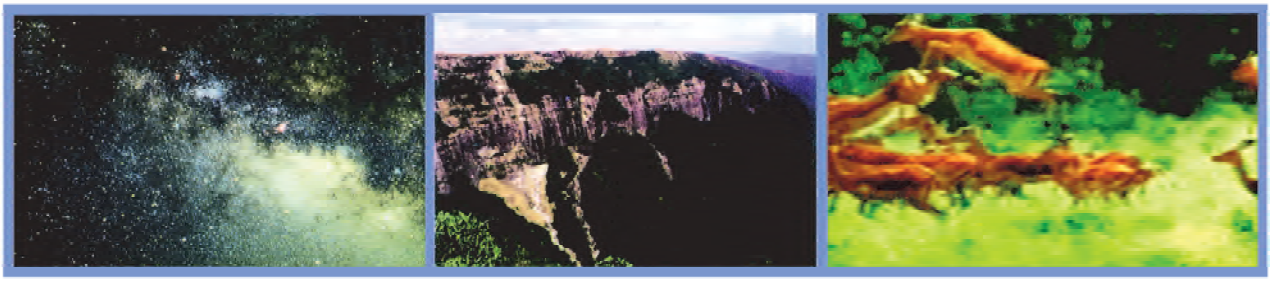
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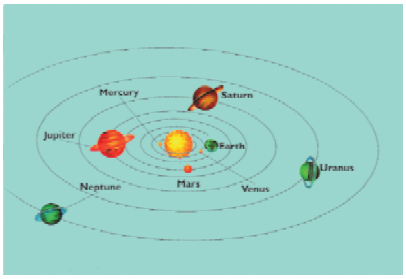
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Our National Anthem

Jana-gana-mana adhinayaka, jaya he
Bharata-bhagya-vidhata.
Punjab-Sindh-Gujarat-Maratha
Dravida-Utkala-Banga
Vindhya-Himachala-Yamuna-Ganga
Uchchhala-jaladhi-taranga.
Tava shubha name jage,
Tava shubha asisa mage,
Gahe tava jaya gatha.
Jana-gana-mangala-dayaka jaya he
Bharata-bhagya-vidhata.
Jaya he, jaya he, jaya he,
Jaya jaya jaya, jaya he!

Our National Anthem, composed originally in Bangla by Rabindranath Tagore, was adopted in its Hindi version by the Constituent Assembly as the national anthem of India on 24 January 1950.



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1

THE EARTH IN THE SOLAR SYSTEM

How wonderful it is to watch the sky after sunset! One would first notice one or two bright dots shining in the sky. Soon you would see the number increasing. You cannot count them any more. The whole sky is filled with tiny shining objects – some are bright, others dim. It seems as if the sky is studded with diamonds. They all appear to be twinkling. But if you look at them carefully you will notice that some of them do not twinkle as others do. They simply glow without any flicker just as the moon shines.

Along with these bright objects, you may also see the moon on most of the days. It may, however, appear at different times, in different shapes and at different positions. You can see the full moon only once in about a month's time. It is Full moon night or *Poornima*. A fortnight later, you cannot see it at all. It is a New moon night or *Amavasya*. On this day, you can watch the night sky best, provided it is a clear night.

Do you wonder why can't we see the moon and all those bright tiny objects during day time? It is because the very bright light of the sun does not allow us to see all these bright objects of the night sky.

The sun, the moon and all those objects shining in the night sky are called celestial bodies.

Some celestial bodies are very big and hot. They are made up of gases. They have their own heat and light, which they emit in large amounts. These celestial bodies are called stars. The sun is a star.

Countless twinkling stars in the night sky are similar to the sun. But we do not feel their heat or light, and they look so tiny because they are very very far from us.

Let's Do



You'll need : 1 torch, 1 sheet of plain paper, pencil and a needle.

Step :

1. Place the torch in the centre of the paper with its glass front touching the paper.
2. Now draw a circle around the torch.
3. Perforate the paper with the needle within the circled area.
4. Now place the perforated circle part of the paper on the glass front and wrap the paper around the torch with a rubber band.
5. Take care that the switch of the torch is not covered.
6. In a dark room, stand at some distance facing a plain wall. Switch off all other lights. Now flash the torch light on the wall. You will see numerous dots of light on the wall, like stars shine in the night.
7. Switch on all the lights in the room. All dots of light will be almost invisible.
8. You may now compare the situation with what happens to the bright objects of the night sky after the sun rises in the morning.

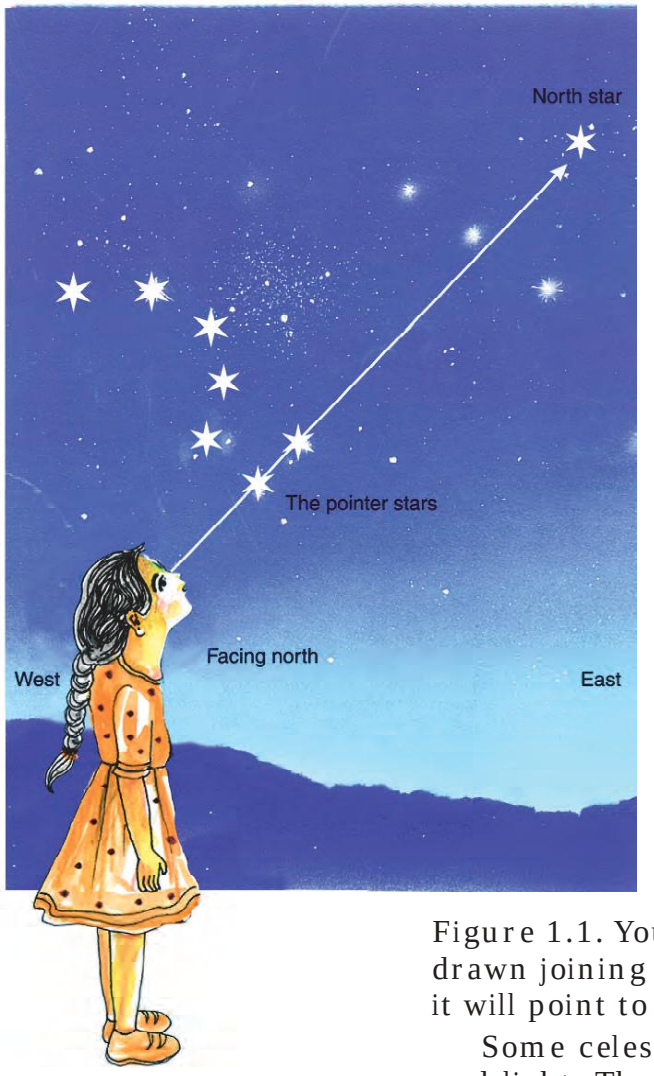


Figure 1.1 : Saptarishi and the North Star

You must have noticed that all objects look smaller when seen from a distance. How small an aeroplane looks when it is flying at a great height!

While watching the night sky, you may notice various patterns formed by different groups of stars. These are called *constellations*. Ursa Major or Big Bear is one such constellation. One of the most easily recognisable constellation is the *Saptarishi* (*Sapta*-seven, *rishi*-sages). It is a group of seven stars (Figure 1.1) that forms a part of Ursa Major Constellation. Ask someone elder in your family or neighbourhood to show you more stars, planets and constellations in the sky.

In ancient times, people used to determine directions during the night with the help of stars. The North star indicates the north direction. It is also called the Pole Star. It always remains in the same position in the sky. We can locate the position of the Pole Star with the help of the Saptarishi. Look at Figure 1.1. You will notice that, if an imaginary line is drawn joining the pointer stars and extended further, it will point to the Pole Star.

Some celestial bodies do not have their own heat and light. They are lit by the light of the stars. Such bodies are called planets. The word 'planet' comes from the Greek word "Planetai" which means 'wanderers'. The earth on which we live is a planet. It gets all its heat and light from the sun, which is our nearest star. If we look at the earth from a great distance, say the moon, it will appear to be shining just as the moon.

The moon that we see in the sky is a satellite. It is a companion of our earth and moves round it. Like our earth, there are seven other planets that get heat and light from the sun. Some of them have their moons too.



Interesting Fact

Jupiter, Saturn and Uranus have rings around them. These are belts of small debris. These rings may be seen from the earth with the help of powerful telescopes.

THE SOLAR SYSTEM

The sun, eight planets, satellites and some other celestial bodies known as asteroids and meteoroids

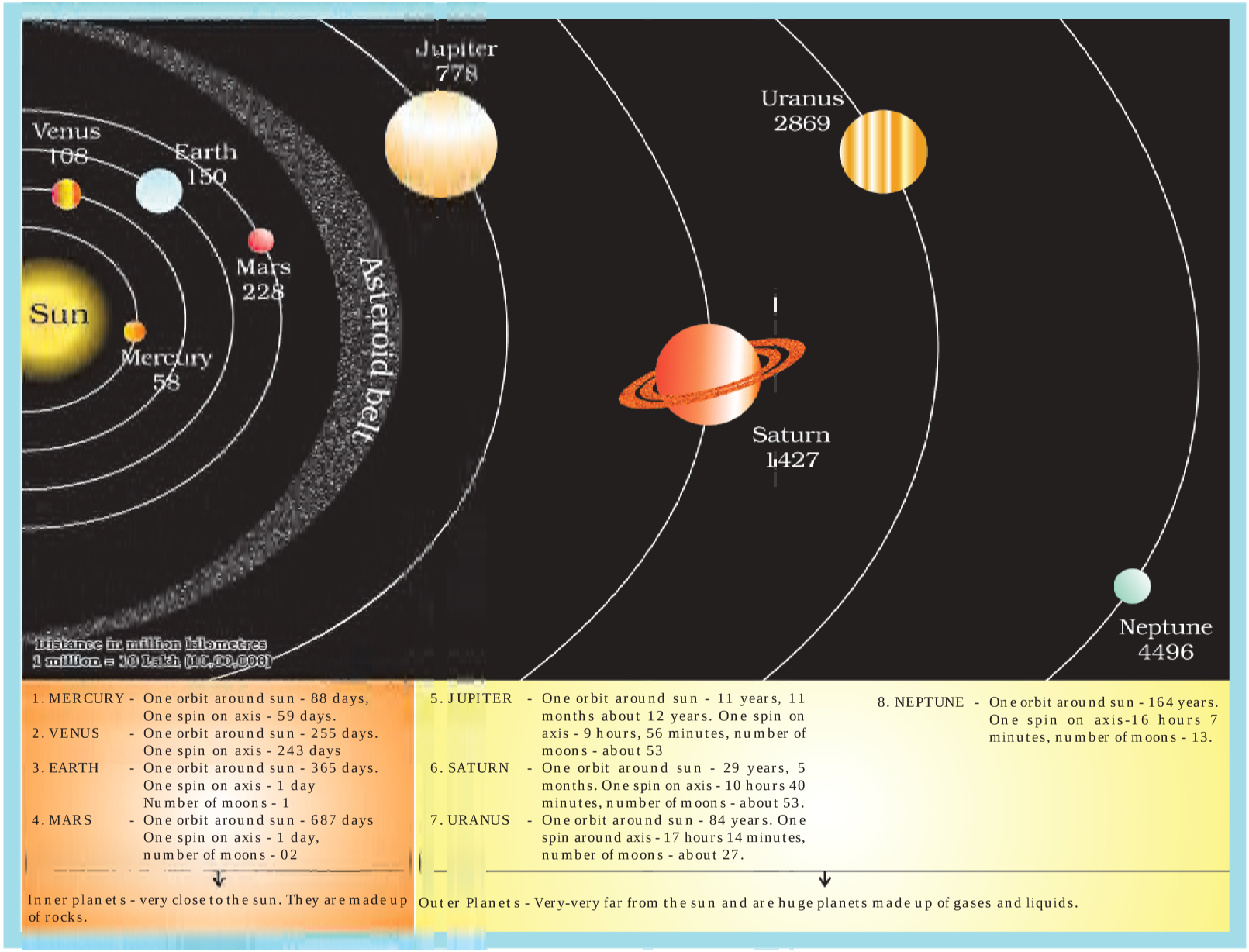


Figure 1.2 : The Solar System *Saurce: https://planetarynames.wr.usgs.gov/Page/Planets*



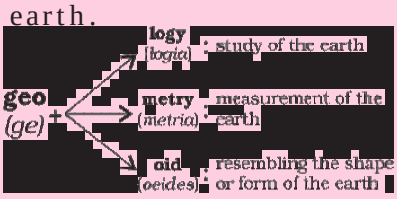
Do you know?

'Sol' in Roman mythology is the 'Sungod'. 'Solar' means 'related to the sun'. The family of the sun is, therefore, called the solar system. Write down as many words using the word solar on your own as you can.



Word Origin

Many words used in a language may have been taken from some other language. Geography, for example, is an English word. It has its origin in Greek, which relates to the description of the earth. It is made of two Greek words, 'ge' meaning 'earth' and 'graphia' meaning 'writing'. Find out more about the earth.





Do you know?

Humans have always been fascinated gazing at the night sky. Those who study the celestial bodies and their movements are called astronomers. Aryabhatta was a famous astronomer of ancient India. He said that the moon and the planets shine due to reflected sunlight. Today, astronomers all over the world are busy exploring the universe.

form the solar system. We often call it a solar family, with the sun as its Head.

The Sun

The sun is in the centre of the solar system. It is huge and made up of extremely hot gases. It provides the pulling force that binds the solar system. The sun is the ultimate source of heat and light for the solar system. But that tremendous heat is not felt so much by us because despite being our nearest star, it is far away from us. The sun is about 150 million km away from the earth.

Planets

There are eight planets in our solar system. In order of their distance from the sun, they are: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.

An easy way to memorise the name of the planets in order of their distance from the sun is:

MY VERY EFFICIENT MOTHER JUST SERVED US NUTS.

All the eight planets of the solar system move around the sun in fixed paths. These paths are elongated. They are called orbits. *Mercury* is nearest to the sun. It takes only about 88 days to complete one round along its orbit. *Venus* is considered as 'Earth's-twin' because its size and shape are very much similar to that of the earth.

Till recently (August 2006), Pluto was also considered a planet. However, in a meeting of the International Astronomical Union, a decision was taken that Pluto like other celestial objects (Ceres, 2003 UB_{313}) discovered in recent past may be called 'dwarf planets."

The Earth

The earth *is* the third nearest planet to the sun. In size, it is the fifth largest planet. It is slightly flattened at the poles. That is why, its shape is described as a Geoid. Geoid means an earth-like shape.

Conditions favourable to support life are probably found only on the earth. The earth is neither too hot nor too cold. It has water and air, which are very essential for our survival. The air has life-supporting gases like oxygen. Because of these reasons, the earth is a unique planet in the solar system.

From the outer space, the earth appears blue because its two-thirds surface is covered by water. It is, therefore, called a *blue planet*.



Do you know?

Light travels at the speed of about 300,000 km per second. Yet, even with this speed, the light of the sun takes about eight minutes to reach the earth.

The Moon

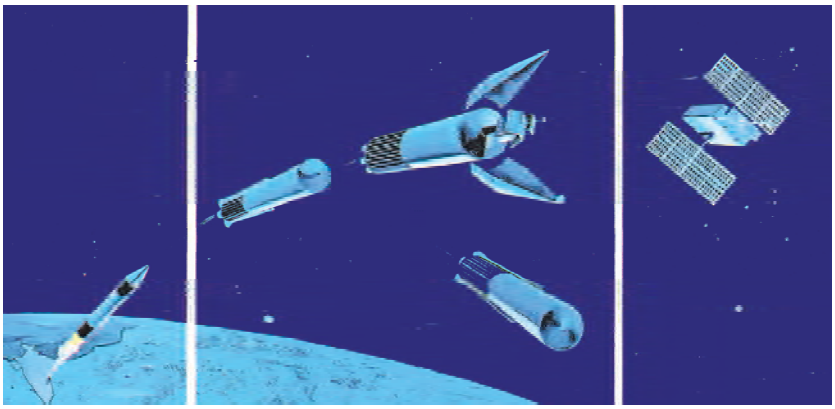
Our earth has only one satellite, that is, the moon. Its diametre is only one-quarter that of the earth. It appears so big because it is nearer to our planet than other celestial bodies. It is about 3,84,400 km away from us. Now you can compare the distance of the earth from the sun and that from the moon.



Figure 1.3 : The moon as seen from the space

The moon moves around the earth in about 27 days. It takes exactly the same time to complete one spin. As a result, only one side of the moon is visible to us on the earth.

The moon does not have conditions favourable for life. It has mountains, plains and depressions on its



Rocket launch *Rocket falls back to the Earth* *Satellite enters orbit*

Figure 1.4 : Human-made Satellite



Interesting Fact

Neil Armstrong was the first man to step on the surface of the moon on 20 July 1969. Find out whether any Indian has landed on the moon?

A Satellite is a celestial body that moves around the planets in the same way as the planets move around the sun.

A Human-made Satellite is an artificial body. It is designed by scientists to gather information about the universe or for communication. It is carried by a rocket and placed in the orbit around the earth.
Some of the Indian satellites in space are INSAT, IRS, EDUSAT, etc.

? *What do animals and plants require in order to grow and survive?*

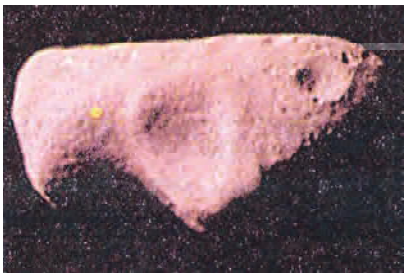


Figure 1.5 : Asteroid

surface. These cast shadows on the moon's surface. Look at the full moon and observe these shadows.

Asteroids

Apart from the stars, planets and satellites, there are numerous tiny bodies which also move around the sun. These bodies are called *asteroids*. They are found between the orbits of Mars and Jupiter (Figure 1.2). Scientists are of the view that asteroids are parts of a planet which exploded many years back.

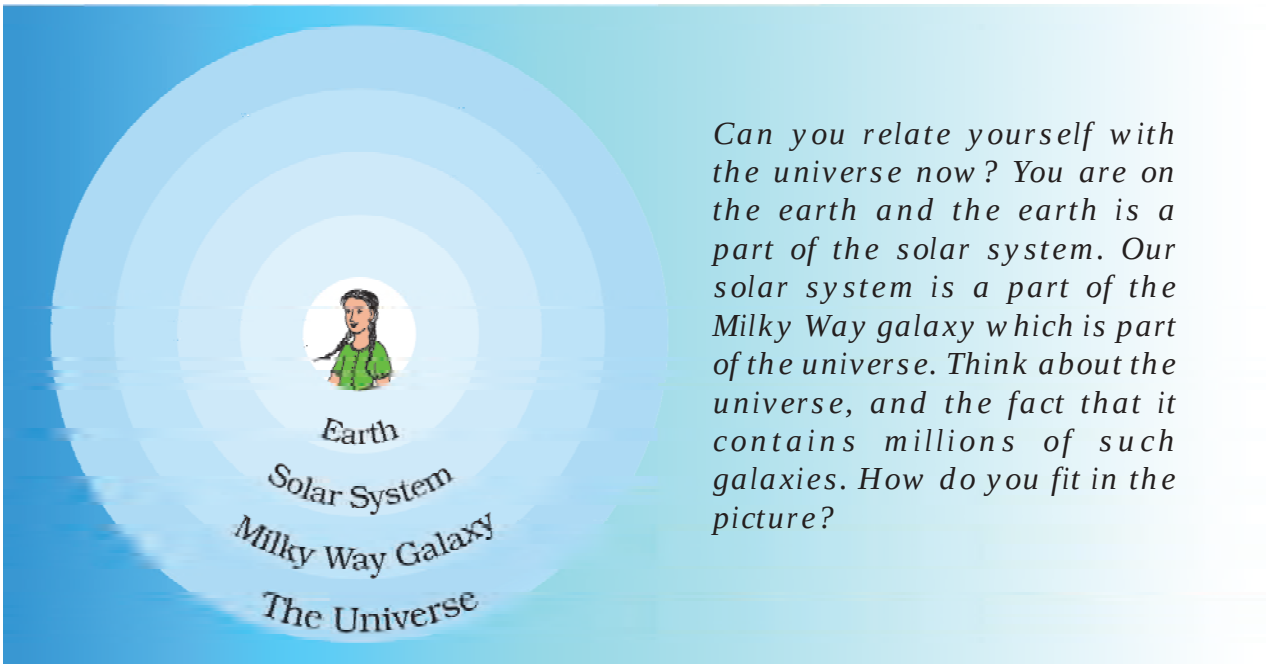
Meteoroids

The small pieces of rocks which move around the sun are called meteoroids. Sometimes these meteoroids come near the earth and tend to drop upon it. During this process due to friction with the air they get heated up and burn. It causes a flash of light. Sometimes, a meteor without being completely burnt, falls on the earth and creates a hollow.

Do you see a whitish broad band, like a white glowing path across the sky on a clear starry night? It is a cluster of millions of stars. This band is the *Milky Way* galaxy (Figure 1.6). Our solar system is a part of this galaxy. In ancient India, it was imagined to be a river of light flowing in the sky. Thus, it was named *Akash Ganga*. A galaxy is a huge system of billions of stars, and clouds of dust and gases. There are millions of such galaxies that make the Universe. It is difficult to imagine how big the universe is. Scientists are still trying to find out more and more about it. We are not certain about its size but we know that all of us – you and I belong to this universe.



Figure 1.6 : Milky Way



Can you relate yourself with the universe now? You are on the earth and the earth is a part of the solar system. Our solar system is a part of the Milky Way galaxy which is part of the universe. Think about the universe, and the fact that it contains millions of such galaxies. How do you fit in the picture?

EXERCISES

1. Answer the following questions briefly.

   (a) How does a planet differ from a star?

   (b) What is meant by the 'Solar System'?

   (c) Name all the planets according to their distance from the sun.

   (d) Why is the Earth called a unique planet?

   (e) Why do we see only one side of the moon always?

   (f) What is the Universe ?

2. Tick the correct answer.

   (a) The planet known as the "Earth's Twin" is

   (i) Jupiter (ii) Saturn (iii) Venus

   (b) Which is the third nearest planet to the sun ?

   (i) Venus (ii) Earth (iii) Mercury

   (c) All the planets move around the sun in a

   (i) Circular path (ii) Rectangular path (iii) Elongated path

   (d) The Pole Star indicates the direction to the

   (i) South (ii) North (iii) East

(e) Asteroids are found between the orbits of

(i) Saturn and Jupiter (ii) Mars and Jupiter (iii) The Earth and Mars

3. Fill in the blanks.

(a) A group of _____ forming various patterns is called a _____.

(b) A huge system of stars is called_____.

(c) _____is the closest celestial body to our earth.

(d) _____is the third nearest planet to the sun.

(e) Planets do not have their own_____ and _____.



1. Prepare a chart of the solar system.
2. During a vacation visit a planetarium and describe your experience in the class.
3. Organise a quiz contest on the earth and the solar system.



1. The sun is commonly known as *Soorya* or *Sooraj* in Hindi, Find out its name in different languages of our country. Take help of your friends, teachers and neighbours.
2. You might have heard that people make human chains and run for world peace etc. You can also make a human solar system and run for fun.

Step 1: All children of your class can play this game. Assemble in a big hall or on a playground.

Step 2: Now draw 8 circles on the ground as shown in the figure drawn on the opposite page.

Use a 5-metre long rope. Mark at every half a metre with a chalk or ink. Place a small nail to mark the centre. Now hold one end of the rope at the central position. Ask your friend to hold a chalk at the ½ metre mark and move around the nail holding rope and chalk together on the ground.

You have drawn one circle just as you do on paper using a compass and a pencil. Draw other circles in the same manner.

Step 3: Prepare 10 placards. Name them as Sun., Moon, Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune.

Step 4: Select 10 children in the following order and give each one of them a placard.

Order of placard distribution

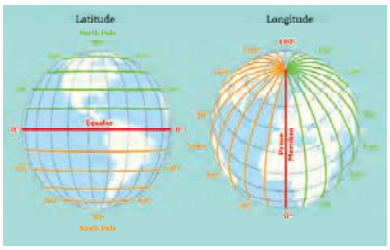
The Sun - tallest, The moon - smallest; Mercury, Mars, Venus and Earth (almost equal heights); Neptune, Uranus, Saturn and Jupiter taller than the earlier four planets but smaller than the Sun.

Now ask the children holding placards to take their places with the Sun in the centre in their orbits. Ask the child holding the moon placard to keep the hand of the child holding the earth placard always.

Now your Solar System is almost ready to go into action.

Now make everybody move slowly in the anti-clockwise direction. Your class has turned into a small human replica of the solar system.

While moving on your orbit you can also turn around. For everybody the spin should be anti-clock wise except for Venus and Uranus who will make the spin in the clock-wise direction.



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2

GLOBE : LATITUDES AND LONGITUDES



Figure 2.1 : Globe

In the previous chapter, you have read that our planet earth is not a sphere. It is slightly flattened at the North and the South Poles and bulge in the middle. Can you imagine how it looks? You may look at a globe carefully in your classroom to get an idea. Globe is a true model (miniature form) of the earth (Figure 2.1).

Globes may be of varying size and type – big ones, which cannot be carried easily, small pocket globes, and globe-like balloons, which can be inflated and are handy and carried with ease. The globe is not fixed. It can be rotated the same way as a top spin or a potter's wheel is rotated. On the globe, countries, continents and oceans are shown in their correct size.

It is difficult to describe the location of a point on a sphere like the earth. Now the question arises as to how to locate a place on it? We need certain points of reference and lines to find out the location of places.

You will notice that a needle is fixed through the globe in a tilted manner, which is called its axis. Two points on the globe through which the needle passes are two poles – North Pole and South Pole. The globe can be moved around this needle from west to east just as the earth moves. But, remember there is a major difference. The real earth has no such needle. It moves around its axis, which is an imaginary line.

Another imaginary line running on the globe divides it into two equal parts. This line is known as the equator. The northern half of the earth is known as the Northern Hemisphere and the southern half is known as the Southern Hemisphere. They are both



Let's Do

Take a big round potato or a ball. Pierce a knitting needle through it. The needle resembles the axis shown in a globe. You can now move the potato or the ball around this axis from left to right.

equal halves. Therefore, the equator is an imaginary circular line and is a very important reference point to locate places on the earth. All parallel circles from the equator up to the poles are called parallels of latitudes. Latitudes are measured in degrees.

The equator represents the zero degree latitude. Since the distance from the equator to either of the poles is one-fourth of a circle round the earth, it will measure ¼th of 360 degrees, i.e. 90°. Thus, 90 degrees north latitude marks the North Pole and 90 degrees south latitude marks the South Pole.

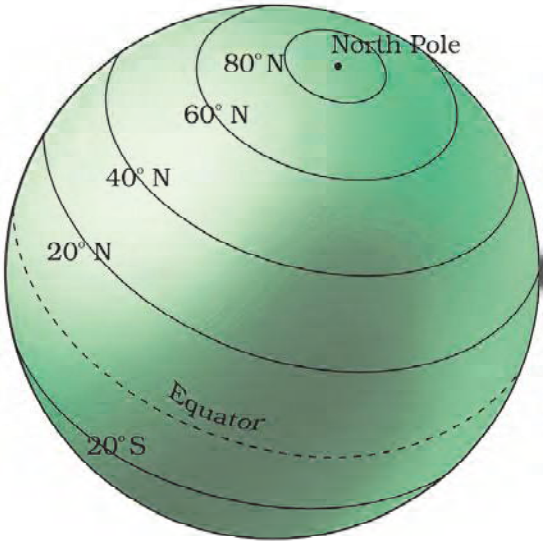


Figure 2.2 : Latitude

As such, all parallels north of the equator are called 'north latitudes.' Similarly all parallels south of the equator are called 'south latitudes.'

The value of each latitude is, therefore, followed by either the word north or south. Generally, this is indicated by the letter 'N' or 'S'. For example, both Chandrapur in Maharashtra (India) and Belo Horizonte in Brazil (South America) are located on parallels of about 20° latitude. But the former is 20° north of the equator and the latter is 20° south of it. We, therefore, say that Chandrapur is situated at 20° N latitude and Belo Horizonte is situated at 20° S latitude. We see in Figure 2.2 that as we move away from the equator, the size of the parallels of latitude decreases.



Do you know?

By measuring the angle of the Pole Star from your place, you can know the latitude of your place.

Important Parallels of Latitudes

Besides the equator (0°), the North Pole (90°N) and the South Pole (90° S), there are four important parallels of latitudes–

(i) Tropic of Cancer (23½° N) in the Northern Hemisphere. (ii) Tropic of Capricorn (23½° S) in the Southern Hemisphere. (iii) Arctic Circle at 66½° north of the equator. (iv) Antarctic Circle at 66½° south of the equator.

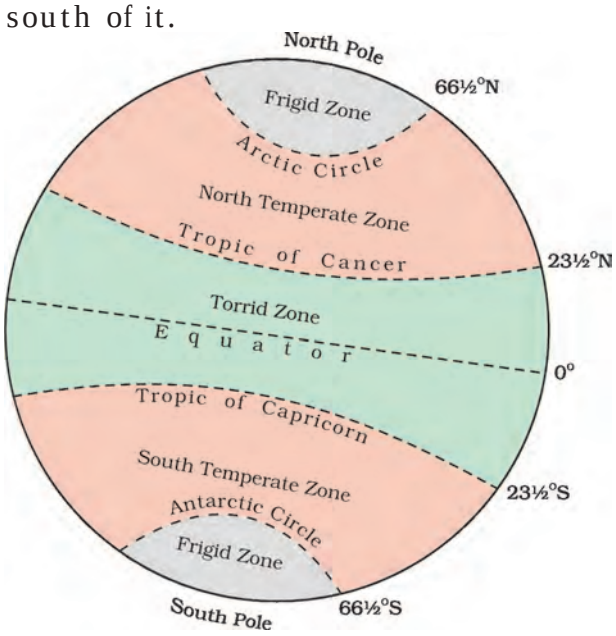


Figure 2.3 : Important Latitudes and Heat Zones

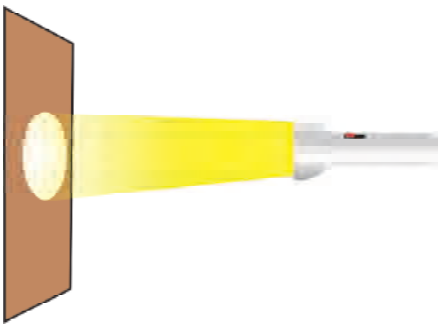


Figure 2.4 : (a)

Torch-light falling on a straight surface is bright and covers a smaller area.

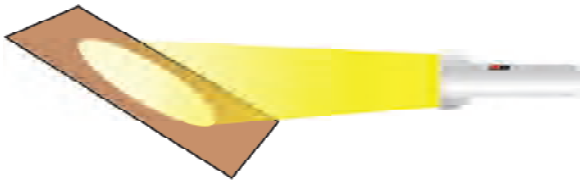


Figure 2.4 : (b)

Torch-light falling on a slanted surface is less bright but covers a bigger area.

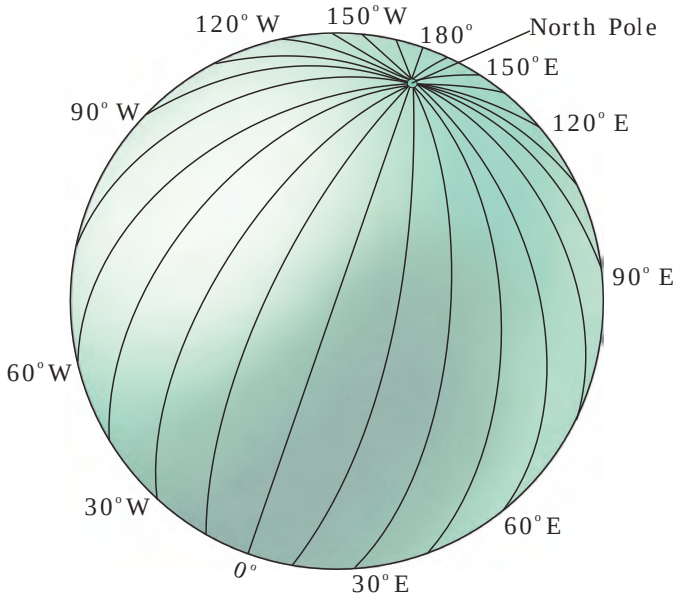


Figure 2.5 : Longitudes

Heat Zones of the Earth

The mid-day sun is exactly overhead at least once a year on all latitudes in between the Tropic of Cancer and the Tropic of Capricorn. This area, therefore, receives the maximum heat and is called the Torrid Zone.

The mid-day sun never shines overhead on any latitude beyond the Tropic of Cancer and the Tropic of Capricorn. The angle of the sun's rays goes on decreasing towards the poles. As such, the areas bounded by the Tropic of Cancer and the Arctic Circle in the Northern Hemisphere, and the Tropic of Capricorn and the Antarctic Circle in the Southern Hemisphere, have moderate temperatures. These are, therefore, called Temperate Zones.

Areas lying between the Arctic Circle and the North Pole in the Northern Hemisphere and the Antarctic Circle and the South Pole in the Southern Hemisphere, are very cold. It is because here the sun does not rise much above the horizon. Therefore, its rays are always slanting and provide less heat. These are, therefore, called Frigid Zones (very cold).

What are Longitudes?

To fix the position of a place, it is necessary to know something more than the latitude of that place. You can see, for example, that Tonga Islands (in the Pacific Ocean) and Mauritius Islands (in the Indian Ocean) are situated on the same latitude (i.e., 20° S). Now, in order to locate them precisely, we must find out how far east or west these places are from a given line of reference running from the North Pole to the South Pole. These lines of references are called the meridians of longitude,

and the distances between them are measured in 'degrees of longitude.' Each degree is further divided into minutes, and minutes into seconds. They are semi-circles and the distance between them decreases steadily polewards until it becomes zero at the poles, where all the meridians meet.

Unlike parallels of latitude, all meridians are of equal length. Thus, it was difficult to number the meridians. Hence, all countries decided that the count should begin from the meridian which passed through Greenwich, where the British Royal Observatory is located. This meridian is called the Prime Meridian. Its value is 0° longitude and from it we count 180° eastward as well as 180° westward. The Prime Meridian and 180° meridian divide the earth into two equal halves, the Eastern Hemisphere and the Western Hemisphere. Therefore, the longitude of a place is followed by the letter E for the east and W for the west. It is, however, interesting to note that 180° East and 180° West meridians are on the same line.

Now look at the grid of the parallels of latitude and meridians of longitude on the globe (Figure 2.6). You can locate any point on the globe very easily if you know its latitude and longitude. For example, Dhubri in Assam is situated at 26° N latitude and 90° E longitude. Find out the point where these two lines cut each other. That point will be the location of Dhubri.

To understand this clearly draw equidistant vertical and horizontal lines on a paper (Figure 2.7). Label the vertical rows with numbers and horizontal rows with letters, draw some small circles randomly on points where these horizontal and vertical lines intersect each other. Name these small circles as a, b, c, d and e.

Let vertical lines represent East Longitudes and horizontal lines as North Latitudes.

Now you will see that circle 'a' is located on B°N latitude and 1° E longitude.

Find out the location of other circles.



Let's Do

Draw a circle. Let the Prime meridian divide it into two equal halves. Colour and label the eastern hemisphere and the western hemisphere. Similarly draw another circle and let the equator divide it into two halves. Now colour the Northern hemisphere and Southern hemisphere.

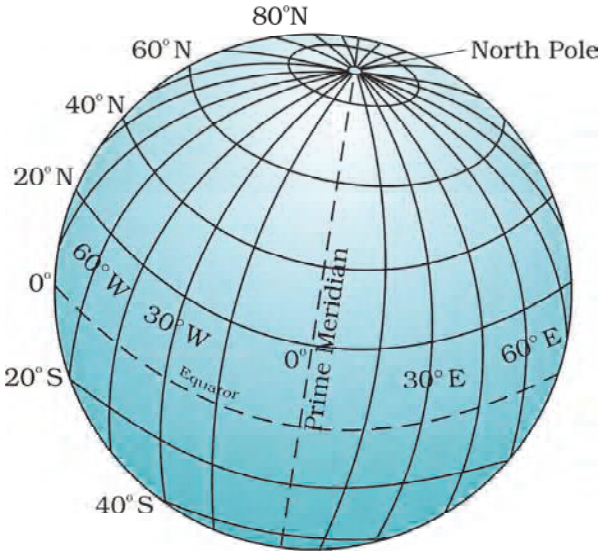


Figure 2.6 : Grid

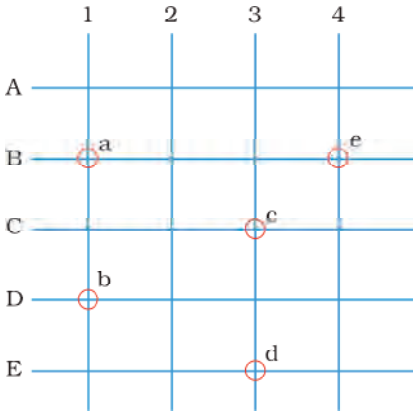


Figure 2.7

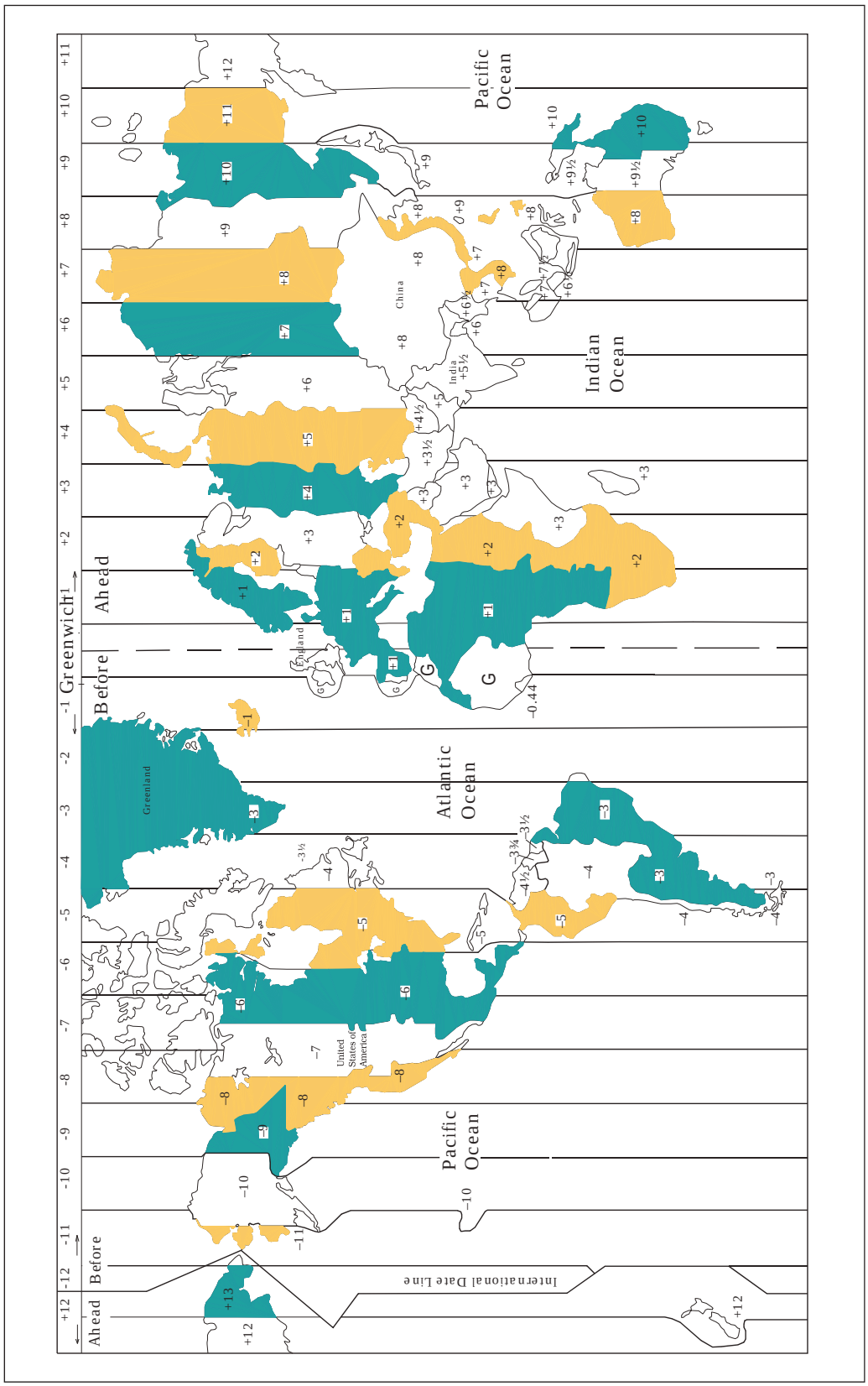


Figure 2.8 : Time zones of the World

Longitude and Time

The best means of measuring time is by the movement of the earth, the moon and the planets. The sun regularly rises and sets every day, and naturally, it is the best time-keeper throughout the world. Local time can be reckoned by the shadow cast by the sun, which is the shortest at noon and longest at sunrise and sunset.

When the Prime Meridian of Greenwich has the sun at the highest point in the sky, all the places along this meridian will have mid-day or noon.

As the earth rotates from west to east, those places east of Greenwich will be ahead of Greenwich time and those to the west will be behind it (Figure 2.8). The rate of difference can be calculated as follows. The earth rotates 360° in about 24 hours, which means 15° an hour or 1° in four minutes. Thus, when it is 12 noon at Greenwich, the time at 15° east of Greenwich will be 15 × 4 = 60 minutes, i.e., 1 hour ahead of Greenwich time, which means 1 p.m. But at 15° west of Greenwich, the time will be behind Greenwich time by one hour, i.e., it will be 11.00 a.m. Similarly, at 180°, it will be midnight when it is 12 noon at Greenwich.

At any place a watch can be adjusted to read 12 o'clock when the sun is at the highest point in the sky, i.e., when it is mid-day. The time shown by such a watch will give the local time for that place. You can see that all the places on a given meridian of longitude have the same local time.

Why Do We Have Standard Time?

The local time of places which are on different meridians are bound to differ. For example, it will be difficult to prepare a time-table for trains which cross several longitudes. In India, for instance, there will be a difference of about 1 hour and 45 minutes in the local times of Dwarka in Gujarat and Dibrugarh in Assam. It is, therefore, necessary to adopt the local time of some central meridian of a country as the standard time for the country. In India, the longitude of 82½° E (82° 30'E) is treated as the standard meridian. The local time at this meridian is taken as the standard time for the whole country. It is known as the Indian Standard Time (IST).

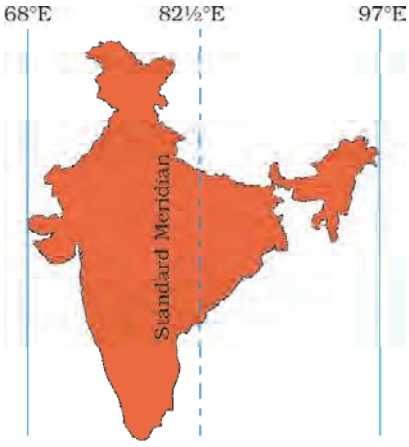


Figure 2.9 : Indian Standard Meridian

Kabeer lives in a small town near Bhopal. He tells his friend Alok that they will not be able to sleep tonight. A day and night cricket match between India and England had started at 2 p.m. in London. This means that the match would begin at 7.30 p.m. in India and finish well into the night. Do you know what is the time difference between India and England?

India located east of Greenwich at 82°30'E is 5 hours and 30 minutes ahead of GMT. So it will be 7:30 p.m. in India when it is 2:00 p.m. noon in London.

Some countries have a great longitudinal extent and so they have adopted more than one standard time. For example, in Russia, there are as many as eleven standard times. The earth has been divided into twenty-four time zones of one hour each. Each zone thus covers 15° of longitude.

EXERCISES

1. Answer the following questions briefly.
   - (a) What is the true shape of the earth?
   - (b) What is a globe?
   - (c) What is the latitudinal value of the Tropic of Cancer?
   - (d) What are the three heat zones of the Earth?
   - (e) What are parallels of latitude and meridians of longitude?
   - (f) Why does the torrid zone receive maximum amount of heat?
   - (g) Why is it 5.30 p.m. in India and 12.00 noon in London?
2. Tick the correct answers.
   - (a) The value of the prime meridian is
     (i) 90° (ii) 0° (iii) 60°
   - (b) The frigid zone lies near
     (i) the Poles (ii) the Equator (iii) the Tropic of Cancer
   - (c) The total number of longitudes are
     (i) 360 (ii) 180 (iii) 90
   - (d) The Antarctic circle is located in
     (i) the Northern hemisphere
     (ii) the Southern hemisphere
     (iii) the Eastern hemisphere
   - (e) Grid is a network of
     (i) parallels of latitudes and merdians of longitudes
     (ii) the Tropic of Cancer and the Tropic of Capricorn
     (iii) the North Pole and the South Pole

3. Fill in the blanks.

(a) The Tropic of Capricorn is located at _____.

(b) The Standard Meridian of India is _____.

(c) The 0° Meridian is also known as _____.

(d) The distance between the longitudes decreases towards_____.

(e) The Arctic Circle is located in the _____ hemisphere.

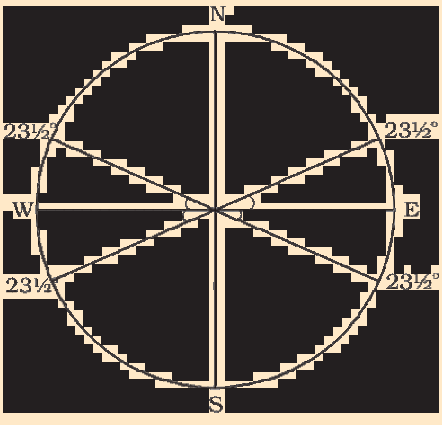


1. Draw a diagram of the globe showing the earth's axis, the Equator, Tropics of Cancer and Capricorn, Arctic Circle and Antarctic Circle.

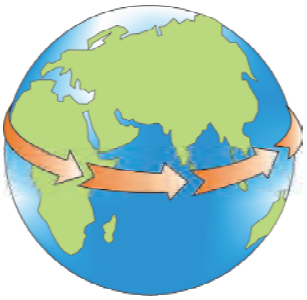


1. Draw and cut out six circles of the same size (approx. 3 cm. radius) from cardboard. Mark diametres (NS, EW) and 23½° angles on each face of the circles as shown on the figure. Place the circle one on top of the other and stitch along the line NS. Now there are twelve semi-circles. Let one semi-circle represent 0° or Greenwich Meridian (Prime Meridian). The 6th semi-circle from it will be the 180° Meridian. Between the 0° and 180° there are 5 semi-circles on both sides which are West and East longitudes 30° apart. On two ends of the stapled line stick pins to represent the North and South Poles.

   A rubber band around the model touching the EW points will represent the Equator. Two rubber bands touching the 23½° points, South and North of the EW points will represent the tropics.







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3

MOTIONS OF THE EARTH



Let 's Do

Take a ball to represent the earth and a lighted candle to represent the sun. Mark a point on the ball to represent a town X. Place the ball in such a way that the town X is in darkness. Now rotate the ball from left to right. As you move the ball slightly, the town will have its sunrise. As the ball continues to move, the point X gradually gets away from the sun. This is sunset.

As you know that the earth has two types of motions, namely rotation and revolution. Rotation is the movement of the earth on its axis. The movement of the earth around the sun in a fixed path or orbit is called Revolution.

The axis of the earth which is an imaginary line, makes an angle of 66½° with its orbital plane. The plane formed by the orbit is known as the orbital plane. The earth receives light from the sun. Due to the spherical shape of the earth, only half of it gets light from the sun at a time (Figure 3.2). The portion facing the sun experiences day while the other half away from the sun experiences night. The circle that divides the day from night on the globe is called the circle of illumination. This circle does not coincide with the axis as you see in the Figure 3.2. The earth takes about 24 hours to complete one rotation around its axis. The period of rotation is known as the *earthday*. This is the daily motion of the earth.

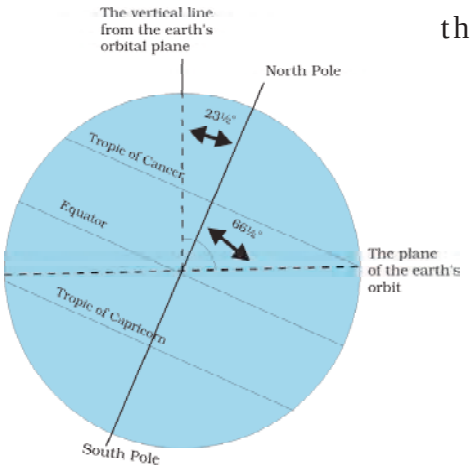


Figure 3.1 : Inclination of the Earth's axis and the orbital plane

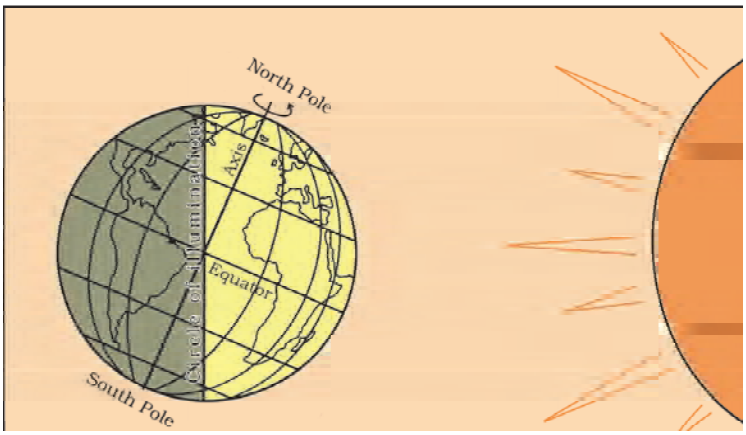


Figure 3.2 : Day and Night on the Earth due to rotation

What would happen if the earth did not rotate? The portion of the earth facing the sun would always experience day, thus bringing continuous warmth to the region. The other half would remain in darkness and be freezing cold all the time. Life would not have been possible in such extreme conditions.

The second motion of the earth around the sun in its orbit is called revolution. It takes 365¼ days (one year) to revolve around the sun. We consider a year as consisting of 365 days only and ignore six hours for the sake of convenience.



Do you know?

The ancient Indian astronomer Aryabhata had stated that 'the earth is round and rotates on its own axis'

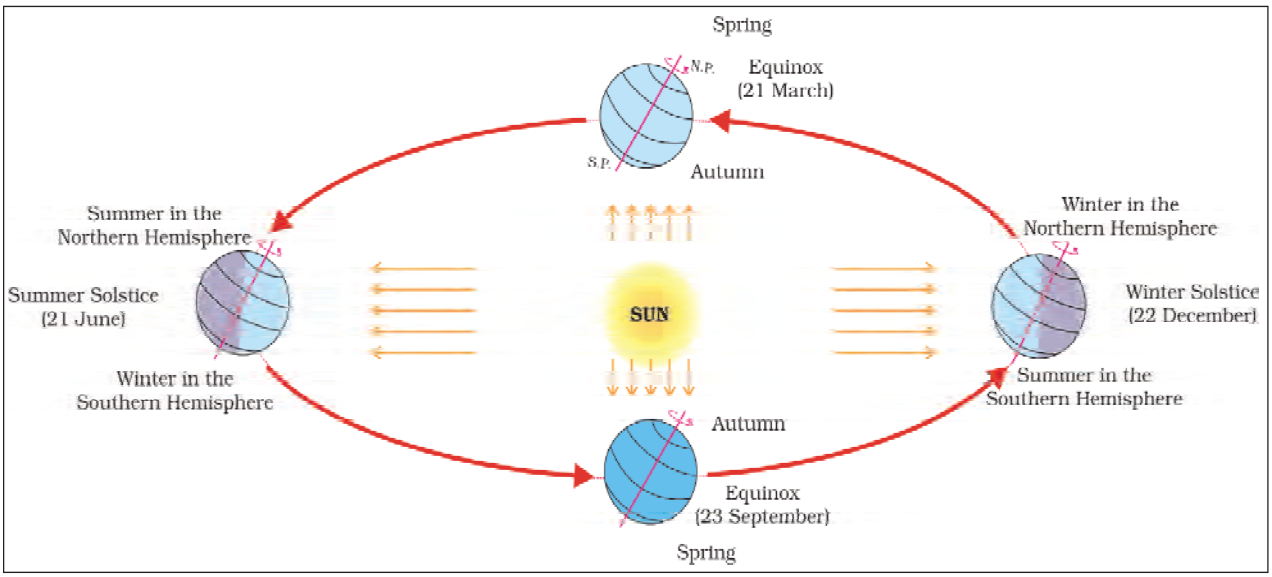


Figure 3.3 : Revolution of the Earth and Seasons

Six hours saved every year are added to make one day (24 hours) over a span of four years. This surplus day is added to the month of February. Thus every fourth year, February is of 29 days instead of 28 days. Such a year with 366 days is called a leap year. Find out when will the next leap year be?

From the Figure 3.3, it is clear that the earth is going around the sun in an elliptical orbit.

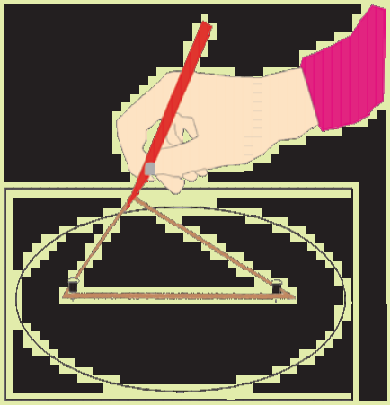
Notice that throughout its orbit, the earth is inclined in the same direction.

A year is usually divided into summer, winter, spring and autumn seasons. Seasons change due to the change in the position of the earth around the sun.



Let's Do

Do you know how to draw an ellipse? Take a pencil, two pins and a loop of thread. Now fix these pins on a paper as shown in the figure. Put the loop on the paper enclosing these two pins inside the loop. Now hold the pencil and draw the line keeping the thread tight and moving the pencil along it. The figure represents an ellipse.





Let's Do

To understand the earth's inclination in the same direction, draw a big ellipse on the ground and take a flag with a stick. Stand anywhere on the line of the ellipse. Point your flag to a fixed point far away like on a tree-top. Now move along the ellipse keeping your flag always pointing towards that fixed point. In this way, the axis of the earth remains inclined permanently in the same position. The revolution of the earth and the inclination of the earth's axis in a fixed direction cause seasons.

Look at the Figure 3.3. You will see that on 21st June, the Northern Hemisphere is tilted towards the sun. The rays of the sun fall directly on the Tropic of Cancer. As a result, these areas receive more heat. The areas near the poles receive less heat as the rays of the sun are slanting. The North Pole is inclined towards the sun and the places beyond the Arctic Circle experience continuous daylight for about six months. Since a large portion of the Northern Hemisphere is getting light from the sun, it is summer in the regions north of the equator. The longest day and the shortest night at these places occur on 21st June. At this time in the Southern Hemisphere all these conditions are reversed. It is winter season there. The nights are longer than the days. This position of the earth is called the Summer Solstice.

On 22nd December, the Tropic of Capricorn receives direct rays of the sun as the South Pole tilts towards it. As the sun's rays fall vertically at the Tropic of Capricorn (23½° S), a larger portion of the Southern Hemisphere gets light. Therefore, it is summer in the Southern Hemisphere with longer days and shorter nights. The reverse happens in the Northern Hemisphere. This position of the earth is called the Winter Solstice. Do you know that Christmas is celebrated in Australia in the summer season?

On 21st March and September 23rd, direct rays of the sun fall on the equator. At this position, neither of the poles is tilted towards the sun; so, the whole earth experiences equal days and equal nights. This is called an equinox.

On 23rd September, it is autumn season in the Northern Hemisphere and spring season in the Southern Hemisphere. The opposite is the case on 21st March,

when it is spring in the Northern Hemisphere and autumn in the Southern Hemisphere.

Thus, you find that there are days and nights and changes in the seasons because of the rotation and revolution of the earth respectively.

EXERCISES

1. Answer the following questions briefly.

   (a) What is the angle of inclination of the earth's axis with its orbital plane?

   (b) Define rotation and revolution.

   (c) What is a leap year?

   (d) Differentiate between the Summer and Winter Solstice.

   (e) What is an equinox?

   (f) Why does the Southern Hemisphere experience Winter and Summer Solstice in different times than that of the Northern Hemisphere?

   (g) Why do the poles experience about six months day and six months night?

2. Tick the correct answers.

   (a) The movement of the earth around the sun is known as

   (i) Rotation (ii) Revolution (iii) Inclination

   (b) Direct rays of the sun fall on the equator on

   (i) 21 March (ii) 21 June (iii) 22 December

   (c) Christmas is celebrated in summer in

   (i) Japan (ii) India (iii) Australia

   (d) Cycle of the seasons is caused due to

   (i) Rotation (ii) Revolution (iii) Gravitation

3. Fill in the blanks.

   (a) A leap year has _____ number of days.

   (b) The daily motion of the earth is _____.

   (c) The earth travels around the sun in _____ orbit.

   (d) The sun's rays fall vertically on the Tropic of _____ on 21st June.

   (e) Days are shorter during _____ season.

THINGS TO DO



1. Make a drawing to show the inclination of the earth.
2. Record the timings of sunrise and sunset at your place taking help from your local newspaper on the 21st of each month and answer the following :

   (a) In which month are the days the shortest?

   (b) In which months are the days and nights nearly equal?

FOR FUN

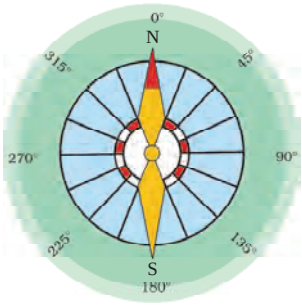


1. Draw different shapes of ellipses by placing two pins nearer and farther using the same loop of thread. Notice when the ellipse becomes circular.
2. On any sunny day, take a straight stick that is one metre long. Find out a clean and level place on the ground. Place this stick into the ground where it casts a distinctive (sharp) shadow.

   Step (1): Mark the tip of the shadow with a stone or a twig or by any other means. The first shadow mark is always towards the west. See after 15 minutes and mark the tip of the shadow again. By then it would have moved a few centimetres away. Now join the two points and you have an approximate east-west line.

   Step (2) : Stand with the first mark to your left and the second mark to your right you are now facing north. This fact is true everywhere on the earth because the earth rotates in west to east direction.

   An alternative method is more accurate but requires more time. Set up your shadow stick and mark the first shadow in the morning. Use a piece of string to draw a clean arc through this mark around the stick. At mid-day, the shadow will shrink or disappear. In the afternoon, it will lengthen again and at the point where it touches the arc, make a second mark. Draw a line through the two marks to get an accurate east-west line.



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4

MAPS

You have learnt in the previous chapter about the advantages of a globe. However, globe has limitations as well. A globe can be useful when we want to study the earth as a whole. But, when we want to study only a part of the earth, as about our country, states, districts, towns and villages, it is of little help. In such a situation we use maps. A map is a representation or a drawing of the earth's surface or a part of it drawn on a flat surface according to a scale. But it is impossible to flatten a round shape completely.

We find that maps are useful to us for various purposes. One map shows a small area and a few facts. Another map may contain as many facts as a big book. When many maps are put together we get an Atlas. Atlases are of various sizes, measurements drawn on different scales. Maps provide more information than a globe. They are of different types. Some of them are described below.



Let's Do

Take an old rubber ball and draw whatever you like all over it. You may also mark north pole and south pole on it. Now cut this ball with a knife and try to flatten it. Notice how the drawings are distorted.

Physical Maps

Maps showing natural features of the earth such as mountains, plateaus, plains, rivers, oceans etc. are called physical or relief maps.

Political Maps

Maps showing cities, towns and villages, and different countries and states of the world with their boundaries are called political maps.

Thematic Maps

Some maps focus on specific information; such as road

maps, rainfall maps, maps showing distribution of forests, industries etc. are known as thematic maps. Suitable titles are given on the basis of information provided in these maps.

There are three *Components of Maps* – distance, direction and symbol.

Distance

Maps are drawings, which reduce the entire world or a part of it to fit on a sheet of paper. Or we can say maps are drawn to reduced scales. But this reduction is done very carefully so that the distance between the places is real. It can only be possible when a small distance on paper represents a large distance on the ground. Therefore, a scale is chosen for this purpose. Scale is the ratio between the actual distance on the ground and the distance shown on the map. For example, the distance between your school and your home is 10 km. If you show this 10 km. distance by 2 cm on a map, it means, 1 cm on the map will show 5 km. on the ground. The scale of your drawing will be 1cm = 5 km. Thus, scale is very important in any map. If you know the scale, you will be able to calculate the distance between any two places on a map.

When large areas like continents or countries are to be shown on a paper, then we use a small scale. For example 5 cm. on the map shows 500 km. of the ground. It is called a small scale map.

When a small area like your village or town is to be shown on paper, then we use a large scale that is 5 cm. on the map shows 500 metres only on the ground. It is called a large scale map.

Large scale maps give more information than small scale maps.



Let's Do

Look at the Figure 4.1. There is a scale. It may be used for measuring distance between places. For example the distance between the well and the tree is 5 cm. It means that the actual distance is 50 metres. Now the distance between the PO (A) to Karim's house (E) is 12 cm. It means 120 metres on the ground but you can not fly like a bird directly from E to A. You will have to walk on the road. Let us measure the total walking distance from E to C, then C to M, M to B and B to A. Add all these distances. This will be the total walking distance from Karim's house to the post office.

Direction

Most maps contain an arrow marked with the letter 'N' at the upper right hand corner. This arrow shows the north direction. It is called the north line. When you know the north, you can find out other directions, for example east, west and south. There are four major

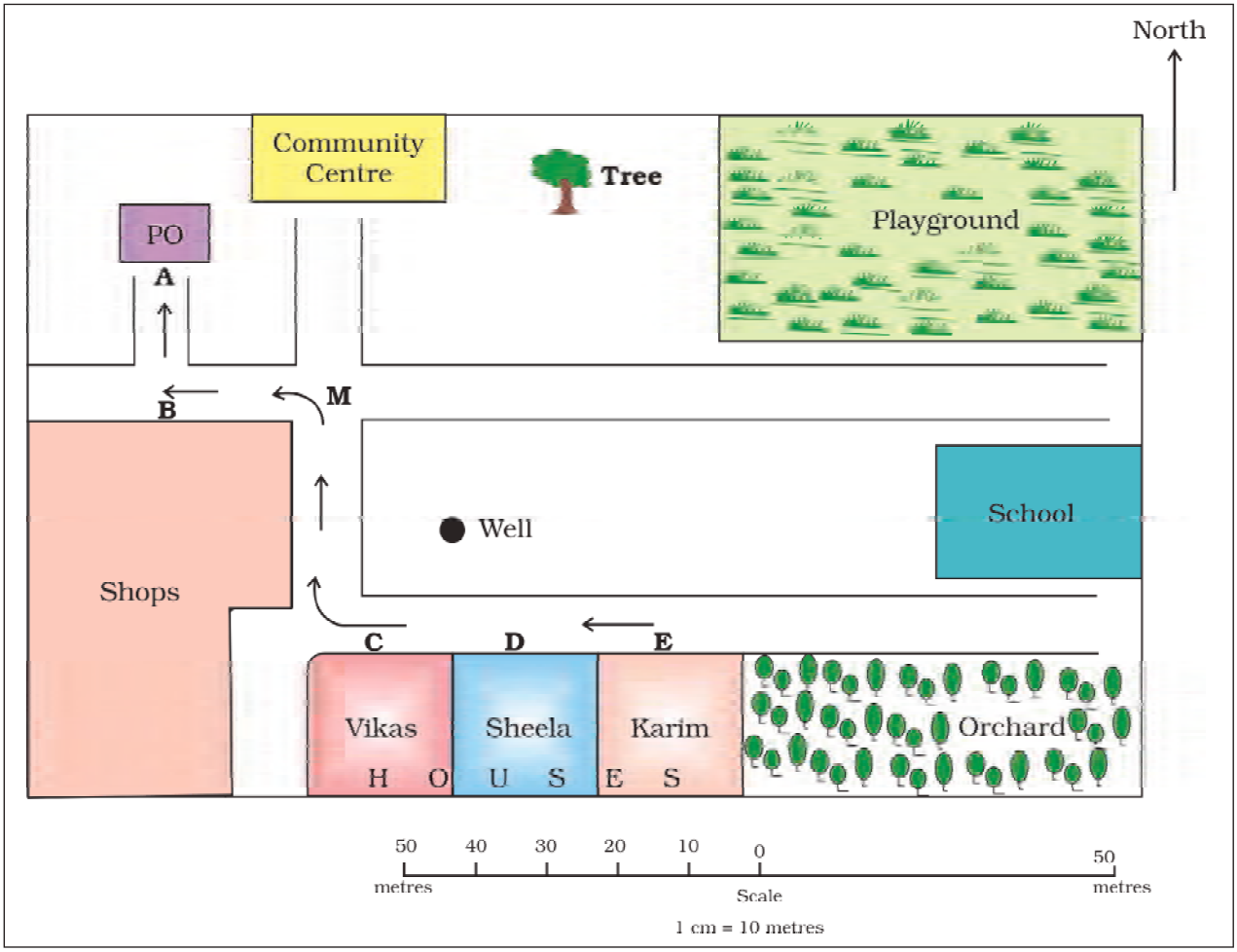


Figure 4.1 : Map of a village

directions, North, South, East and West {Figure 4.2 (a)}. They are called cardinal points. Other four intermediate directions are north-east (NE), south-east(SE), south-west (SW) and north-west (NW). We can locate any place more accurately with the help of these intermediate directions.

Find out the following directions from the Figure 4.1: (a) The direction of the Community Centre, the playground from Vikas's house (b) the direction of school from shops.

We can find out the direction of a place with the help of a compass. It is an instrument used to find out main directions. Its magnetic needle always points towards north-south direction {Figure 4.2 (b)}.

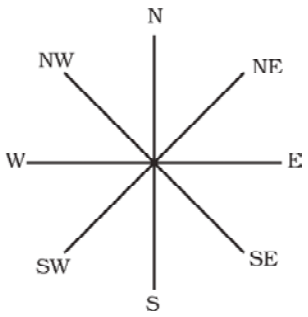


Figure 4.2 (a) : Cardinal Directions

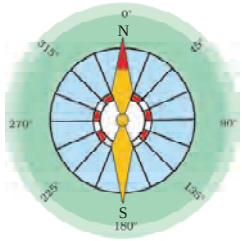


Figure 4.2 (b) : A compass

Symbols

It is the third important component of a map. It is not possible to draw on a map the actual shape and size of different features such as buildings, roads, bridges, trees, railway lines or a well. So, they are shown by using certain letters, shades, colours, pictures and lines These symbols give a lot of information in a limited space. With the use of these symbols, maps can be drawn easily and are simple to read. Even if you don t know the language of an area and therefore cannot ask someone for directions, you can collect information from maps with the help of these symbols. Maps have a universal language that can be understood by all. There is an international agreement regarding the use of these symbols. These are called conventional symbols. Some of the conventional symbols are shown in the Figure 4.3.

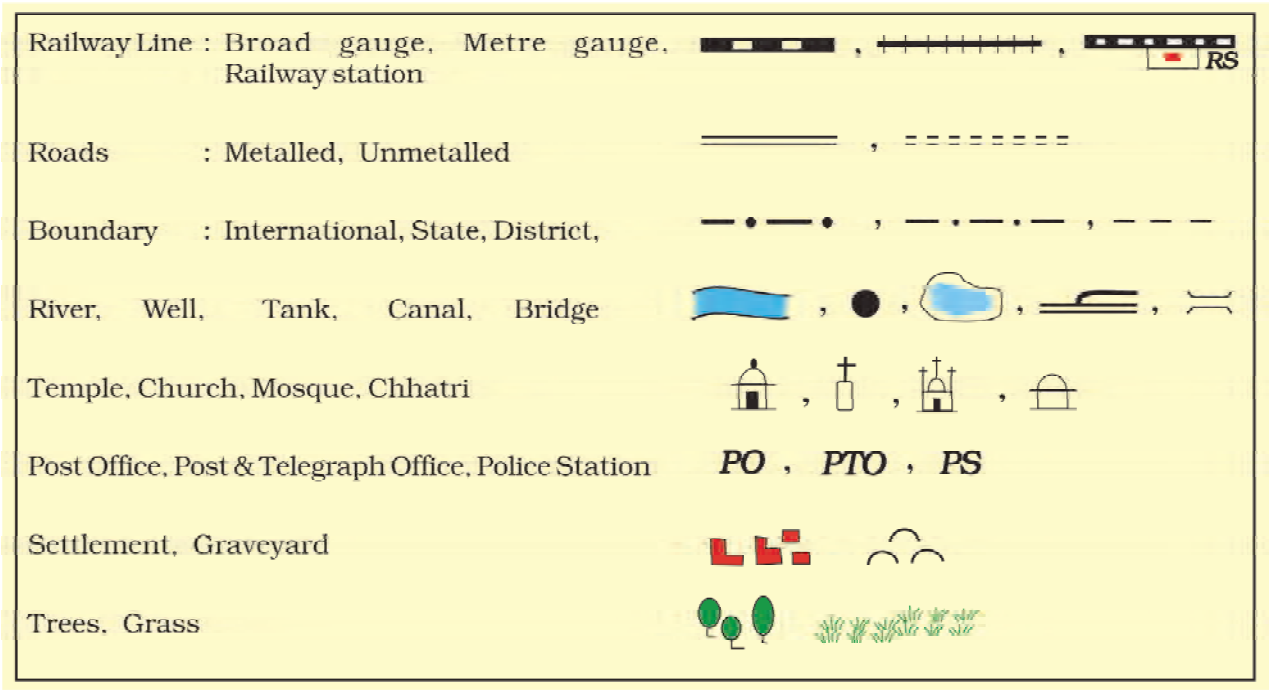


Figure 4.3 : Conventional Symbols

Various colours are used for the same purpose. For example, generally blue is used for showing water bodies, brown for mountain, yellow for plateau and green is used for plains.

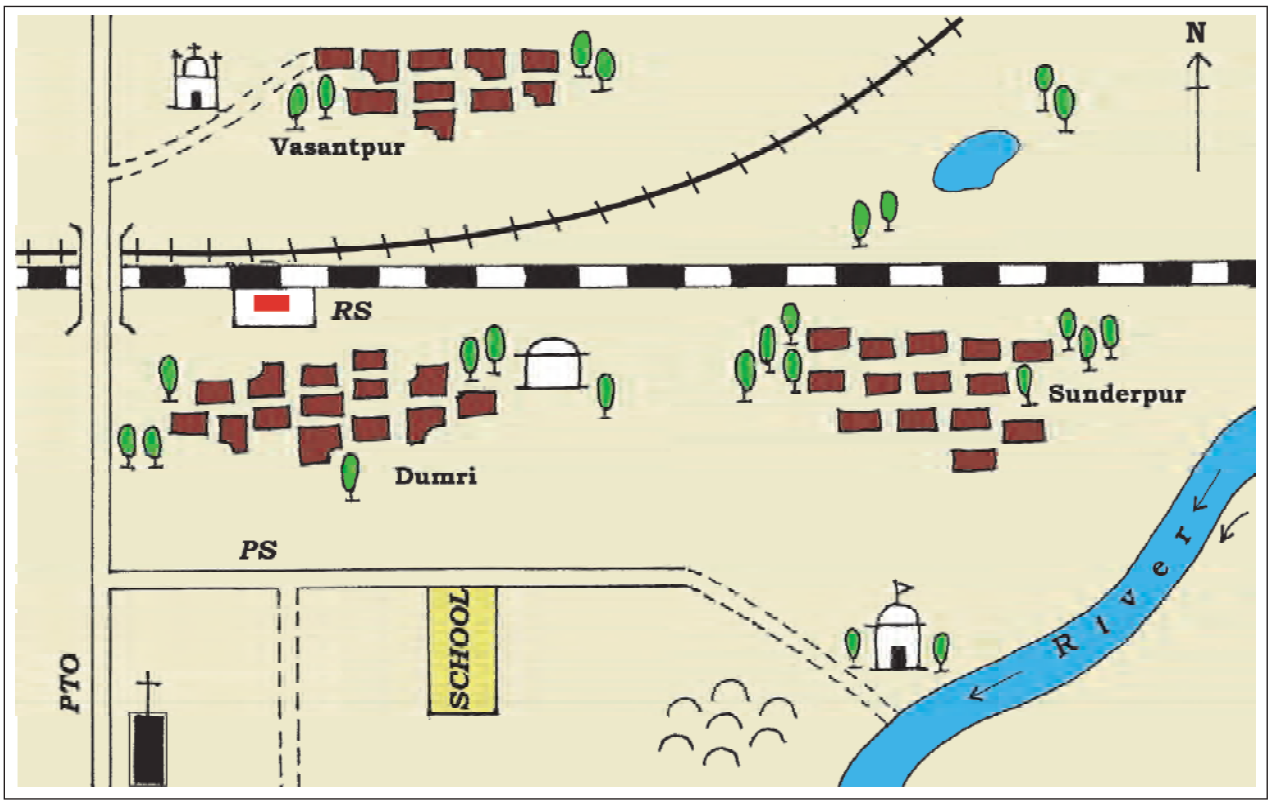


Figure 4.4 : Sunderpur village and its surrounding areas

Sketch

A sketch is a drawing mainly based on memory and spot observation and not to scale. Sometimes a rough drawing is required of an area to tell where a particular place is located with respect to other places. Suppose, you want to go to your friend's house, but you don't know the way. Your friend may make a rough drawing to show the way to his house. Such a rough drawing is drawn without scale, and is called a *sketch map*.

Plan

A plan is a drawing of a small area on a large scale. A large-scale map gives lot of information, but there are certain things which we may sometimes want to know for example the length and breadth of a room, which can't be shown in a map. At that time, we can refer drawings drawn to scale called a *plan*.



Let 's Do Visit web portal School Bhuvan-NCERT and draw online neighbourhood map on satellite imageries.

Look at the Figure 4.4 and find out :

(i) In which direction is the river flowing?

(ii) What kind of road passes by the side of village Dumri?

(iii) On what type of railway line is Sunderpur situated ?

(iv) On which side of the railway bridge is the police station situated?

(v) On which side of the railway line do the following lie :

(a) Chhatri
(b) Church (c) Pond
(d) Mosque (e) River
(f) Post and Telegraph Office
(g) Graveyard

EXERCISES

1. Answer the following questions briefly.

   (a) What are the three components of a map?

   (b) What are the four cardinal directions?

   (c) What do you mean by the term 'the scale of the map'?

   (d) How are maps more helpful than a globe?

   (e) Distinguish between a map and a plan.

   (f) Which map provides detailed information?

   (g) How do symbols help in reading maps?

2. Tick the correct answers.

   (a) Maps showing distribution of forests are

   (i) Physical map (ii) Thematic Map (iii) Political map

   (b) The blue colour is used for showing

   (i) Water bodies (ii) Mountains (iii) Plains

   (c) A compass is used –

   (i) To show symbols

   (ii) To find the main direction

   (iii) To measure distance

   (d) A scale is necessary

   (i) For a map (ii) For a sketch (iii) For symbols



THINGS TO DO

1. Draw a plan of your classroom and show the teacher's table, blackboard, desks, door and windows.

2. Draw a sketch of your school and locate the following :

   (a) the principal's room (b) your classroom

   (c) the playground (d) the library

   (e) some big trees (f) drinking water



1. Make the plan (in the space given below) of a fun-park where you can enjoy several activities : for example swings, slides, see-saw, merry-go-round, boating, swimming, looking into funny mirrors, etc. or anything else that you can think of.



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5

MAJOR DOMAINS OF THE EARTH

As you have read in the first chapter, the earth is the only planet which has life. Human beings can live here because the life sustaining elements of land, water and air are present on the earth.

The surface of the earth is a complex zone in which three main components of the environment meet, overlap and interact. The solid portion of the earth on which we live is called the Lithosphere. The gaseous layers that surround the earth, is the Atmosphere, where oxygen, nitrogen, carbondioxide and other gases are found. Water covers a very big area of the earth's surface and this area is called the Hydrosphere. The Hydrosphere comprises water in all its forms, that is, ice, water and water vapour.

The Biosphere is the narrow zone where we find land, water and air together, which contains all forms of life.



Word Origin

In the Greek language, *Lithos* means Stone; *Atmos* means Vapour; *Hudor* means Water; and *Bios* means Life.

Can you make words using the above?

LITHOSPHERE

The solid portion of the earth is called the *Lithosphere*. It comprises the rocks of the earth's crust and the thin layers of soil that contain nutrient elements which sustain organisms.

There are two main divisions of the earth's surface. The large landmasses are known as the continents and the huge water bodies are called the ocean basins. All the oceans of the world are connected with one another. Look at the map of the world (Figure 5.1). Are all the land masses connected with one another?

The level of seawater remains the same everywhere. Elevation of land is measured from the level of the sea, which is taken as zero.

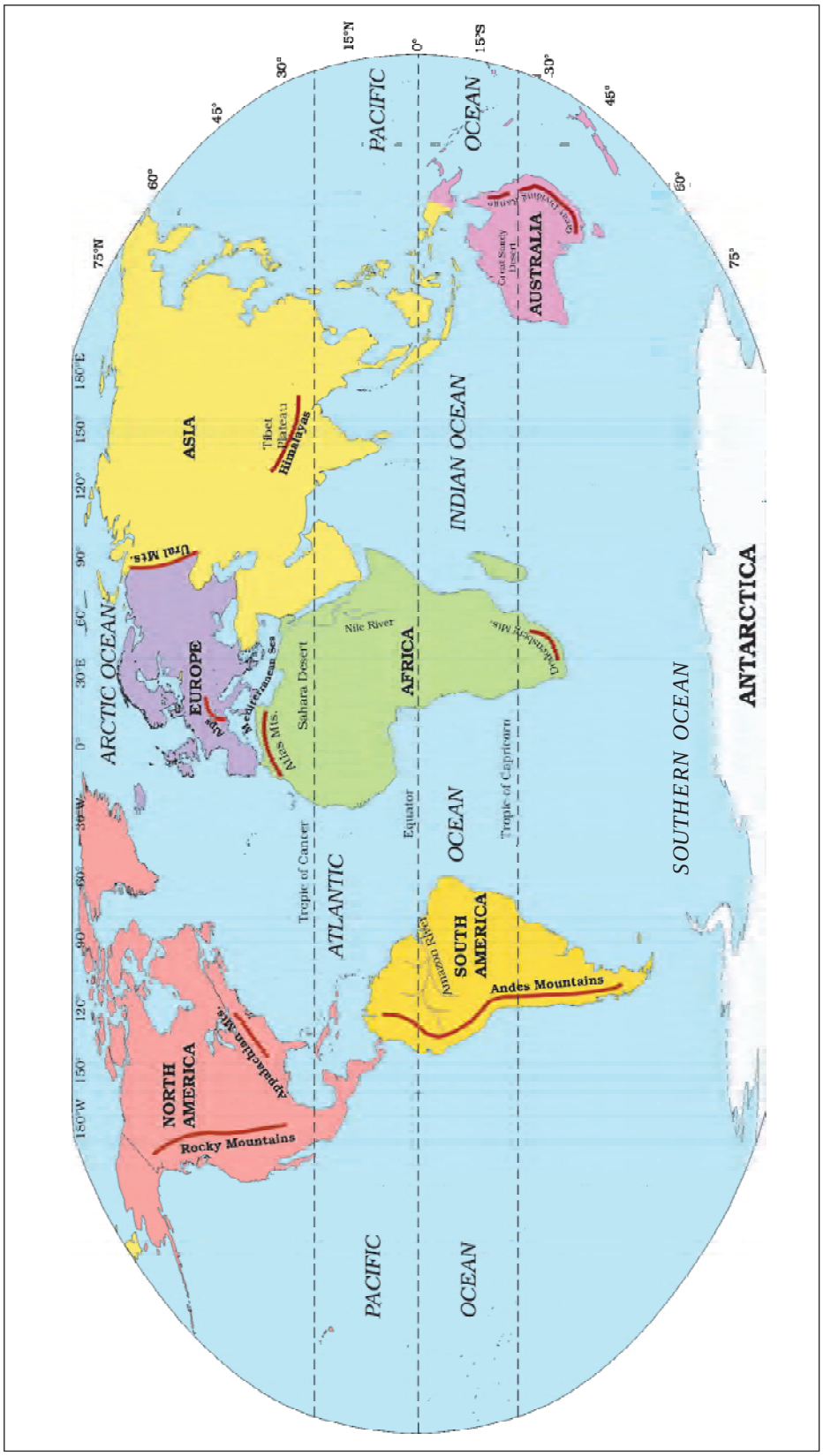


Figure 5.1 : The World : Continents and Oceans



Do you know?

Edmund Hillary (New Zealand) and Tenzing Norgay Sherpa (India) were the first men to climb the highest mountain peak Mt. Everest on the planet earth on 29th May, 1953.

Junko Tabei (Japan) was the first woman to reach the summit on 16th May, 1975. The first Indian woman to climb the highest peak on 23rd May, 1984 was Bachendri Pal.

The highest mountain peak Mt. Everest is 8,848 metres above the sea level. The greatest depth of 11,022 metres is recorded at Mariana Trench in the Pacific Ocean. Could you imagine that depth of sea is much more than the highest point?

Continents

There are seven major continents. These are separated by large water bodies. These continents are – Asia, Europe, Africa, North America, South America, Australia and Antarctica. Look at the map of the world (Figure 5.1) and notice that the greater part of the land mass lies in the Northern Hemisphere.

Asia is the largest continent. It covers about one-third of the total land area of the earth. The continent lies in the Eastern Hemisphere. The Tropic of Cancer passes through this continent. Asia is separated from Europe by the Ural mountains on the west (Figure 5.1). The combined landmass of Europe and Asia is called the *Eurasia* (Europe + Asia).

Europe is much smaller than Asia. The continent lies to the west of Asia. The Arctic Circle passes through it. It is bound by water bodies on three sides. Look at the map of the world and locate it.

Africa is the second largest continent after Asia. The Equator or 0^0 latitude runs almost through the middle of the continent. A large part of Africa lies in the Northern Hemisphere. Look at the Figure 5.1; you will find that it is the only continent through which the Tropic of Cancer, the Equator and the Tropic of Capricorn pass.

The Sahara Desert, the world's largest hot desert, is located in Africa. The continent is bound on all sides by oceans and seas. Look at the world map (Figure 5.1). You will notice that the world's longest river the Nile, flows through Africa. Notice where the Equator, the Tropic of Cancer and the Tropic of Capricorn pass in the map of Africa.

North America is the third largest continent of the world. It is linked to South America by a very narrow strip of land called the Isthmus of Panama. The continent lies completely in the Northern and Western Hemisphere. Three oceans surround this continent. Can you name these oceans?

South America lies mostly in the Southern Hemisphere. Which two oceans surround it on the east and the west? The Andes, world's longest mountain range, runs through its length from north to south (Figure 5.1). South America has the world's largest river, the Amazon.

Australia is the smallest continent that lies entirely in the Southern Hemisphere. It is surrounded on all sides by the oceans and seas. It is called an *island continent*.

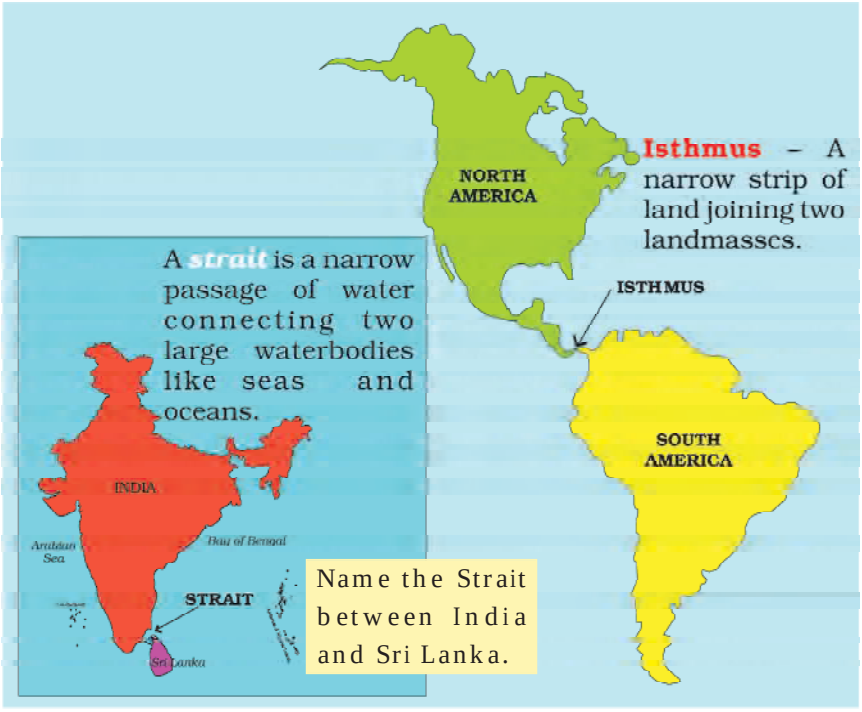


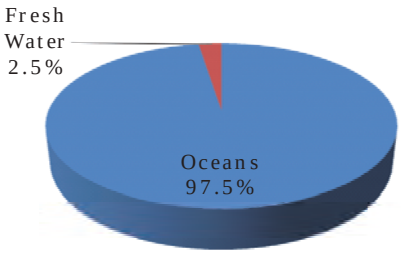
Figure 5.2 : Isthmus and Strait

Antarctica, completely in the Southern Hemisphere, is a huge continent. The South Pole lies almost at the centre of this continent. As it is located in the South Polar Region, it is permanently covered with thick ice sheets. There are no permanent human settlements. Many countries have research stations in Antarctica. India also has research stations there. These are named as Maitri and Dakshin Gangotri.

HYDROSPHERE

The earth is called the *blue planet*. More than 71 per cent of the earth is covered with water and 29 per cent is with land. Hydrosphere consists of water in all its forms. As running water in oceans and rivers and in lakes, ice in glaciers, underground water and the water vapour in atmosphere, all comprise the hydrosphere.

More than 97% of the Earth's water is found in the oceans and is too salty for human use. A large proportion of the rest of the water is in the form of icesheets and glaciers or under the ground and a very small percentage is available as fresh water for human



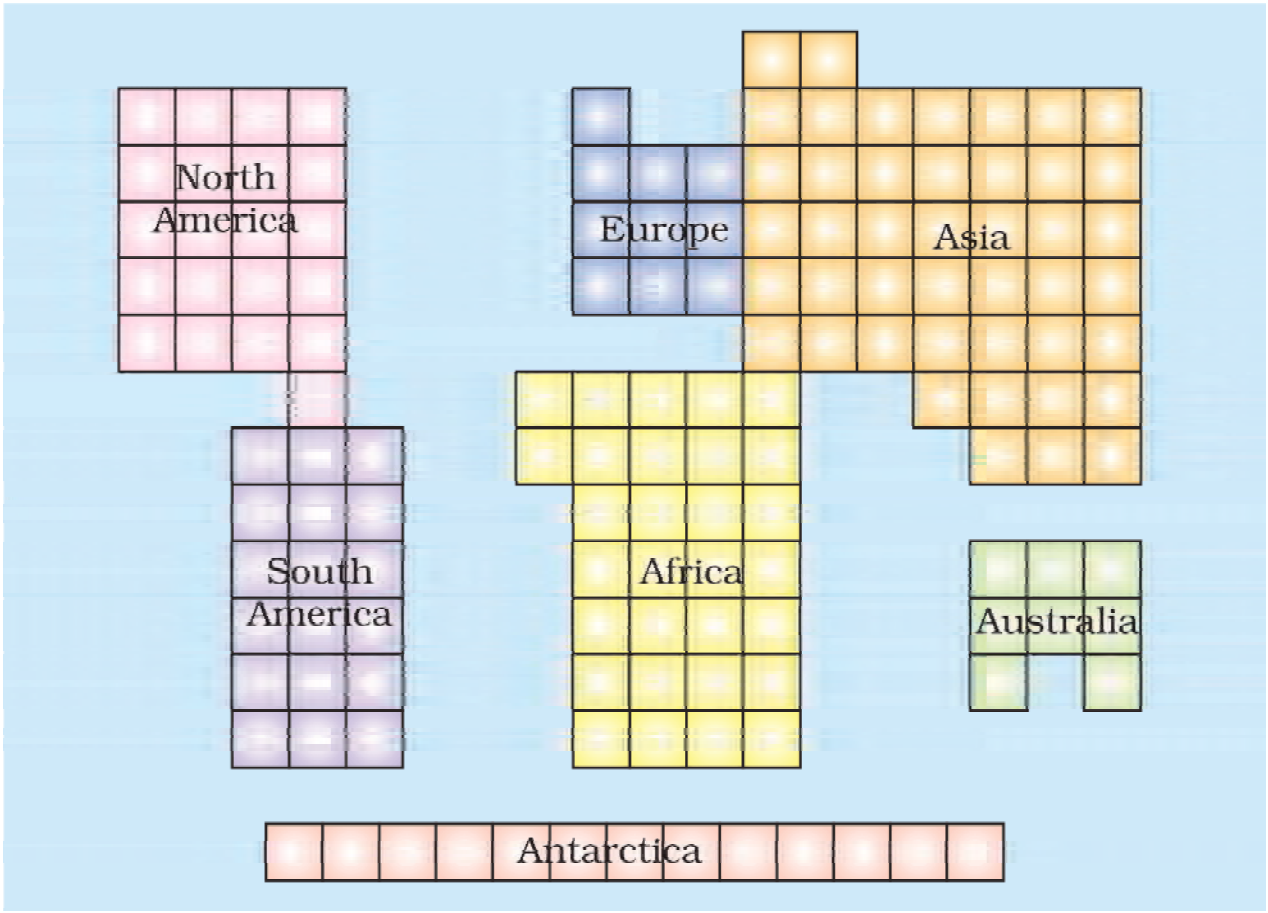


Figure 5.3 : Comparative size of the continents

Count the squares given in Figure 5.3 and answer the following :
(a) Name the largest continent; (b) Which is larger – Europe or Australia?

use. Hence, despite being a 'blue planet' we face a shortage of water!!

Oceans

Oceans are the major part of hydrosphere. They are all interconnected.

The ocean waters are always moving. The three chief movements of ocean waters are the waves, the tides and the ocean currents. The five major oceans are the Pacific Ocean, the Atlantic Ocean, the Indian Ocean, the Southern Ocean and the Arctic Ocean, in order of their size (Figure 5.1).

The Pacific Ocean is the largest ocean. It is spread over one-third of the earth. Mariana Trench, the deepest part of the earth, lies in the Pacific Ocean. The Pacific Ocean is almost circular in shape. Asia, Australia,

North and South Americas surround it. Look at the map and find out the location of the continents around the Pacific Ocean.

The Atlantic Ocean is the second largest Ocean in the world. It is 'S' shaped. It is flanked by the North and South Americas on the western side, and Europe and Africa on the eastern side. The coastline of Atlantic Ocean is highly *indented*. This irregular and indented coastline provides ideal location for natural harbours and ports. From the point of view of commerce, it is the busiest Ocean.

The Indian Ocean is the only ocean named after a country, that is, India. The shape of ocean is almost triangular. In the north, it is bound by Asia, in the west by Africa and in the east by Australia.

The Southern Ocean encircles the continent of Antarctica and extends northward to 60 degrees south latitude.

The Arctic Ocean is located within the Arctic Circle and surrounds the North Pole. It is connected with the Pacific Ocean by a narrow stretch of shallow water known as Berring strait. It is bound by northern coasts of North America and Eurasia.



Atmosphere

The earth is surrounded by a layer of gas called the atmosphere. This thin blanket of air is an integral and important aspect of the planet. It provides us with the air we breathe and protects us from the harmful effects of sun's rays.

The atmosphere extends up to a height of about 1,600 kilometres. The atmosphere is divided into five layers based on composition, temperature and other properties. These layers starting from earth's surface are called the troposphere, the stratosphere, the mesosphere, the thermosphere and the exosphere.

The atmosphere is composed mainly of nitrogen and oxygen, which make up about 99 per cent of clean, dry air. Nitrogen 78 per cent, oxygen 21 per cent and other gases like carbondioxide, argon and others comprise 1 per cent by volume. Oxygen is the breath of life while nitrogen helps in the growth of living organisms. Carbon dioxide, though present in minute amount, is important as it absorbs heat radiated by the earth, thereby keeping the planet warm. It is also essential for the growth of plants.

The density of the atmosphere varies with height. It

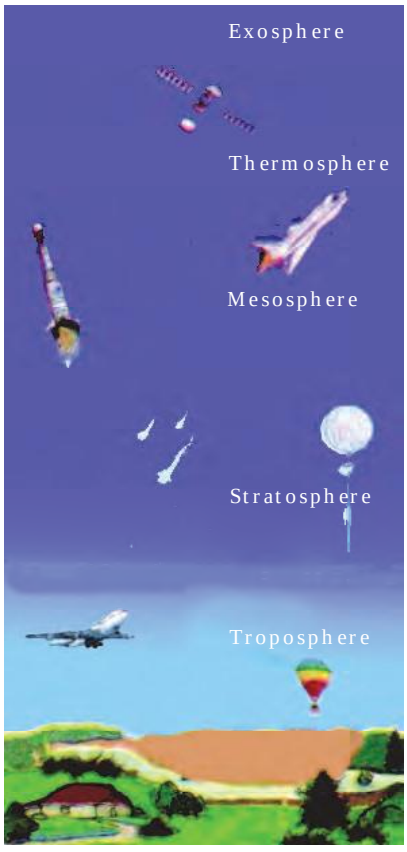


Figure 5.4 : Layers of the Atmosphere



Figure 5.5 : A mountaineer

is maximum at the sea level and decreases rapidly as we go up. You know, the climbers experience problems in breathing due to this decrease in the density of air. They have to carry with them oxygen cylinders to be able to breathe at high altitudes. The temperature also decreases as we go upwards. The atmosphere exerts pressure on the earth. This varies from place to place. Some areas experience high pressure and some areas low pressure. Air moves from high pressure to low pressure. Moving air is known as wind.

Biosphere – The Domain of Life

The biosphere is the narrow zone of contact between the land, water and air. It is in this zone that life, that is unique to this planet, exists. There are several

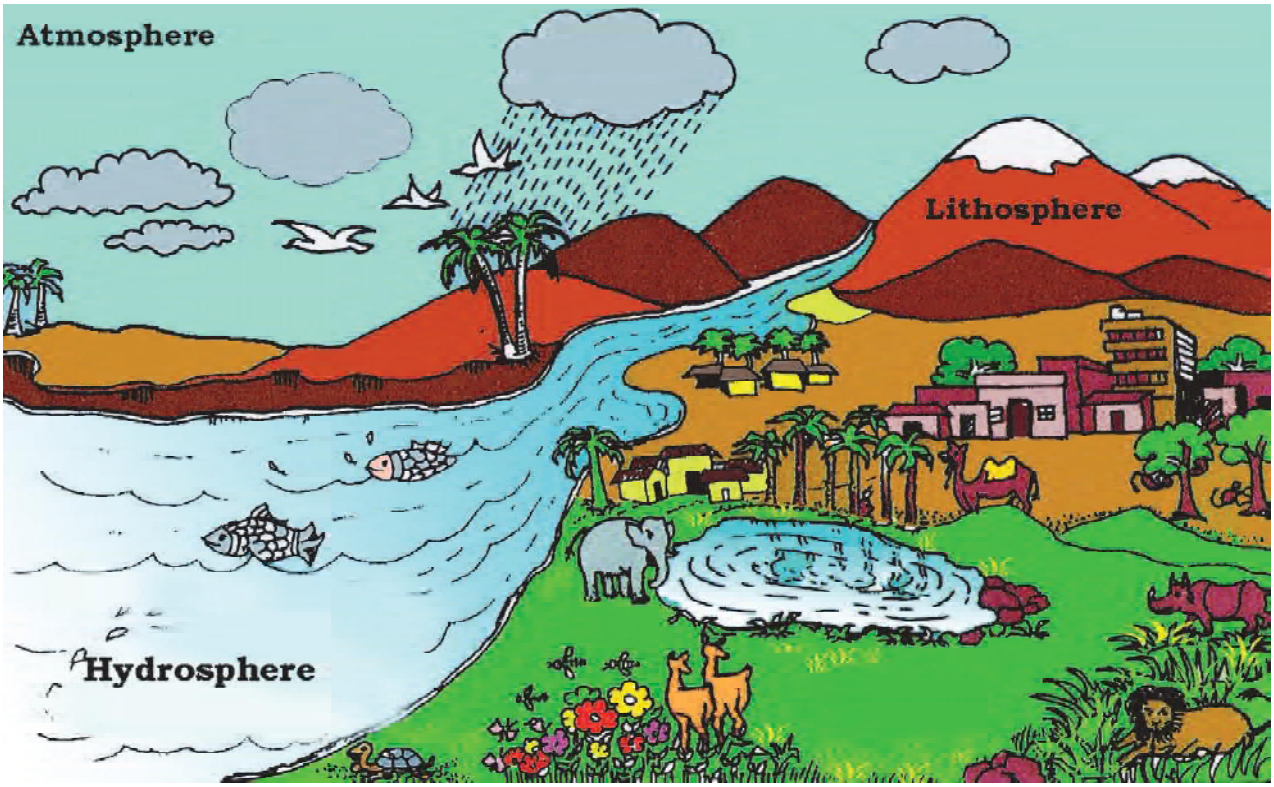


Figure 5.6 : The Biosphere

species of organisms that vary in size from microbes and bacteria to huge mammals. All the living organisms including humans are linked to each other and to the biosphere for survival.

The organisms in the biosphere may broadly be divided into the plant kingdom and the animal kingdom. The three domains of the earth interact with each other and affect each other in some way or the other. For example, cutting of forests for fulfilling our needs of wood, or clearing land for agriculture may lead to fast removal of soil from slopes. Similarly earth's surface may be changed due to natural calamities like earthquakes. For example, there could be submergence of land, as happened in the case of Tsunami recently. Parts of Andaman & Nicobar islands were submerged under water. Discharge of waste material into lakes and rivers makes the water unsuitable for human use. It also damages other forms of life.

Emission from industries, thermal power plants and vehicles, pollute the air. Carbon dioxide (CO_2) is an important constituent of air. But increase in the amount of CO_2 leads to increase in global temperatures. This is termed as global warming. There is thus, a need to limit the use of resources of the earth to maintain the balance of nature between the domains of the lithosphere, the atmosphere and the hydrosphere.

EXERCISES

1. Answer the following questions briefly.

   (a) What are the four major domains of the earth?

   (b) Name the major continents of the earth.

   (c) Name the two continents that lie entirely in the Southern Hemisphere.

   (d) Name the different layers of atmosphere.

   (e) Why is the earth called the 'blue planet'?

   (f) Why is the Northern Hemisphere called the Land Hemisphere?

   (g) Why is the Biosphere important for living organisms?

2. Tick the correct answers.

(a) The mountain range that separates Europe from Asia is

(i) the Andes (ii) the Himalayas (iii) the Urals

(b) The continent of North America is linked to South America by

(i) an Isthmus (ii) a Strait (iii) a Canal

(c) The major constituent of atmosphere by per cent is

(i) Nitrogen (ii) Oxygen (iii) Carbon dioxide

(d) The domain of the earth consisting of solid rocks is

(i) the Atmosphere (ii) the Hydrosphere (iii) the Lithosphere

(e) Which is the largest continent?

(i) Africa (ii) Asia (iii) Australia

3. Fill in the blanks.

(a) The deepest point on the earth is _____ in the Pacific Ocean.

(b) The _____ Ocean is named after a country.

(c) The _____ is a narrow contact zone of land, water and air that supports life.

(d) The continents of Europe and Asia together are known as _____.

(e) The highest mountain peak on the earth is _____.



THINGS TO DO

1. Cut the outline of the continents from an outline map of the world and arrange them according to their decreasing sizes.
2. Cut the outline of the continents from an outline map of the world and try to fit them together as a jig-saw puzzle.
3. Collect pictures of expeditions to the Himalayas. Write about the kind of equipment carried by the climbers for protection against sunshine, temperature and the lack of air.

Map Skills

1. On the outline map of the world, mark the following :

   Europe, Asia, Antarctica, South America, Australia, Indian Ocean, Pacific Ocean, Atlantic Ocean, Ural Mountains and Isthmus of Panama.



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6

MAJOR LANDFORMS OF THE EARTH

You must have seen some of the landform features as shown in the Figure 6.1 below. You will notice that the surface of the earth is not the same everywhere. The earth has an infinite variety of landforms. Some parts of the lithosphere may be rugged and some flat.

These landforms are a result of two processes. You will be amazed to know that the ground you are standing on is slowly moving. Within the earth, a continuous movement is taking place. The first, or the internal process leads to the upliftment and sinking of the earth's surface at several places.



Do you know?

A hill is a land surface that rises higher than the surrounding area. Generally, a steep hill with an elevation of more than 600 metres is termed as a mountain. Name some mountains with a height of more than 8,000 metres.

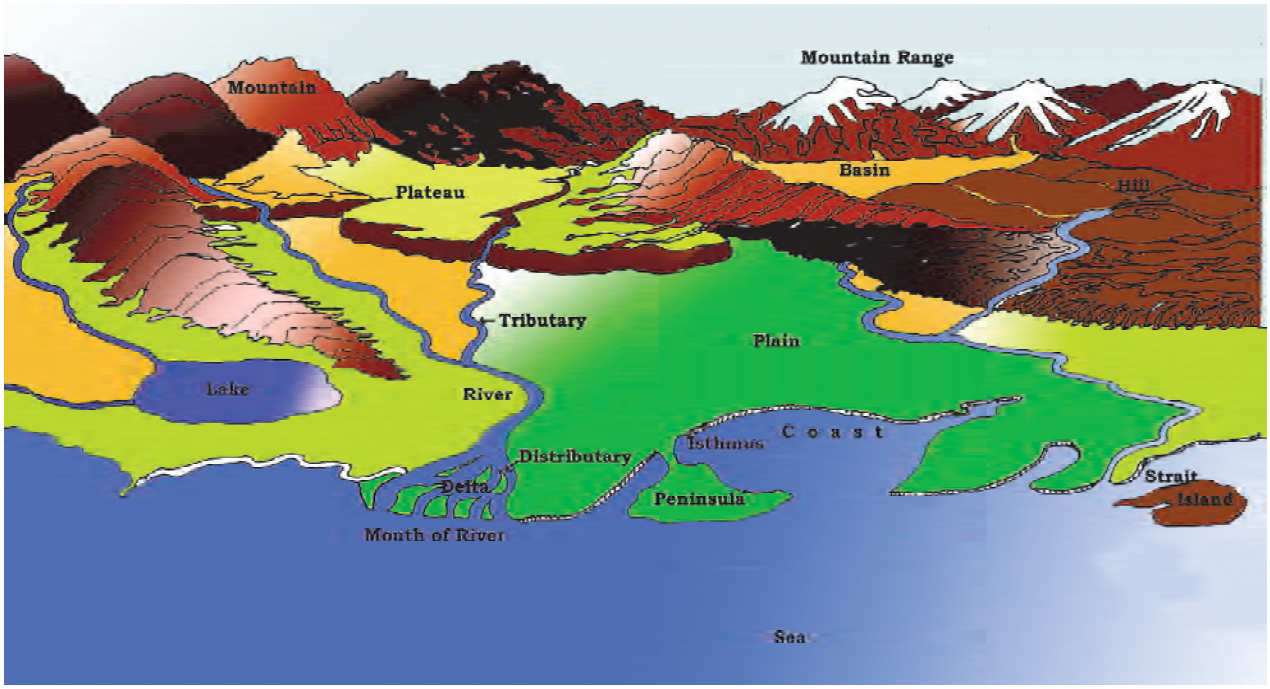


Figure 6.1 : Landforms



Let's Do

Making of a Mountain :

1. All you require is a pile of paper.
2. Put the papers on your table.
3. Push the papers from both sides by your hands.
4. The sheet will be folded and rise into a peak.
5. You have made a mountain!
   In the same process our Himalayas and the Alps were formed!

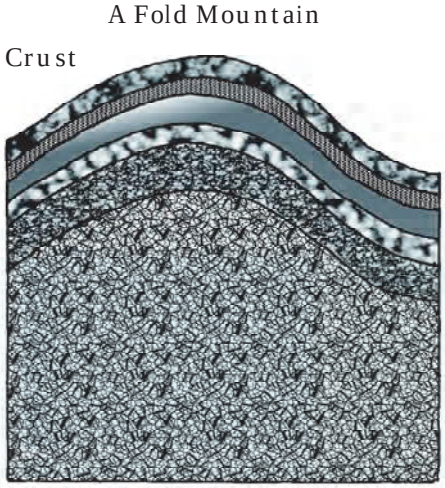


The second, or the external process is the continuous wearing down and rebuilding of the land surface. The wearing away of the earth's surface is called erosion. The surface is being lowered by the process of erosion and rebuilt by the process of deposition. These two processes are carried out by running water, ice and wind. Broadly, we can group different landforms depending on elevation and slope as mountains, plateaus and plains.

Mountains

A mountain is any natural elevation of the earth surface. The mountains may have a small summit and a broad base. It is considerably higher than the surrounding area. Some mountains are even higher than the clouds. As you go higher, the climate becomes colder.

In some mountains, there are permanently frozen rivers of ice. They are called glaciers. There are some mountains you cannot see as they are under the sea. Because of harsh climate, less people live in the mountain areas. Since the slopes are steep, less land is available for farming.



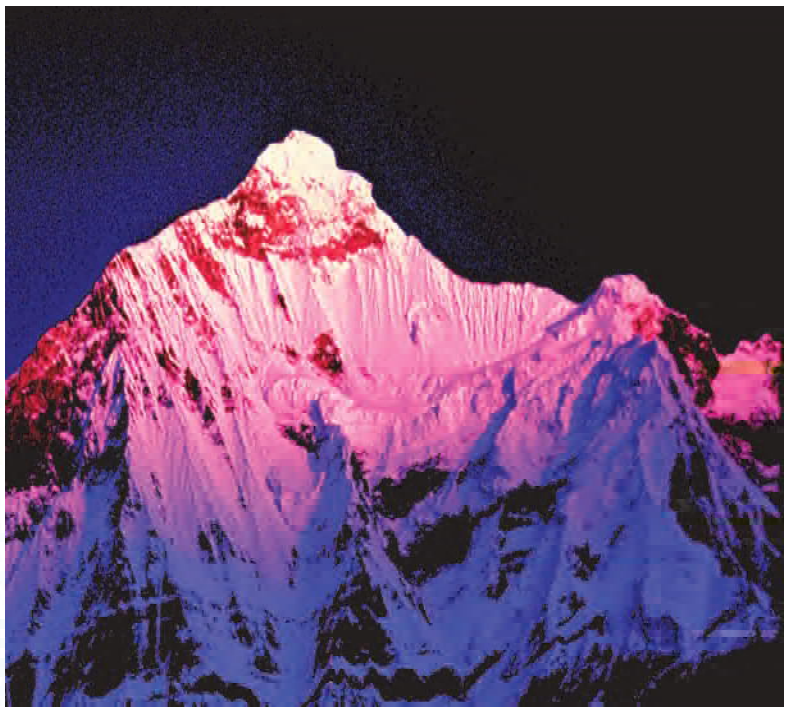


Figure 6.2 : Fold Mountains (Himalayas)

Mountains may be arranged in a line known as range. Many mountain systems consist of a series of parallel ranges extending over hundreds of kilometres. The Himalayas, the Alps and the Andes are mountain ranges of Asia, Europe and South America, respectively (Figure 5.1). Mountains vary in their heights and shape.

There are three types of mountains- Fold Mountains, Block Mountains and the Volcanic Mountains. The Himalayan Mountains and the Alps are young fold mountains with rugged relief and high conical peaks. The Aravali range in India is one of the oldest fold mountain systems in the world. The range has considerably worn down due to the processes of erosion. The Appalachians in North America and the Ural mountains in Russia (Figure 5.1) have rounded features and low elevation. They are very old fold mountains.



Do you know?

Mauna Kea (Hawaii) in the Pacific Ocean is an undersea mountain. It is higher than Mount Everest being 10,205 metres high.

Block Mountains are created when large areas are broken and displaced vertically. The uplifted blocks are termed as horsts and the lowered blocks are called graben. The Rhine valley and the Vosges mountain in Europe are examples of such mountain systems. Locate them on the world map in the atlas and find out some more examples of this type of landforms.

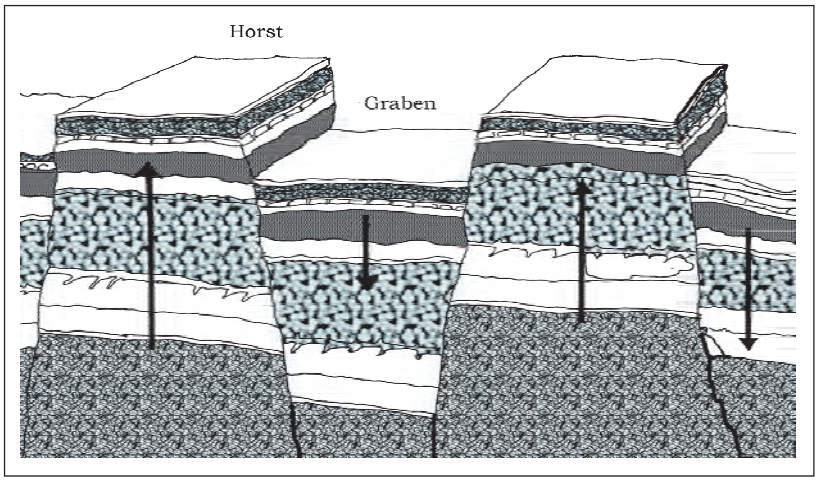


Figure 6.3 : A Block Mountain

Volcanic mountains are formed due to volcanic activity. Mt.Kilimanjaro in Africa and Mt.Fujiyama in Japan are examples of such mountains.

Mountains are very useful. The mountains are a storehouse of water. Many rivers have their source in the glaciers in the mountains. Reservoirs are made and the water is harnessed for the use of people. Water from the mountains is also used for irrigation and generation of hydro-electricity. The river valleys and terraces are ideal for cultivation of crops. Mountains have a rich variety of flora and fauna. The forests provide fuel, fodder, shelter and other products like



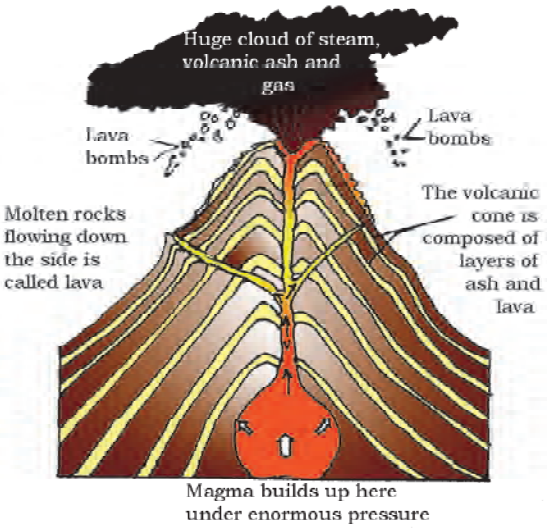
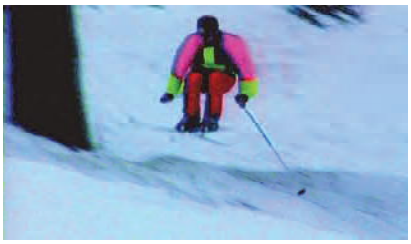


Figure 6.4 : A Volcanic Mountain



Can you name this sport?

gum, raisins, etc. Mountains provide an idyllic site for tourists. They visit the mountains for their scenic beauty. Several sports like paragliding, hang gliding, river rafting and skiing are popular in the mountains. Can you name some places in the Himalayas associated with these sports?



Figure 6.5 : Plateau

Plateaus

A plateau is an elevated flat land. It is a flat-topped table land standing above the surrounding area. A plateau may have one or more sides with steep slopes. The height of plateaus often varies from few hundred metres to several thousand metres. Plateaus, like mountains may be young or old. The Deccan plateau in India is one of the oldest plateaus. The East African Plateau in Kenya, Tanzania and Uganda and the Western plateau of Australia are other examples. The Tibet plateau (Figure 5.1, p.31) is the highest plateau in the world with a height of 4,000 to 6,000 metres above the mean sea level.

Plateaus are very useful because they are rich in mineral deposits. As a result, many of the mining areas in the world are located in the plateau areas. The

African plateau is famous for gold and diamond mining. In India huge reserves of iron, coal and manganese are found in the Chhotanagpur plateau.

In the plateau areas, there may be several waterfalls as the river falls from a great height. In India, the Hundru falls in the Chhotanagpur plateau on the river Subarnarekha and the Jog falls in Karnataka are examples of such waterfalls. The lava plateaus are rich in black soil that are fertile and good for cultivation. Many plateaus have scenic spots and are of great attraction to tourists.

Plains

Plains are large stretches of flat land. They are, generally, not more than 200 metres above mean sea level. Some plains are extremely level. Others may be slightly rolling and undulating. Most of the plains are formed by rivers and their tributaries. The rivers flow down the slopes of mountains and erode them. They carry forward the eroded material. Then they deposit their load consisting of stones, sand and silt along their courses and in their valleys. It is from these deposits that plains are formed.

Generally, plains are very fertile. Construction of transport network is easy. Thus, these plains are very thickly-populated regions of the world. Some of the largest plains made by the rivers are found in Asia and North America. For example, in Asia, these plains are formed by the Ganga and the Brahmaputra in India and the Yangtze in China.

Plains are the most useful areas for human habitation. There is great concentration of people as more flat land is available for building houses, as well as for cultivation. Because of fertile soils, the land is highly productive for cultivation. In India too, the Indo-Gangetic plains are the most densely populated regions of the country.



Figure 6.6 : Plains



Figure 6.7 : Rope Bridge (Arunachal Pradesh)

Do you know?

Swachh Bharat Mission: Healthy mind lives in healthy body and for a healthy body clean environment particularly clean water, air and hygienic surroundings are pre-requisites. Swachh Bharat Mission, a government of India Programme aims to achieve all these for people.

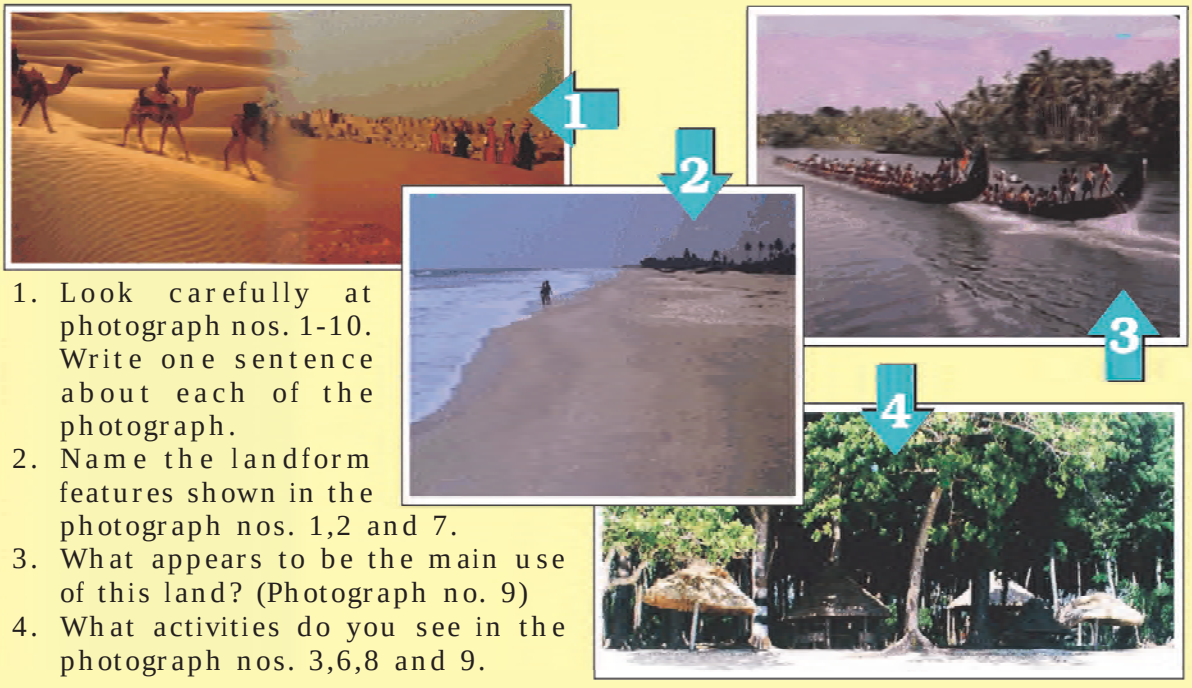
Landforms and the People



Figure 6.8 : A polluted river

Humans have been living on different kinds of landforms in different ways. Life is difficult in mountainous areas. Plains provide much better conditions. It is easy to grow crops, build a house or a road in a plain than a mountain. Can you point out some differences in the ways people live on different kinds of landforms? Sometimes, natural calamities such as earthquakes, volcanic eruption, storms and floods cause widespread destruction. Huge loss of life and property takes place. By creative awareness about such incidences we may lower the risks.

You may find out from your own surroundings in how many ways we use the land and water. Quite often we use the land in a wasteful manner, for example constructing houses on a fertile land. Similarly we throw garbage on land or in water making them dirty. We should avoid using such important gifts of nature in a careless manner. The available land is not only for our use. It is our duty to leave the earth a better place for future generations as well.



1. Look carefully at photograph nos. 1-10. Write one sentence about each of the photograph.
2. Name the landform features shown in the photograph nos. 1,2 and 7.
3. What appears to be the main use of this land? (Photograph no. 9)
4. What activities do you see in the photograph nos. 3,6,8 and 9.













5. What type of houses do you see in photograph nos. 4 and 5.
6. Name the water sports/ games shown in photograph nos. 3 & 8.
7. Name two means of transport shown in photograph nos. 1 and 10.

EXERCISES

1. Answer the following questions briefly.
   (a) What are the major landforms?
   (b) What is the difference between a mountain and a plateau?
   (c) What are the different types of mountains?
   (d) How are mountains useful to man?
   (e) How are plains formed?
   (f) Why are the river plains thickly populated?
   (g) Why are mountains thinly populated?
2. Tick the correct answers.
   (a) The mountains differ from the hills in terms of
   (i) elevation (ii) slope (iii) aspect
   (b) Glaciers are found in
   (i) the mountains (ii) the plains (iii) the plateaus
   (c) The Deccan Plateau is located in
   (i) Kenya (ii) Australia (iii) India
   (d) The river Yangtze flows in
   (i) South America (ii) Australia (iii) China
   (e) An important mountain range of Europe is
   (i) the Andes (ii) the Alps (iii) the Rockies
3. Fill in the blanks.
   1. A _____ is an unbroken flat or a low-level land.
   2. The Himalayas and the Alps are examples of _____types of mountains.
   3. _____ areas are rich in mineral deposits.
   4. The _____ is a line of mountains.
   5. The _____areas are most productive for farming.



1. What kind of landforms are found in your state? Based on the reading of this chapter, say how they are of use to the people.

Map Skills

1. On an outline map of the world, mark the following :
   (a) Mountain ranges: Himalayas, Rockies and Andes.
   (b) Plateau : Tibet.



0656CH07

7

OUR COUNTRY – INDIA

India is a country of vast geographical expanse. In the north, it is bound by the lofty Himalayas. The Arabian Sea in the west, the Bay of Bengal in the east and the Indian Ocean in the south, wash the shores of the Indian peninsula.

India has an area of about 3.28 million sq. km. The north-south extent from Kashmir to Kanyakumari is about 3,200 km. And the east-west extent from Arunachal Pradesh to Kuchchh is about 2,900 km. The lofty mountains, the Great Indian Desert, the Northern Plains, the uneven plateau surface and the coasts and islands present a diversity of landforms. There is a great variety in the climate, vegetation, wildlife as well as in the language and culture. In this diversity, we find unity that is reflected in traditions that bind us as one nation. India has a population of more than one hundred twenty crores since the year 2011. It is the *second most populous* country of the world after China.

The peninsula is a piece of land that is surrounded by water on three sides (figure 6.1).

Locational Setting

India is located in the northern hemisphere. The Tropic of Cancer (23°30′N) passes almost halfway through the country (Figure 7.2). From south to north, main land of India extends between 8°4′N and 37°6′N latitudes. From west to east, India extends between 68°7′E and 97°25′E longitudes. If we divide the world into eastern and western hemispheres, which hemisphere would India belong to? Due to great longitudinal extent of about 29°, there could be a wide differences in local time of places located at two extreme points of India. As such, the difference between these two points would be of



Do you know?

Large countries which stretch extensively from east to west do not have a single Standard Time for the whole country. The USA and Canada have seven and six time zones respectively. Do you remember how many time zones are there in Russia?

about two hours. As you have learnt earlier, the local time changes by four minutes for every one degree of longitude. The sun rises about two hours earlier in the east (Arunachal Pradesh) than in the west (Gujarat). You have already read earlier, why the local time of longitude of 82°30'E has been taken as the *Indian Standard Time*. This meridian or longitude is also termed as the *Standard Meridian of India*.

India's Neighbours

There are seven countries that share land boundaries with India. Find out names



Figure 7.1 : India and its neighbouring countries

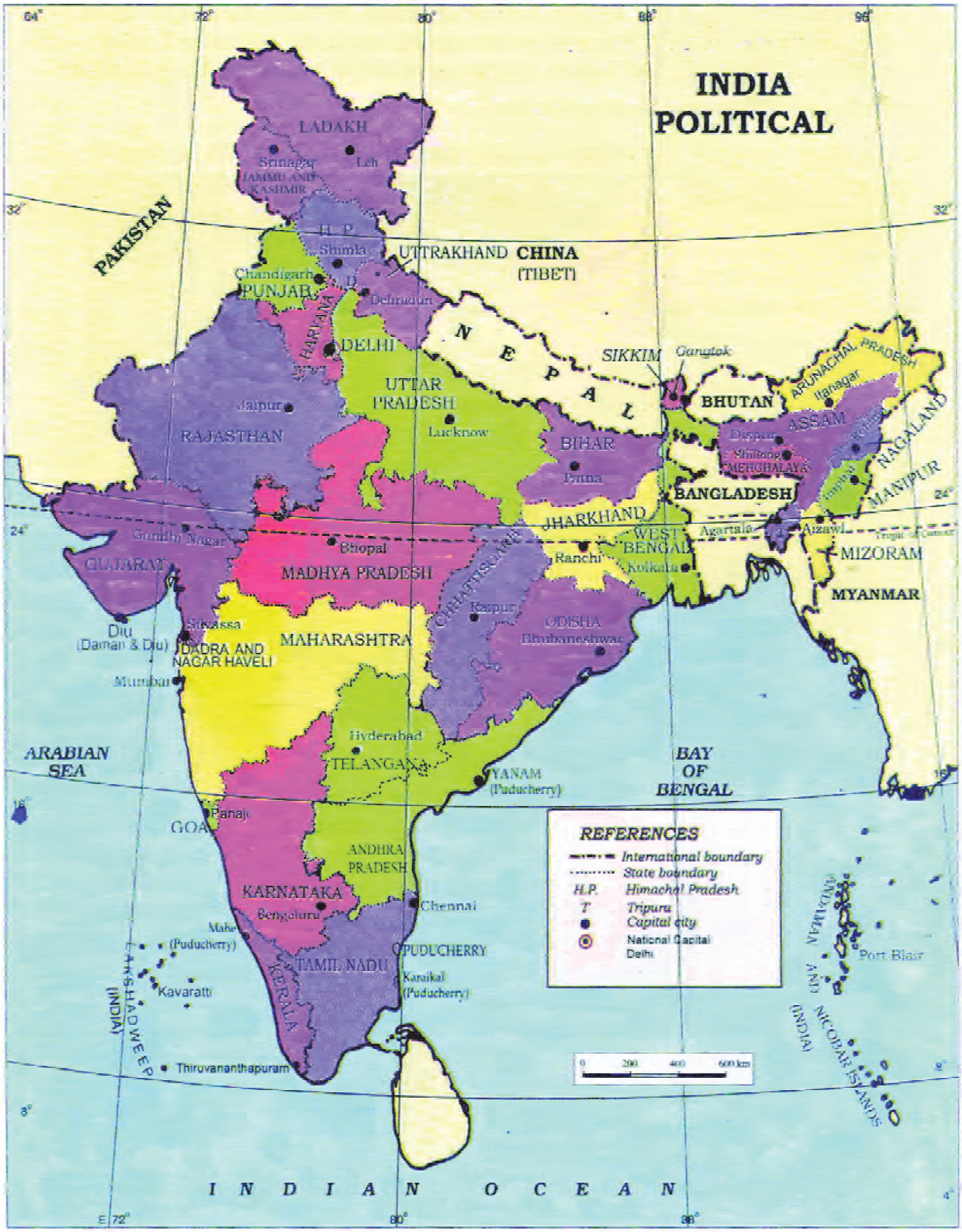


Figure 7.2 : Political map of India

** Telangana became 29th state of India in June 2014*

of these countries from the Figure 7.1. How many of these countries do not have access to any ocean or sea? Across the sea to the south, lie our island neighbours– Sri Lanka and Maldives. Sri Lanka is separated from India by the *Palk Strait*.

Political and Administrative Divisions

India is a vast country. For administrative purposes, the country is divided into 29

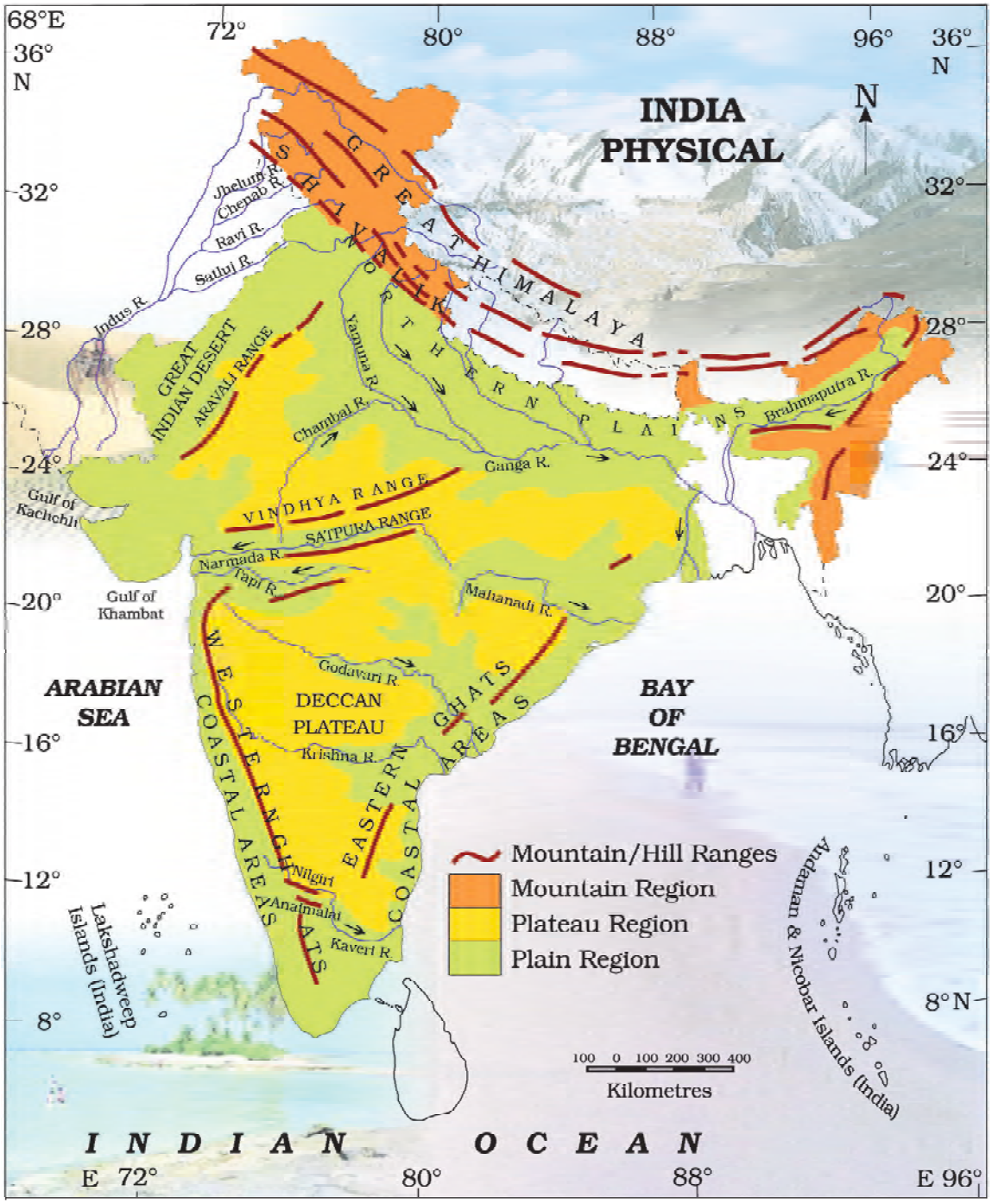


Figure 7.3 : India : Physical Divisions

States and 9 Union Territories (Appendix-I). Delhi is the national capital. The states have been formed mainly on the basis of languages.

Physical Divisions

India is marked by a diversity of physical features such as mountains, plateaus, plains, coasts and islands. Standing as sentinels in the north are the lofty snow-capped Himalayas. *Him+alaya* mean 'the abode of snow'. The Himalayan mountains are divided into three main parallel ranges. The northernmost is the Great Himalaya or Himadri. The world's highest peaks are located in this range. Middle Himalaya or Himachal lies to the south of Himadri. Many popular hill stations are situated here. Find out the names of five hill stations. The Shiwalik is the southernmost range.

The Northern Indian plains lie to the south of the Himalayas. They are generally level and flat. These are formed by the alluvial deposits laid down by the rivers– the Indus, the Ganga, the Brahmaputra and their *tributaries*. These river plains provide fertile land for cultivation. That is the reason for high concentration of population in these plains.

In the *western* part of India lies the Great Indian desert. It is a dry, hot and sandy stretch of land. It has very little vegetation.

To the south of northern plains lies the Peninsular plateau. It is triangular in shape. The relief is highly uneven. This is a region with numerous hill ranges and valleys. Aravali hills, one of the oldest ranges of the world, border it on the north-west side. The Vindhyas and the Satpuras are the important ranges. The rivers Narmada and Tapi flow through these ranges. These are west-flowing rivers that drain into the Arabian Sea. The Western Ghats or Sahyadris border the plateau in the west and the Eastern Ghats provide the eastern boundary. While the Western Ghats are almost continuous, the Eastern Ghats are broken and uneven (Figure 7.3). The plateau is rich in minerals like coal and iron-ore.

To the West of the Western Ghats and the East of Eastern Ghats lie the Coastal plains. The western

Alluvial deposits : These are very fine soils, brought by rivers and deposited in the river basins.

Tributary : A river or stream which contributes its water to a main river by discharging it into main river from either side (Figure 6.1).



Do you know?

The *Ganga and the Brahma-putra* form the *world's largest delta, the Sundarbans delta*. The delta is triangular in shape. It is an area of land formed at the *mouth of the river* (Where rivers enter the sea, that point is called the mouth of the river, Figure 6.1).



Let's Do

Many girls are named after rivers eg. Yamuna, Mandakini, and Kaveri. Do you know anyone in your locality who is named after a river? Ask your parents and others and make a list of such names. Could you also find other names related to water e.g. Shabnam?



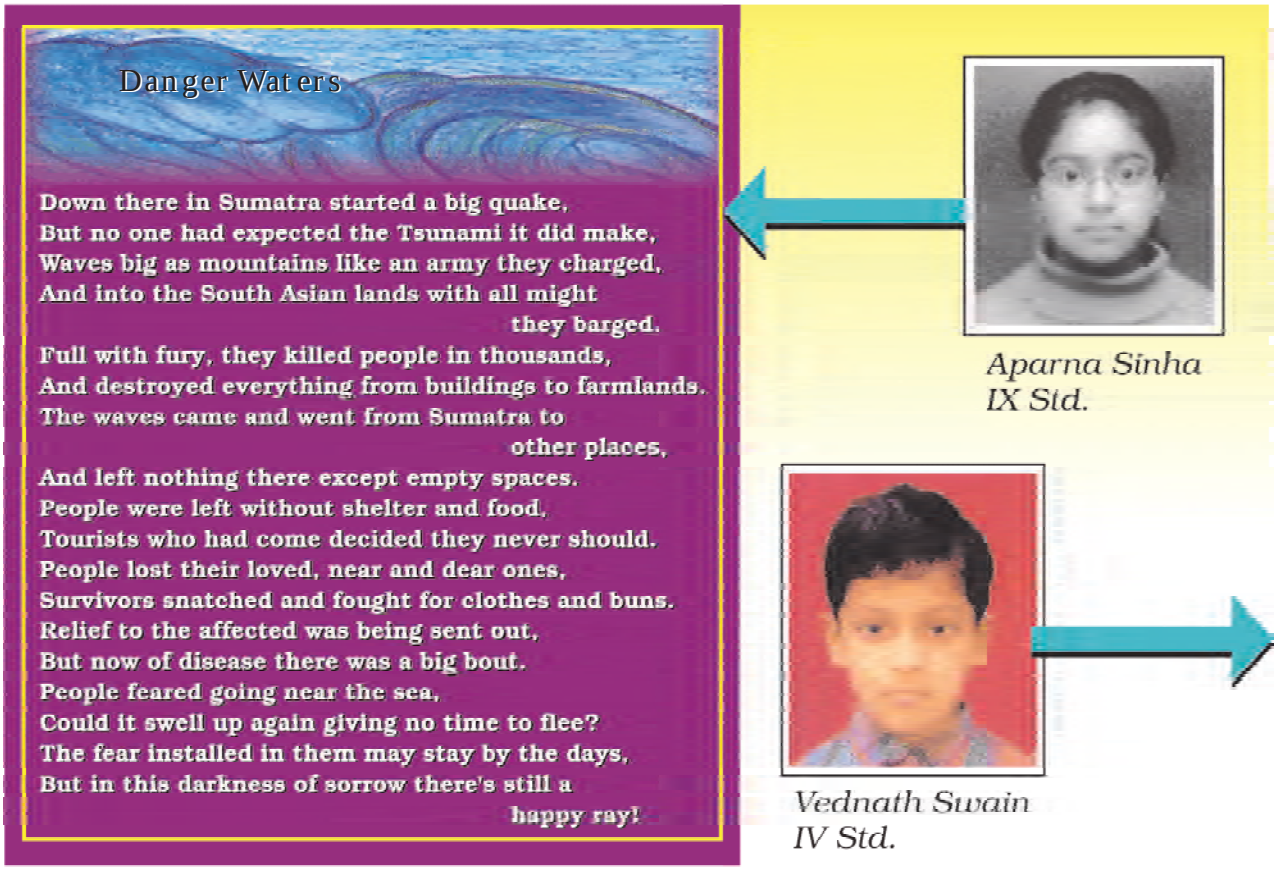
Figure 7.4 : Coral Islands



Do you know?

Corals are skeletons of tiny marine animals called Polyps. When the living polyps die, their skeletons are left. Other poplyps grow on top of the hard skeleton which grows higher and higher, thus forming the coral islands. Figure 7.4 shows Coral islands.

coastal plains are very narrow. The eastern Coastal plains are much broader. There are a number of east flowing rivers. The rivers Mahanadi, Godavari, Krishna and Kaveri drain into the Bay of Bengal. These rivers have formed fertile deltas at their mouth. The Sunderban delta is formed where the Ganga and Brahmaputra flow into the Bay of Bengal.



Danger Waters

Down there in Sumatra started a big quake,
But no one had expected the Tsunami it did make,
Waves big as mountains like an army they charged,
And into the South Asian lands with all might
they barged.
Full with fury, they killed people in thousands,
And destroyed everything from buildings to farmlands.
The waves came and went from Sumatra to
other places,
And left nothing there except empty spaces.
People were left without shelter and food,
Tourists who had come decided they never should.
People lost their loved, near and dear ones,
Survivors snatched and fought for clothes and buns.
Relief to the affected was being sent out,
But now of disease there was a big bout.
People feared going near the sea,
Could it swell up again giving no time to flee?
The fear installed in them may stay by the days,
But in this darkness of sorrow there's still a
happy ray!


Tsunamis'
Killer
Waves

Two groups of islands also form part of India. Lakshadweep Islands are located in the Arabian Sea. These are *coral islands* located off the coast of Kerala. The Andaman and the Nicobar Islands lie to the southeast of the Indian mainland in the Bay of Bengal. Do you know which group of islands were affected by the Tsunami in 2004? Find out through newspaper reports and by speaking to people how in different ways people faced this challenge when Tsunami struck the Indian coast. Tsunami is a huge sea wave generated due to an earthquake on the sea floor.

EXERCISES

1. Answer the following questions briefly.

   (a) Name the major physical divisions of India.

   (b) India shares its land boundaries with seven countries. Name them.

   (c) Which two major rivers fall into the Arabian Sea?

   (d) Name the delta formed by the Ganga and the Brahmaputra.

   (e) How many States and Union Territories are there in India? Which states have a common capital?

   (f) Why do a large number of people live in the Northern plains?

   (g) Why is Lakshadweep known as a coral island?

2. Tick the correct answers.

   (a) The southernmost Himalayas are known as

   (i) Shiwaliks (ii) Himadri (iii) Himachal

   (b) Sahyadris is also known as

   (i) Aravali (ii) Western Ghats (iii) Himadri

   (c) The Palk Strait lies between the countries

   (i) Sri Lanka and Maldives

   (ii) India and Sri Lanka

   (iii) India and Maldives

   (d) The Indian islands in the Arabian Sea are known as

   (i) Andaman and Nicobar Islands

   (ii) Lakshadweep Islands

   (iii) Maldives

(e) The oldest mountain range in India is the

(i) Aravali hills (ii) Western ghats (iii) Himalayas

3. Fill in the blanks.

(a) India has an area of about _____.

(b) The Greater Himalayas are also known as_____.

(c) The largest state in India in terms of area is_____.

(d) The river Narmada falls into the _____ sea.

(e) The latitude that runs almost halfway through India is _____.

Map skills

1. On an outline map of India, mark the following.

(a) Tropic of Cancer

(b) Standard Meridian of India

(c) State in which you live

(d) Andaman Islands and Lakshadweep Islands

(e) Western Ghats and Eastern Ghats



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8

INDIA : CLIMATE, VEGETATION AND WILDLIFE

You read in newspapers daily and watch on T.V. or hear others talking about weather. You must know that weather is about *day to day changes* in the atmosphere. It includes changes in temperature, rainfall and sunshine etc. For example, as such it may be hot or cold; sunny or cloudy; windy or calm. You must have noticed that when it is hot continuously for several days you don't need any warm clothing. You also like to eat or drink cold things. In contrast there are days together, you feel cold without woollen clothes when it is very windy and chilly, you would like to have something hot to eat.

Broadly, the major seasons recognised in India are:

- Cold Weather Season (Winter) December to February
- Hot Weather Season (Summer) March to May
- Southwest Monsoon Season (Rainy) June to September
- Season of Retreating Monsoon (Autumn) October and November

Cold Weather Season or Winter

During the winter season, the sun rays do not fall directly in the region. As a result the temperatures are quite low in northern India.

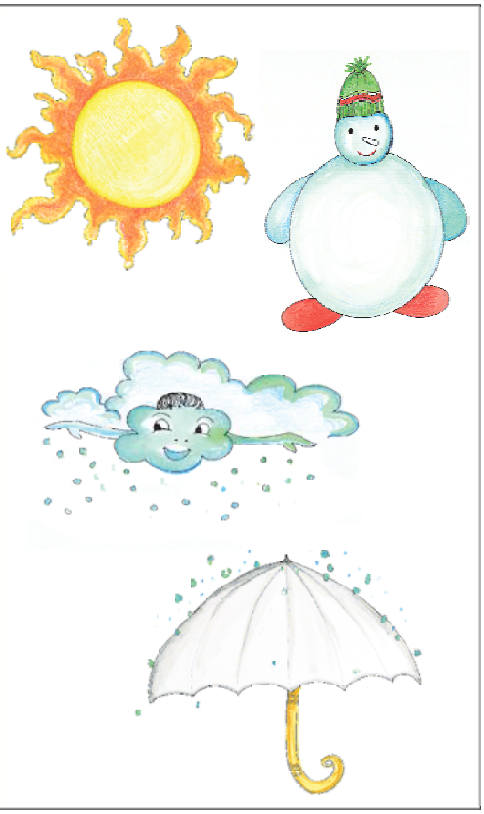
Hot Weather Season or Summer

In the hot weather season sun rays more or less directly fall in this region. Temperature becomes very high. Hot and dry winds called *loo*, blow during the day.

Let's have fun :

1. People in all parts of our country drink delicious cool drinks called *Sharbat* made from fruits available in their regions. They are excellent thirst-quenchers and protect our bodies from the ill-effect of the harsh 'loo'. Have you tried 'Sharbat', made from raw mango, bel, lemon, tamarind, kokum, phalsa, watermelon and buttermilk made from curds; for example chhaachh, mattha, mori, chash, etc? Many make banana and mango milkshakes too.
2. After a hot summer, the first rains bring much joy. All our languages have melodious songs on 'rains'. They sound happy and bring cheer. Learn two songs on rains and sing them together.
   Write or collect five poems on rains.
   Ask your friends, neighbours and family members for names for rains and other seasons in different languages. For instance,

Varsha	– Hindi	Pous	– Marathi
Barish	– Urdu	Borsha	– Bengali



South West Monsoon Season or Rainy Season

This season is marked by the onset and advance of monsoon. The winds blow from Arabian Sea and Bay of Bengal towards the land. They carry moisture with them. When these winds strike the mountain barriers, rainfall occurs.

Season of Retreating Monsoons or Autumn

Winds move back from the mainland to the Bay of Bengal. This is the season of the retreating monsoons. The southern parts of India, particularly Tamil Nadu and Andhra Pradesh receive rainfall in this season.

However, the climate is about the average weather condition, which have been measured *over many years*.

The climate of India has broadly been described as Monsoon type. Monsoon is taken from the Arabic word 'mausim', which means seasons. Due to India's location in the tropical region, most of the rain is brought by monsoon winds. Agriculture in India is dependent on rains. Good monsoons mean adequate rain and a bountiful crop.

What would happen if monsoons were weak, or even worse, failed to occur one year? Tick (✓) the correct answer.

Crops will be-
affected/ not affected

The level of the water in a well will-
come-up/ go-down

Summer will be-
longer/ shorter



Let's Do

On a map of India, locate the places mentioned in the paragraph.

The climate of a place is affected by its location, altitude, distance from the sea, and relief. Therefore, we experience regional differences in the climate of India. *Jaisalmer* and *Bikaner* in the desert of Rajasthan are *very hot*, while *Drass* and *Kargil* in Jammu and Kashmir are *freezing cold*. *Coastal places* like *Mumbai* and *Kolkata* experience *moderate climate*. They are neither too hot nor too cold. Being on the coast, these places are *very humid*. *Mawsynram* in *Meghalaya* receives the *world's highest rainfall*, while in a particular year it might not rain at all in Jaisalmer in Rajasthan.

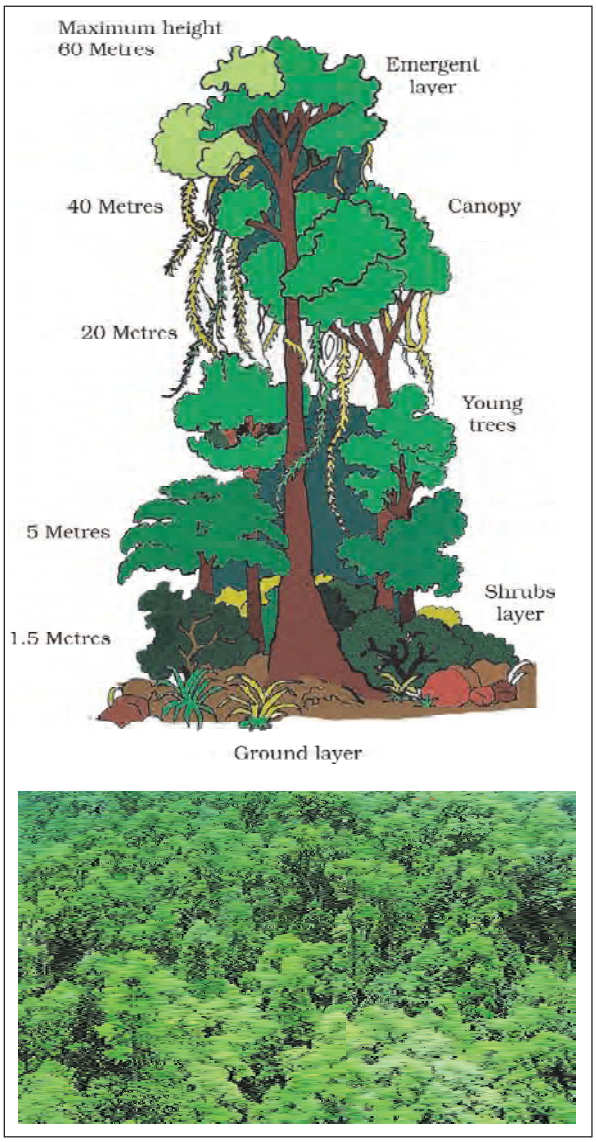


Figure 8.1 : Tropical Rain Forests

Natural Vegetation

We see a variety of plant life in our surroundings. How nice it is to play in a field with green grasses. There are also small plants called bushes and shrubs like cactus and flowering plants etc. Besides there are many tall trees some with many branches and leaves like neem, mango or some which stand with few leaves such as palm. The grasses, shrubs and trees, which grow on their own without interference or help from human beings are called natural vegetation. Do you wonder how these differ from each other. Different types of natural vegetation are dependent on different climatic conditions, among which the amount of rainfall is very important.

Due to varied climatic conditions, India has a wide range of natural vegetation.

Why are Forests Necessary?

Forests are very useful for us. They perform various functions. Plants release oxygen that we breathe and absorb *carbon dioxide*. The roots of the plants bind the soil; thus, they control soil erosion.

Forests provide us with timber for furniture, fuel wood, fodder, medicinal plants and herbs, lac, honey, gum, etc.

Forests are the natural habitat of wild life.

Natural vegetation has been destroyed to a large extent because of the reckless cutting of trees. We should plant more trees and protect the existing ones and make people aware of the importance of trees. We can have special programmes like *Van Mahotsav* to involve more people in making our earth green.

Leela's parents planted a sapling of "neem" to celebrate her birth. On each birthday, a different sapling was planted. It was watered regularly and protected from severe heat, cold and animals. Children took care not to harm it. When Leela was 20, twenty-one beautiful trees, stood in and around her house. Birds built their nests on them, flowers bloomed, butterflies fluttered around them, children enjoyed their fruits, swung on their branches and played in their shade.

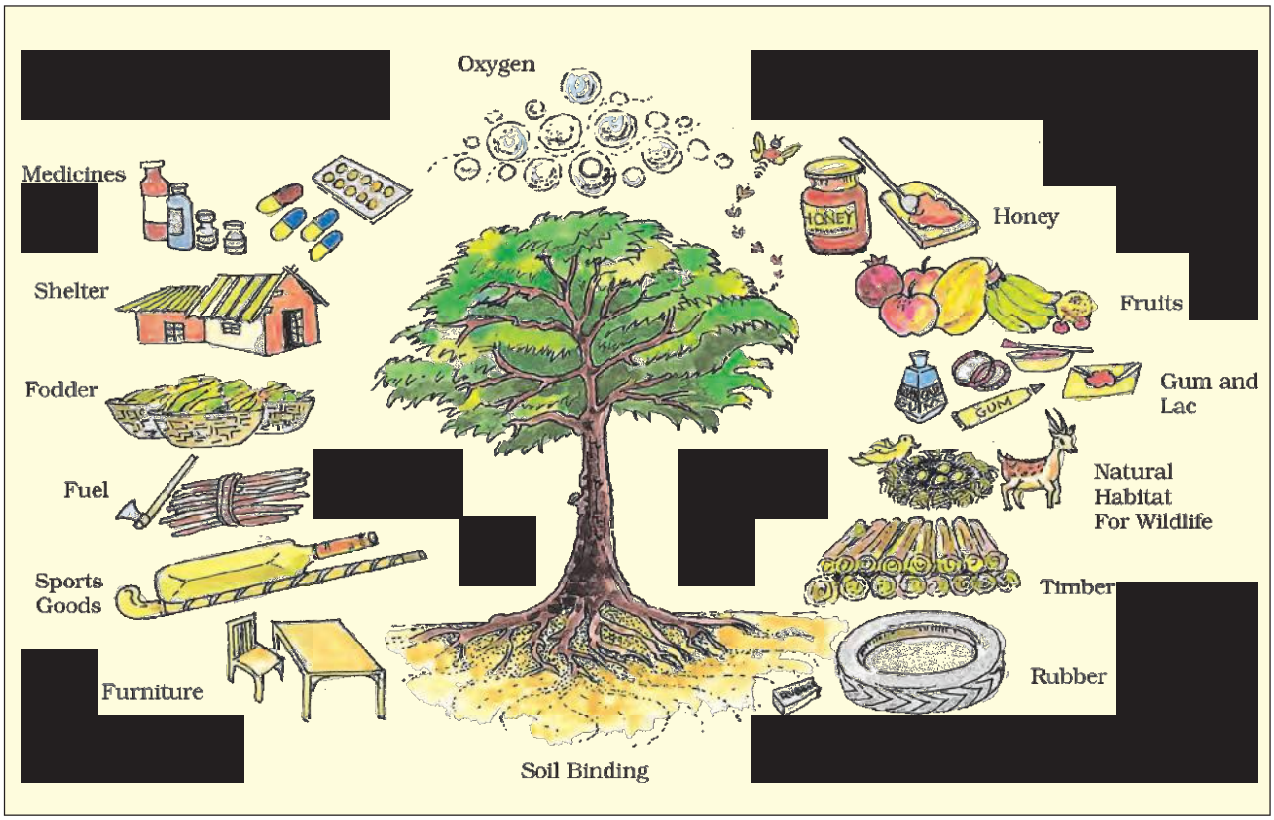


Figure 8.2 : What we get from forests

Wild Life

Forests are home to a variety of wild life. There are thousands of species of animals and a large variety of reptiles, amphibians, mammals, birds, insects and worms which dwell in the forest.

The tiger is our national animal. It is found in various parts of the country. *Gir* forest in Gujarat is the home of Asiatic lions. Elephants and one-horned rhinoceroses roam in the forests of Assam. Elephants are also found in Kerala and Karnataka. Camels and wild asses are found in the Great Indian desert and the Rann of Kuchchh respectively. Wild goats, snow leopards, bears, etc. are found in the Himalayan region. Besides these, many other animals are found in our country such as monkey, wolf, jackal, nilgai, cheetal, etc.

India is equally rich in bird life. The peacock is our national bird. Other common birds are parrots, pigeons, mynah, geese, bulbul and ducks. There are several bird sanctuaries which have been created to give birds their natural habitat. These provide the birds protection from hunters. Can you name five birds that are commonly found in your area?

There are several hundreds of species of snakes found in India. Cobras and kraits are important among them.

Due to cutting of forests and hunting, several species of wildlife of India are declining rapidly. Many species have already become extinct.

In order to protect them many national parks, sanctuaries and biosphere reserves have been set up. The Government



Figure 8.3 : Wildlife

has also started *Project Tiger* and *Project Elephant* to protect these animals. Can you name some wildlife sanctuaries of India and locate them on a map?

You can also contribute in conserving wildlife. You can refuse to buy things made from parts of the bodies of animals such as their bones, horns, fur, skins, and feathers. Every year we observe wildlife week in the first week of October, to create awareness of conserving the habitats of the animal kingdom.



Figure 8.4

Migratory Birds

Some birds such as Pintail Duck, Curlews, Flamingo, Osprey and Little Stint migrate to our country in winter season every year. Smallest migratory bird Little Stint Weighing as low as 15 gram, from Arctic region travel over 8000 km to reach India.

EXERCISES

1. Answer the following questions briefly.

   (a) Which winds bring rainfall in India? Why is it so important?

   (b) Name the different seasons in India.

   (c) What is natural vegetation?

2. Tick the correct answers.

   (a) The world's highest rainfall occurs in

   (i) Mumbai (ii) Asansol (iii) Mawsynram

   (b) Wild goats and snow leopards are found in

   (i) Himalayan region

   (ii) Peninsular region

   (iii) Gir forests

   (c) During the south west monsoon period, the moisture laden winds blow from

   (i) land to sea (ii) sea to land (iii) plateau to plains

3. Fill in the blanks.

   (a) Hot and dry winds known as _____ blow during the day in the summers.

   (b) The states of Andhra Pradesh and Tamil Nadu receive a great amount of rainfall during the season of_____.

   (c) _____ forest in Gujarat is the home of _____.



FOR FUN

1. Make a list of trees in your neighbourhood and collect pictures of plants, animals and birds and paste them in your copy.
2. Plant a sapling near your home and nurture it and write down the changes you observe for a few months.
3. Does any migratory bird come in your locality? Try to identify that. Be watchful in the winter season.
4. Visit a zoo in your city or visit a nearby forest or sanctuary with your elders. Look carefully at the various types of wildlife there.

Villages of Chhattisgarh Situated on a mountain, a Plain and a Plateau

9

9.1. Uparvedi – A Village Situated on a Mountain

Chhattisgarh has a varied topography. On one side there are high mountains and valleys covered with dense forests and on the other side there are large plains and high plateaus. Our people living in these varied land forms work hard and produce a variety of things, giving a heterogeneous look to our culture.

Would you like to know about life styles of the people inhabiting in these areas? In this lesson we shall read about people living on inaccessible mountains. We shall read about things that are available there and how they are used. But to know all this we will have to go towards Bastar region.

MOUNTAINS OF BASTAR

Abujhmad mountains of Bastar region are very famous. This mountain range is on the north-west of this region. If we travel towards south from Kanker, we can see the edge of the mountains. Our team went to see a village located on these mountains on 16th feb. 2002.



Pic. 9.1.1 Mountain Road

A little away from the bus stand of Kanker, we could see the beautiful Doodh river and Gadiya hill on its bank. From where some hills could be seen here and there. The bus started. When we moved 30 km further, towards th south, we could see a high hill covered with dense forest. Sharp bends and steep ascent were very exciting. We felt as if we were moving around the same place. We reached its peak enjoying the valley scenic beauty. Here we saw a beautiful temple of Devi and Panchawati park. The valleys together near this peak is called Keshkal Valley. A little further away is the headquarter of Keshkal block.

About 5-6 kms away from Keshkal, we had to leave the metalled road and enter into thick forest. The path was narrow, uneven and rocky and at some places even such type of path was missing lost in the forests (Pic 9.1.1) On the way, we came across some children who were hunting birds and small animals. A few women were collecting *mahua (Bassia latifolia) and plucking leaves.*

Among thick trees of *'mahua', mango, teak, harra, bahera, dumar* etc. a tiny village could be spotted.

After climbing about 20 kms towards west we could see the Uparvedi village. We felt as if we had reached Uparvedi (that is raised platform ***upar ki vedi***). When

we reached the village we found that there were steep slopes on its eastern, western and southern sides.

Identify the hills of Abujhmada in the Atlas of Chhattisgarh .

Look at the map 4.1 and fill in the blanks

On _____ of Kanker lies Keshkal and on _____ of Keshkal lies Uparvedi.

Map 9.1.1

LOCATION MAP OF UPARVEDI



INHABITATION OF UPARVEDI

Inhabitation of Uparvedi villages is very scattered. Groups of one or two houses could be seen here and there. These houses were linked by narrow lanes. On reaching the village we sat under the shade of a tree. Just then we saw an old man. We asked him why we can't see anyone in the village. Where have they gone?

He said that everyone had gone to the forest.

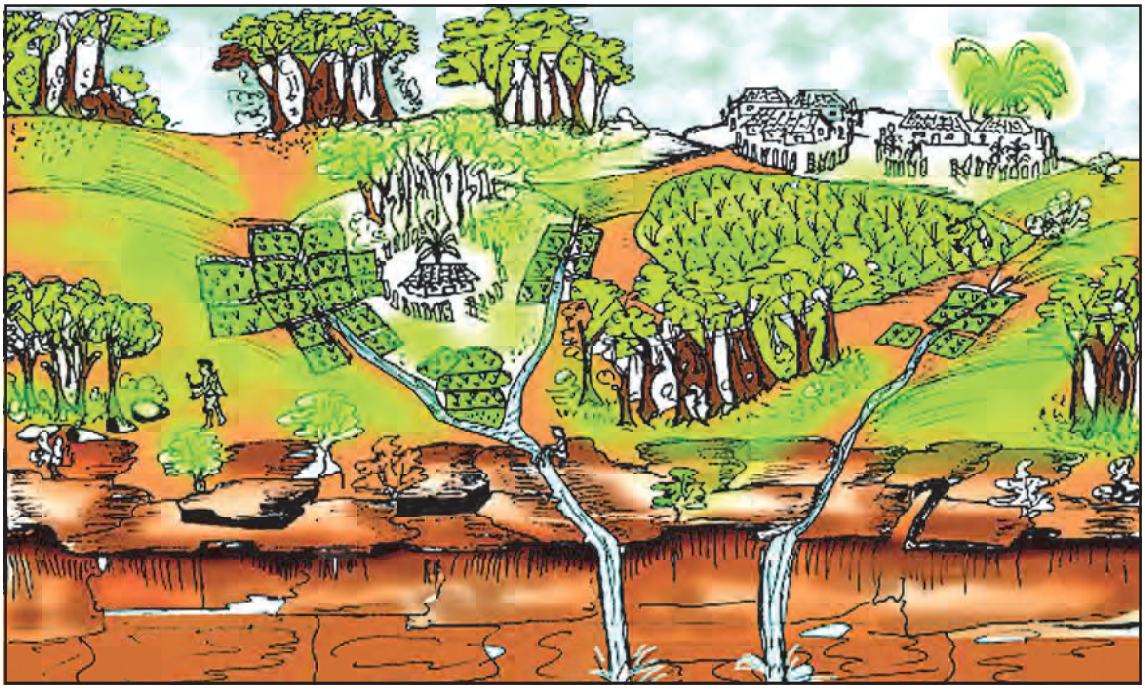
'When will they return?' we asked.

There is nothing in the village when all requirements are fulfiled from the forest what is the use of staying in the village.

His answer made us think that our visit to this place is useless if we do not meet the local people. Then we asked him if he would take us to them in the forest. He agreed and we started walking with him. After a little while we reached a steep slope and started going down hill very fast. When we reached the base we saw a small stream flowing. Some people were working near it. These people were the villagers. When they saw us, they came and sat near us. They all had spades, and Tumbi (pic 9.1.2).



Pic. 9.1.2 A man from Uparvedi village



Pic 9.1.3 Uparvedi

After the initial formal talk they started opening up and told us about their village and their lives.

STREAMS

They told us that their village was situated at the top of a hill. On southern side of the village there is a water fall . There are steep slopes on three sides of village and it is surrounded by several streams. These streams are the main source of water. People get their drinking water from them and farming is done near the streams where there is moisture in the ground. They caught fish from the streams and their animals also come here to drink water.



Pic. 9.1.4 Woman catching Fish

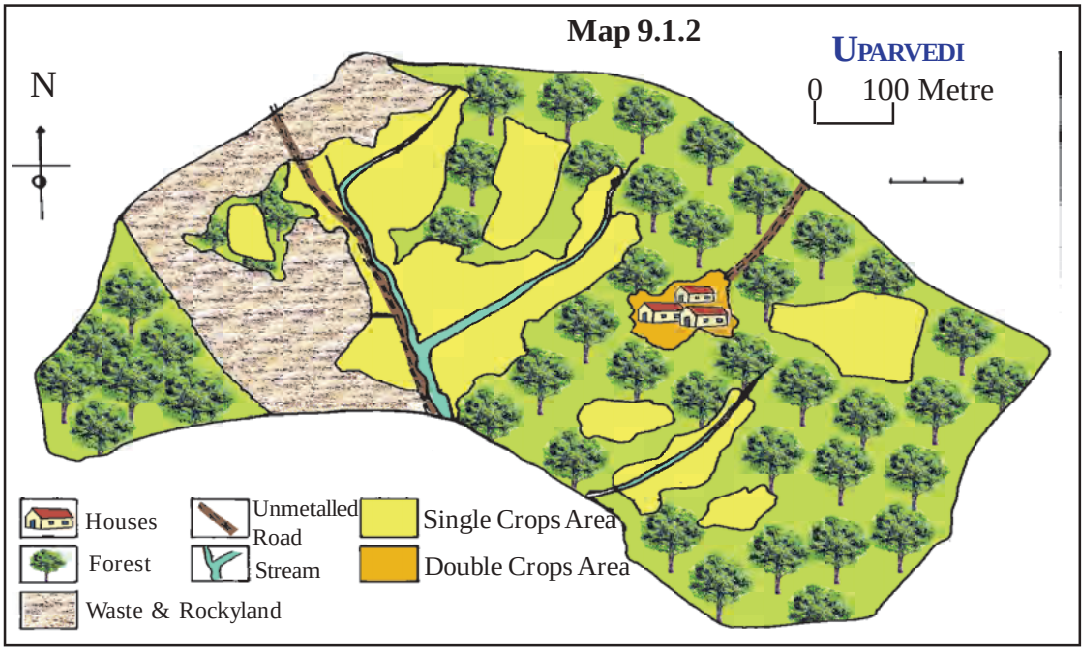
Look at the picture 9.1.3 and answer

1. How many streams were there in the village?
2. Are there more forests or fields in the village?
3. Where is the waterfall?

SOIL AND CROP

Among the people who were sitting, was the upsarpanch of village Shri Amaluramji. When we asked him about farming he took us to their fields.

Amaluramji told us that, as there are steep slopes, the soil there was fine and fertile as it has flowed down from top and settled near the stream. This was the reason why there was a thick layer of black soil near the stream.



Amaluramji further explained that soil near the stream is damp and fertile. So in this narrow strip small paddy fields are made. In these fields variety of rice is grown. If rainfall is good then 'gadakutta', 'maisafari', 'moto safari' type of rice is grown which take a longer time to ripe. But if rainfall is less than 'turiapara', 'turia safari', 'masuri' are grown as they ripe early. If rainfall is heavy then the whole crop is washed away by water of the stream.

1. Why are paddy fields found only near the stream ?
2. Why is there a thick layer of soil near the stream ?
3. When rainfall is less, rice which ripens_____. is grown and when rainfall is heavy then rice which ripens _____ is grown. (early/late)

KODO KUTKI ON ROCKY LAND



Pic. 9.1.5 Woman drying Kodo - Kutki

Amaluramji further told us that paddy was grown in this village but on a very small land. The land between stream and where they live is rocky and uneven. The soil is red in colour and is sandy and rocky. At some places there are tall trees too. It is clear that fields are made by clearing forests. No paths are seen any where on the land. In the village most of the land which can be cultivated is like this. Amaluramji told that during rainy season they grow Kharif crops like *kodo, kutki, barley, ramtil* and *parabat*. These crops need less water and can grow in shallow soil. But yield is less on this land as fertile soil flows away with the monsoon rains.

1. What difference was seen in soil between rocky land and land near stream?
2. Which type of land is prominently found in the village?
3. What steps can be taken to stop the flow of water and soil from the rocky land?

MAIZE AND MUSTARD IN THE KITCHEN GARDEN

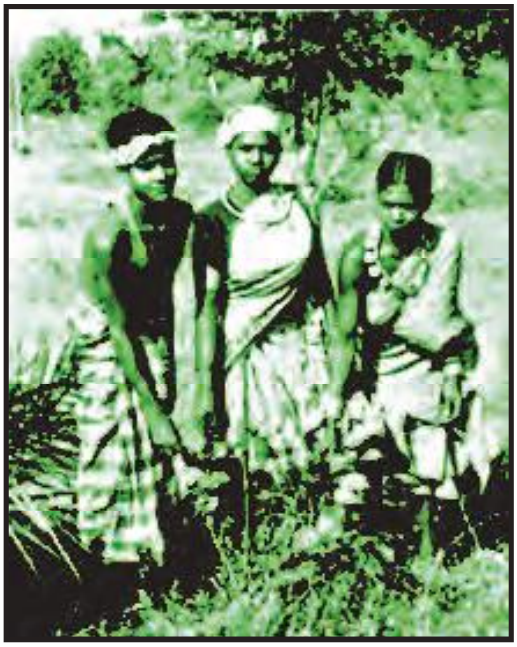
From local people we learnt that tribal farmers had more faith in their kitchen gardens called 'loada'. Every house has a large bada at the back side, which is fenced with sticks to protect it from animals. In these badas they would grow fruit trees like mangoes, bananas, jack fruit, salfi and vegetables like 'kulthi', beans, brinjals, tomatoes etc. These badas are made fertile by spreading composed manure and kitchen garbage. In rainy season, maize is grown in badas and in winter they grow mustard. This way, badas are the only place where they can have two crops.



Pic. 9.1.6 Kitchen Garden

Can you tell, why is soil more fertile in badas ?

When we returned back to the stream, after seeing three types of fields, then they told that there was no means of irrigation, no Ponds, no canals and no tube wells. Some houses have wells in their 'badas but the water level is very low. So it cannot be used for irrigation. As there are steep slopes in the mountains, water flows away and soil is without moisture. Fertile land is found in some small patches only. This is the reason why there is very little fertile land. Remaining land is fallow. Production from fields is very low because of these reasons. They survive for 6-8 months on field produce and for remaining period they depend on forests.



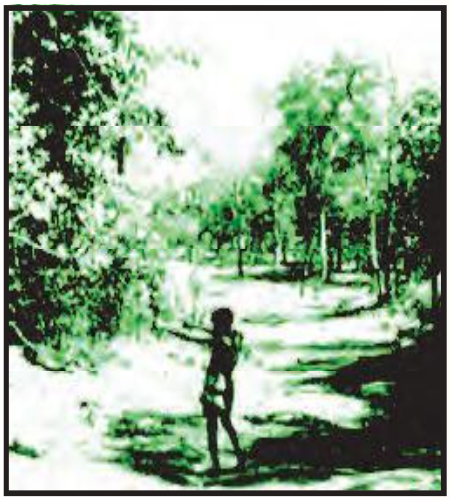
Pic. 9.1.7 Tendu Leaf

USES OF FORESTS

People of Uparvedi use forests extensively. They keep cows, bullocks, buffaloes, goats, pigs, hens, etc. in large number. They leave their animals in forests for grazing. From these animals, people get milk, eggs and meat which forms their main diet.

HUNTING, FRUITS, ROOTS

Children, women and men form small groups and go to forests with bows, arrows, axes and baskets. They collect and bring edible fruits, flowers, roots and leafy vegetables. They also hunt rabbits, birds, porcupines and catch fishes from the stream. During summer they get mangoes, goose berries, *chaar, tendu, kadi, kosam, mahua, gulli, bahera, saal* seed etc. In rainy season they get *'karu kanda, targai ya kanda, jirra* etc. Besides these, they get several other types of vegetables also from forests.



Pic. 9.1.8 Children hunting

TRADE OF FOREST PRODUCE

Things from forest not only bring a variety in their food but even give them different tastes. They get nutrients from them. Several things are sold in market at high price like *chiroungi, harra, bahera,* leaves and fruits of tendu. Villagers go and sell at the nearby towns of Ghanora and Keshkal and buy cereals, salt, oil, cloth etc. in return. The main problem of these people is that they do not get proper price for their goods.



Pic.9.1.9 Woman carrying forest produce

TIMBER FOR HOUSE

People, here, do not construct their houses with bricks, iron and cement. They build it with mud and wood. They get the wood from forests for their houses.

LABOUR

People of Uparvedi work as labourers for government department like the Forest Department. They do plantation for forest department. Sometimes they also work on road construction.

1. **What are the things which people of Uparvedi get to eat from forests?**

2. **What are the things which people of Uparvedi sell in nearby markets ?**



Pic. 9.1.10 Labourers doing

PROTECTION OF THE FORESTS

We have seen that tribals living at Uparvedi and nearby areas depend heavily on forests. We were surprized to see that forests were very thick and they were within the village boundary. Inspite of the heavy use, the forests were not cut neither were they destroyed. The main reason is that to fulfill their domestic needs the people use the forest reasonably (in a controlled manner). They do not cut trees to sell in the market and earn profit. That is why forests are saved till now.

TRIBALS

In that village a total of 134 people lived in twenty one houses. Nearly all of them were Gond tribals and were related to each other. No one was very rich nor very poor. Hence there was a lot of rapport among them. Their main diet is 'pej'. This is made by boiling rice, maize, maida, dumar etc. together. Every house has *salfi trees*. The juice of it is extracted and taken for intoxication.



Pic. 9.1.11 Salfi tree

MUTUAL COOPERATION

By talking to people of the village we learnt that both men and women share responsibility of family. The feelings of co-operation and coordination is very prominent among people there. If any one has to sow the field or do any other household work then everyone readily offer their help. No money is given for work, but food is arranged for them. The next day if any other person has work to do, then all will go to help the next person.

GHOTUL

Villagers told us that like other tribal villages they too have 'ghotul'. This is the place where unmarried boys and girls get together in evening for entertainment where they sing, dance and play games. Ghotul is the place where marriages are fixed between unmarried boys and girls. The elders of their family accept their mutual feelings and get them married.

Though this village is full of natural resources still there is scarcity of modern facilities. It does not have tar roads, pure drinking water, electricity, school, hospital etc. When ill, people practise exorcism. Proper treatment is not available.

While returning from Uparvedi we felt that though there is little farming in the hilly areas of Chhattisgarh, however forests, which provide invaluable properties, are in abundance. On the one hand we were attracted by lives of tribals and on the other hand we were forced to wonder why the basic amenities like schools and hospitals had not reached in these villages yet.

EXERCISE

I. Fill in the blanks -

1. Uparvedi was _____ inhabited.
2. On three sides of Uparvedi there are steep _____.
3. As the village is on a slope the _____ soil from the top flows and settles down near the stream.

II. State whether right of wrong -

1. Uparvedi village has a bumper crop of paddy.
2. People of the village grow two crops in their badas.
3. People of the village of Uparvedi get a good price in the market for the things from the forests.
4. Irrigation of crops is done from wells in the Uparvedi village.

III. Answer the following questions -

1. What type of soil is mostly found in the village of Uparvedi ?
2. In which way is the stream utilized by villagers ?
3. Which type of paddy is grown when there is less rainfall ?
4. Why are forests so dense there ?
5. What examples of co-operation among the people did you see in Uparvedi ?

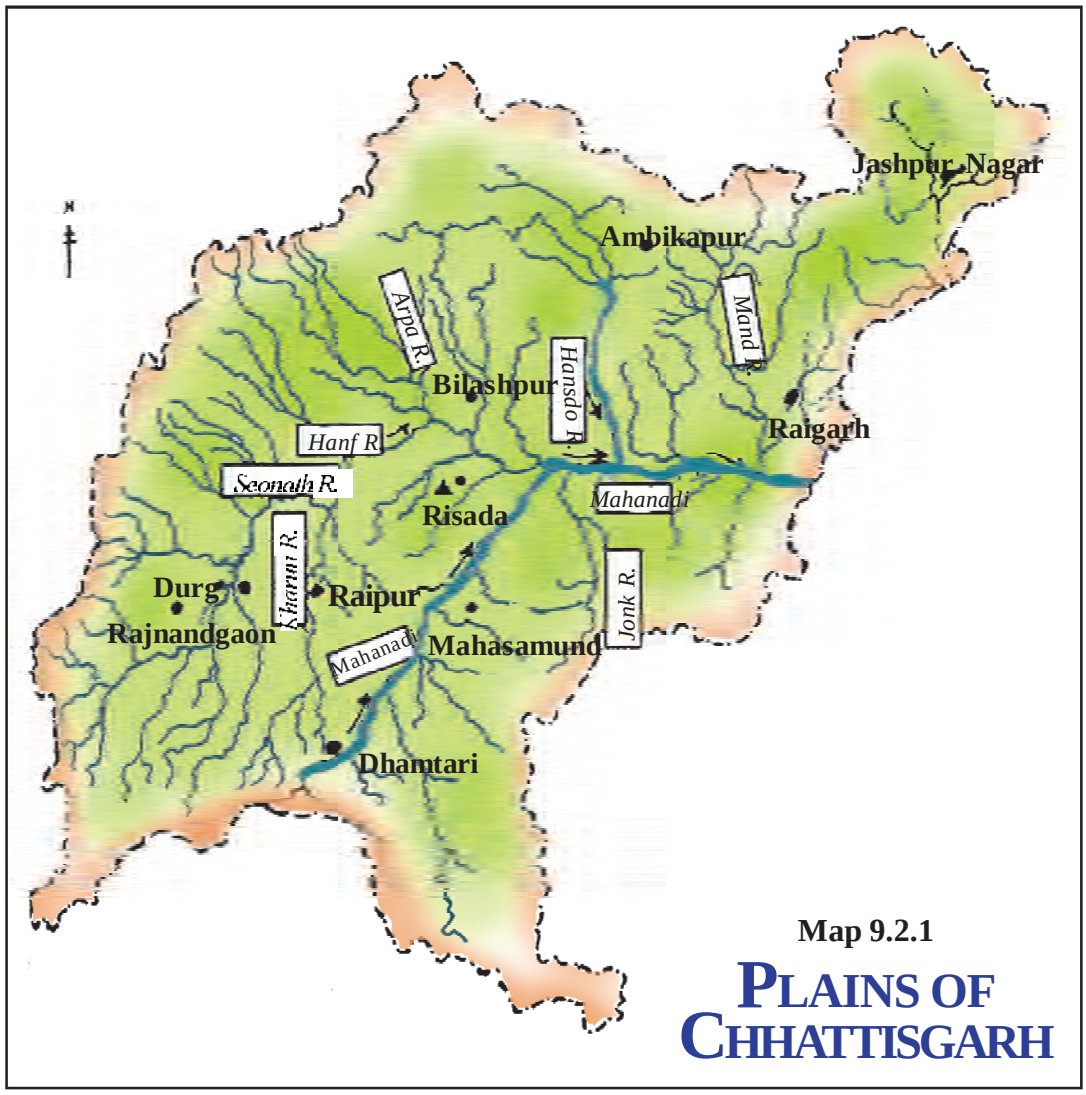
IV. Discuss -

How can the problems of people of Uparvedi be solved according to you?

Note - Information in this chapter is according to survey done in to 2004 A.D. At present it may vary.

9.2. RISADA - A Village Situated on a Plains

In the previous chapter we had read about Uparvedi, a village in the mountains. The villages on plains are totally different when compared to those in the mountains. In this chapter we shall find out about a village in plains.



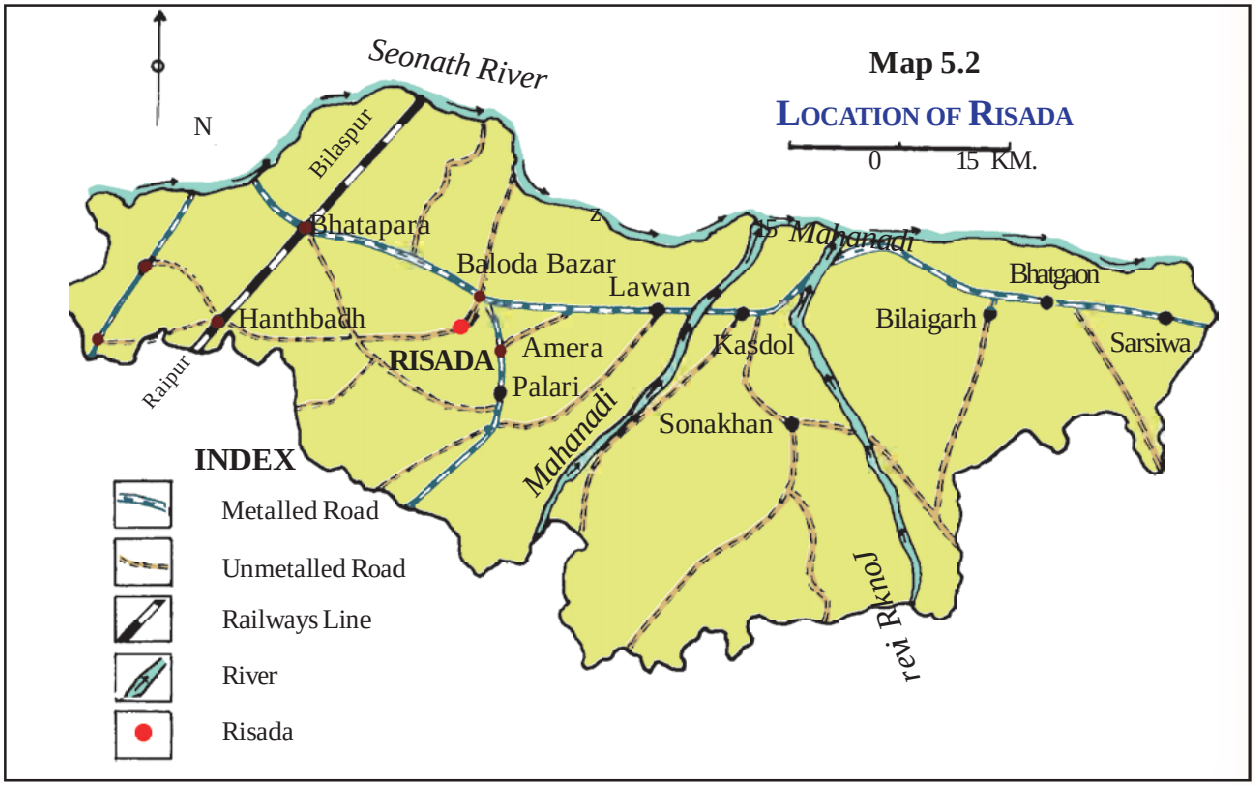
Map 9.2.1

PLAINS OF CHHATTISGARH

PLAINS OF CHHATTISGARH

This plain is made by river Mahanadi and its tributary Shivnath. In the atlas of Chhattisgarh you can see mountains and high plateaus around the plain. These rivers flow down the mountains and plateaus and bring the rain water upto the plains. These rivers even bring fertile soil from higher plateaus and mountains and deposit it in plains. This is why soil of plains of Chhattisgarh is very fertile and has moisture.

Why do rivers deposit soil in plains? Usually plains are flat and even. The flow of water slows down as land is flat. As flow is slow, soil keeps depositing near banks of rivers. During rainy season water of rivers crosses its banks and spreads out in the nearby areas. The soil in water settles down in that area. The Plains are formed when



this process is repeated by rivers for thousands of years. Such plains are called alluvial plains.

Look at the map (5.1) and answer the questions -

1. From which sides do small supporting rivers come and join Mahanadi?

2. Identify and write the name of the main tributaries of Mahanadi.

In this chapter we shall read about a village called Risada, which is situated in the plain between Mahanadi and Shivnath rivers.

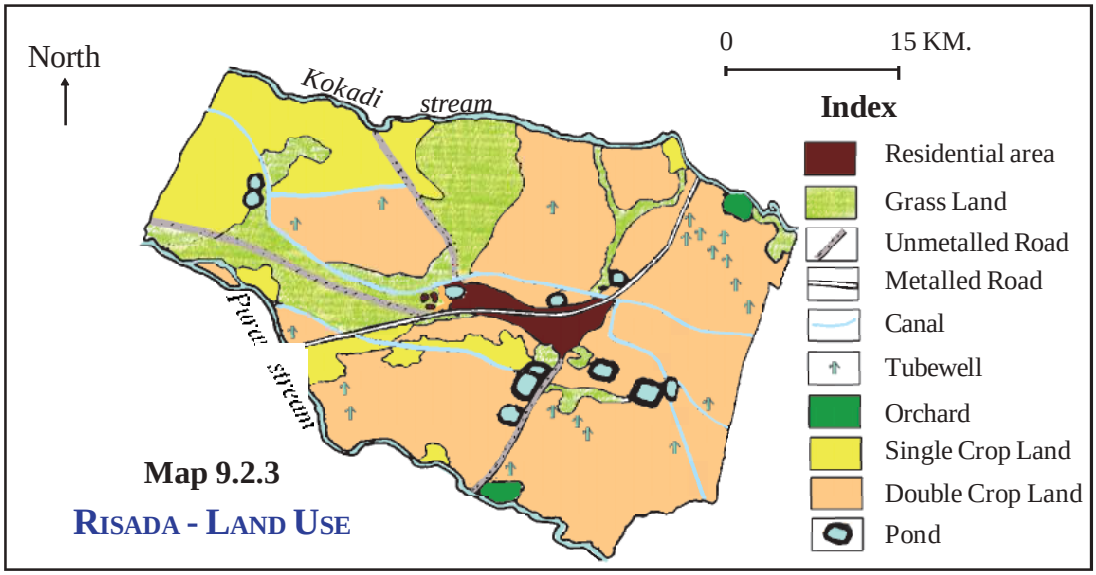
TOPOGRAPHY AND PATH

Risada is a village in Baloda Bazar, sub-division of Raipur district. This village is situated at a distance of about 8 km. south west of Baloda Bazar.

Identify the location of Risada in map.

If we go from Baloda Bazar towards Hathband we can see flat land stretching for miles. Paddy fields are on both sides of the road. We reach Risada village after crossing Kokadi stream.

Kokadi stream is on the north of Risada village. It flows from west to east. Similarly there is Puran stream in south and this also flows from west to east. Between the two streams lies the village of Risada.



Map 9.2.3

RISADA - LAND USE

Kukuradi dam is at the upper end of the streams. A canal from the dam passes through middle of the village. For kharif crop most of the fields of Risada are irrigated by this canal.

SOIL AND CROPS

In Uparvedi village we saw that there were more forests and little land available for farming. But it is not so in Risada village.

Look at the village map carefully. How much land is barren?

(In this village there is very little land which is fallow. And that is the pasture field of this village). This means farming is done on most of the land.



Pic. 9.2.1 Paddy Field

In Uparvedi village we have seen that most of the cultivable land was rocky and the soil was not fertile. It was red, sandy and rocky. Just reverse is the case of Risada village in plains. The land is not rocky. On the west of Risada there is brown porous soil in some areas. Therefore, in these areas only one crop is grown (paddy, pulses, oilseeds)

The centre of the village has very fine grained yellow coloured soil. This type of soil is called '*matasi*' soil. It retains water for a long time. It is very good for paddy, which is grown as Kharif crop and 'Tivara' as rabi crop. They also grow wheat as rabi crop in places where irrigation facility is available.

Eastern side of Risada has well drained fertile soil. It has fine grains and sandy pebbles in equal proportion. This type of soil is best for farming. Here villagers generally grow paddy as kharif and wheat as rabi crop.

Near the streams on both sides of Risada, soil is black. It is called 'kanhar' soil. It has the highest capacity of retaining water. Here there is moisture in soil even in winter season. So in this soil they can have wheat and gram as rabi crop.

In map 5.3,

1. The land which gives two crops is shown by which colour?
2. Which type of soil is found in your village ?
3. What can be grown there ?

Fill in the blanks.

A. _____ soil has the highest capacity to retain water; where as _____ soil has the least.

B. _____ soil is good for paddy where as _____ is good for both paddy and wheat.

C. In yellow soil after paddy they grow _____ or _____. In well drained fertile soil after paddy _____ is grown and _____ is grown as kharif crop. Wheat/gram grow more in _____ soil.

IRRIGATION

We saw that in Risada Village, where there is irrigation facility, two crops can be cultivated. Now let us see which means of irrigation are available here.



Pic. 5.2 Dam and Canal

CANAL

It is easier to make a lake or a pond in plains than in mountainous regions. As land form is even canals can also be built easily. You have read that on west of Risada village is the Kukurdi dam. Irrigation for kharif crop, in this village, is done by canal. Rain water is collected in the dam. When rainfall is good there is sufficient water for irrigation. Otherwise for rabi crop irrigation cannot be done by canal.

TUBEWELL

In Uparvedi we had seen that it is difficult to dig wells in mountainous areas and even if it was dug the level of water would be so low that irrigation by it was not possible. But in plains, wells can be dug

easily. Several rich farmers have got tube-wells dug in their fields. These tube-wells take out water from the depth of 350 feet. But in Risada much water is not available from tube-wells. It is possible to irrigate only one or two acres of land by one tube-well. These farmers grow paddy as kharif, and wheat and vegetables as rabi crop. Electricity is available in Risada so tube-wells function with it.

Recognize tube-wells in map 9.2.3.

In which type of soil are most of the tube-wells dug ?



Pic. 9.2.3 Pond

POND

In Chhattisgarh ponds have a very important position in villages of plains.

How many ponds are there in the map of Risada? Usually there are about 8-10 ponds in a village in plains. They are surrounded by high boundaries on all sides. Water in ponds is the rain water which comes from fields. Where there are canals, these ponds are filled with canal water. But most of the ponds are private properties of land owners. Maintenance of these ponds is done by owners and only they can use its water for irrigation. Other people of village can use pond water for bathing, washing, bathing their animals etc.

1. What are the other irrigation facilities available in plains compare to the mountains?
2. Compare the irrigation facility which is available in your area with that of Risada.

Inspite of so many ways of irrigation only one third land of Risada village is irrigated. Two-third land is not irrigated. So only one crop of paddy is cultivated by scattering seeds on most of the land. Let us find out how paddy is grown.

CROPS AND WAYS OF FARMING

Like Risada village all other villages of the plains of Chhattisgarh get both kharif and rabi crops. Paddy, yellow gram, bengal gram, sesame and kodo are grown as kharif crop. Wheat, gram, sunflower, tivara, green gram, red gram and vegetables are grown as rabi crop.

In most of the villages paddy is grown in two ways.

1. SCATTERING

After the first rain, fields are ploughed and seeds of paddy are scattered. After a month, when the saplings are grown, soil is dug out and weeds are pulled out. The production of rice is less when grown this way. But this method is best where there is scarcity of water or no other means of irrigation is available.

2. TRANSPLANTATION



Pic. 9.2.4 Transplatation of Paddy

Production is more in this method. When rainy season starts seeds are sown in one part of the field and are allowed to grow. Remaining field is ploughed nicely and is filled with water. When saplings are a month old, they are transplanted in the field at equal distance. This way each plant gets full nutrition. The field is nicely ploughed and the soil becomes loose. This enables roots of the plants to spread easily. The problem of weeds is also less. So now farmers are adopting this method of transplantation for growing paddy. In this method proper irrigation is essential. Only one fourth of the fields use the method of transplantation for growing paddy as resources of irrigation is limited. In most of the fields, scattering method (which gives less production) is used.

TRADITIONAL AND MODERN SEEDS OF PADDY

There are several types of traditional seeds of paddy in Chhattisgarh. Each variety is of different colour, size, smell and taste. Each one is grown in different types of soil. Some ripen fast, while others take a longer time. Some grow in little water, while others need plenty of water. Our farmers have worked hard to recognize and protect them. Traditional variety of paddy is a precious treasure of our state.



Pic. 9.2.5 Farming

Our farmers are experimenting with new varieties of seeds because traditional seeds give less production. New varieties give more production, but this proves to be more costly as it needs more urea, pesticide and water for irrigation.

FIELDS AND TREES

Paddy fields have high ridges. In some places a crop of yellow gram is grown on these ridges. On other ridges trees, of neem, mango, saja, babul, kahua and mahua are grown. Farmers can get wood for fuel from these trees. Of the various modern



Pic. 9.2.6 Plain, flat field and Tree

machines for farming, tractors are widely used. However small farmers depend on hard work of men and animals only.

1. **Which kharif crops are grown in your area ?**
2. **What is the main rabi crop ?**
3. **By which method is paddy grown in your area - scattering or transplanting ?**
4. **Which method needs more water for irrigation ?**
5. **Name the traditional varieties of paddy that are grown in your place?**
6. **What is the difference between new and traditional variety of seeds ?**
7. **From where do people of Risada and Uparvedi get wood for their fuel ?**
8. **People of Risada use tractors to plough their fields whereas people of Uparvedi use oxen. Why do they not use tractors in Uparvedi ?**

CATTLE - REARING

Cows, oxen, buffaloes and goats are reared in this village. But farmers say that their number of animals is going down as pasture-land is scarce. A major problem of plains is shortage of pasture-land. Farming is done on most of the land which is available, therefore animals have very little pasture land.

PROBLEMS OF FARMERS AND MIGRATION OF LABOURERS

Irrigation is a major problem of villagers of Risada. Almost the whole village depends upon the canal from Kukuradi dam. This dam has very little capacity and it is filled up with silt. Therefore it cannot hold enough water. So only kharif crop can be irrigated.

Lack of proper irrigation is a major problem on the plains of Chhattisgarh. This is the reason why at most places only kharif crop is grown. The labourers here do not get work throughout the year in villages so, for remaining days they migrate to Uttar Pradesh, Bihar, Punjab and Maharashtra in search of work. Every year about 2000 people from Risada migrate to other states in. Now the government is thinking of providing employment for them. Construction of roads, improvement of forest maintainance of ponds and brick industry are the major areas where they work.

TOWNSHIP AND ROADS

Risada is one of the big villages of Baloda Bazar at sub division of Raipur district. Its population is round 5000. Houses are built very close. Lanes are curved and narrow. Most of the houses are made of mud which have tiles on roof. Houses have a small kitchen garden where they grow vegetables. The pucca houses made of bricks and stones, are also being constructed now a days.



Pic. 9.2.7 Houses built close togather

Compare houses of Uparvedi and Risada. What are the similarities and dissimilarities between them ?

Risada village has a weekly bazar where people buy things they need. There is a Co-operative Bank and a fair price shop too. People get drinking water from the tank constructed by of water works department through taps. Electricity is also available there. People use it to light their homes and lanes and to run pumps on tube wells to irrigate their fields. Agriculture produce is loaded on tractors and bullock

carts and is sold in the market of Baloda Bazar. Buses are available for transportation. From Risada buses go to Baloda Bazar and from there to Raipur on one side and Hathband on other side, where there is a railway station too.

Transport facilities are better in villages of plains. You must be remembering that there was no tar road or bus facility in the village of Uparvedi.

CHANGE IN LIFE STYLE

Now people of Risada can see changes in their lives. Educated boys have now started their own business. They have opened garages, repair shops for electrical goods, tailoring shops etc. The number of people going to other states in search of work has reduced now.

Instead of leaving their villages, some people have started making bricks and tiles in large numbers. All family members co-operate in this work. There is a great demand for bricks and tiles in neighbouring villages. Increase in work has created awareness in women and they have formed Self help groups.

Ask your teacher about Self help group.

People of various castes and professions live in Risada. Here economic inequality is more. A few people have large land while majority of them have very little land.

1. Were there any such type of difficulties in Uparvedi village too?



Pic. 9.2.8 Making bricks

EXERCISE

I Fill in the blanks

1. Rivers bring _____ from mountains and plateaus and spread it in plains.
2. In comparison to mountains the land in plains is _____.
3. Irrigation of crops in Risada is mostly done by _____.
4. People of Risada get drinking water from _____

II Say whether following statements are right or wrong.

1. Production of crops is more in villages of plains than that of the villages of mountains.
2. Fewer people live in villages of plains than in mountain villages.
3. People living in villages of plains depend a lot on forests.
4. People of only one caste live in Risada.

III Answer the following questions -

1. How are plains formed by rivers?
2. Why are houses in plains built close together?
3. What are the means of irrigation in plains?
4. Why is paddy grown in Chhattisgarh by scattering seeds?
5. Why has the number of people going out of Risada in search of work reduced?

Discuss

If you are given a choice where would you like to live-in Uparvedi or Risada? Give reasons.

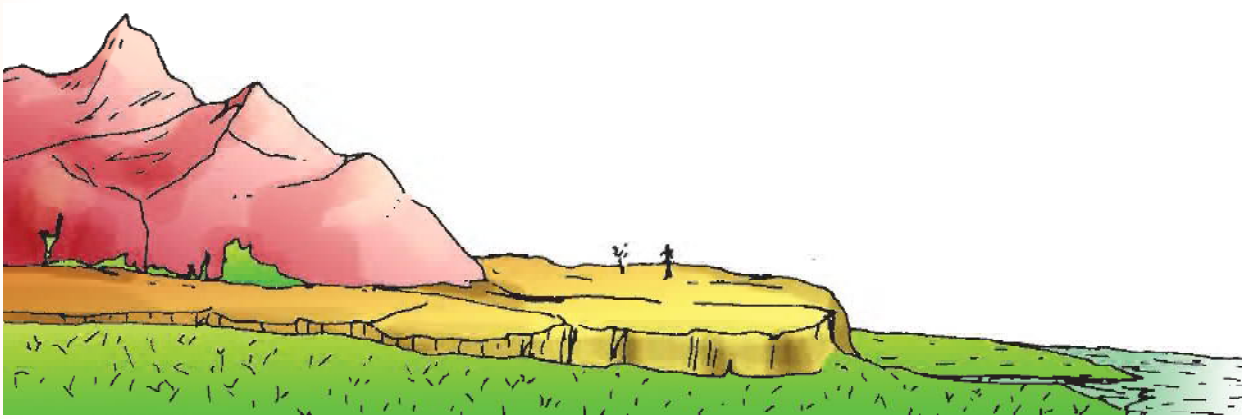


9.3 CHALHA - A Village Situated on a Plateau

In the previous two chapters you read about Uparvedi a village in the mountains and Risada - a Village on the plains of Chhattisgarh. You have seen that there is less farming on slopes of mountains. The tribals of that place depend more on forests. Just reverse of this is the case of villages on plains. On plains the farming is done on most of the land and two crops are cultivated as there is irrigation facility. In this lesson we shall read about a different type of village which is situated on a plateau.

PLATEAU OF RAIGARH

The plain of Chhattisgarh is like a bowl. There is a raised land around it. Towards the south are the hills of Abujhmada and plateau of Bastar. Towards the west is the maikal range and towards the north are the plateaus of Raigarh, Sarjuga and Jashpur. In this chapter we shall read about a village which is situated on the plateau of Raigarh.



Picture 9.3.1

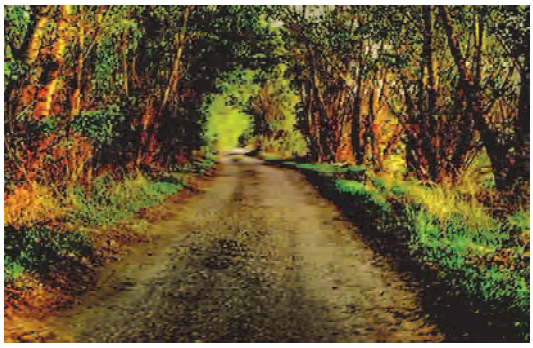
1. Identify plateau of Raigarh in the atals of Chhattisgarh.

2. On which side of Mahanadi is plateau of Raigarh situated?

WHAT IS A PLATEAU ?

In comparison to plains, plateau is elevated. To reach there, high cliffs have to be climbed. But once we reach on top we find flat slightly uneven land. Here there are no steep slopes like Uparvedi.

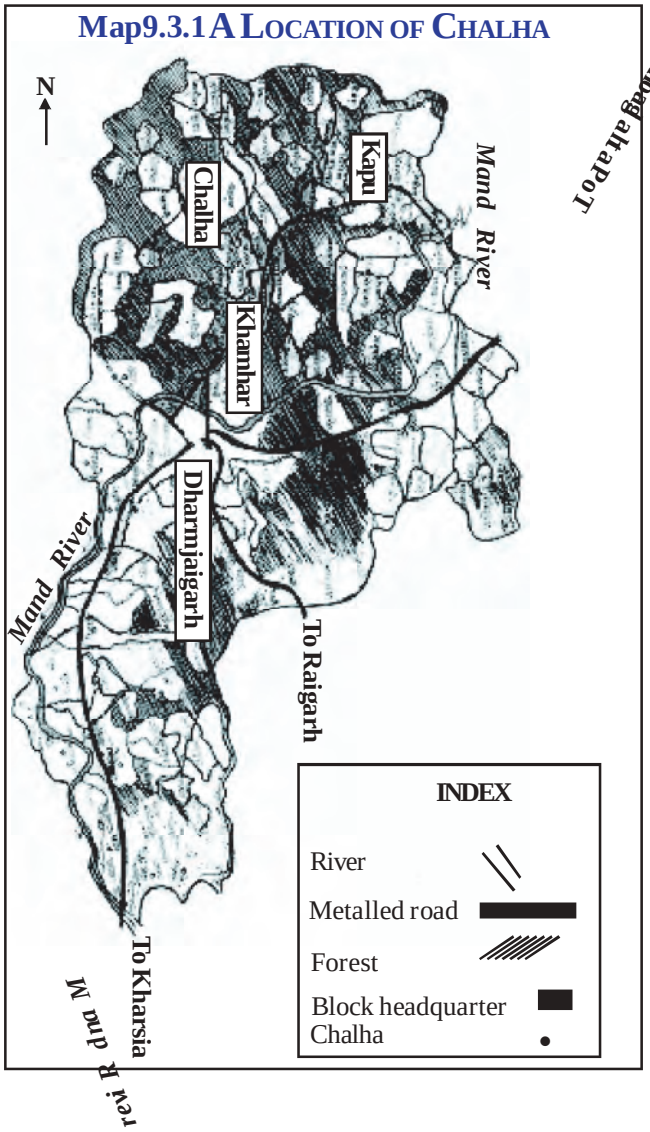
Identify plains, plateaus and mountains in map 9.3.1 and name them correctly. Write their names



Pic. 9.3.2 Way to Chalha village

Raigarh city is situated in the northern plains of Mahanadi. We have to climb a cliff from Kudumkela which is on the way to Dharamjaigarh, in north of Raigarh. After

Map9.3.1 A LOCATION OF CHALHA



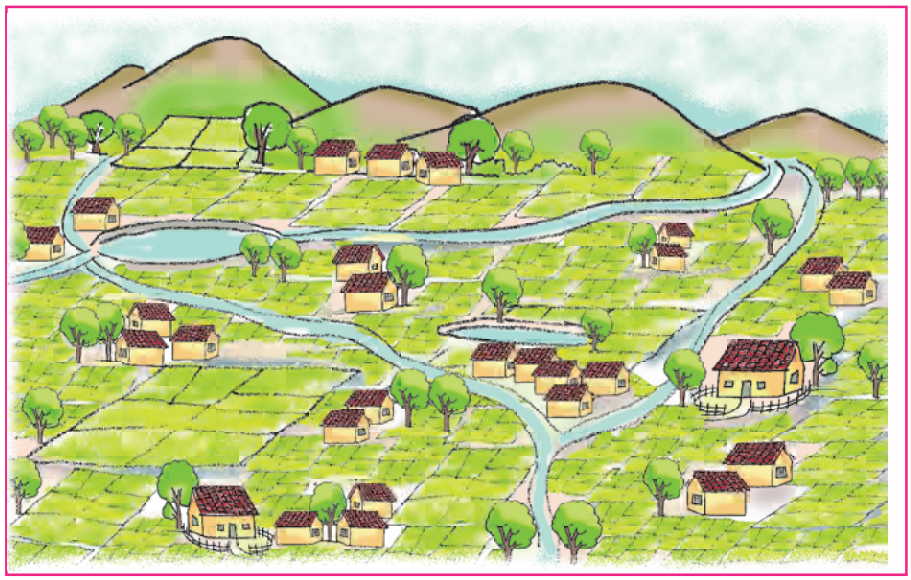
climbing and walking for a short distance on even land we reach Dharamjaigarh. About 18 km. north of Dharamjaigarh is a big township known as Khamhar. From Khamhar towards the west is an unmetalled road which goes through dense forest. Here the road crosses the cliff. After crossing the cliff we find flat land and village Chalha is situated here.

LAND AND SOIL

We have read that Chalha village is on even land. A stream flows from the middle of the village. There is slight slope on all sides of the stream. At the end of the village, the land is steeper and there are high cliffs. North of the village is a small mountain. Soil here has coarse sand and stones which have flowed down from higher areas. Therefore the soil here is sandy and rocky. Pieces of mica shine in the soil here. On the western side of the village we find deep layer of red soil. Here there are big fields. Towards the North of the village, at the base of the mountain the soil is black and in south the soil is yellow .

Farming is done on three fourth of land of Chalha village. Only one fourth has forests and mountains. You may recall that in mountain villages farming is done in a small area, while in villages of plains farming is done almost on all the land.

There is a variety of soil on



Pic. 9.3.3 Chalha village and field

plateaus as the land is uneven. Sloping areas have sandy and rocky soil. Flat or lower areas have deep red or black soil. So the same crop cannot be grown everywhere in village. Different crops according to the competency of soil, are grown.

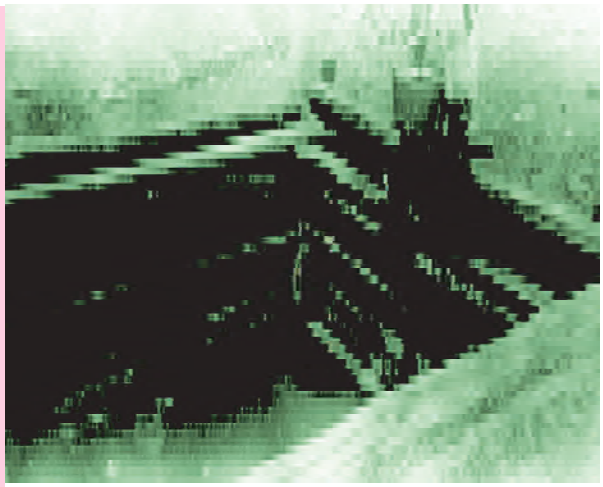


Pic. 9.3.4 Field

1. **Farming is done on more or less land in villages of plateau than villages in plains.why?**

2. **The soil of Chalha village is mostly _____ and _____.While the soil of Risada a village of plains is _____ and _____.**

3. **The best land for farming in Chalha village is in (north, south, east, west)**



Pic. 9.3.5 Dhodhi

SOURCES OF WATER AND IRRIGATION

Before learning about fields and crops of Chalha, let us first find out the sources of water.

For centuries together, people here have been using *'dhodhi'* for drinking water.

'Dhodhi' is like a well but not so deep and a 'sarai wood' frame is built on its sides. Water which seeps through rocks collects here. 'Dhodhis' are always full of water. Here there are no wells. These days some tube wells are dug for drinking water. Some tube wells have been closed because the water is red.

Remember, there is a stream in middle of the Chalha village. Every year after rainy seasons, villagers construct a dam over this stream. Water collected is used for purpose of bathing both by villagers and their cattle throughout the year.

But there is no means of irrigation in Chalha village. It means that farming, here depends completely on rains.

1.From where do you get drinking water in your village/ city ?

2.Where is drinking water easily available - Uparvedi, Risada or Chalha ?

3.Where is water available with great difficulty ? Why ?

4.Where is water in Risda village available for animals and for bathing and washing purposes ?



Pic. 9.3.6 Dam

CROPS

As agriculture depends on rainfall, only kharif crop is grown. On most of the land paddy is grown and as there is no means of irrigation. Cultivation is done by scattering seeds. Besides paddy, maize, yellow gram, bengal gram, jhunga and ramtil are grown. Here production is less as soil is sandy and rocky. They grow vegetables in their kitchen gardens during winter season.

1.**Here on which type of soil, should paddy be grown ? Explain.**

2.In Chalha why is there no rabi crop ?



Pic. 9.3.7 Kitchen - Garden

FOOD

Rice and vegetables are the main food of the people of Chalha. Use of lentils is less here. Sometimes they do take fish and meat. For meat they keep chickens, pigs, goats etc.

People mostly use oil made out of seeds of mahua called *'dori'*. Mustard and 'Jatangi' oil is also used.

TIRHI

Tirahi is a mechanical device which is made of wood by which oil of mahua seeds (dori) is extracted. It is not just an instrument but a symbol of brotherhood and

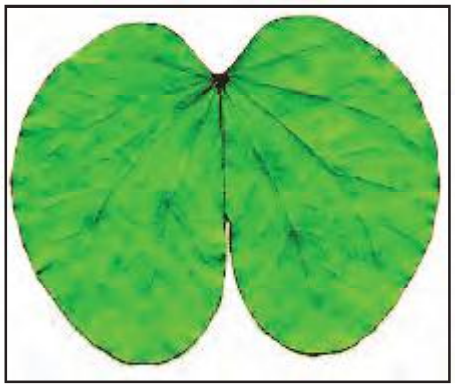
cooperation among villagers. Everyone extracts oil by turns. Oil is squeezed out by pressing seeds (dori) between two planks. For this a team of four or six young men from all communities, take turns in running the instrument. The owner of the'dori' takes the oil extracted. Next time he joins to help another in extracting oil. This is a unique example of co-operation in the village.



Pic. 9.38 Tirhi

DEPENDENCE ON FORESTS

This whole plateau area has only one crop in a year. So people are free after kharif crop is harvested. As the land is not so productive, living on agriculture itself is not possible. To fulfill their needs they depend on forests.



Pic. 9.3.9 Mahul leaf

Dense forests start from the boundary of Chalha village. 'Saal', 'saja', 'bija', 'tendu', 'chaar', 'mahua', 'dhoura', 'salhiya', mango etc. are prominent trees in these forests. Near the village there is a thick growth of mango, tamarind, jackfruit and karanj trees. These trees provide fruits to local people. Villagers collect different types of roots too like 'pitharu', 'Katharu', 'gainth', 'kanda', boda kanda, siyo kanda etc. These are boiled, salted and then eaten. 'Koilar' leaves are eaten in form of curry.

Villagers of Chalha get plenty of things from forests to sell in the market. During summer they collect 'tendu' leaves, 'mahul' leaves, 'chaar' 'mahua' flowers etc. to sell in local market. Several ayurvedic medicines like 'dhavai phool', 'lac', 'dhoop' etc. are also collected from forests.

'Mahul' or 'Mohalai' leaf is of great importance. In southern states people take their food in plates and bowls made out of these leaves. Traders sell mahul leaves from this area in markets of Andhra Pradesh, Karnataka and Tamilnadu.

In summer, local people are busy in collecting forest produce. Things collected are sold in far off villages. You know that 'tendu patta' is used in making 'bidi'. Similarly 'mahul' leaves are of great demand in factories making plates and bowls.

Villagers of Chalha get wood for cooking and building their houses from forests. Their animals are also taken to forests to graze.



Pic. 9.3.10 Picking up Mahua

This way we see that people of plateaus of this region depend more on forests as the production in fields is less.

1.Did you see such dependence on forests in Risada ?

2.What similarities are there in using forests among the people of Uparvedi a village in mountains and Chalha a plateau village? Discuss.

SETTLEMENT AND HOUSES

About 1350 people live in 290 houses in Chalha village. The houses are made with unbaked bricks and tiled roofs. A good deal of wood is also used to construct houses. All houses are close to one another. The village is divided into four main wards.

Compare houses and settlements of Uparvedi and Chalha villages.



Pic. 9.3.11 Making basket

People of several castes and tribes live in Chalha village like - Manjhwar, Panika, Chauhan, Mahkul, Uran, brahman, Agarwal etc. As several castes of people live together in this village, all types of festivals are celebrated following various rites and rituals.

Poojas are performed collectively before harvesting crop and before going to forest to collect mahua.

There are several craftsmen tooin this village some of them make different types of baskets, fans and boxes out of bamboo and sell them. The others make and sell iron and wooden equipment for farmers and household items.

MARKET AND BUSINESS

In Chalha village there is weekly bazar every Wednesday. Traders come from other places to sell their wares. In this village they still have barter system. Villagers get clothes, utensils etc. in place of forest produce collected by them.

Minerals are usually found in abundance in plateau regions. Pieces of mica are seen in Chalha village. Mica is mostly used in making electrical equipments. But in chalha use of this mineral has not started yet.

HEALTH AND EDUCATION

There is a community health centre in Chalha where patients are treated. There is a primary and middle school. That is why one-third of people here can read and write. But teachers of the school say that very often children here, go with their parents to forests and cannot come to school. Electricity is available in this village.

Compare Uparvedi and Chalha regarding health and education.

PROBLEMS OF THE VILLAGERS

According to Villagers of Chalha their biggest problem is lack of means of irrigation. Because of this they are not able to increase their production. Another problem is that they do not get fair amount of money for forest produce. They want to cultivate the rare species of herbal plants available in forests. The facility should be provided to sell these herbs at a fair price to those who make medicines.

People of Chalha village realise importance of forests in their lives and they make efforts to save forests.

COMPARATIVE STUDY OF PLAIN, MOUNTAIN AND PLATEAU

You have read about the villages on the three types of land forms i.e. plains, mountains and plateau. Now let us make a comparative study.

Village of plain-RISADA, village of mountain-UPARVEDI, village of plateau-CHALHA.

1. **Where is the land very fertile, less fertile and fallow for farming ?**
2. **Where was thick and fertile soil found ?**
3. **Where were sources of irrigation available ?**

4. **Where were good road and tar roads available? Which village was very difficult to reach ?**

5. **Where did different types of craftsmen, traders and farmers live together ?**

6. **In which village do people depend mostly on forests ?**

7. **In which village do people depend least on forests ?**

8. **Is there any problem which is common to villages of all three areas ?**

In Plains, plateaus or mountains - there is no dearth of resources. At some place there are more agricultural resources and at other places there are forest or mineral resources. How should these resources be utilized for development so that the local people too are benefited? This is the biggest challenge for our state.

EXERCISE

I Fill in the blanks

i) The main food of Chalha villagers is _____.

ii) _____ people of the village are educated.

iii) _____ is a shallow well from where drinking water is available.

iv) _____ leaves are used to make plates and bowls.

v) _____ are grown in Chalha in rabi season.

II Give short answers to these questions

i) Where is Chalha village situated ?

ii) What did the people of Chalha do to stop the water of stream ?

iii) Which crops are grown in Chalha ?

iv) Which craftsmen live here ?

v) What things do the villagers of Chalha get from forests ?

III. Answer in Detail

Mention similarities and dissimilarities in Chalha and Risada villages.

Soil _____

irrigation _____

crops _____

State and Union Territories of India

State	Capital	Union Territory	Capital
Andhra Pradesh	Hyderabad	Andaman and Nicobar Islands	Port Blair
Arunachal Pradesh	Itanagar	Chandigarh	Chandigarh
Assam	Dispur	Dadra & Nagar Haveli	Silvassa
Bihar	Patna	Daman & Diu	Daman
Chhattisgarh	Raipur	Lakshadweep	Kavaratti
Goa	Panaji	Puducherry	Puducherry
Gujarat	Gandhi Nagar		
Haryana	Chandigarh	National Capital Territory of Delhi	Delhi
Himachal Pradesh	Shimla	Jammu & Kashmir	Srinagar
Jammu & Kashmir	Srinagar	Ladakh	Leh
Jharkhand	Ranchi		
Karnataka	Bengaluru		
Kerala	Thiruvananthapuram		
Madhya Pradesh	Bhopal		
Maharashtra	Mumbai		
Manipur	Imphal		
Meghalaya	Shillong		
Mizoram	Aizawl		
Nagaland	Kohima		
Odisha	Bhubaneshwar		
Punjab	Chandigarh		
Rajasthan	Jaipur		
Sikkim	Gangtok		
Tamil Nadu	Chennai		
Telangana	Hyderabad		
Uttarakhand	Dehradun		
Uttar Pradesh	Lucknow		
Tripura	Agartala		
West Bengal	Kolkata		

Some Internet Sources for more information

http://volcanoes.usgs.gov/

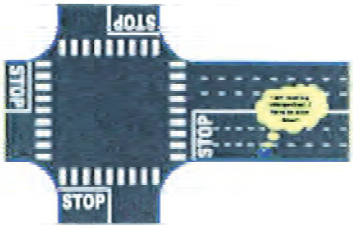
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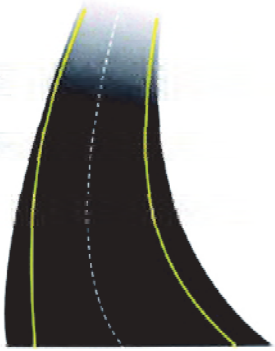
सड़क चिन्ह एवं सड़क संकेत



जेब्रा क्रासिंग (ZEBRA CROSSIGN) – चौंक-चौराहों पर पैदल यात्रियों के सुरक्षित रोड क्रासिंग हेतु बनी सफेद रंग की पट्टी होती है जिससे होकर पैदल यात्री सड़क के एक छोर से दूसरे छोर जाने के लिए उपयोग करता है। चौंक में जब सिग्नल रेड लाईट हो एवं सभी गाड़िया स्टॉप लाईन पर रूका हुआ हो तभी जेब्रा क्रासिंग का उपयोग करना चाहिए।



स्टॉप लाईन (STOP LINE) – स्टॉप लाईन जेब्रा क्रासिंग के पहले सफेट रंग की पट्टी/लाईन बनी होती है। चौंक पर जब रेड लाईट सिग्नल हो तब वाहन चालक को उसी स्टॉप लाईन के पहले रूकना होता है ताकि पैदल यात्री जेब्रा क्रासिंग से सुरक्षित सड़क पार कर सके।



ऐज मार्किंग (EAGG MARKING)- सड़क के किनारे पीले या सफेद रंग की पट्टी बनी होती है जिसका उद्देश्य सड़क किनारे वाहन पार्क नही करना और न ही रूकना होता है। यदि यही रेखा खंडित है तो वाहन रोक सकते है, किन्तु पार्किंग नही कर सकते।

उत्तर दो

प्रश्न- 01 जेब्रा क्रासिंग पर वाहन चालक के कर्तव्य बताएं ?

प्रश्न- 02 मार्ग संगम स्थल पर वाहन चालक को दाहिने जाने के लिए कौन से लेन का प्रयोग करना चाहिए ?

प्रश्न- 03 मार्ग संगम स्थल पर लाल बत्ती होने पर वाहन चालक को कहॉ रूकना चाहिएं ?

प्रश्न- 04 ऐज मार्किंग पर वाहन चालक के कर्तव्य बताएं ?