Social Science II

Standard x

Part - 1

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2019

THE NATIONAL ANTHEM

Jana-gana-mana-adhinayaka, jaya he
Bharata-bhagya-vidhata.
Punjab-Sindh-Gujarat-Maratha
Dravida-Utkala-Banga
Vindhya-Himachala-Yamuna-Ganga
Uchchala-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!

PLEDGE

India is my country. All Indians are my brothers and sisters. I love my country, and I am proud of its rich and varied heritage. I shall always strive to be worthy of it.

I shall give my parents, teachers and all elders respect, and treat everyone with courtesy.

To my country and my people, I pledge my devotion. In their well-being and prosperity alone lies my happiness.

Dear Students,

You have already learnt how diverse and dynamic the earth we live in. We can make use of the diversities of nature for the progress of mankind with the help of technology. The lessons in Class X are so arranged as to help familiarize the physiography, climate, and soil of our country, and to develop a general awareness on the use of the potentials of modern technology in geography. We are living in a world where human resource development is necessary. This textbook also discusses concepts like the society in which we regularly interact, the economic transactions in the society, banks and their functions, and national income.

The educational portal-Samagra and textbooks with QR code will make class room activities easy and interesting. The Textbook has been revised considering the National Skill Qualifications Frame work (NSQF), the disaster mitigation measures which is of contemporary relevance and ICT possibilities. You can take part in this life oriented informative and joyful learning activities and enrich this textbook further more. I believe that this textbook will help you intereact responsibly with the nature and that you can transform into responsible citizens.

With love and regards

Dr. J. Prasad
Director, SCERT

State Council of Educational Research and Training (SCERT)
Poojappura, Thiruvananthapuram 695 012, Kerala
Website : www.scertkerala.gov.in, *e-mail* : scertkerala@gmail.com
Phone : 0471 - 2341883, Fax : 0471 - 2341869
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Content

Certain icons are used in this textbook for convenience


For further reading (Need not be subjected to assessment)


Questions for assessing the progress


Learning activities


Let us assess


Extended activities

1

Seasons and Time

The wonders of seasonal change exhibited by the nature are varied. Winter is the season where everything is buried in snow. As the winter retreats, the grass and trees slowly turn green. The spring season arrives with leaves and flowers in different hues. Then summer sets in, bidding adieu to the reign of spring. Comes the long rainy season as a relief to the scorching summer and then follows the autumn. Trees start shedding their leaves within a few weeks in preparation to welcome the forthcoming winter. And the winter returns. Months of severe cold then.

Such astonishing visuals that the nature prepares are more pronounced in the Mid Latitudes. While it is noon at one place it is midnight elsewhere. Two different days but at the same time on the earth! Just like the wonders of the seasons, the sequence of time is also diverse.

You have just read a brief note on the seasonal changes. We experience the recurrence of winter, summer and rainy seasons one after the other. Such a change on the Earth is known as seasonal change.

Why seasons change?

You have learnt that there is periodic variation in the amount of sunshine over different places in both the hemispheres of the Earth. Why does this happen?

Variations in the amount of sunshine are the important special feature of the different seasons. The Earth's revolution and the tilt of the axis are the reasons for this variation.

You know that it is in an elliptical orbit that the Earth revolves around the Sun. This is known as revolution.

- How much time does the Earth take to complete one revolution?
- What is a leap year?

You have learnt in the previous classes that the axis of the Earth is tilted at an angle of 66½° from the orbital plane. If measured from the vertical plane this would be 23½° (Fig.1.1). The Earth maintains this tilt throughout its revolution (Fig 1.2). This is known as the parallelism of the Earth's axis.

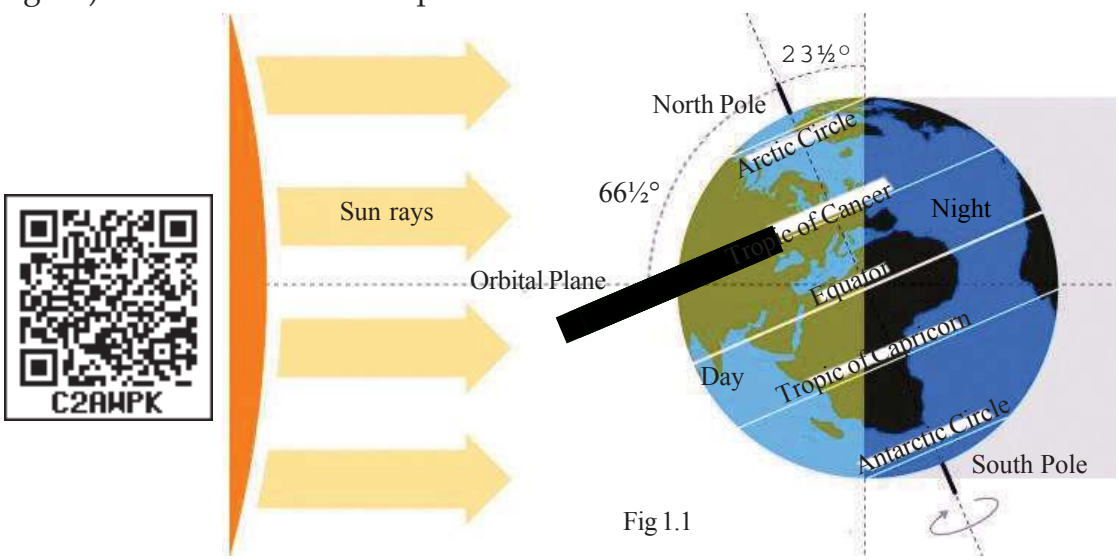


Fig 1.1

Sun and Earth: near and far

The distance between the Earth and the Sun will vary continuously throughout the period of one revolution. The days on which the Sun and the Earth are nearest and farthest are shown in the diagram. These days are known as Perihelion and Aphelion respectively.

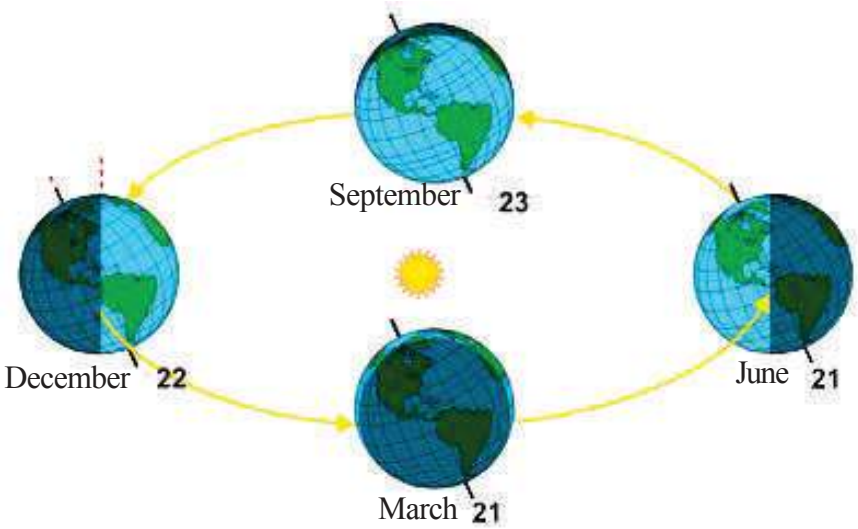


Fig 1.2

Observe the parallelism of the Earth's axis from the diagram (Fig.1.2).

Since the parallelism is maintained same throughout the revolution, the position of the Sun in relation to the Earth varies apparently between Tropic of Cancer (23½° North) and Tropic of Capricorn (23½° South). This is known as the apparent movement of the Sun.

The apparent movement of the Sun, due to the inclination of axis, is the reason for the occurrence of seasons. Look at Fig. 1.2. Four different positions of the Earth during a single revolution (one year) around the Sun are depicted in it. There is variation in the sunlight that falls on the Earth due to the apparent movement of the Sun. The Sun's rays fall vertically over one hemisphere during one half of the year and on the other hemisphere, during the other half. Temperature will be higher over those places where the vertical rays of the Sun fall. The temperature will be low at places where the Sun's rays are slanting.

Seasons and apparent movement of the Sun

As a result of the apparent movement of the sun between Tropic of Cancer (23½°N) and Tropic of Capricorn (23½°S), the different seasons - Spring, Summer, Autumn and Winter - get repeated in a cyclic manner.

Seasonal changes are not usually very obvious in the tropical regions because of the incidence of large amount of Sun's rays throughout the year.

Seasons are not distinctly felt in Kerala. Why?

Characteristics of different seasons are clearly felt in the mid latitudinal or temperate zones.

The frigid zones do not experience all the seasons. Discuss the reason.

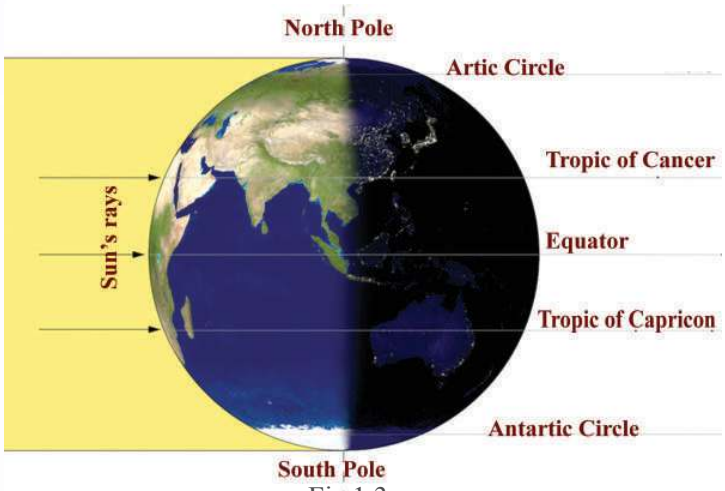


Fig 1.3

Equal amount of sunlight is received in the Northern Hemisphere as well as in the Southern Hemisphere when the Sun is vertically over the Equator. The apparent position of the Sun during the Earth's revolution will be over the Equator on March 21 and September 23. Hence the length of day and night will be equal during these days on both the hemispheres (Fig.1.3). These days are called equinoxes.

From 21 March onwards, the Sun apparently shifts from the Equator northwards and reaches vertically over the Tropic of Cancer (23½°N) on 21 June. This day is known as the Summer Solstice in the Northern Hemisphere. On this day the Northern Hemisphere experiences its longest day and shortest night.


Fig 1.4

What is the peculiarity of the day and the night in the Southern Hemisphere on 21 June?

The Northern Hemisphere generally experiences spring season between 21 March and 21 June. Spring is the season of transition from winter to summer. Haven't you noticed the plants sprouting, mango trees blooming and jackfruit trees bearing buds and the like? These are the peculiarities of spring season. Read Table 1.1 and identify the season in the Southern Hemisphere during this period.

The southward apparent movement of the Sun begins from 21 June and again reaches vertically above the Equator on 23 September. Summer season is experienced in the Northern Hemisphere during this period.

Fig 1.5

What are the changes observed in nature during the summer season?

The Sun continues its southward apparent shift from the Equator from 23 September and reaches vertically above Tropic of Capricorn (23½°S) on 22 December. This day is known as Winter Solstice in the Northern Hemisphere. On this day the Northern Hemisphere experiences its shortest day and longest night.

What is the peculiarity of the day and the night in the Southern Hemisphere on 22 December?

It is autumn season in the Northern Hemisphere from 23 September to 22 December.

Autumn marks the transition from the severity of summer towards winter. During this period, the atmospheric temperature decreases considerably. There is shortening of day and lengthening of night during the period. This is the season during which the trees generally shed their leaves. The shedding of leaves is a form of adaptation to survive the forthcoming dry winter.

Fig 1.6

What is the season in the Southern Hemisphere, when it is autumn in the Northern Hemisphere? (see Table 1.1)

The northward apparent shift of the Sun begins by 22 December and again reaches vertically above the Equator on 21 March. This period marks the winter season in the Northern Hemisphere.

Fig 1.7

What are the peculiarities of winter season?

Which will be the season in the Southern Hemisphere when it is winter in the Northern Hemisphere? Observe Table 1.1 and find out.

Months	The apparent movement of the sun	Seasons	
		Northern hemisphere	Southern hemisphere
From March 21 to June 21	From the Equator to Tropic of Cancer	Spring	Autumn
From June 21 to September 23	From Tropic of Cancer to the Equator	Summer	Winter
From September 23 to December 22	From the Equator to Tropic of Capricon	Autumn	Spring
From December 22 to March 21	From Tropic of Capricon to the Equator	Winter	Summer

Table 1.1

Traditional seasons of India

Though the Indian seasons are generally classified into four, it is estimated that there are six seasons in India based on the changes in the atmospheric conditions.

- *Vasantha- March, April*
- *Greeshma- May, June*
- *Varsha- July - August*
- *Sarat - September, October*
- *Hemanta - November, December*
- *Sisira- January, February*

Utharayanam and Dakshinayanam

You might have understood the apparent movement of the Sun and the resultant seasons in both the hemispheres. Following the winter solstice, the Sun sets its northward apparent movement from Tropic of Capricorn (23½°S) and it culminates on Tropic of Cancer (23½°N) on 21 June. This northward apparent movement of the Sun from Tropic of Capricorn to Tropic of Cancer is termed as 'Utharayanam'. The duration of day in the northern hemisphere gradually increases during this period.

Following the summer solstice, the Sun sets its southward apparent movement from Tropic of Cancer (23½°N) and it culminates on Tropic of Capricorn (23½°S) on 22 December. This southward apparent movement of the Sun from Tropic of Cancer to Tropic of Capricorn is termed as 'Dakshinayanam'.

What is the change that occurs in the duration of day in the Southern Hemisphere during 'Dakshinayanam'?

During the period from March to September, as the Sun is in the Northern Hemisphere, the north polar regions experience continuous daylight for six months.

During the remaining period, that is from September to March, as the Sun is in the Southern Hemisphere north polar regions experience continuous night for six months.

What is the duration of day and night in the south polar regions, when the Sun is respectively over the Northern Hemisphere and Southern Hemisphere?

Rotation and calculation of time

I looked at the clock - it was showing 12. The air hostess announced that we should set all our watches back by five and a half hours. As per our watches it was 5. 30 Indian Standard Time. One could say the aircraft was flying towards the West, literally swallowing our Indian Standard Time! We had to turn back the hands of our watches every now and then accordingly.

Translated from **S K Pottekkat's Pathirasooryante Naattil ("In the Land of the Midnight Sun")**

Hope you read the extract from "Pathira sooryante Naattil", the famous travelogue by the renowned author S.K. Pottekkatt. Aren't you now convinced that time in other countries is different from the time in India. Let's examine the reason behind this difference.

In the ancient period, time was calculated based on the apex position of the Sun and the length of the shadow cast by it. When the Sun is vertically overhead, it is noon. Thus the time estimated at each place, based on the position of the Sun, is termed as the local time.

Is the local time in all the Indian states the same?

The midnight sun

The Sun shines even at midnight! Not for a single day, but for six months throughout, in the Arctic and the Antarctic Circles. But don't think that the Sun will be vertically overhead during those days. The Sun can be seen only on the horizon. The remaining six months are shrouded in darkness. Daylight lasts only for one or two hours. The land will be covered with snow. Human life and limited agriculture here are all scheduled according to the peculiarities of this climate.

What will be the hardships if there are several local times in a country?

- *Cannot prepare a railway time table applicable throughout the country.*
- *Cannot give announcements about radio programs.*
-

Later on, the calculation of time became more scientific and accurate. Let's go into the details of time calculation.

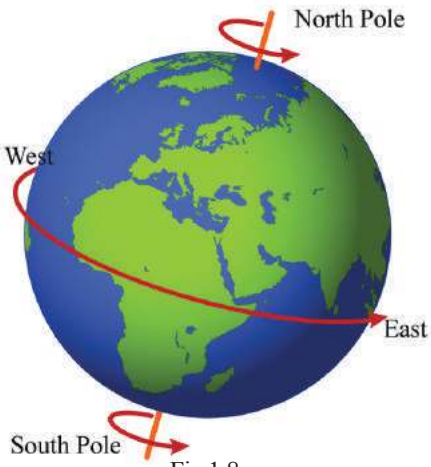


Fig 1.8

You know that the earth rotates on its axis while it revolves. You have also learnt that day and night occur due to rotation. Look at some of the facts associated with rotation.

- The Earth rotates from west to east (Fig.1.10).
- It takes 24 hours to complete one rotation.
- As the Earth rotates from west to east, the Sun rises in the east.

The people of which Indian State can see the Sun rise first?

The angular distance of the Earth is 360°. We will get 360 longitudes if we draw one longitude each for each degree of angular distance. The time required to complete a 360° rotation is 24 hours.

- On converting 24 hours into minutes

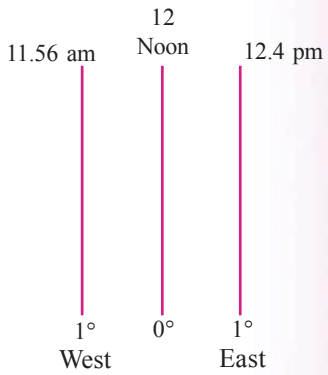
  $24 \times 60 = 1440$ minutes
- That is, the time required for the completion of one rotation

  = 1440 minutes
- The time required for the Earth to complete the rotation of 1° longitude is

$$\frac{1440}{360} = 4 \text{ minutes.}$$

∴ The time required for the rotation of 15° longitudinal area is

15 × 4 = 60 minutes (1 hour).



In otherwords, 15° longitudinal area of the Earth passes by the Sun within a period of one hour.

As the Earth rotates from west to east, time advances towards the east and recedes towards the west. Look at the illustration. From a definite longitude, the time is estimated to increase by 4 minutes towards the east and decrease by 4 minutes towards the west for every degree of longitude.

Greenwich time (GMT) and time zones

The zero degree longitude is known as the Greenwich Meridian. It acquires its name from Greenwich, the place where the Royal British Observatory is situated (Fig.1.9) and through which this line passes. Time is calculated worldwide based on the Greenwich Line. Hence this line is also known as the prime meridian. The local time at the prime meridian is known as the Greenwich Mean Time. Based on the Greenwich Merdian, the world is divided into 24 zones, each with a time difference of one hour. These are known as time zones.

What would be the longitudinal extent of each time zone?

Fig1.9

Standard time

The local time would be different at each longitude. If we start calculating the local time at different places based on the longitude there, it would create a lot of confusion. To solve this, the local time at the longitude that passes through the middle of a country is selected as the common time for the whole country. Each country in the world considers the longitude that passes almost through its middle as the standard meridian. The countries with large longitudinal extent estimates more than one local time by considering more than one standard meridian. The local time at the standard meridian is the standard time of that country.

Indian Standard Time (IST)

The longitudinal extent of India is from 68°E to 97°E. The 82½°E longitude which passes almost through the middle of these longitudes has been fixed as the standard meridian of India.

The local time along this longitude is generally considered as the Standard Time of India. This is known as the Indian Standard Time.

Find the difference between the Indian Standard Time and the Greenwich Mean Time.

International Date Line

Calculate the time at each 15° longitude east and west of the Greenwich Line up to 180° longitude and complete the table.

Time at Greenwich - Friday 10 A.M.					
To the west of Greenwich			*To the east of Greenwich*		
Longitude	**Day**	**Time**	**Longitude**	**Day**	**Time**
15^0	Friday	9 am	15^0	Friday	11 am
30^0	Friday	8 am	30^0	Friday	12 noon
45^0			45^0		
60^0			60^0		
75^0			75^0		
90^0			90^0		
105^0			105^0		
120^0			120^0		
135^0			135^0		
150^0			150^0		
165^0			165^0		
180^0			180^0		

Table 1.2

You might have noticed that there is a diffence of 24 hours, at 180° longitude to the east and west of Greenwich. The place 'A' marked in the given figure (Fig. 1.10) is located at 180° longitude. Which day would it be for those residing at place 'A' in Fig. 1.10?

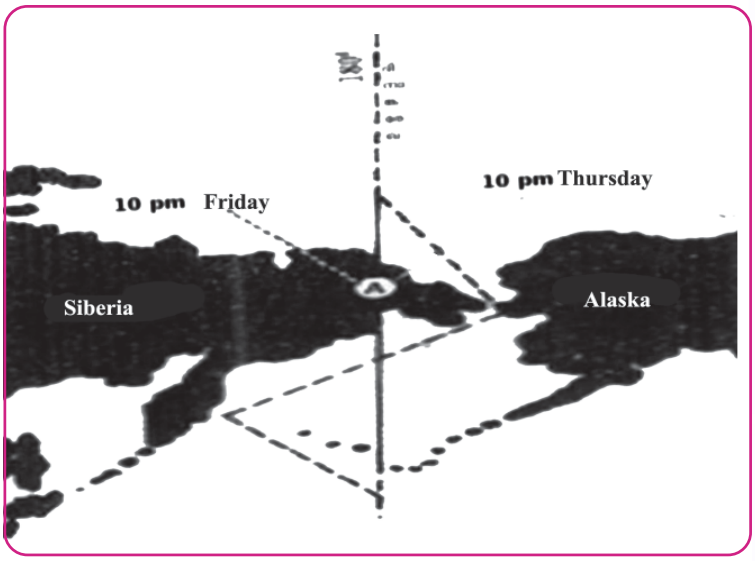


Fig 1.10

If 180° longitude passes through a country, the places situated East and West of this line will be having two different days. Think about the practical difficulties caused by this. To avoid this, certain necessary adjustments have been effected in this line with the result that it doesn't pass through the corresponding land areas. Note the longitude marked with broken lines. The line is in such a way that it passes through Bering - strait in Pacific Ocean and avoid some of the inhabited islands. The travellers who cross this line from the West calculate the time by advancing it by one day and those who cross the line from the west deduct one day. This imaginary line is known as the International Date Line.

Note the International Date Line marked on the globe. Identify the continents situated to the east and the west of this line. The travellers to which of these continents will gain one day on crossing the International Date Line?

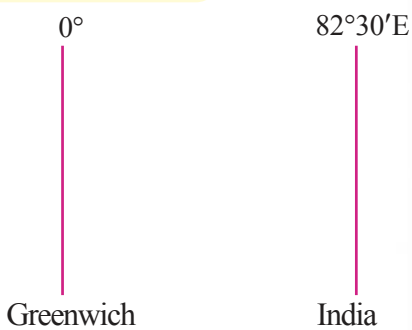
Let's calculate time

Example 1

What will be the time in India when it is 12 noon at Greenwich?

Let us see how the time of India is calculated:

- The longitudinal difference between India and Greenwich = 82°30′



- The time difference for 15° longitude = 1 hour
- The time difference for 82°30′ longitude =

  = 5½ hours

  = 5 hours 30 minutes
- As India is located to the east of Greenwich, the time in India will be 5 hours and 30 minutes ahead of Greenwich Mean Time.

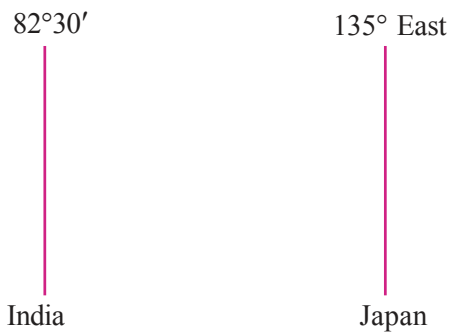
  Therefore the time at India = Time at Greenwich + Time difference

  = 12 Noon + 5 hours 30 minutes

  = 5.30 pm

Example 2.

What will be the time in Japan (135° East) when it is 11 pm on Monday in India?



- The longitudinal difference between India and Japan

  = 135° - 82°30′

  = 52°30′

- Time difference for 1° longitude is 4 minutes.
- Time difference for 52°30′ longitude = 52½ × 4

  = 210 minutes

  = 3 hours 30 minutes

- As Japan is situated at the east of India, the time in Japan would be 3 hours and 30 minutes ahead of that time in India.
- When it is 11 pm on Monday in India, the time in Japan = 11 pm Monday + 3 hours 30 minutes = 2.30 am Tuesday

Let us assess

- Identify the factor not responsible for the occurrence of seasons.

  a. Revolution of the Earth

  b. Tilt of the earth's axis

  c. Parallelism of the Earth's axis

  d. Rotation of the Earth

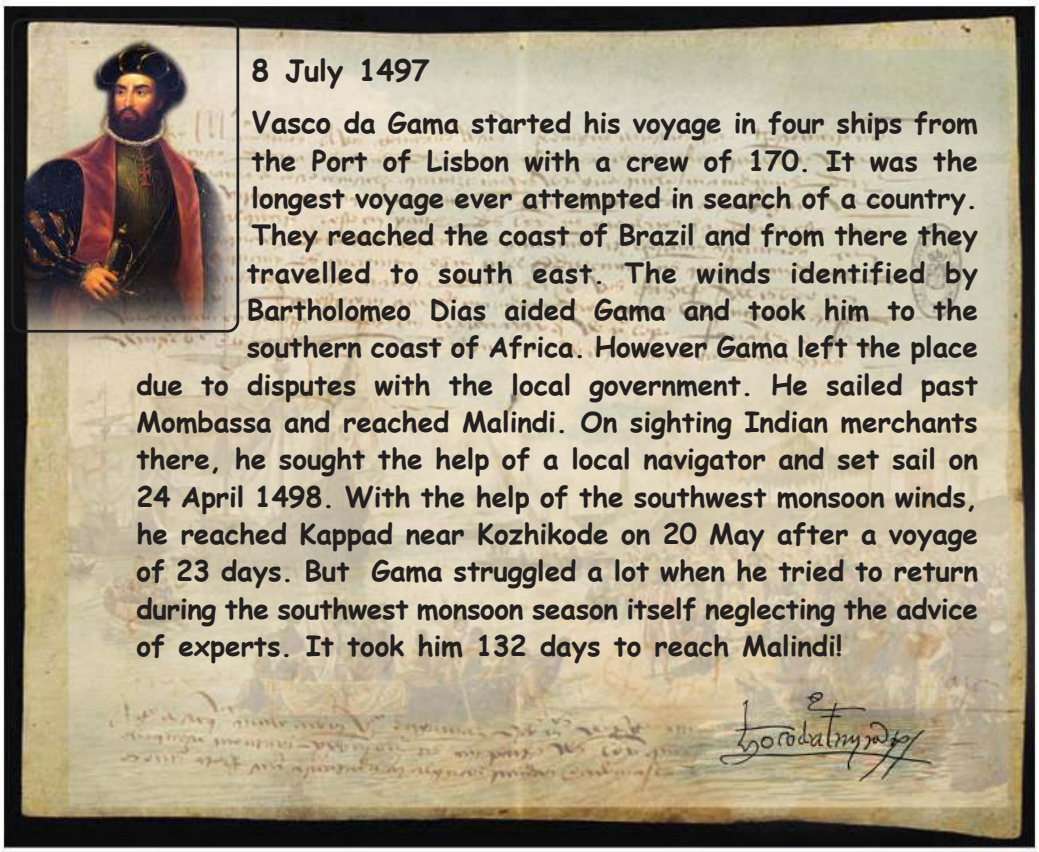
- The Sun's rays fall vertically between Tropic of Cancer and Tropic of Capricon. Why?
- Explain the geographical importance of March 21, June 21, September 23, and December 22.
- Why is there an eastward increase and westward decrease in time?

Extended activities

- In the class, exhibit pictures along with short notes depiciting the seasonal changes in nature.
- Record your observations on the changes in nature in each season and prepare a weather observation diary.
- With the help of an atlas, find out the standard meridians of different countries and calculate their local time.

2

In Search of the Source of Wind



8 July 1497

Vasco da Gama started his voyage in four ships from the Port of Lisbon with a crew of 170. It was the longest voyage ever attempted in search of a country. They reached the coast of Brazil and from there they travelled to south east. The winds identified by Bartholomeo Dias aided Gama and took him to the southern coast of Africa. However Gama left the place due to disputes with the local government. He sailed past Mombassa and reached Malindi. On sighting Indian merchants there, he sought the help of a local navigator and set sail on 24 April 1498. With the help of the southwest monsoon winds, he reached Kappad near Kozhikode on 20 May after a voyage of 23 days. But Gama struggled a lot when he tried to return during the southwest monsoon season itself neglecting the advice of experts. It took him 132 days to reach Malindi!

It was the winds and an unyielding will that helped the mariner named Vasco da Gama to sail thousands of kilometres from Europe to find a sea route to India. The role of winds in that voyage which changed the course of our land's history is worthy of mention. How do winds influence us? Let's look into a few factors like the different types of wind, their formation, and effects.

You have learnt that atmospheric pressure is the weight of atmospheric air and that the variations in the atmospheric pressure are the basic reason for wind. Let's look into the variations behind this and their effects.

Variations in atmospheric pressure

The average weight that air exerts on the earth's surface is 1034 mg per cm^2. The atmospheric pressure is measured using an instrument called Mercury Barometer. It is recorded in units like millibar (mb) and hectopascal (hPa). The level of mercury at normal atmospheric pressure will be 76 cm. The atmospheric pressure at that point will be 1013.2 mb or 1013.2 hPa.

Look at the following diagram.

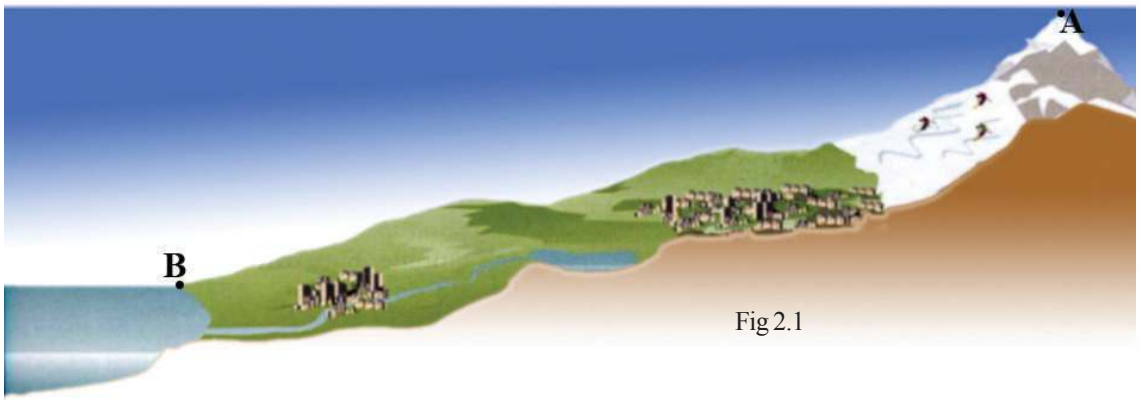


Fig 2.1

Did you notice the places marked A and B in the diagram? Which of these places will have a higher atmospheric pressure? Why?

Atmospheric pressure and altitude

The atmospheric pressure decreases with altitude. The pressure decreases at the rate of 1 millibar (mb) per an altitude of 10 meters.

As one goes up, there is a decrease in atmospheric pressure due to the rarification of air with altitude.

Why do mountaineers carry oxygen cylinders?

You might have felt your ears clog as you go to high altitude places like Ponmudi, Ooty and Brahmagiri. This is due to the low pressure in these places.

The atmospheric pressure and the altitude are inversely proportional. You would have understood now that altitude is an important factor influencing the atmospheric pressure.

Apart from altitude, temperature and humidity also influence the atmospheric pressure. Let's see how.

Temperature and atmospheric pressure

Like any other object, air also expands when it gets heated. The expanded air is less dense and hence it ascends. This leads to the lowering of atmospheric pressure. The ascending air spreads to the sides and it starts cooling. On cooling, it becomes dense and descends. As a result the atmospheric pressure increases.

The atmospheric pressure decreases as the temperature increases and vice versa. Haven't you understood now that the temperature and the atmospheric pressure are inversely proportional. Given below are the day and night scenes of a place (Fig.2.2).

Fig 2.2

Compare the two pictures. Identify the situations of low and high atmospheric pressure and suitably mark 'H' and 'L' in the pictures.

Compared to the colder regions, the tropical regions experience low atmospheric pressure. Why?

Humidity and atmospheric pressure

Humidity refers to the quantity of water present in the atmosphere. Water vapour is lighter than air and hence it ascends. If the quantity of water vapour is more in a unit volume of air, then naturally the atmospheric pressure will be less.

Humidity and atmospheric pressure are inversely proportional. Two places at the same elevation are marked as A and B in the figure (Fig.2.3). Which of these has a low atmospheric pressure? Why?

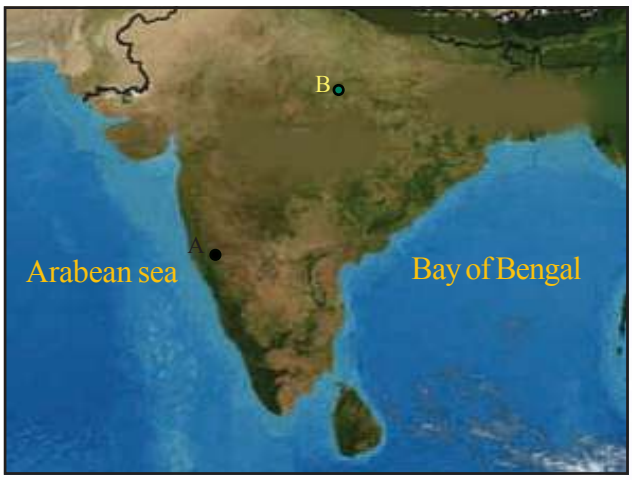


Fig 2.3

Hope you have understood that altitude, temperature and humidity experienced in a region influence the atmospheric pressure. Variations in atmospheric pressure occur in accordance with the variations in the above factors.

If the atmospheric pressure of an area is higher than that of the surrounding regions, it can be designated as 'high pressure' (High - H). In that case, what would low pressure be?

You have learnt about the isotherms in the previous classes. Similarly isobars are the imaginary lines joining places having the same atmospheric pressure. We can easily understand the distribution of the atmospheric pressure of any region by observing the isobars.

Observe Fig 2.4. It shows the distribution of atmospheric pressure of a region in two different seasons.

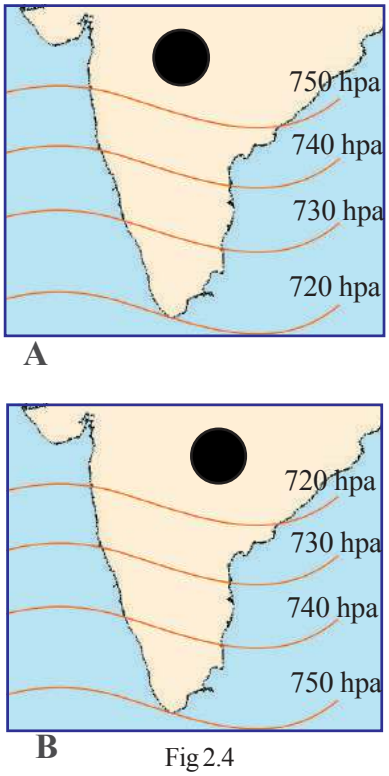


Fig 2.4

Observe the distribution of isobars in the given figure and mark the places experiencing high pressure and low pressure as H and L respectively.

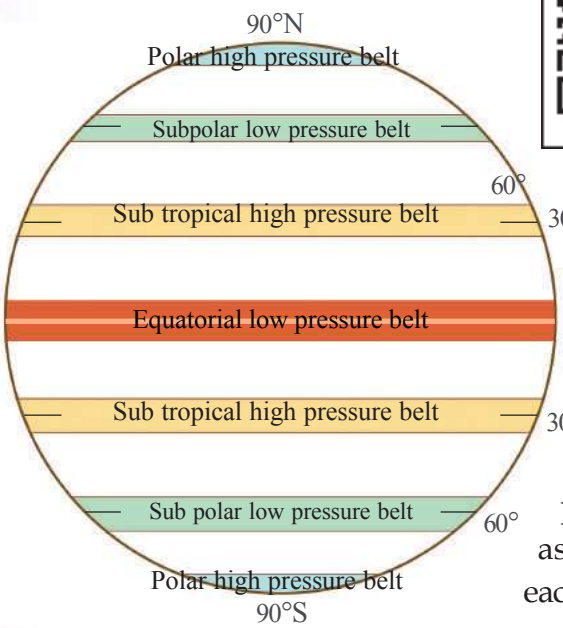


Fig 2.5

Global pressure belts

C2JSR8

Haven't you realized that there can be seasonal variation in the atmospheric pressure of the same region?

Global pressure belts

Studies have revealed that the atmospheric pressure is more or less the same between certain latitudes. Based on this, the earth's surface is divided into different pressure belts. Look at Fig 2.5.

Haven't you understood the various pressure belts on the Earth? These are known as the global pressure belts. Let's learn about each of these pressure belts in detail.

Equatorial low pressure belt

This is the zone where the sun's rays fall vertically throughout the year. Hence the temperature will be high in this zone all through the year. The air expands due to sun's heat and rises up on a massive scale. This is the reason for the low pressure experienced throughout this zone.

The equatorial low pressure belt is situated between 5° North and South latitudes. As the air in this zone ascends on a large scale, winds are very feable here. This pressure belt is also known as 'doldrum', meaning 'the zone with no winds'. The region was a nightmare for the ancient mariners.

Horse latitude

Superior breeds of horses were once a major export from Europe to America and Cargo ships were used to carry them across. As the winds are feeble in the subtropical regions, it was difficult for these ships to sail smoothly. In order to make the ship lighter to facilitate easy voyage, they used to throw many of these horses into the sea. Thus the zone acquired the name 'horse latitude'.

Sub tropical high pressure belt

The hot air ascending from the equatorial low pressure belt cools gradually and subsides at the sub tropical zone due to the rotation of the Earth. Hope you now understand the reason for the occurrence of high pressure all along this zone.

Find out the position of the sub tropical high pressure belt from the given figure (Fig2.5).

Sub polar low pressure belt

Look at Fig 2.5. As this zone is close to the Pole, the air is colder here. Though the cold air remains close to the Earth, the air is thrown away due to the rotation of the earth. As a result, low pressure is experienced all along the sub polar region.

Find out the location of the sub polar low pressure belt from Fig 2.5.

If the Earth did not rotate, would there have been low pressure in the sub polar region?

Polar high pressure belt

This zone experiences severe cold throughout the year. As a result, the air remains chilled under the extreme cold that prevails over the Poles, and this contributes to the steady high pressure experienced here.

- *Find out the latitudinal location of the polar high pressure belts.*
- *Complete the following table by incorporating the names of different pressure belts and their latitudinal extent.*

Pressure belt	Latitudinal extent
•	•
•	•

You are now aware of the distribution of the pressure belts on the Earth. Variations in the amount of solar energy received and the rotation of the earth contribute to the formation of different pressure belts. The pressure belts shift according to the apparent movement of the Sun. The pressure belts shift northward during the period of Sun's northward progression

and towards the south during the period of its southward progression.

Atmospheric pressure and winds

Global variations in the atmospheric pressure lead to the formation of winds. The horizontal movement of air from a high pressure zone to a low pressure zone is called wind. There are different types of winds on the earth's surface, ranging from light breeze that makes the leaves flutter to cyclones that cause widespread damage. Winds are named on the basis of the direction from which they blow. For example the south wind is the wind blowing from the south. The peculiarities of the source regions influence the nature of the wind.

Winds blowing from the sea will be saturated with moisture whereas the moisture content will be less in winds blowing from drier regions.

The speed and direction of wind

The speed and the direction of wind are based on

- Pressure gradient
- Coriolis force
- Friction

Let's examine them one by one.

Pressure gradient

Atmospheric pressure is not uniform everywhere on the earth's surface. The change in pressure with horizontal distance is termed as pressure gradient. The pressure gradient is said to be steeper when the pressure difference is more. Fig 2.6 depicts the pattern of isobars in two different situations.

Analyse the figures and answer the following questions:

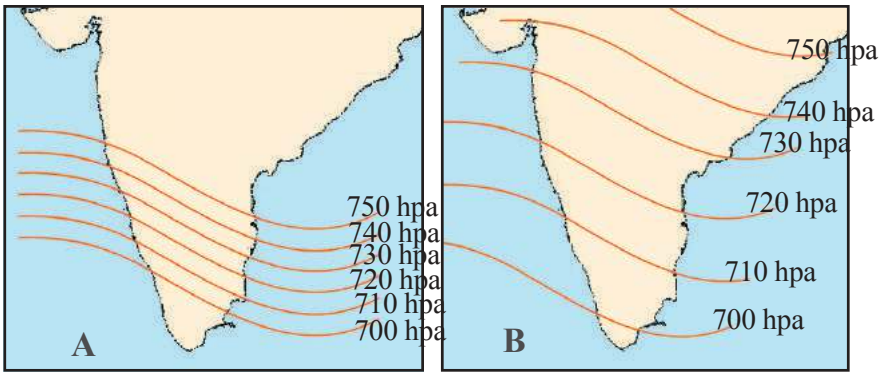


Fig 2.6

- *Mark the direction of winds in both the diagrams, using arrow marks.*
- *In which of these situations will the speed of the wind be higher? Why?*

Coriolis Force

Freely moving bodies get deflected to the right in the Northern Hemisphere and to the left in the Southern Hemisphere. This is due to the force generated as a result of Earth's rotation which is known as the Coriolis force. This force increases as it moves towards the Poles from the Equator. Admiral Ferrel found out that the winds in the Northern Hemisphere deflect towards their right and those in the Southern Hemisphere deflect towards their left due to the Coriolis Effect. The law put forward by him on the basis of this is known as Ferrel's law.

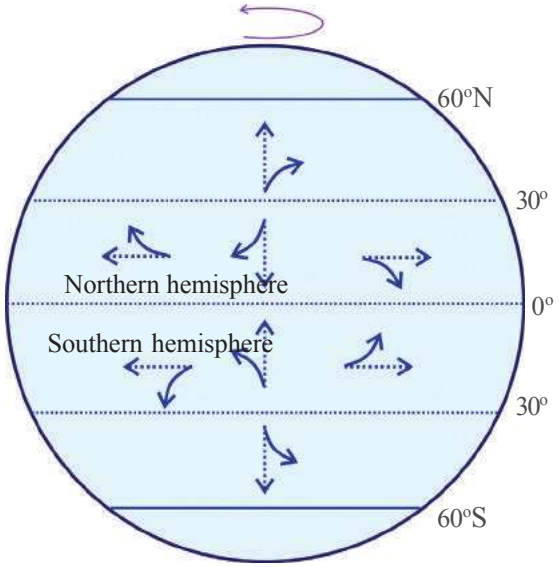


Fig 2.7

Fig 2.8

To prevent desertification

Trees are often planted along the borders of deserts. It is a measure to reduce the speed of the wind thereby preventing the expansion of deserts.

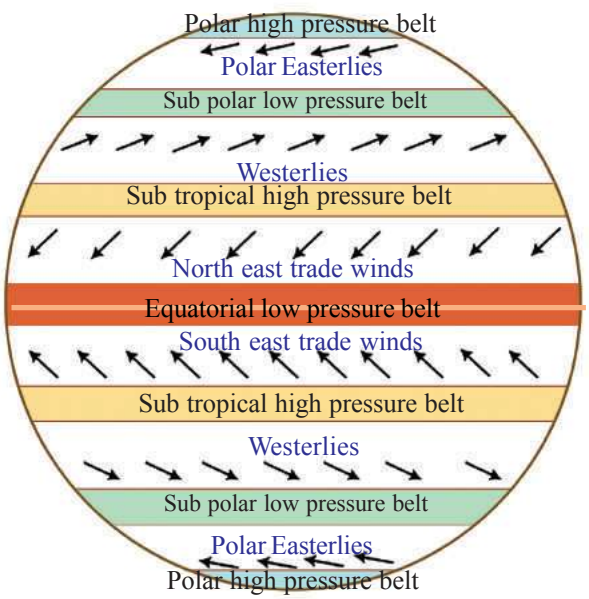


Fig.2.9 **Global Pressure belts and Planetary winds**

Friction

Look at the given pictures (Fig2.8).

In which of these situations do winds blow smoothly? The speed of wind will be high over ocean surfaces and plains as the friction is less. On the other hand, the friction being more along difficult terrains and places with dense forest cover, the speed of wind will be less in those places.

Pressure belts and winds

You have learnt that there exist differences in pressure over different latitudinal zones at the global level. These pressure differences lead to the formation of winds. Winds blow from high pressure regions to low pressure regions. The winds developed between the global pressure belts can be generally called as planetary winds. The different planetary winds are listed below.

- Trade winds
- Westerlies
- Polar easterlies

The latitudinal locations of the different pressure belts have been identified from Fig 2.5 and marked in Fig 2.9.

Haven't you noticed the different planetary winds?

Let's study them in detail.

Trade winds

The sub tropical high pressure belts in both the hemispheres can be seen in Fig 2.9.

From here, the winds blow continuously towards the equatorial low pressure belt. These are known as trade winds. As these winds blow from the northeast in the Northern Hemisphere, they are known as northeast trade winds. The equatorial low pressure zone where the trade winds from both the hemispheres converge is known as the Inter Tropical Convergence Zone (ITCZ).

On the hands of wind...

In the past, the trade winds that blowed in a constant direction throughout the year were a blessing to those transporting goods in ships and other vessels. The name 'trade wind' might have evolved since it helped ocean trade quite a lot. The term 'traden' in German means 'winds that maintain constant direction'.

Find out the direction and the name of the trade winds in the Southern Hemisphere from Fig 2.9.

What could be the reason for the trade winds blowing from the southeast and the northeast directions?

Westerlies

Haven't you seen the sub polar low pressure belts situated between the sub tropical high pressure belts and polar High pressure belts? Winds blow continuously from the sub tropical high pressure zones to these low pressure zones. As the direction of these winds is moslty from the west, they are known as the westerlies.

Identify and note the direction of the westerlies in both the hemispheres from Fig 2.9.

The westerlies are stronger in the Southern Hemisphere than in the Northern Hemisphere. This is due to the vast expanse of oceans in the Southern Hemisphere. You read about the route of Vasco da Gama at the beginning of this chapter. It was the

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westerlies that helped Gama reach the South Africa through the South Atlantic Ocean.

The ancient mariners had given different names to the rough westerlies in the Southern Hemisphere, such as 'Roaring Forties' (along 40° latitudes), 'Furious Fifties' (along 50° latitudes) and 'Shrieking Sixties' (60° latitudes).

Polar Easterlies

You have learnt that the cold polar regions are centres of high pressure. The polar winds are the cold winds that blow from these high pressure areas towards the sub polar low pressure belts. These winds blow from the East in both the hemispheres due to the Coriolis Force. Hence these are known as polar easterlies. These winds play a significant role in determining the climate of North America, the eastern European countries, and Russia.

Prepare a chart describing the planetary winds, the areas where they blow, and their features and exhibit it in the class.

You have learnt that the planetary winds are permanent winds blowing between the global pressure belts throughout the year. There are also winds of seasonal and local occurrence.

Periodic winds

Periodic winds are winds that repeat at regular intervals of time and can be seasonal or diurnal. Monsoon winds are example for seasonal winds.

What is monsoon?

The term 'monsoon' is derived from the Arab word 'mousom'. It means 'winds that change direction in accordance with season'. Monsoon is the seasonal reversal of wind in a year.

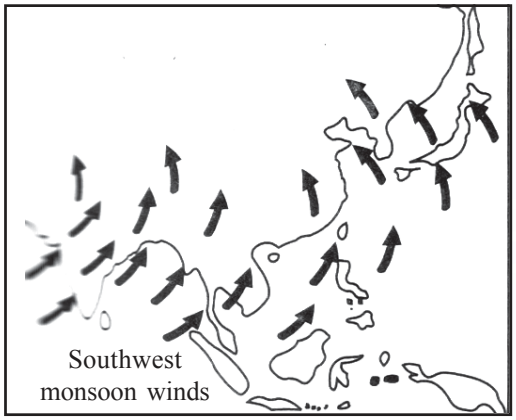
The Arab scholar Hippalus was the first to observe the shift in the direction of Monsoon winds.

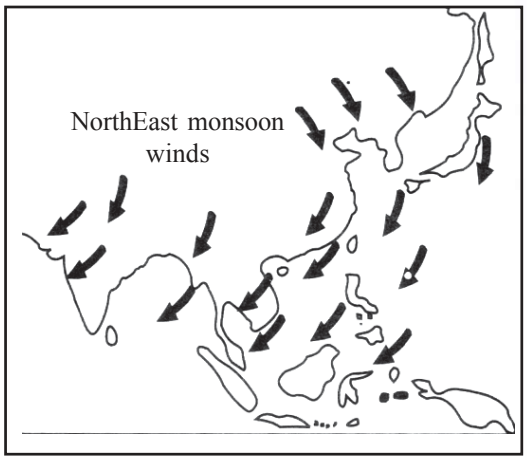
Many factors are responsible for the formation of the monsoon wind like

- The apparent movement of the sun
- Coriolis force
- Differences in heating

Meghasandesam, the epic poem by Kalidasa, is a creative visualization of monsoon winds that change direction according to the season as a messenger.

Sun's rays fall vertically to the North of the Equator during certain months due to the tilt of the Earth's axis. This leads to an increase in temperature along the region through which Tropic of Cancer passes. The pressure belts also shift slightly northwards in accordance with this. The southeast trade winds also cross the equator and moves towards the north as the Inter Tropical Convergence Zone (ITCZ) moves northwards during the summer in the northern hemisphere. As the trade winds cross the Equator they get deflected and are transformed into southwest monsoon winds due to the Coriolis Effect. The low pressure formed over the land due to the intense day temperature attracts these sea winds and further contributes to the formation of the southwest monsoon winds.





As a result of the formation of high pressure zones over the Asian landmass and low pressure zones over the Indian Ocean during winter, the northeast trade winds get strengthened. These are the North East monsoon winds.

Now haven't you understood why the phenomenon called monsoon undergoes seasonal reversal of wind in a year?

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Land and sea breeze

Fig 2.10

You have already learnt that atmospheric pressure is different during day and night at the same place. Similarly the reaction of land and sea to Sun's heat is also not uniform. The land heats up and cools down quickly, whereas the sea gets heated up slowly and can retain the heat for a longer period of time. Look at Fig. 2.10.

The air in contact with the land also gets heated up and ascends as the land heats up quickly during the daytime. This leads to the formation of low pressure over the land which causes the comparatively cooler air to blow from the sea. This is known as sea breeze.

As the land cools faster than the sea during the night it would be high pressure over the land and low pressure over the sea. This results in the movement of air from the land to sea. This is the land breeze. The land breeze which starts blowing at night becomes active early in the morning and ceases by sunrise.

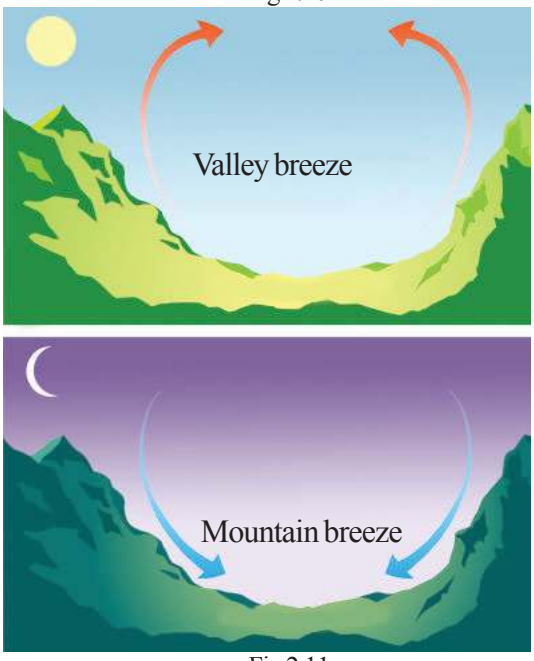


Fig 2.11

Mountain and valley breeze

Look at the figure (Fig. 2.11). These are winds experienced in mountainous regions that are well above the sea level.

During the day time the air above the mountains gets heated and rises up. As a result, the wind blows upslope from the valley with relatively lower temperature. This is known as valley breeze.

But during night the air in the mountainous regions cools due to the intense cold conditions in that region. As cool air is dense, it blows towards the valley. This is known as mountain breeze.

Local winds

Local winds are winds whose effects are limited to a relatively smaller area. Formed as a result of the local pressure differences, these winds are weak. Such winds exist in different parts of the world. Loo, Mangoshowers, and Kalbaisakhi are the local winds experienced in India. Chinook, Harmattan and Foehn are some of the local winds in other parts of the world.

Chinook is a hot local wind that blows down the eastern slope of the Rockie Mountains in North America. As a result of these winds, the snow along the eastern slopes of the Rockies melts down? The term Chinook means 'snow eater', an apt term that describes its peculiarity. Since this wind reduces the severity of the cold, it is helpful for wheat cultivation in the Canadian lowlands.

Foehn is the wind that blows down the northern slopes of the Alps mountain.

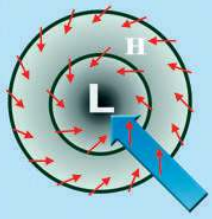
As the air heats up due to pressure from the descent, it helps in reducing the severity of cold in that region.

Find out from the atlas the countries along the southern slope of the Alps.

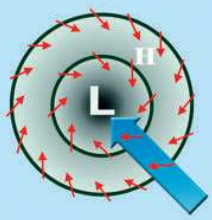
Harmattan is a dry wind which blows from the Sahara desert towards West Africa. On the arrival of these winds, the humid and sultry conditions of West Africa improve significantly. Hence, people call these winds as the *doctor*.

Loo is another hot wind blowing in the North Indian plain. These winds blowing from the Rajasthan desert raise the summer temperature of the North Indian plains. The winds that blow in South India during this season are called Mango showers. These wind cause the ripening and fall of mangoes and hence the name.

Cyclones

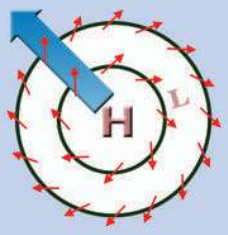


Anti clockwise
(Northern Hemisphere)

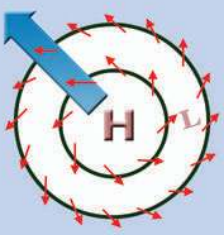


Clockwise
(Southern Hemisphere)

Anti Cyclones



Clockwise
(Northern Hemisphere)



Anti clockwise
(Southern Hemisphere)

Variable winds

Variable winds are winds with entirely different characteristics formed during certain atmospheric situations. Cyclones and anticyclones are variable winds.

Cyclones

Cyclones are caused by the formation of low atmospheric pressure at the centre surrounded by high pressure regions. Strong whirl winds blow towards such low pressure centres from the surrounding high pressure areas. Due to Coriolis effect winds flow in the anti-clock wise direction in the Northern Hemisphere and in the southern Hemisphere. Based on the climatic region of their formation, cyclones can be classified as tropical cyclones and temperate cyclone. Cyclones often cause extensive damage and destruction wherever they occur. You might have heard of the Ockhi - cyloninc winds that struck the coastlines of Kerala and Lakshdweep during November 2017. This was a tropical cyclone. Tropical cylones are caused due to local pressure differences in the tropical oceans, especially the Indian ocean.

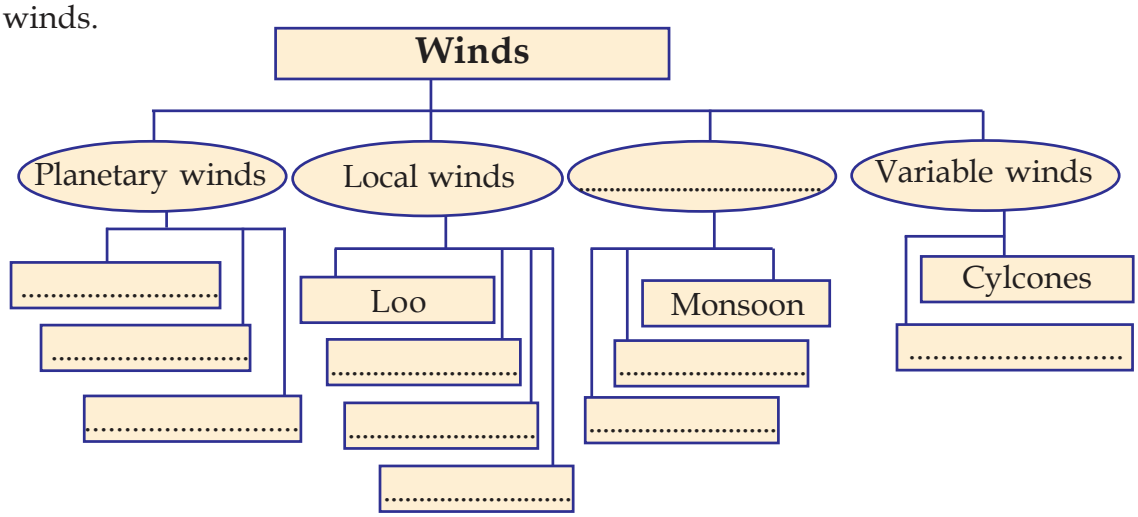
Ockhi cyclones left the Indian coasts after wreaking havoc on life and property.

Prepare a report on the distress caused by Ockhi and suggest measures to mitigate the impact of such disasters in future by collecting information from internet and other sources.

Anti cyclones

Anti cyclones are phenomenon where strong whirl winds blow from the high pressure centres to the surrounding low pressure areas. Due to Coriolis effect the pattern of winds in anti cyclones is clock wise in the Northern Hemisphere and anti clockwise in the Southern Hemisphere.

Complete the following flow chart showing the classification of winds.



The Sun's aura

Don't you now realize how dynamic the earth's atmosphere is? The driving force behind this continuous movement of air is the Sun. Without its energy there would be no temperature or pressure difference, or any wind. The role of the atmospheric phenomena in keeping the earth's surface dynamic is immense. Information on the diversities in the nature not only arouses our curiosity but is informative as well. May all of you be able to continue your quest regarding the Earth and its diversities.

Let us assess

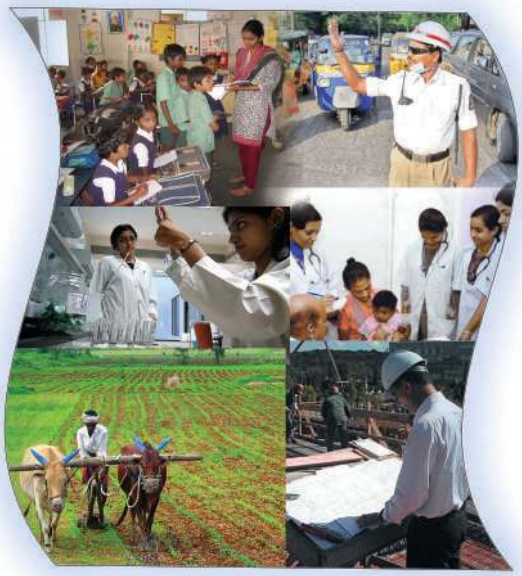
- Temperature, altitude and humidity are inversely proportional to atmospheric pressure. Justify.
- Prepare notes on the role of solar energy and the Earth's rotation in the formation of pressure belts.
- Describe how the Coriolis Effect causes the deflection of winds on the basis of the direction of the winds mentioned below.

  a. Trade winds

  b. Westerlies

3

Human Resource Development in India



Observe the pictures. Who all can be seen and what jobs are they engaged in? Which are the goods and services made available as a result of these efforts?

List in the table the different jobs and the goods and services produced by them.

• Taxi driver	Arranges transportation
• Farmer	Produces agricultural crops
•	
•	

Manpower is an important factor in making available the above mentioned goods and services. Therefore, human resource is necessary for the progress of any country. Let us examine some aspects of human resource development and its status in India.

Human resource

Many goods and services are necessary for improving human life and for the progress of a country. To facilitate this the manpower of many has to be utilised. Human resource refers to people who have the manpower which can be utilised in the production sector.

Increase in production and progress of a country can be accelerated only if the human resource is developed to the maximum. How can human resource be developed? Human resource development is the development of man's physical and mental abilities through education, health care, and training. There are different levels of human resource development.

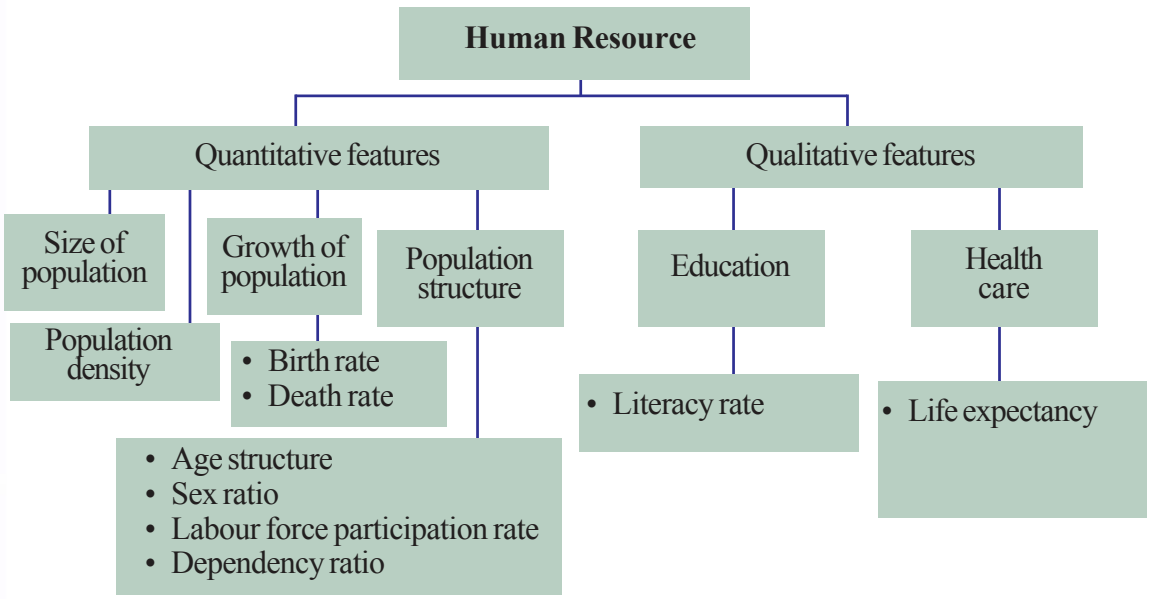
- Individuals take efforts to develop their own skills.
- Family creates an environment for the development of the potential of individuals.
- Various institutions and agencies provide facilities for education and training.
- Nation provides the necessary facilities for its people to develop their skills.

Prepare a note on the facilities provided in your area for the development of human resource?

Features of human resource

What features are to be considered while studying human resource? Human resource has quantitative as well as qualitative features.

Examine the chart given below.



Hope the qualitative and quantitative features of population are clear from the given chart. Let us analyse the quantitative aspects.

Size of population

Size of population refers to the total number of people residing in a country at a particular time. The branch of social science that analyses the population, the changes in its size, its structural aspects, etc is known as demography.

Every country collects information on the number of people in the country, their age, sex, socio - economic status, etc. and analyses these at specific intervals of time. This activity is known as population census. In India, census activities are spearheaded by the Office of the Population Registrar General and Census Commissioner.

In India, population census is conducted once in ten years. The last census was conducted in 2011. Information related to the population were collected as on 1 March 2011. According to this census there are 121.02 crore people in India. Out of this, 58.65 crore are females and 62.37 crore are males.

Why are population studies conducted?

Population studies help the government to quantitatively assess the different needs of the people and to plan activities and programmes accordingly.

What other help do they offer?

- Informs the availability of human resource in a country.
- Depicts the extent of basic facilities required by the people.
- Quantfies the goods and services required.
- Determines the socio - economic development policies.

- Find out from your elders what information was collected from your home for the 2011 census.
- Collect more information on the population by visiting the website www.censusindia.gov.in

According to the United Nations Organisation Report 2014, the world population is 724.4 crores. One in six person of the world population is an Indian. 17.5 percentage of the world population is in India. China ranks first in position with 19.4 percent and India ranks second. In terms of land area, India ranks seventh with only 2.4 percent.

India and China can play a major role in making human resource available. It has been proved by the experience of countries like the USA, Japan, and China that a nation can attain high economic development through better human resource development.

Density of population

Inhabitation is not the same everywhere in India. We have already understood the factors that influence population. Density of population refers to the number of people per square kilometer area. This differs in various states in India.

How does the population density of an area influence the availability of human resources? Discuss.

July 11
World Population Day

UNDP has declared 11 July as the World Population Day since 1989 and is observed. This day was selected because the world population reached 500 crore on July 11, 1987.

Population growth rate in India

Population growth refers to the increase in the number of people in an area within a specific period of time. It is

indicated in terms of percentage and states the increase in a year as compared to the previous year. Examine the table indicating population growth rate in India.

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Year	Population (in crores)	Decadal growth rate (in percentage)
1951	36.11	13.31 (1941 - 51)
1961	43.90	21.64 (1951 - 61)
1971	54.82	24.80 (1961 - 71)
1981	68.33	24.66 (1971 - 81)
1991	84.64	23.87 (1981 - 91)
2001	102.87	21.54 (1991 - 2001)
2011	121.02	17.64 (2001 - 11)

Source : Census of India 2011 (Provisional)

- Which decade has marked the maximum population growth?
- From which year onwards is there a decrease in the population growth rate?
- How much decrease did the population growth rate record in the decade 2001-2011?

It can be seen that India's population growth rate has been declining since 1971. The birth rate, death rate, and migration are the factors that affect the population of a country. Observe the chart given below.

Birth rate increases Death rate decreases	Population increases
Birth rate decreases Death rate increases	Population declines
Birth rate and death rate are equal	No change in population
Migration	Population increases in one region but decreases in another region

Birth rate
Birth rate is the number of live births per 1000.

Death rate
Death rate is the number of deaths per 1000.

Migration
Migration is the settlement of people of a region in another region.

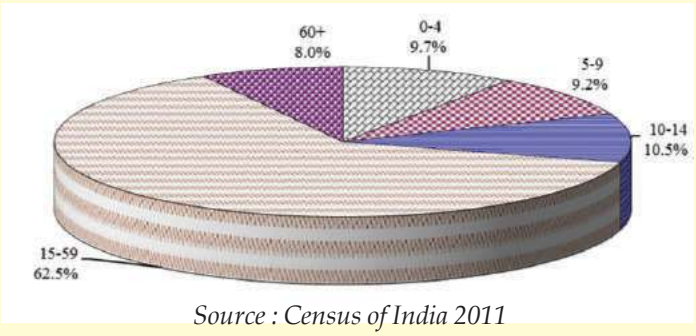
What changes are made in the population of a country by birth rate, death rate, and migration? Prepare a note.

Population Structure

Age structure is the classification of population into different age groups and presenting the ratio of each group in the population. For example, classification is done in age groups like 0- 14 years, 15-59 years, and 60 and above years.

Given below is the age structure based on Census of India 2011.

Population : Age Structure Distribution



Source : Census of India 2011

- *What percentage of the total population belongs to the age group of 0-14 years?*
- *What percentage of the total population belongs to the age group of 60 years and above?*
- *What percentage of the total population belongs to the age group of 15-59 years?*

Labour force participation rate is the ratio of the population in the age group 15 - 59, who are either employed or actively looking for jobs. This age group has the capability to contribute to the progress of the nation. The age groups 0-14 years and 60 years and above are included in the dependent group. Their proportion in total population is known as dependency ratio. This group depends on the working force of the country. An increase in the dependency ratio decreases the per capita income.

Many people in the age group 15 - 59 years do not have a job. This points to the necessity of utilising the human resource aptly.

Discuss the problems in the economy as a result of a decrease in the labour force participation rate and increase in the dependency ratio?

The sex ratio plays an important role in determining the human resource of a country. According to census 2011, the sex ratio in India is 940. Sex ratio is the number of females per 1000 males.

Conduct a discussion in class on the topic sex ratio and the nation's economic development.

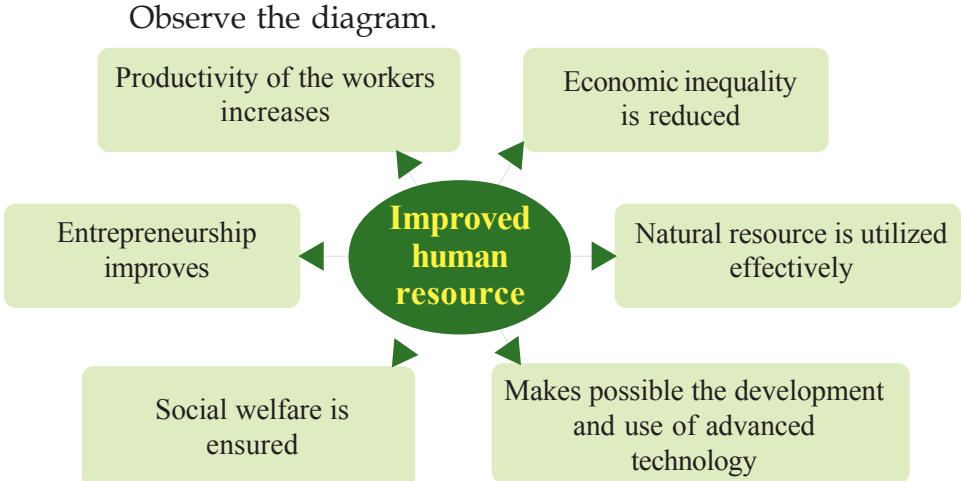
So far we have discussed the quantitative aspects of the population. There are certain aspects that improve the quality of human resource. Let us look at them.

Qualitative aspects of human resource

The population that can contribute to the manpower of the nation is its strength. What are the qualitative factors that improve the labour potential?

- Education
- Healthcare
- Training
- Social capital
-

Let us see the advantages in developing human resource. Observe the diagram.

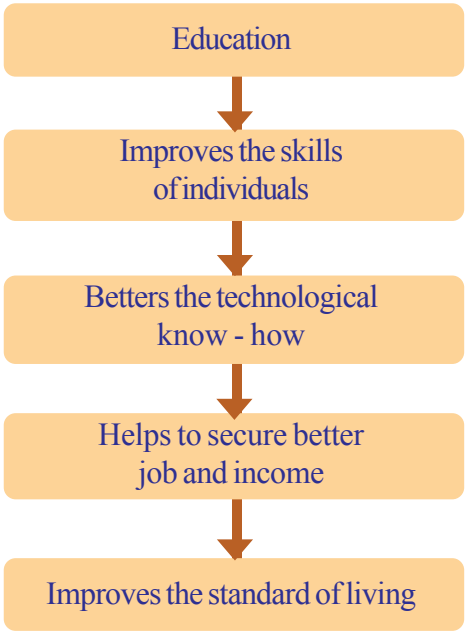


Prepare a note on how human resource development helps in economic development.

Lets observe how each qualitative factor improves human resource.

Education and human resource development

A mere increase in the population will not lead to the development of a country; it requires people with potential and skills. Education has a major role in moulding skilled people. Let's see how education helps in the development of a country. Observe the flowchart.



Ministry of Human Resource Development

In India, a department operates for human resource development. The Government of India started this department in the year 1985. The main responsibility of this department is to plan and implement the activities necessary for human resource development.

Experts argue that at least 6% of the national income must be spent for providing facilities in the education sector. During the year 2017 - 18 Government of India spent only 3.7% of the Gross Domestic Product (GDP) on education. Hence the literacy rate could not be improved along the expected lines. Observe the table given below.

India : Literacy rate	
Female	65.46
Male	82.14
Total	74.04

Source : Census of India 2011

Literacy rate refers to the percentage of population that can read and write with comprehension.

Let us see the projects implemented in India to develop education and skills.

Projects	Goals
Integrated Child Development Scheme (ICDS)	• To ensure integrated development of children upto 6 years • To provide healthcare for pregnant and lactating women •
Samagra Shiksha Abhiyan (SSA)	• To ensure universal education to all up to higher secondary level • To ensure quality and equity • To promote the vocational education strenthen
Samagra Shiksha was formed by integrating Sarva Shiksha Abihyan (SSA) and Rashtriya Madhyamik Shiksha Abhiyan (RMSA)	• To the teacher training institutes like SCERT/DIET • •
Rashtriya Uchthal Shiksha Abhiyan (RUSA)	• To increase the access to higher education • To improve the quality of higher education •
National Skill Development and Monetary Reward Scheme	• To improve the working skills of the youth • To ensure the availability of people with employable skills •

Apart from these, several programmes are also initiated by state governments.

Prepare a report by collecting details about the different educational development programmes undertaken by the state and local government institutions in Kerala.

There are institutions at various levels to provide education in a country. Schools, colleges, universities, technical education institutions, etc are among them.

Our country has made education a fundamental right and has passed the Right to Education Act (RTE Act) in 2009. The constitution ensures the goal of "elementary education for all" through RTE.

National Skill Development Corporation (NSDC)

In order to compensate the shortage of skilled people, the NSDC has been giving skill training in various fields such as construction, tourism, banking, and engineering.

However, problems still exist in the education sector of India which need to be solved.

- Certain sections drop out from schools without completing primary education.
- There is a lack of availability of basic facilities in the education sector.
- Quality of education has to be improved.

Conduct a discussion on the topic 'Educational facilities in India and the existing problems'.

Human resource development and healthcare

What is health? According to the World Health Organisation (WHO), health is a state of physical, mental and social wellbeing. Along with physical conditions, importance is given to mental and social conditions as well. It is the government's responsibility to ensure healthcare for all. Only then can each individual work for the economic development of a country. Let us see how healthy persons can participate in the progress of a country.

- Production increases with the increase in efficiency and the number of working days.
- Natural resources can be utilised properly.
- Medical expense can be reduced, thereby reducing the government's expenditure.

- Economic development is possible through increase in production

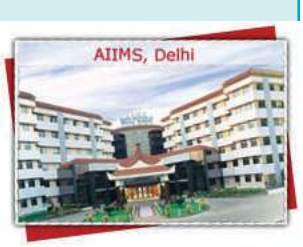
Let's list the facilities to be ensured for healthcare.

- Availability of nutritious food
- Availability of clean water
- Preventive measures
- Cleanliness
- Medical facilities
- Ensuring of leisure and entertainment
- Healthy environment

Various institutions operate to ensure the availability of the above - mentioned facilities. The government has set up institutions that work at different levels in the medical sector.

All India Institute of Medical Sciences

AIIMS has been established to make available the services of the best doctors and modern medical facilities. Now there are 9 such institutions working in different parts of the country.



- **Medical Colleges**
- **District Hospitals**
- **Community Health Centres**
- **Primary Health Centres**
- **Health Sub Centres**

Discuss how the different institutions working in the health sector help in making available the medical attention and preventive measures to the people.

There are various hospitals in the cooperative and private sectors. Many multispecialty hospitals operate to make available modern treatment facilities. There are several institutions which provide different systems of medicine like ayurveda, yoga, naturopathy, unani, sidha and homeopathy;

National Rural Health Mission (NRHM) and National Urban Health Mission (NUHM) function to make available quality

health services to all. The National Rural Health Mission operates in the rural sector. The National Urban Health Mission provides improved health services to the residents of urban slums and other marginalised people in towns with a population of more than 50,000.

As a result of these programmes and activities, the life expectency in India has been improved. Observe the table below.

India : Life expectancy	
Female	67.7
Male	64.6
Total	66.1

Source : Census of India 2011

Life expectancy is the expected average years of life of a person lives.

Organise a seminar on the topic 'The role of education and healthcare in human resource development'.

Various resources are to be used properly for the economic development of a country. We have understood that human resource is as important as natural resources. When the natural resources are combined with human efforts there is an increase in production leading to economic development. Therefore, planned efforts are required in the education and health sectors to develp human resource. Only then can resources then can the quality and development of human resource be attained.

Do you agree with the statement that the main reason for prosperity and poverty in the world is the difference in human resource development? Prepare a note.

Let us assess

- List out the quantitative and qualitative aspects of human resource?
- Prepare a note by analysing the importance of population studies.

- Compare the changes in population due to birth rate, death rate and migration.
- Labour force participation rate and dependency rate as per the census of India 2011 is given below. Prepare a graph based on this.

	Labour force participation rate (in percentage)	Dependency rate (in percentage)
Female	62.8	37.2
Male	62.2	37.7

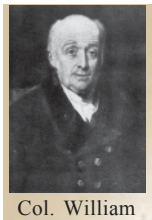
- List the advantages of the increase in labour force participation rate and disadvantages due to increase in dependency rate.
- What are the factors that improve human resource? How does this influence a country's development?
- How does education help in a country's development? Prepare a flowchart.
- List the existing problems in the health sector.
- Explain how education and healthcare help in human resource development.

Extended activities

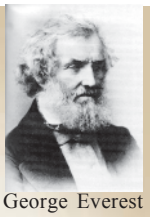
- Visit the website of the Census India and collect the latest population data.
- Organize various programmes in connection with the World Population Day.
- Find out the dependency rate and the labour force participation rate by collecting the age structure from the families of your classmates.
- Prepare a report by interviewing the headmaster on the programmes which are undertaken by the school to improve the quality of education.

4

Landscape analysis through Maps



Col. William Lambton



George Everest

The British realized that they could ascertain power and collect the taxes in their colonies only if they clearly understood the special geographical features of each of them. This made them decide to conduct various surveys and prepare maps on their basis. Accordingly three surveys namely the Tax Survey, the Topographic Survey, and the Trigonometric survey were carried out by the East India Company in the Indian subcontinent. These surveys that were began with the stewardship of Col.william Lambton in 1802 which took more than 50 years to be completed, were very accurate.

Several Indians were part of these surveys conducted through difficult terrains and hostile climate, carrying the heavy metallic survey instrument called theodolite which weighed half a ton. The surveys incurred immense expenditure and took a toll on many. Col. George Everest joined as an assistant to Lambton in 1818. This was the first survey that recorded the correct measurements of the Himalayan mountain ranges.

As a tribute to George Everest who took up the survey as Lambton's successor the highest peak in the Himalayan mountain ranges was named as Mount Everest. The first topographic maps of the Indian subcontinent were prepared after the completion of the survey in 1854.

Haven't you read the above description? Finding the precise location of the earth's surface features is essential for the preparation of maps. Each part of the earth is measured with the help of survey instruments and maps are prepared based on these measurements. What are the features of the topographic maps? How do these differ from other maps? Let's look into these aspects.

Topographic Map

You have learnt that large scale maps are prepared by incorporating minute details of relatively smaller areas. Topographic maps depict in minute detail all the natural and manmade features on the earth's surface. These maps contain the important surface features such as the undulations of the terrain, rivers, other water bodies, forests, agricultural land, barren land, villages, towns, and transport and telecommunication systems.

Toposheets

The English term 'topography' is derived from the Greek terms 'topo' and 'graphie' which mean 'place' and 'to write or draw' respectively. Topographic maps are also known as toposheets.

In India, the preparation of Topographic maps is entrusted to a central government agency named Survey of India. Certain restrictions have been imposed on the use of topographic maps of strategic regions owing to the national security concerns.

Uses of topographic maps

Topographic maps are used for various purposes; let's see what they are:

- Analysis of the physical and the cultural features of the earth surface.
- For military operations and the preparation of military maps.
- Identification and studying of the natural and the cultural resources of a region as part of economic planning.
- For urban planning.
-

Topographic maps can be read only through proper training and practical experience. A thorough knowledge of the numbering scheme, locational aspects, the conventional signs and symbols, the elevation and slope of the terrain, and the methods of their representation are very essential for comprehending topographic maps.

The following map is part of a toposheet (Fig 4.1). Find out how it differs from the maps you are familiar with.

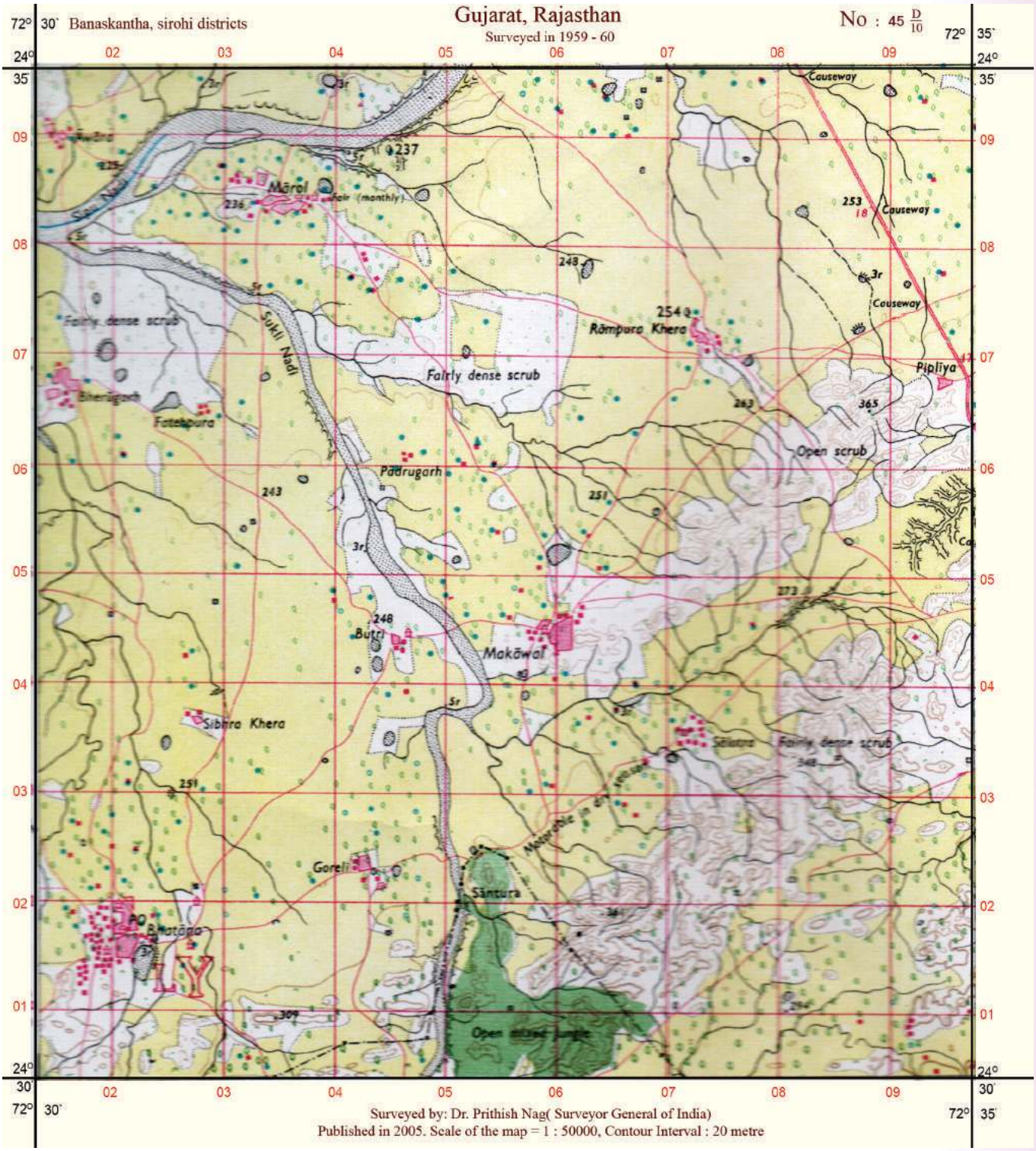


Fig 4.1

Look at the number ($45\frac{D}{10}$) noted above the given toposheet Fig 4.1. What does this indicate? Do all the toposheets contain such numbers?

Layout and numbering of toposheets

The number of the toposheet denotes the area it represents. For example, the number of the given toposheet is 45D/10. This number denotes certain parts of Gujarat and Rajasthan. Similarly unique numbers are given to toposheets covering different regions. Let's see how these numbers are obtained.

Survey of India

The official agency responsible for the preparation of topographic maps in our country is the Survey of India with its headquarters at Dehradun. In India, the topographic maps are prepared in scales 1 : 1000000, 1 : 250000, 1 : 50000 and 1 : 25000 for various purposes. Survey of India made topographical maps for all the places in India. The topographic maps prepared in India are generally known as the 'Survey of India Maps' (SOI maps).

Toposheets for the whole world have been prepared in several sheets of same size and shape. The whole world is picturised in 2222 sheets as follows. There are 1800 sheets for regions between 60° North and South latitudes, 420 sheets for regions between 60° and 88° latitudes in both hemispheres and 2 sheets for both the poles. Analyse the given description and figures (Figs. 4.2, 4.3, 4.4, 4.5, 4.6) and understand the numbering and order of the toposheets representing India.

The numbering of India's toposheets are done on the basis of the India and Adjoining Countries Map Series. As each of the maps in this series is in 1:1000000 scale, these are known as million sheets.

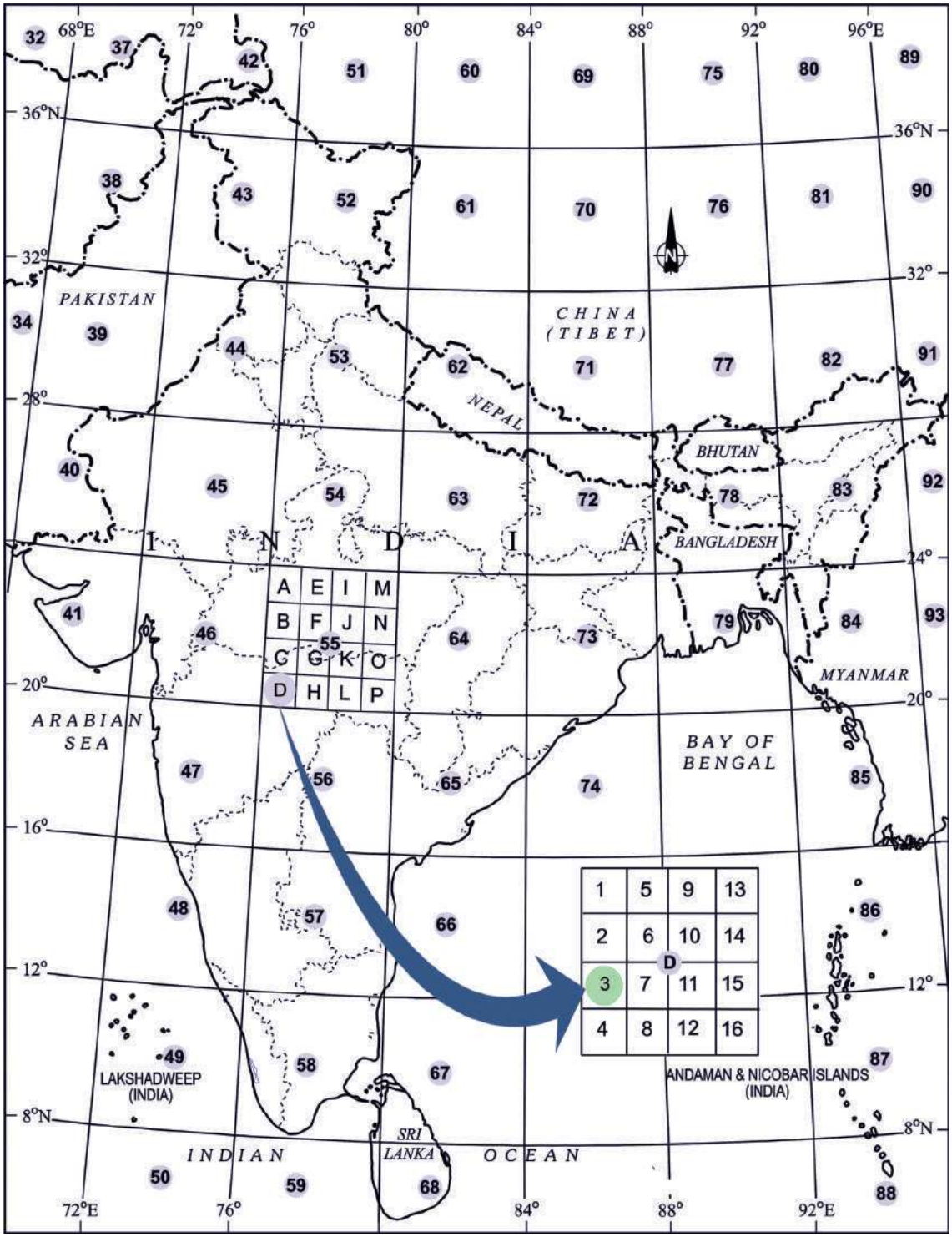


Fig. 4.2

Million sheets

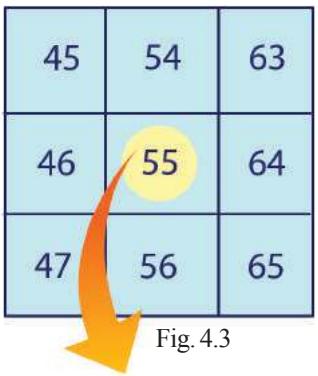


Fig. 4.3

- The million sheets covering 4° latitudinal and 4° longitudinal extent are given numbers from 1 to 105. These numbers are known as index numbers. Look at Fig. 4.3. Each of the sheets in this category is divided into 16 parts known as degree sheets.

Degree sheets

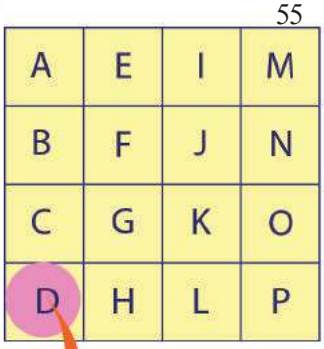


Fig. 4.4

- Each million sheet is divided into 16 parts in the order A, B, C, D, ……. upto P as in Fig. 4.4. For example, the million sheet numbered 55 is divided into 16 parts as 55A, 55B, 55C, ….. etc. Each of these sheets with 1° latitudinal and longitudinal extent is prepared in 1:250000 scale. The degree sheets are further divided into 16 equal parts.

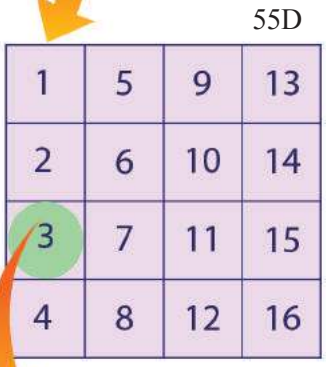


Fig. 4.5

- Each degree sheet has 15' (15 minutes) latitudinal and longitudinal extent (Fig. 4.5) and are numbered as 1, 2, 3, …. 16, for example, 55 , $55\frac{D}{2}$, $55\frac{D}{3}$, ….. up to $55\frac{D}{16}$. These sheets are prepared in 1 : 50000 scale (Fig 4.6).

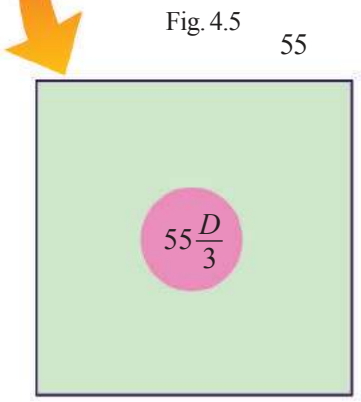


Fig. 4.6

Can you explain how the toposheet in the Fig. 4.1 got the number $45\frac{D}{10}$ *?*

Answer the following by analyzing Fig. 4.2.

- The parts of states that are included in toposheet number 45.
- The index numbers of toposheets which cover the state of Odisha.

- The states that are included in toposheet number 73.
- The index numbers of toposheets which cover the state of Karnataka.
- The index numbers of toposheets which cover kerala.

Now you might have understood the layout and numbering of toposheets. Let's take a look at how the surface features of the earth are represented in these maps.

Conventional signs and symbols

You have learnt in previous classes that various features on the Earth's surface are represented in topographic maps using different colours and symbols. As the colours and symbols used in the toposheets are internationally accepted, the maps prepared in one country can be easily understood and analysed by the people of another. Look at Table 4.1. It contains the conventional signs and symbols used in toposheets.

Table 4.1

Signs and symbols	Geographic features	Signs and symbols	Geographic features
	Road		**Boundary**
	Metalled road		International boundary
	Unmetalled road		State boundary
	Footpath		District boundary
	Cart track		Taluk boundary
	Bridge with road		
	Railway		**Waterbodies**
	Railway-broad gauge		Stream
RS	Railway with station		River
	Railway- meter gauge		Tidal river
	Level crossing		Spring
			Well
	Railway with bridge		Tube well

Table 4.1. (cont'd)

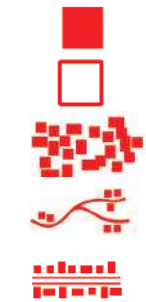
Signs and symbols	Geographic features	Signs and symbols	Geographic features
	**Vegetation** Grass Palms Coniferous trees Bamboo Dense forest Reserve forest		Lighthouse
		DISPENSARY	Health centre
			Airport
		PO	Post office
		TO	Telegraph office
		PTO	Post and telegraph office
		PS	Police station
		IB	Inspection bunglow
		RH	Rest house
	**Settlements** Permanent house Temporary house Clustered settlements Dispersed settlements Linear settlements		
	**Monuments and buildings** Fort Temple Church Mosque Tomb Grave		**Elevation** Contour lines Form line 240 Spot height 200 Triangulated height BM215 Benchmark

Table 4.1. **Conventional signs and symbols**

Find out the conventional colours used to represent different geographic features and complete Table 4.2.

Feature	Colour
• Latitudes and longitudes • Non perennial waterbodies • Railway lines, telephone and telegraph lines • Boundary lines	
• Oceans, rivers, wells, tube wells…… (perennial waterbodies)	•
• Forests • Grasslands • Trees and shrubs • Orchards	•
• Cultivable land	•
• Barren land	•
• Settlements, roads, paths	•
• Grid lines (eastings, northings and their numbers)	•
• Contour lines and their values	•
• Sand dunes and sand hills	•

Table 4.2 Conventional colours

Representing elevation

Elevation or height is represented in toposheets using contour lines, form lines, spot height, triangulated height, and benchmarks.

Contour lines

Contour lines are imaginary lines joining places having the same elevation above the sea level.

Form lines

When it is difficult to measure the elevation of places through land surveys due to rugged terrain, the elevation is represented with the help of broken lines. These are form lines.

Spot height

Spot height represents the actual height of a place by recording the height in digits beside a black dot. Sometimes the height alone is recorded without the black dot.

Triangulated height

Height of places estimated through trigonometric surveys are recorded in maps using 'Δ'symbol.

Benchmark

The height of reservoirs and prominent buildings are recorded along with the letters BM.

Look at the given toposheet (Fig 4.1). Find out the symbols and colours you have familiarized.

You are now familiar with the conventional signs and symbols in toposheets. Let us see how the location of places is identified in these maps.

Haven't you noticed the red lines drawn lengthwise and breadthwise in the given toposheet (Fig 4.1)? What are they? What are their uses?

Grid reference

You know that places are located on maps and globe with the help of latitudes and longitudes. But it is difficult to show the precise location of minor geographical features in toposheets, which are large scale maps.

To solve this difficulty north-south and east-west lines in red are incorporated in the toposheets. The north-south lines are called eastings and the east-west lines are called northings. The values of the lines would also be recorded appropriately.

Find out the eastings and northings in the given toposheet (Fig 4.1)

Analyse the figures (Figs 4.7, 4.8) and their descriptions to understand the salient features of eastings and northings.

Eastings

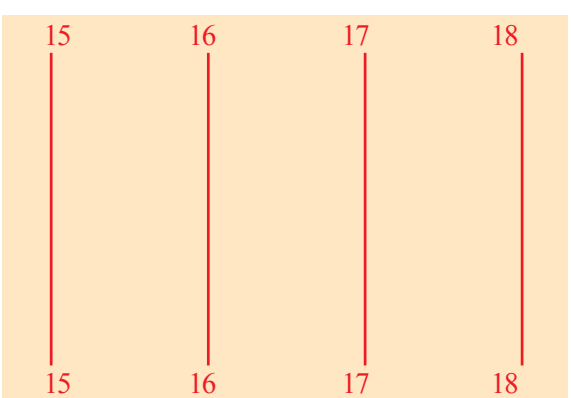


Fig 4.7

- These are north-south lines
- Their value increases towards the East.
- The value of the eastings immediately left to the geographic features is considered for identifying a location.

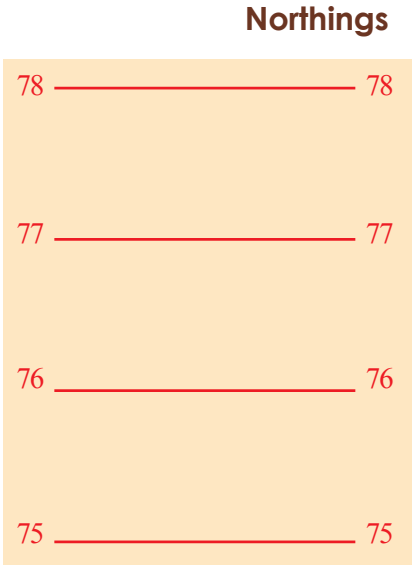


Fig 4.8

- These are lines drawn in the east-west direction.
- Their value increases towards the north.
- The value of the northings immediately to the south of the feature in the map is considered for identifying a location.

Find the values of the eastings and the northings from the given toposheet (Fig 4.1).

The grids formed jointly by the eastings and the northings are called reference grids. In 1:50000 toposheets each grid with 2 cm width & 2 cm breadth covers an area with 1 kilometre length & 1 kilometre breadth on the earth's suface.

Let's see how features can be located in toposheets using these grids.

Look at the model grid (Fig 4.9) given below. Don't you see the symbols of some geographic features in the grid? It is their location we need to find. The sizes of the geographic features included in the model grid are not one and the same. Since they differ in size, the location of these features can be found out in

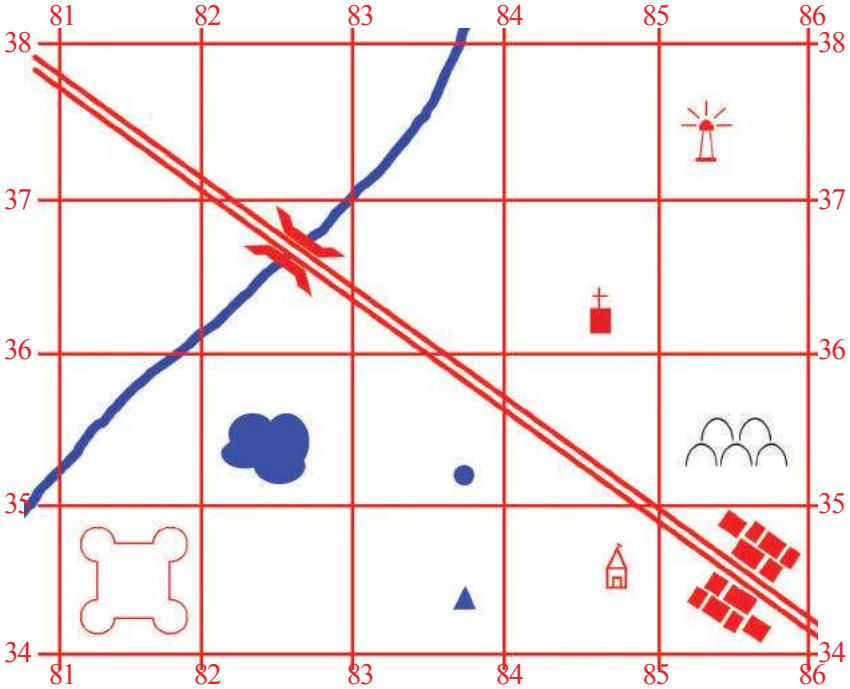


Fig 4.9

two different ways, namely, 4 - figure grid reference and 6 - figure grid reference.

4 - figure grid reference

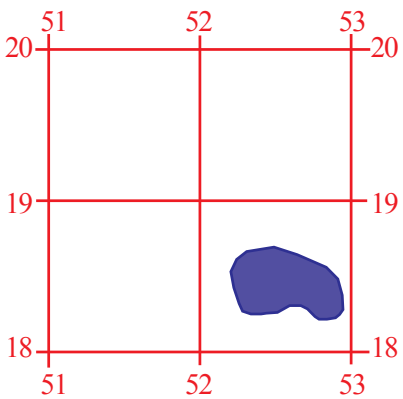


Fig 4.10

Look at the grid with a lake in Fig. 4.10. Let's examine how the lake can be located.

In the 4 - figure grid reference method, the value of the easting to the immediate left of the feature (lake) is to be written (here it is 52). Then the value of the northing just south of the feature (18) is to be written. Thus the location of the lake, as per the 4 - figure grid reference, will be 5218 (Fifty two eighteen).

Locate the geographic features of fort, graveyard, and settlements shown in the model grid (Fig 4.9), using the 4-figure grid reference method.

6-figure grid reference

Relatively smaller geographic features are generally located through the 6-figure grid reference method. Look at the given grids (Fig 4.11) depicting a tube well. Let's examine how the tube well can be located.

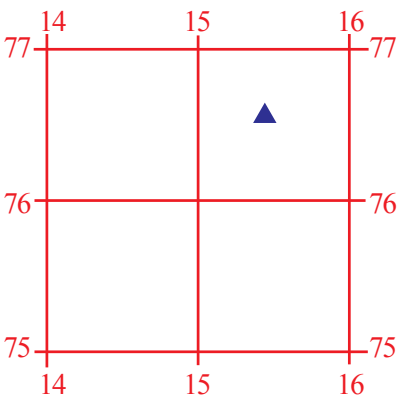


Fig. 4.11

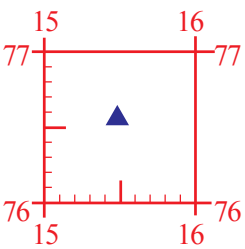


Fig. 4.12

While determining the location of the tube well, the value of the easting to the left of it (15) is to be written first.

- Then divide the area up to the next easting into 10 equal parts as shown in figure (Fig 4.12).
- Find the exact division on which the tube well is located (5) and write it next to the value of easting already found. (155).

- Now write the value of the northing just below the tube well (76) along with the easting's value (15576).
- Divide the area up to the next northing as being divided into 10 equal parts as shown in Fig. 4.12 and find the exact division on which the tube well is located (6) and write it with the values already written (155766 - Fifteen five seventy six six). What is obtained (155766) is the exact 6 grid reference of the given tube well.

Locate the smaller geographic features such as temple, church, well, light house and bridge shown in the model grid (Fig 4.9), using the 6 - figure grid reference method.

Now you have understood how to determine the location of features in topographic maps. Let's see how the shape of the terrain is assessed.

Look at the smooth curved brown lines shown in the topographic map (Fig. 4.1). By what name are these lines known? What is their use?

C3CFW6

Contour Lines

Observe the pictures given (Figs. 4.13 and 4.14). These are the pictures of contour lines and the shapes of the landforms they represent. Contours are imaginary lines drawn on maps connecting those places having equal elevation from the sea level. A contour line joins points of equal elevation above a given level such as mean sea level. The respective altitude will be marked with each contour line. These are called contour values. With the help of contour values we can find out the altitude of the places shown in maps.

Two different landforms and their contour representations are given in Figs. 4.13 and 4.14. Which are the landforms you can identify in these pictures?

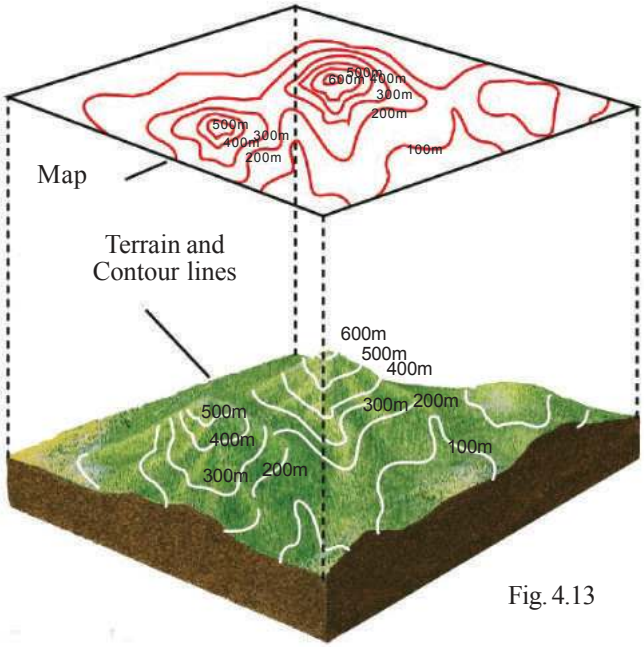


Fig. 4.13

Don't you see that the value difference between contours will always be equal? This difference between the value of two adjacent contours is called contour interval. For example, the contour interval in Figs. 4.13 and 4.14 is 100 metres.

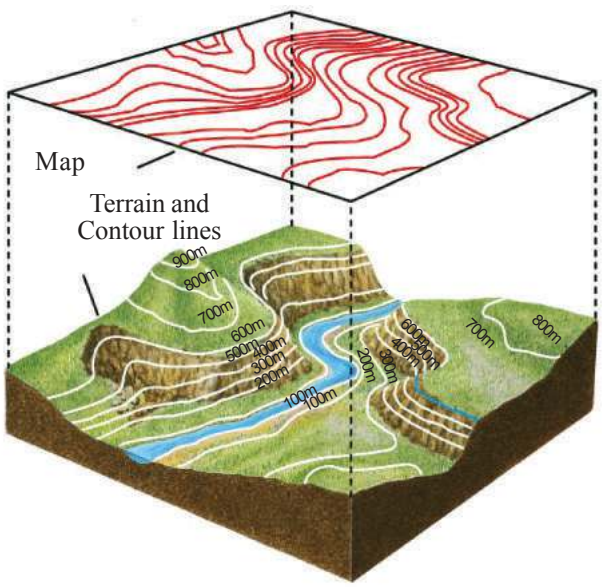


Fig. 4.14

Find the contour interval in the toposheet provided (Fig. 4.1).

Contour interval

The contour interval of toposheets in the 1:50000 scale is generally 20 metres. By analysing the values of the contours, the altitude of places represented in the maps can be found out. To understand the relief of elevated landforms, contours with 100 metre interval are used.

You might have noticed that in the given picture (Fig 4.14) the contours are closely spaced at certain places and are farther apart elsewhere. The closely spaced contours represent steep slopes and the widely spaced contours represent gentle slopes.

The following three things can be assessed from the contour lines in topographic maps.

- Altitude of the place
- Nature of the slope
- Shape of the landform

Let's see how the shapes of landforms are determined using contour lines. This can be done using two methods.

Assessing the topography

Method 1

Directly from the contours

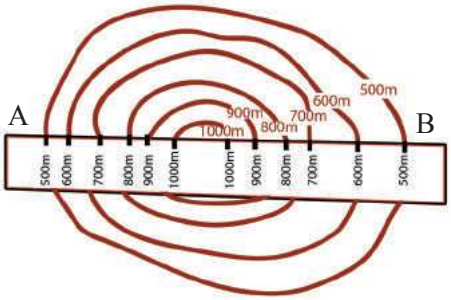


Figure 4.15

- As shown in Fig. 4.15, place a paper strip, across the contour pattern of which the topography is to be assessed. Mark A and B at either ends of the paper strip. Mark and label the values of the contour lines cutting across the paper strip.

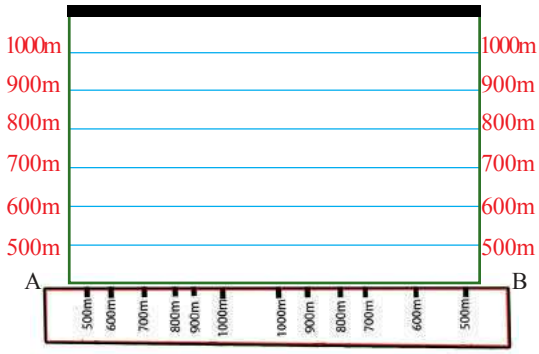


Fig. 4.16

- Transfer these contour values on to the X-axis of a graph paper (Fig. 4.16). Choose a convenient scale and mark the contour values on the Y-axis.
- Draw vertical lines from the points of contour values on the X- axis (Fig. 4.17). Intersect these vertical lines against the corresponding values in Y axis and mark the intersecting points. Join these points by smooth curves.
- Shade the area using a pencil. Thus we get the shape of the landform represented by the contour lines.

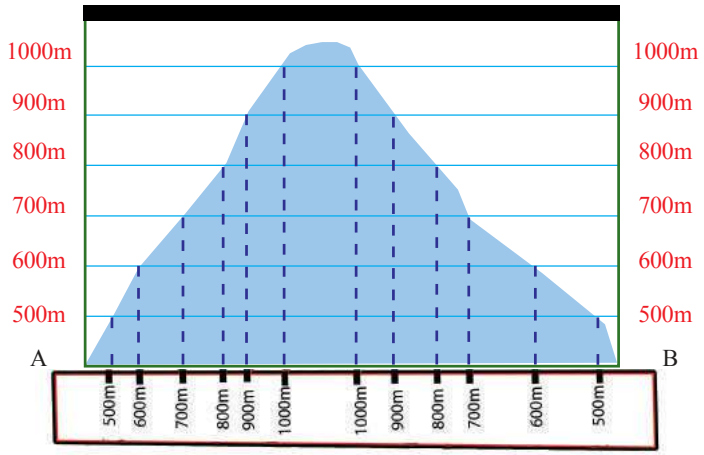


Fig. 4.17

Find out the contour lines of the elevated regions in Fig. 4.1. Mark their contour values on a piece of paper and identify the shape of the landform.

Method 2

By tracing out the contour lines

- Copy the contour lines on a tracing paper and transfer them onto another paper.
- Draw a line AB through the centre of the contours as shown in Fig. 4.18.

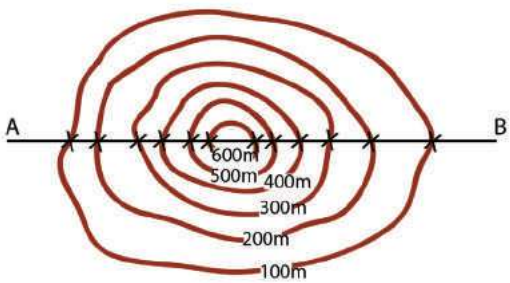


Fig 4.18

- Draw the X and Y axes below the line AB as shown in Fig. 4.19. Mark the values of the contours on both the Y-axis in an appropriate scale (0.5cm=100m or 1cm=100m). Join equal values on both the Y-axes using narrow lines.

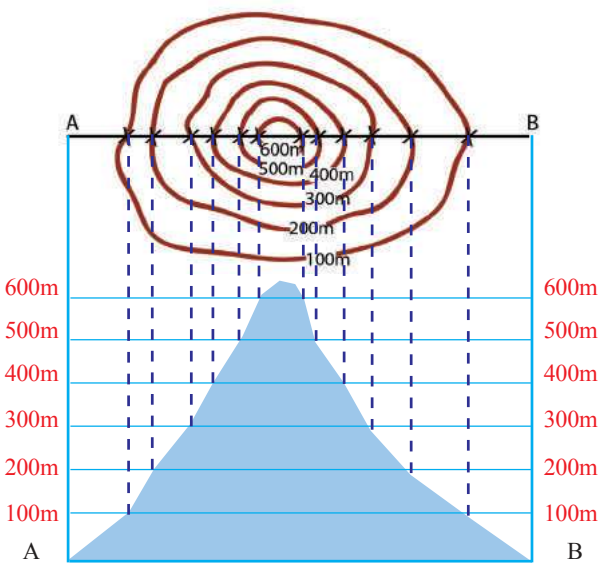


fig 4.19

- Draw vertical lines from the points where contours cut across AB. Mark the points at which these vertical lines intersect the horizontal lines (as in Fig. 4.19).
- Join the points with smooth curves and shade the area using a pencil. Thus we get the shape of the landform represented by the contours.

Using the methods mentioned above, plot the topography represented by the following contour patterns (Fig. 4.20 and Fig. 4.21).

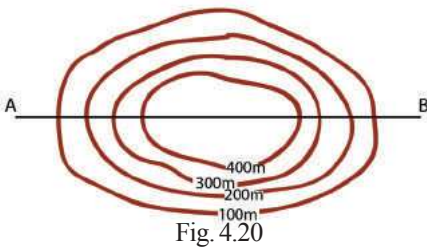


Fig. 4.20

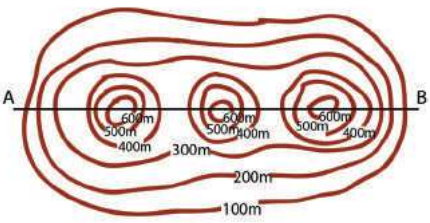


Fig. 4.21

Now you might have understood the methods of plotting the topography from contour lines. Let's examine how the visibility between two places is determined.

Intervisibility

As part of topographical map interpretation, there arises a need to find out whether two places are intervisible. This can be solved only by finding out the relief as well as the slope of the region. If any two places are mutually visible, then we can establish that these places are intervisible. Intervisibility assessment is being applied for erecting electric posts, mobile towers and wireless transmission towers.

Look at Fig. 4.22. You can see the points marked as P, Q, R, and S between the contours. Can you identify the points which are intervisible?

For assessing the intervisibility, the shape of the terrain must be inferred from the contour lines. The given picture (Fig 4.23) represents the shape of the landform inferred from the contour lines.

By analysing this picture, we can assess the intervisibility between places.

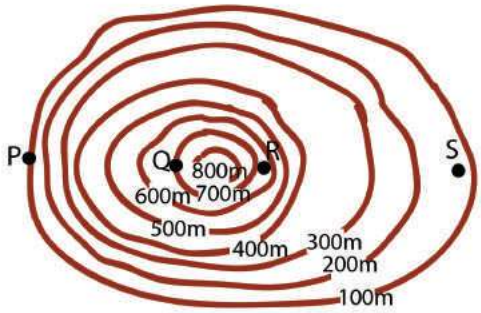


Fig. 4.22

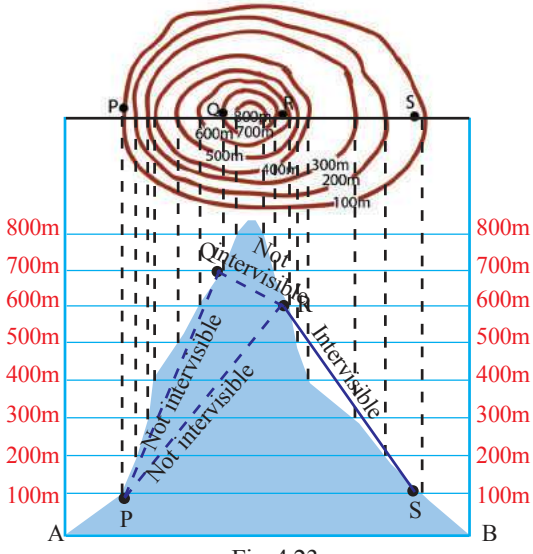


Fig. 4.23

Determine the shape of the terrain represented by the given contours (Fig. 4.24) and complete Table 4.3 by checking the intervisibility between the places M, N, O and P.

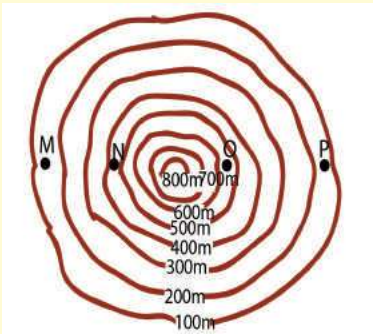


Figure 4.24

Places	Intervisible/ Not intervisible
• Between M and N	•
• Between N and O	•
• Between O and P	•
• Between M and O	•
• Between M and P	•
• Between N and P	•

Table 4.3

Let's examine how the toposheets can be interpreted based on the basic knowledge you've acquired so far.

Toposheet interpretation

You might have noticed that some basic information regarding the sheet as well as the physical and cultural features pertaining to the area represented are given in the toposheet (Fig. 4.1).

The study and interpretation of such maps can be done in different stages as mentioned below.

1. Marginal Information/Primary information
2. Physical/Natural features
3. Cultural/Man-made features

Marginal information

The general information given outside the margins in topographic maps is known as marginal/primary information. The toposheet number, name of the area, latitudes and longitudes, values of northings and eastings, scale of the map, contour interval, years of survey and publication and the agency in charge of the survey are the marginal information in the toposheet.

Indicators regarding the marginal information of toposheets and a toposheet labelled with such information are given (Fig 4.25). Find out the marginal information from the map on the basis of the given indicators. Prepare a note on this.

Primary information indicators

- Toposheet number - (a)
- Name of the place represented - (b)
- Latitudinal location - $(c)_1$, $(c)_2$
- Longitudinal location - $(d)_1$, $(d)_2$
- Easting - $(e)_1$, $(e)_2$
- Northing - $(f)_1$, $(f)_2$
- Scale of the map - (g)
- Contour interval - (h)
- Year of survey - (i)
- Year of publication - (j)
- Agency in charge of survey - (k)

List the primary information of the given topographic map $\left(45\frac{D}{10}\right)$ *in Fig. 4.1 as was done in the case of the toposheet* $56\frac{D}{11}$.

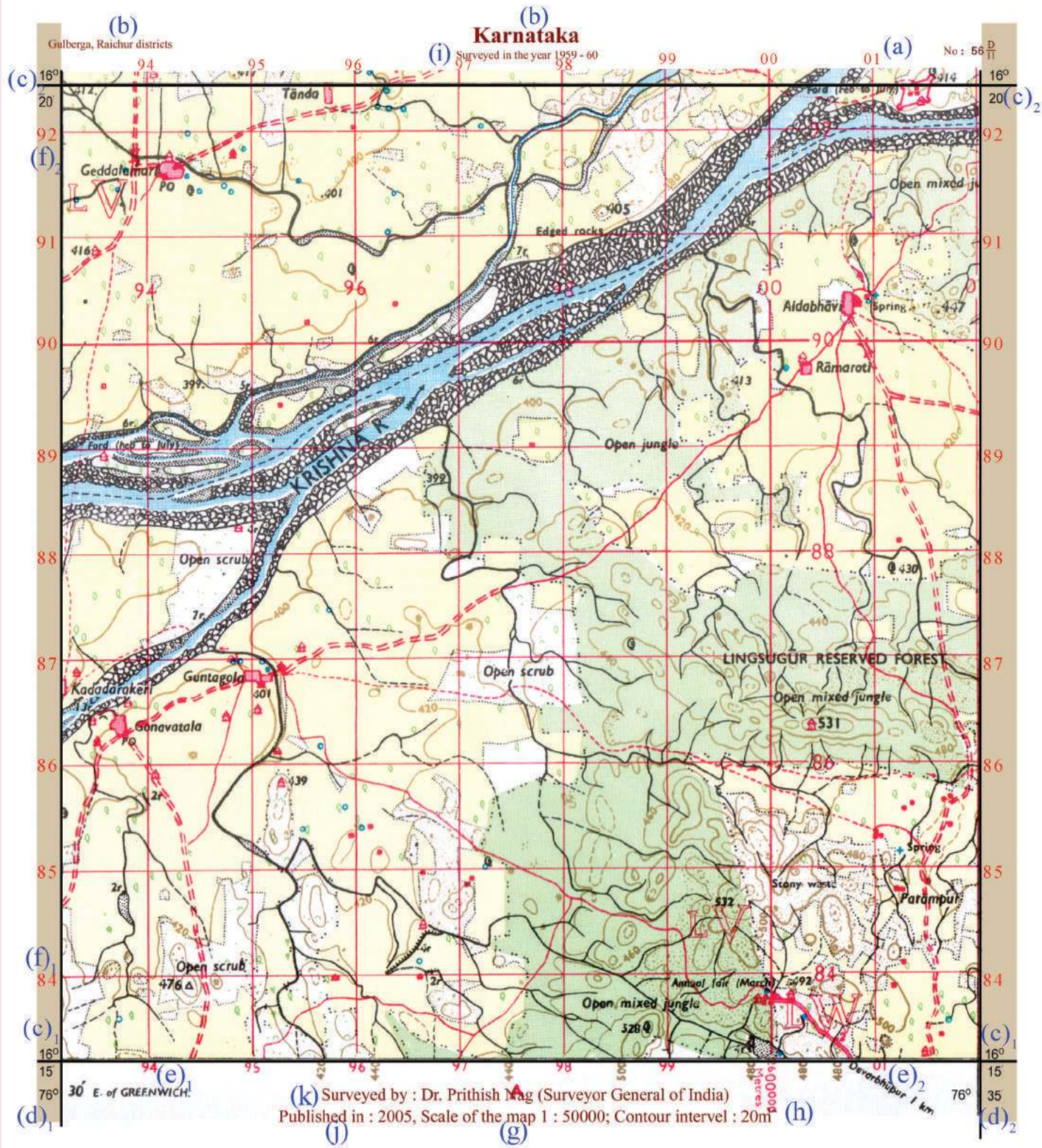


Fig. 4.25

Physical features

Water bodies such as rivers, streams, springs, etc. as well as the different landforms are the physical features in topographic maps. Their locations are to be found by direction or the grid reference method.

Find answers to the following questions by reading the given toposheets (Fig 4.25).

- *Which is the major river flowing through this area?*
- *In which direction does it flow?*
- *On which bank of the river are the forests seen?*
- *What is the name of the reserve forest in this area?*
- *How many springs are seen in this region? Locate them based on direction.*
- *Locate the open scrubs in this area*
- *Find out the location of the following using the 6-figure grid reference method.*
  - *476A*
  - *447*
  - *the spring north of Parampur village*

Cultural features

Settlements, different types of roads, boundaries, places of worship, agricultural lands, post office, police station, bridges, wells and tube wells are a few cultural features shown in toposheets. Their location can also be found based on direction or the grid reference method.

Find answers to the following questions by reading the given toposheets (Fig 4.25).

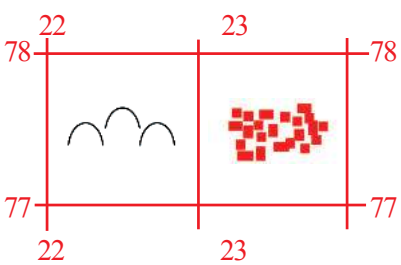
- *Identify the districts in Karnataka to which the area belongs.*
- *Based on which natural feature is the district boundary determined?*
- *Where is the metalled road seen?*

- *In which direction is the Gadalamari village situated?*
- *Which are the villages where post offices can be found?*
- *Find the location using the 4-figure grid reference method.*
  - *Aldobhavi village*
  - *Ganavathala village*
  - *Fort to the north-eastern corner*
- *Using the 6-figure grid reference method, find the locations of:*
  - *Temple near Gadalamari village*
  - *Temple within the Lingusugar Reserve Forest*
  - *Post office in Ganavathala village*

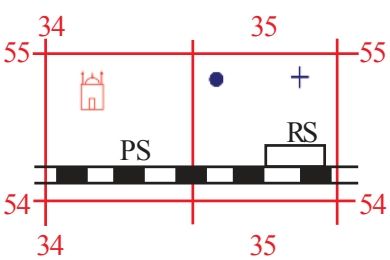
Interpret the toposheet No. given in Fig. 4.1 and prepare a report based on its physical and cultural features.

Let us assess

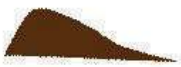
- Find out the location of settlements and graveyard in the given grid, using the 4-figure grid reference method.



- Find out the location of spring, mosque, railway station, police station, and well in the given grid, using the 6-figure grid reference method.



- Match the contour in Column A with the shape of landforms in Column B.

Contour A	Shape of landform B
1 	A 
2 	B 
3 	C 
4 	D 
5 	E 
6 	F 

Extended activity

- Collect different toposheets and interpret the marginal information as well as the physical and cultural features, and prepare short notes.

5

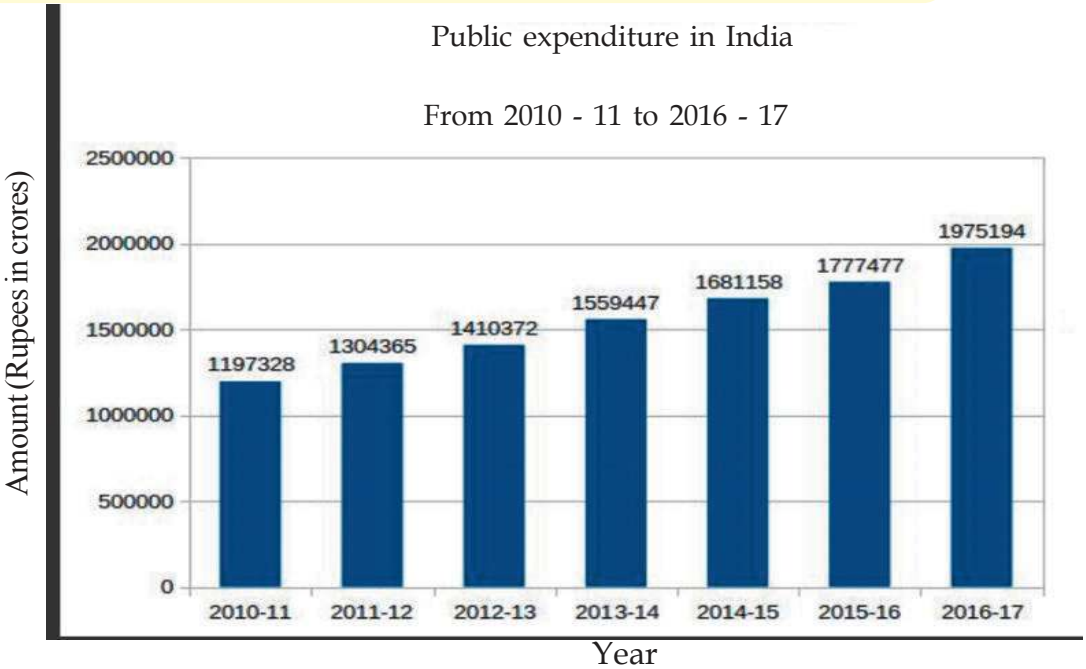
Public Expenditure and Public Revenue

Observe the pictures given above. They are related to certain activities performed by the government. What are they ? Find out other activities of the government.

- Distribution of drinking water
- Protection of environment
-
- Distribution of welfare pension
-

We have seen that the government undertakes many activities. Why are these activities carried out? They are for the welfare of the people. Money is required for all these activities. The expenditure incurred by the government is known as public expenditure. Expenditure increases with an increase in the activities of the government.

Given below is the graph showing the public expenditure of India from 2010 - 11 to 2016 - 17.



Source : Central budget 2016 - 17 (www.indiabudget.gov.in)

Observe the graph and find out the annual increase in the public expenditure.

Public expenditure can be classified into developmental expenditure and non-developmental expenditure. The expenditure incurred by the government for constructing roads, bridges and harbours, starting up new enterprises, setting up educational institutions, etc. are considered as developmental expenditure. Expenditure incurred for war, interest, pension, etc. are considered as non-developmental expenditure.

Find out the government expenditure in your ward and classify them into developmental and non-developmental expenditure.

Hope you have understood from the graph that there has been a steady and continuous increase in India's public expenditure. Why does India's public expenditure increase? Let's see how an increase in population increases the government expenditure. As population increases, facilities for education, health, shelter, etc. have to be provided for more people. For this, the government has to spend more money. Some other important reasons are listed below.

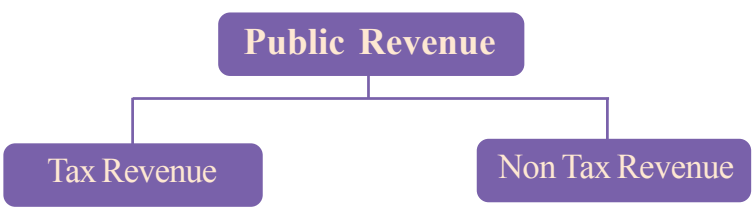
- Increase in the defence expenditure
- Welfare activities
- Urbanisation
-

Discuss how these factors lead to an increase in public expenditure and make inferences.

Government need income to meet expenditure. Let's see what are the sources of revenue to the government.

Public revenue

The income of the government is known as public revenue. Think about the sources of revenue to the government. Government earns income primarily from two sources. They are given in the chart below.

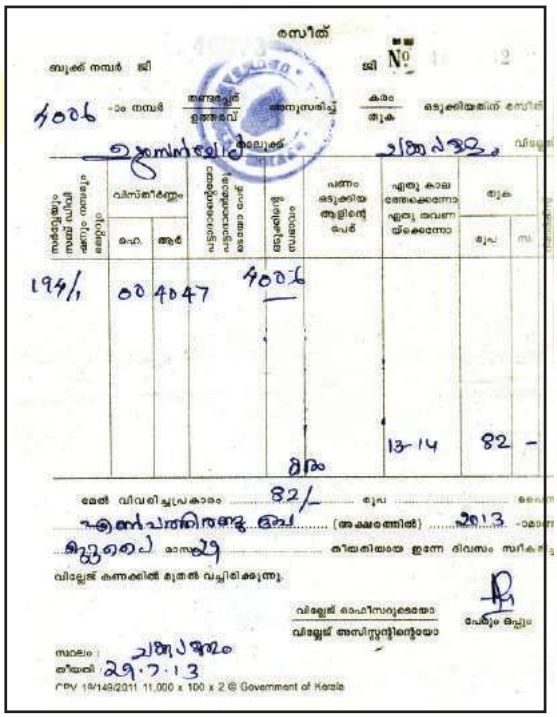


Taxes

Taxes are the main source of income to the government. Tax is a compulsory payment to the government made by the public for meeting expenditure towards welfare activities, developmental activities etc. The person who pays tax is called tax payer. Taxes are of two types.

Direct Tax

Can you identify the receipt given? Where do we remit land tax?



Land tax is paid by the person on whom it is imposed. Here the burden of the tax is borne by the same person on whom tax is imposed. These types of taxes are called direct taxes. The unique feature of direct tax is that the tax payer undertakes the burden of the tax.

Major direct taxes in India

Personal Income Tax

It is the tax imposed on the income of individuals. The rate of tax increases as the income increases. Income tax is applicable to the income that is above a certain limit. In India the income tax is collected by the central government as per the Income Tax Act 1961.

Corporate tax

This is the tax imposed on the net income or profit of the companies.

Indirect tax

An important feature of indirect tax is that the tax burden can be shifted from the person on whom it is imposed to another person. For example in the case of sale tax the tax burden initially falls on the trader. But the trader transfers the burden of the tax along with its price to the consumer. The tax is included in the price paid by the consumer. With a view to simplify the indirect tax system and to introduce one tax across the country Goods and Services Tax (GST) was introduced by incorporating majority of existing indirect taxes. The prevailing system will continue for those items that are not included in GST.

Goods and Services Tax (GST)

The major taxes merged into GST

- Central excise duty
- Service taxes
- Central sale tax
- State value added tax
- Luxury tax
- Advertisement tax
- Octroi
- Entertainment tax

Goods and Services Tax (GST) was introduced in India on 1st July 2017 merging different indirect taxes imposed by central and state governments. Taxes are levied at different stages starting from production to final consumption of goods and services. In each stage the tax is imposed on the value added. Hence tax is collected only on value addition. The tax paid in the earlier stages need not be paid by the final consumer. GST registration is mandatory to the traders if the turnover is more than 20 lakh in a financial year.

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Goods and Services Taxes (GST): Types

The Central and State government impose GST on goods and services traded within the state. The tax imposed by the central government is known as Central GST (CGST) and the tax imposed by the state government is known as State GST (SGST). These taxes are collected jointly from the consumers and are shared equally by the centre and state governments.

Should the tax be imposed on the goods and services traded from one states to the other? The GST on interstate trade is imposed and collected by the central government. This is known as Integrated GST (IGST). The share of the state government on IGST is given by the Central government.

GST Rates

No GST is imposed on essential services and daily consumption goods including unprocessed food items. GST is arranged under four slabs as 5%, 12%, 18% and 28%.

Let us examine a bill received from a shop and find out the following.

- The GST Registration number.
- GST rates as represented by symbols given in coloumn 1.
- Are central and state GST rates same?
- Items that are exempted from GST.
- Whether higher GST rates are applicable to necessary or luxury goods?

GST RULE 2017-TAX INVOICE CASH					
GST32AAIFM9805BIZK					
PAN.AAIFM9805B					
DATE:08/09/2018 BILLNO:50704					
	Item Name	MRP	Qty	Rate	Total
$	COMPLAN KESER B	305	1	299.32	299.32
@	SANTHIGIRI TURM	72	1	65	65
@	BRAH FRIED RAWA	89	1	86.08	86.08
	GARLIC	60	0.2	55.64	11.13
@	CYCLE 3 IN 1	50	2	49	98
@	SPYZEE ROASTED	70	1	66.2	66.2
$	CADBURYS D/M	20	2	19	38
$	COLGATE STRONG	176	1	171.12	171.12
@	BRAH WHEAT POWD	53	1	51.25	51.25
@	PAVITHRAM GINGE	218	1	206.28	206.28
$	VIM LIQUID YMI	155	1	152.88	152.88
$	HARPIC 500 ML	80	1	78.05	78.05
$	SURF EXCEL DETE	190	1	186.49	186.49
$	SURF MATIC F/L	225	1	222.98	222.98
$	HARPIC BATH CLE	40	1	38.3	38.3
!	DOPPI SSK DELUX	42	5	35	175
$	UJALA CRI & SHINE	110	1	107.23	107.23
$	X ALL LOTION	47	1	44	44
	UZHUNNU BALL	97	1	83	83
				Round Off	-0.31
				TOTAL	2180
	TOTAL ITEM:19				
	Gst % !=0%,@=5%,#=12%,$=18%,&=28%				
	Net Amt:	CGST%	CG Amt	SGST%	SGAmt
!	269.13	0		0	
@	545.53	2.5	13.64	2.5	13.64
#	0	6	0	6	0
$	1134.21	9	102.08	9	102.08
&	0	14	0	14	0
	TOTAL :		115.72		115.72

GST Council

Union Finance Minister is the chairman of GST council and the members are Union Minister of State in charge of finance and state finance ministers. The council makes recommendation on the following.

- Taxes, cess and surcharges that are to be merged into GST.
- The goods and services that are to be brought under GST.
- Determining GST rates.
- The time frame for including the excluded items into GST.
- Determining the tax exemption limit on the basis of total turnover.

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Items that do not come under GST at present

Petroleum products (raw petroleum, diesel, petrol, natural gas, aviation fuel) electricity, liquor do not come under GST. The existing indirect tax system will continue on these items.

Discuss whether direct or indirect tax seriously affect common people.

Hints: Tax burden, price rise, income inequality

The other two sources of income to the government are surcharge and cess.

Surcharge and Cess

Surcharge is an additional tax on tax amount. This is imposed for a certain period of time. Usually surcharge is imposed as a given percentage on the income tax.

Cess is an additional tax for meeting some special purpose of government. Cess is withdrawn once sufficient revenue is collected. Education cess on income tax is an example. So far we have been discussing the tax revenue of the government. Some of the taxes imposed by central, state and local self governments are given below.

Central government	State government	Local self government
• Corporate tax • Personal Income Tax • Central GST (CGST) • Integrated GST (IGST)	• Land Tax • Stamp duty • State GST (SGST)	• Property tax • Professional Tax

With the help of reading materials find out major taxes imposed by state government.

We have understood the revenue sources of government, i.e. taxes. Now let us think the non tax revenue sources of the government.

Sources of non-tax revenue

Fees	Fees is the reward collected for the government's services. License fees, registration fees, tuition fees, etc. are examples.
Fines and penalties	Fines and penalties are punishments for violating the laws.
Grants	Grants are the financial aid provided by one government or organisations for meeting a specific objective. For example, grants are provided by central and state governments to local self governments.

Interest	Government receive interest for loans given to various enterprises, agencies and countries.
Profit	Profit is the net income received from the enterprises operated by the government. For example, profit from the Indian Railways.

Visit your local self government institution and prepare a report on the grants they receive.

When public income is insufficient to meet the expenditure, governments resort to borrowing.

Public debt

Public debts are loans taken by the government. Loans are availed from within and outside the country. These are known as internal debt and external debt respectively.

Internal debt ⇒ Internal debts are the loans availed by the government from individuals and institutions within the country.

External debt ⇒ External debts are the loans availed from foreign governments and international institutions.

The table shows the internal and external debt of India form 2012 -13 to 2017-18.

Year	Internal debt (Rupees in crores)	External debt (Rupees in crores)	Total debt (Rupees in crores)
2012 - 13	3764456	177288	3941744
2013 - 14	4240766	184580	4424346
2014 - 15	4775900	194286	4970186
2015 - 16	5298216	205459	5503675
2016 -17	5741710	408108	6149818
2017 - 18^{BE}	6180027	423897	6603924

Status paper on government debt (Feb. 2018)

(www.dea.gov.in)

- How much did public debt increase in 2017-18 compared to 2012-13?
- What conclusion can be arrived at while comparing internal debt with external debt?

Reasons for the increase in India's public debt are given below.

- Increased defence expenditure
- Increase in population
- Social welfare activities
- Developmental activities
-

- *Calculate the annual per capita debt of India.*
- *Statistics shows that India's public debt is increasing. Discuss the advantages and disadvantages of this and report the findings.*

Public finance

Public finance is the branch of economics that relates to public income, public expenditure and public debt. Public finance is presented through the budget.

Budget

Budget is the financial statement showing the expected income and expenditure of the government during a financial year. In India, financial year is from April 1 to March 31.

Budgets are of three types.

When income and expenditure are equal, it is called a balanced budget. When income is more than expenditure, it is called surplus budget. When expenditure is more than income, it is called deficit budget.

Let's examine the major items of expenditure included in India's 2017-18 budget.

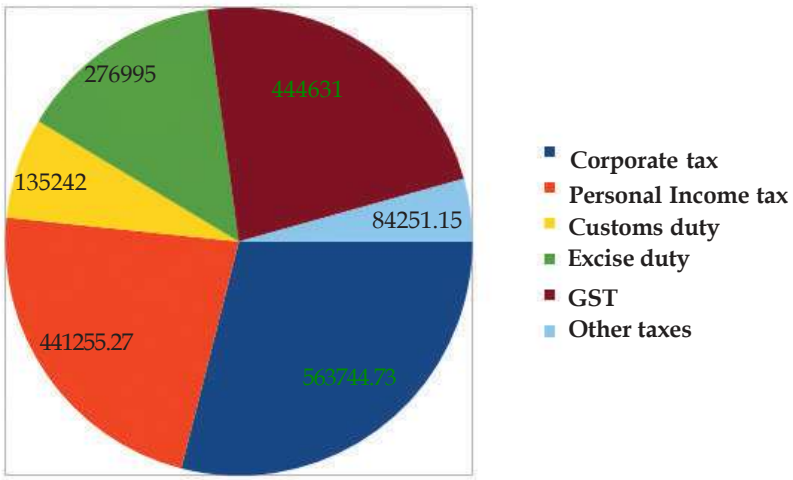
Items	Expenditure (in crores)
Interest and repayment	530843
Defence	267108
Subsidies	229716
Pension	147387
Social Services (Education, health, social welfare)	173691
Economic services (Agriculture, Industry, trade, energy, transport)	231673
Interest	530843
Rural development, Urban development	176358
Other Public services	460974
Total Expenditure	**2217750**

Source : Central budget 2017 - 18 (revised estimate) www.indiabudget.gov.in

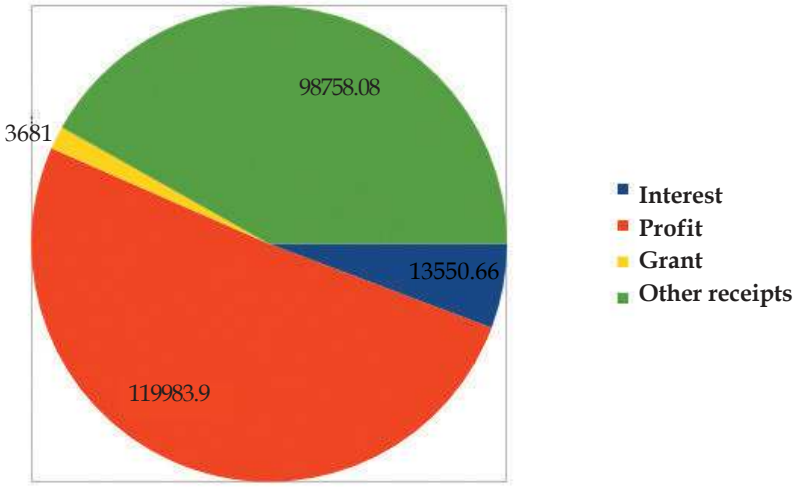
Prepare a note by analysing the major items of expenditure of the central government.

Observe the diagram related to the major income sources of the central budget 2017-18.

Central budget 2017 - 18 Tax revenue



Central budget 2017 - 18 Non tax revenue



Source : Central budget 2017 - 18 (revised estimate) www.indiabudget.gov.in

Find out the following after observing the diagram.

- From which item does the central government receive maximum tax revenue?

- Which is the source of non tax revenue that yields maximum income to the central government?
- Which source yields more income to the central government - tax revenue or non tax revenue?

Fiscal policy

Government's policy regarding public revenue, public expenditure and public debt is called fiscal policy. These policies are implemented through the budget. Fiscal policy influences a country's progress. A sound fiscal policy helps in nourishing the developmental activities and to attain growth. Some of the goals of the fiscal policy are given below.

- Attain economic stability
- Create employment opportunities
- Control unnecessary expenditure
-
-

Let's examine how the fiscal policy controls inflation and deflation which affect economic security. The tax rate is increased when there is inflation. As a result of this, the purchasing power of the people falls. For example, assume that tax rate is increased from ten percentage to twenty percentage. Then, for Rs. 100, the tax to be paid is Rs. 20 and the consumer can use only Rs. 80. When the products cannot be sold in the market, prices fall. Similarly, tax is reduced at the time of deflation. This will increase the purchasing power of the people. As a result the demand for products increases. This results in an increase in the price of the products. The timely application of fiscal policy helps the government to overcome such situations.

How do public expenditure, public income and public debt benefit a country? Discuss.

Let us assess

- Compare developmental and non-developmental expenditure and give examples for each.
- Describe the features of direct tax and indirect tax.
- What are the important functions of GST council.
- Explain with examples public revenue and pubic expenditure.
- What are the sources of non tax revenue?
- Rewrite if required:

  Deficit budget : income = expenditure

  Surplus budget : income < expenditure

  Balanced budget : income > expenditure
- What is fiscal policy? Explain its aims.
- Public finance and fiscal policy determine a country's progress. Substantiate.

Extended activities

From the central budget 2017-18 find out the tax revenue collected from GST.

Collect bills for the goods and services bought in your house for a month. Do the following activities based on this.

- Classify the bills into GST bills and non GST bills.
- Calculate the amount paid from your house as GST.
- Visit the website www.services.gst.gov.in
- Click on search tax payer
- Enter GST number in GSTIN/UIN and collect the available information.

Notes

Notes

Notes

CONSTITUTION OF INDIA

Part IV A

FUNDAMENTAL DUTIES OF CITIZENS

ARTICLE 51 A

Fundamental Duties- It shall be the duty of every citizen of India:

(a) to abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem;

(b) to cherish and follow the noble ideals which inspired our national struggle for freedom;

(c) to uphold and protect the sovereignty, unity and integrity of India;

(d) to defend the country and render national service when called upon to do so;

(e) to promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities; to renounce practices derogatory to the dignity of women;

(f) to value and preserve the rich heritage of our composite culture;

(g) to protect and improve the natural environment including forests, lakes, rivers, wild life and to have compassion for living creatures;

(h) to develop the scientific temper, humanism and the spirit of inquiry and reform;

(i) to safeguard public property and to abjure violence;

(j) to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievements;

(k) who is a parent or guardian to provide opportunities for education to his child or, as the case may be, ward between age of six and fourteen years.

Security Features of a Genuine Indian Currency Note

We have to know more about currency notes used for financial transactions. Genuine currency notes have certain security features. Awareness of those features can save us from being duped.

- **Paper**

  Banknotes are printed on special watermarked paper with substrate cotton and cotton rag. This gives the banknotes a unique "touch feel" and "crackling sound".

- **Watermark**

  The portrait of Mahatma Gandhi, the multi-directional lines and an electrolyte mark showing the denomination value appear in this section and these can be viewed better when the banknote is held against light.

- **Security Thread**

  All banknotes carry a security thread, partially exposed and partially embedded, with readable window. The security thread of notes up to Rs 500 denomination contains "Bharath" in Hindi and "RBI" in English alternately. Rs 1000 denomination notes additionally contain "1000" as a numeral in the security thread.

- **Micro lettering**

  The letters "RBI" and the denomination value as a numeral can be viewed with the help of a magnifying glass in the zone between the portrait of Mahatma Gandhi and the right vertical band. (However, only letters "RBI" is seen in Rs. 10 denomination).

- **Intaglio Printing**

  The name Reserve Bank of India, the Guarantee Clause, the Promise Clause, the Signature of RBI Governor, the Portrait of Mahatma Gandhi, the Reserve Bank Seal, the Ashoka Pillar Emblem, the Central Denomination Value in words and figures are printed in intaglio, i.e., in raised prints which can be felt by touch.

- **Fluorescence**

  The number panels of banknotes are printed in fluorescent link.

- **Optically Variable Ink**

  The colour of the denomination in numeral appears green when the note is held flat and changes to blue when the note is held at an angle. The font size also appears reduced. This feature is available only on notes of Rs. 500 and Rs. 1000 denominations.

- **Latent Image**

  The vertical band contains the denomination in numeral. This can be seen by keeping the note flat on the palm of your hand at eye level and viewing it against the light.

Printing and circulation of forged notes are offences under Sections 489A to 489E of the Indian Penal Code and are punishable in the courts of law by fine or imprisonment or both.

Social Science II

Standard x

Part - 2

NT-875-1-SOC.SCI.-II-10-E-VOL.2

Government of Kerala
Department of General Education

State Council of Educational Research and Training (SCERT, Kerala)
2019

THE NATIONAL ANTHEM

Jana-gana-mana-adhinayaka, jaya he
Bharata-bhagya-vidhata.
Punjab-Sindh-Gujarat-Maratha
Dravida-Utkala-Banga
Vindhya-Himachala-Yamuna-Ganga
Uchchala-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!

PLEDGE

India is my country. All Indians are my brothers and sisters. I love my country, and I am proud of its rich and varied heritage. I shall always strive to be worthy of it.

I shall give my parents, teachers and all elders respect, and treat everyone with courtesy.

To my country and my people, I pledge my devotion. In their well-being and prosperity alone lies my happiness.

State Council of Educational Research and Training (SCERT)
Poojappura, Thiruvananthapuram 695 012, Kerala
Website : www.scertkerala.gov.in, *e-mail* : scertkerala@gmail.com
Phone : 0471 - 2341883, Fax : 0471 - 2341869
Typesetting and Layout : SCERT
Printed at KBPS, Kakkanad, Kochi-30

Dear Students,

You have already learnt how diverse and dynamic the earth we live in. We can make use of the diversities of nature for the progress of mankind with the help of technology. The lessons in Class X are so arranged as to help familiarize the physiography, climate, and soil of our country, and to develop a general awareness on the use of the potentials of modern technology in geography. We are living in a world where human resource development is necessary. This textbook also discusses concepts like the society in which we regularly interact, the economic transactions in the society, banks and their functions, and national income.

The educational portal-Samagra and textbooks with QR code will make class room activities easy and interesting. The Textbook has been revised considering the National Skill Qualifications Frame work (NSQF), the disaster mitigation measures which is of contemporary relevance and ICT possibilities. You can take part in this life oriented informative and joyful learning activities and enrich this textbook further more. I believe that this textbook will help you intereact responsibly with the nature and that you can transform into responsible citizens.

With love and regards

Dr. J. Prasad
Director, SCERT

CONSTITUTION OF INDIA

Part IV A

FUNDAMENTAL DUTIES OF CITIZENS

ARTICLE 51 A

Fundamental Duties- It shall be the duty of every citizen of India:

(a) to abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem;

(b) to cherish and follow the noble ideals which inspired our national struggle for freedom;

(c) to uphold and protect the sovereignty, unity and integrity of India;

(d) to defend the country and render national service when called upon to do so;

(e) to promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities; to renounce practices derogatory to the dignity of women;

(f) to value and preserve the rich heritage of our composite culture;

(g) to protect and improve the natural environment including forests, lakes, rivers, wild life and to have compassion for living creatures;

(h) to develop the scientific temper, humanism and the spirit of inquiry and reform;

(i) to safeguard public property and to abjure violence;

(j) to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievements;

(k) who is a parent or guardian to provide opportunities for education to his child or, as the case may be, ward between age of six and fourteen years.

Content

Certain icons are used in this textbook for convenience


For further reading (Need not be subjected to assessment)


Questions for assessing the progress

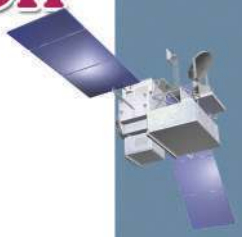

Learning activities


Let us assess


Extended activities

6

Eyes in the sky and Analysis of Information



You have understood how the surface features of the earth are depicted on maps and analyzed. The advancements in the field of science and technology have made information gathering, map making, and subsequent analysis easier and more efficient. Through this lesson you can understand how the launching of satellites and the use of computer softwares for the analysis of geo-spatial data make learning geography more human centered.

Fig. 6.1

Remote Sensing

The invention of photography in the 19th century has brought about a drastic change in data collection. The possibility of capturing photographs from higher elevations mounting cameras on balloons and air crafts has been explored ever since. Data collection using satellites began in 1960. Along with cameras, different types of scanners were also introduced for data collection. Such a method of collecting information about an object, place or phenomenon without actual physical contact is remote sensing.

An energy source is essential for remote sensing. This may be the solar energy containing electromagnetic radiation or an aritificial source of light. Remote sensing is made possible either by utilizing the sunlight or an artificial light reflected from various objects. When photographs are taken by using a camera with flash, the camera is the sensor and the light beam from the flash is an artificial energy. The electromagnetic energy reflected and radiated by objects is utilized in remote sensing technology.

Devices used for data collection in remote sensing are called sensors. Cameras and scanners are sensors. The sensors record the electromagnetic radiations reflected by objects.

The carrier on which sensors are fixed is called a platform. Sensors can be installed on balloons, air crafts and satellites. Based on the source of energy and the platform remote sensing can be classified as follows.

Classification of Remote Sensing Based on Source of energy

Remote sensing

Passive Remote Sensing

Remote Sensing is carried out with the help of solar energy is known as passive remote sensing. Here the sensors do not emit energy by itself.

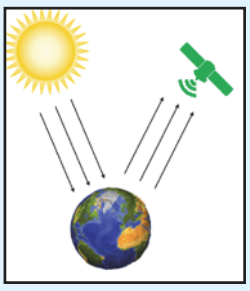


Fig. 6.2

Active Remote Sensing

Remote Sensing made with the aid of artificial source of energy radiating from the sensor is known as active remote sensing.

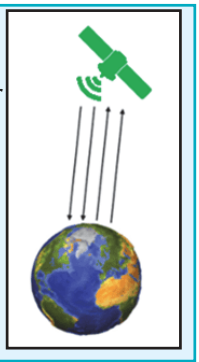
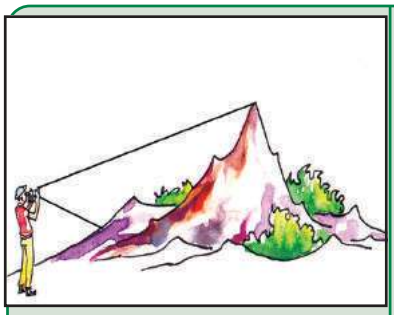


Fig. 6.3

Classification of Remote Sensing based on the platform

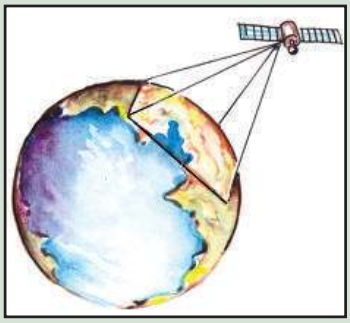


Terrestrial Photography

The method of obtaining the earth's topography using cameras from the ground is known as terrestrial photography.

Aerial Remote Sensing

The method of obtaining photographs of the earth's surface continously from the sky by using cameras mounted on aircrafts is known as aerial remote sensing.



Satellite Remote Sensing

The process of gathering information using the sensors installed in artificial satellites is known as satellite remote sensing.

Fig. 6.4

Fig. 6.5

Fig. 6.6

You have understood the different methods of remote sensing.

Don't we take the photographs of landscape during picnic? What type of remote sensing is this?

Aerial Remote Sensing

Aerial remote sensing is generally used to gather information about comparatively smaller areas. The advantage of aerial remote sensing is that information of any region can be gathered in accordance with our requirements. Another merit of this method is that contiguous pictures of the areas along the path of the air crafts are made available. The photographs

941ZCG

obtained through this method are called aerial photographs. In each aerial photograph, nearly 60% of the places depicted in the adjacent photo is included. This is done for ensuring contiguity and to obtain three dimensional vision with the help of stereoscope. This is called overlap in aerial photographs. Look at the figure 6.7 illustrating the concept of overlap.

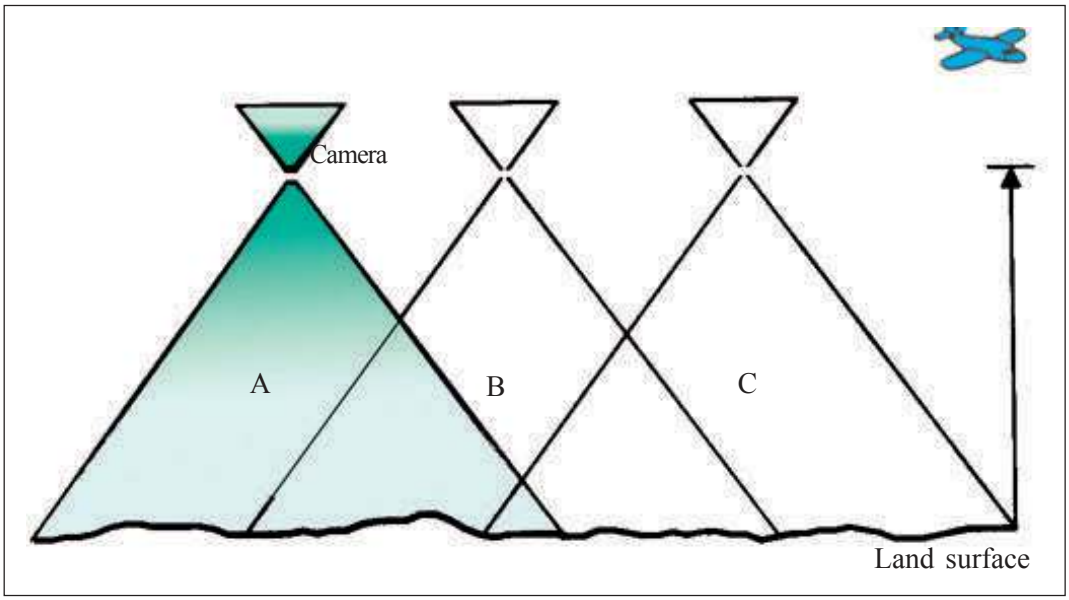


Figure 6.7

It can be seen that each photograph exhibits as much as 60 percentage area as repetition. Major share of areas in the figure A are present in figure B and those of figure B are repeated in figure C. Two such photographs of adjoining areas with overlap are called a stereo pair. Figure A and B as well as B and C are stereo pairs respectively. The instrument which is used to obtain three dimensional view from the stereo pairs is called stereoscope (Fig. 6.8) When viewed through a stereo scope, we get a three dimensional view of the area depicted in the setero pair. Such a three dimensional view obtained is called Stereoscopic vision. Though

Figure 6.8

aerial remote sensing has several advantages they have some limitations as well. Let's see what they are.

94AVE4

The shaking of air crafts affects the quality of photos.

The aircrafts require open space for takeoff and landing.

It is not practical to take photographs of regions that are vast and extensive.

Landing the air crafts frequently for refueling increases the cost.

With the advent of remote sensing using artificial satellites these limitations have been overcome to a great extent. Now let us understand the method of remote sensing by using artificial satellites.

As the aerial photographs are highly useful for viewing a region as a whole and for distinguishing the heights and depressions of the earth's surface aerial photographs were used widely since the second world war. Aerial photographs are also used for the preparation of topographical maps. Aerial photography started in India after independence. The responsibility of aerial survey in India has been vested with the Indian Air Force, Indian Aerospace Company based in Kolkata and the National Remote Sensing Centre.

Satellite Remote Sensing

The process of collecting information using sensors fixed on artificial satellites is called satellite remote sensing. The artificial satellites are mainly divided into two types: Geostationary satellites and Sun Synchronous satellites.

Geostationary satellites

Figure 6.9

These are the satellites that move in equal velocity with the earth's rotation. (Fig. 6.9) The features of these satellites are given below:

- They orbit the earth at an elevation of about 36000 kilometres above the earth.
- One third of the earth comes under its field of view.
- As the movement of these satellites corresponds to the speed of rotation of the earth, it stays constantly above a specific place on the earth.
- This helps in continuous data collection of an area.
- It is used in telecommunication and for weather studies.
- India's INSAT satellites are examples of geo-stationary satellites.

Sun synchronous satellites

Figure 6.10

Sun synchronous satellites are the artificial satellites that passes around the earth along the poles (Fig. 6.10). The features of these satellites are given below:

- The orbit of these satellites is about 900 km in altitude.
- The surveillance area is less than that of the geostationary satellites.
- The repetitive collection of information of a region at regular interval is possible.
- Used for the collection of data on natural resources, land use, ground water etc.
- These satellites are mainly used for remote sensing purposes.
- Satellites in IRS, Landsat series are examples of sun synchronous satellites.

- *With the help of the internet collect the details of the geo – stationary and sun synchronous satellites launched by India and prepare notes.*
- *To collect more information log on to www.isro.gov.in and www.landsat.usgs.gov.*

Haven't you understood that the information about the earth's surface is collected with the help of sensors.

Sensors record the electromagnetic radiation either reflected or emitted by the objects. Each object on the surface of the earth reflects electromagnetic radiation in different measures. For example, the energy reflection of plants is different from that of the water bodies. The amount of reflected energy by each object is called the spectral signature of that object.

Figure 6.11

The sensors on artificial satellites distinguish objects on the earth's surface based on their spectral signature and transmit the information in digital format to the terrestrial stations. This is interpreted with the help of computers and converted in to picture formats. These are called satellite imageries. Fig 6.11. The size of the smallest object on the earth's surface that a satellite sensor can distinguish is called the spatial resolution of the sensor.

Look at the figures (Fig. 6.12 – A and B). These are the satellite imageries captured by two sensors with different spatial resolution. Can we see the features on the earth's surface with greater clarity in figure 6.12 B than in figure 6.12 A? Which of these sensors took images with better spatial resolution?

Spatial Resolution – I Kilometre

A

Spatial Resolution – I metre

B

Figure 6.12

What kind of change that you can find in satellite imageries as the spatial resolution decreases?

Name of some satellites and their spatial resolution are given below:

Satellite	Sensors	Spatial Resolution (in square meter)
Landsat 1, 2, 3, 4, 5	Multi spectral Scanner	79
SPOT	Panchromatic Camera	20
IRS	PAN LISS - III	5.8
Geo Eye	Panchromatic Multi spectral Camera	0.46

Remote sensing in India

Photo interpretation institute was established at Dehradum in 1966 for analyzing and studying aerial photographs. Later this institution becomes Indian institute of Remote sensing (IIRS). The satellite remote sensing in India began with launch of the satellites Bhaskara I and II in 1970. Institutions like National Remote Sensing Centre (NRSC) (erstwhile NRSA), Indian Space Research Organization (ISRO), Department of Space (DOS) and Space Application Centre (SAC) are constantly engaged in making use of remote sensing for the welfare of the society. The complete responsibility of collecting, storing processing and distributing the data made available by Indian Remote sensing satellites are vested in the hands of National Remote sensing centre whose head quarter is at Hyderabad (NRSC) https://nrsc.gov.in.

The clarity of satellite imageries differ as spatial resolutions varies.

With the help of the internet observe the satellite imageries provided by different satellites and compare the clarity in imageries based on their spatial resolution.

Uses of remote sensing technology

- For the assessment of weather and its observations
- For ocean explorations
- To understand the land use of an area.
- For the monitoring of flood and drought
- For identifying forest fires in deep forests and to adopt controlling measures
- To collect data regarding the extent of crops and spread of pest attack
- For oil explorations
- To locate ground water potential places
-

You have understood that a large amount of information about the earth is received through remote sensing technology. We can prepare maps, tables and graphs to find scientific answers to our quiries by the analysis of the information obtained through remote sensing and other means, using a computer based technology called Geographic Information System.

Geographic Information System - GIS

Geographic Information System is a computer based information management system by which the data collected from the sources of information like maps, aerial photographs, satellite imageries, tables, surveys etc. are incorporated in to the computer using softwares, which are retrieved, analyzed and displayed in the form of maps, tables and graphs.

Fig. 6.13 shows the different stages in Geographic Information System.

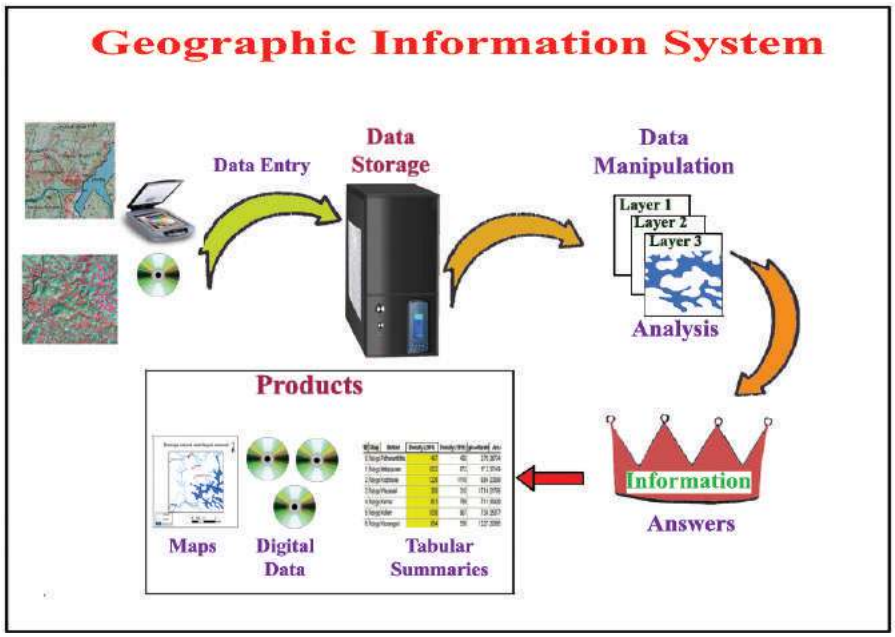


Figure 6.13

Entering basic data in to computer using data input devices like CDs' and Scanners is the first step. Various layers can be created based on the collected data with the help of Geographic Information System softwares. The analyzed data can be converted in accordance with our needs in to products either in the form of maps, tables or digital data.

All data analysis with GIS are done based on two kinds of data. Let us have a look at them.

1. Spatial data

Find out the latitudinal and longitudinal location of our country with the help of the website Bhuvan (https: bhuvan – app I. nrse.gov.in) or with an atlas. Each feature on the surface of the earth has a location of its own. Such features of the earth's surface having a specific location an known are spatial data.

Find out the latitudinal and longitudinal location of your school with the help of Bhuvan and write here.

Latitude : .....

Longitude : .....

2. Attributes

The additional information about the characteristics of each spatial data on the earth's surface are called attributes. The attributes can be combined with spatial data.

Find out the following details of your school.

Number of teachers : .....

Number of class rooms : .....

Number of students : .....

Whether your school building is multi storied or single?: Yes/No

The details you recorded are the attributes of your school. If we can collect and include the spatial data and attributes of places in the data base, the GIS can give precise and scientific answers to the various queries about that place.

Layers

Observe the portion of a topographic map shown in the figure 6.14. Haven't you see the natural and manmade features like streams, roads, vegetation, buildings etc on the map? Can we separate the features one by one to make separate maps. This is possible through GIS. You can see (fig. 6.14) that water channels, roads etc shown separately in the figure. The thematic maps prepared and stored in Geographic Information System for analytical purpose are called layers. The spatial relationship

among the features on the surface of the earth can easily be understood by analyzing the appropriate layers.

Layers of the topographical maps

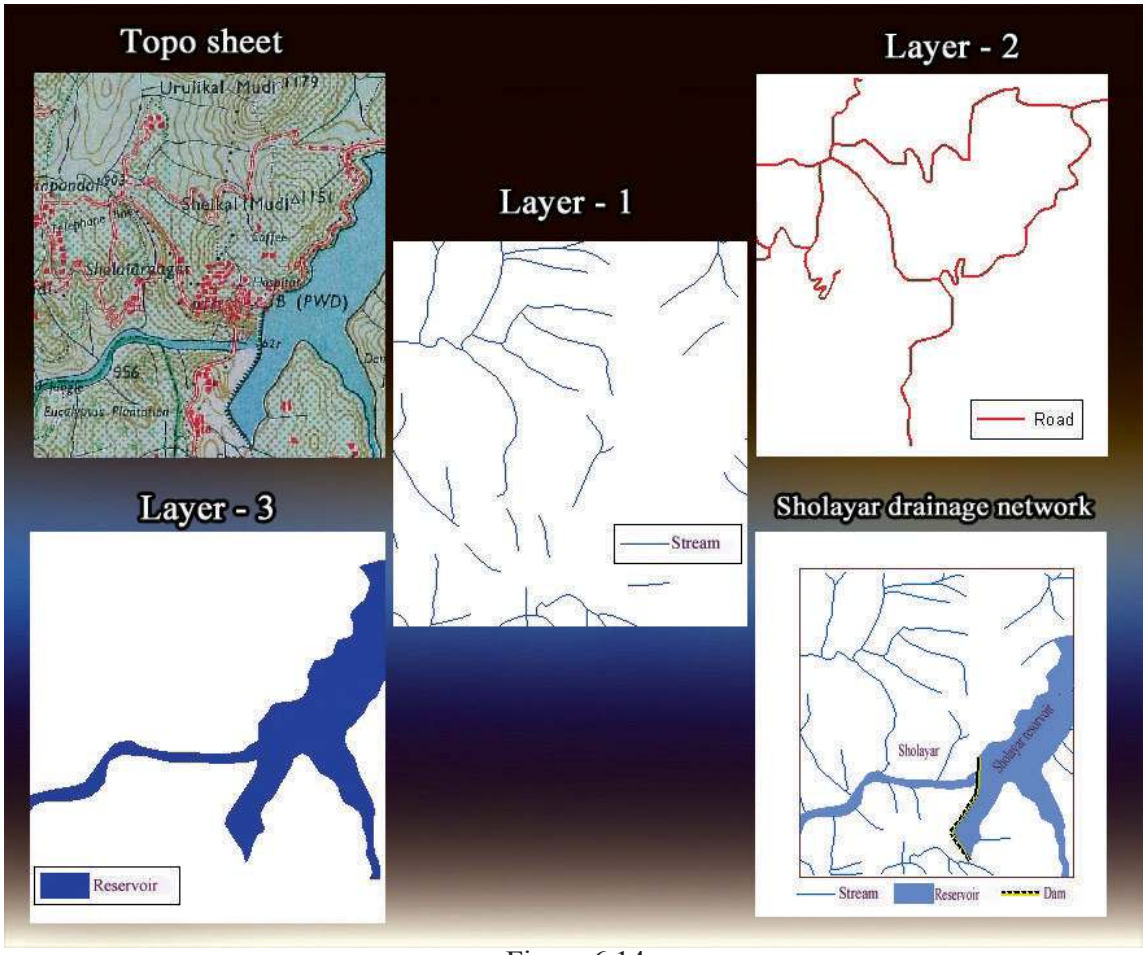


Figure 6.14

In the given figure (fig:6.14) parts of drainage network near a reservoir are shown. Can you find out the different layers that have been used here?

Find out the other possible layers from the given topographic map?

Analytical Capabilities of GIS

The surface features of the earth collected as spatial data and attributes can be analyzed in various ways by the GIS. Network analysis, buffer analysis and overlay analysis are the important analytical capabilities of GIS.

Overlay Analysis

Overlay analysis is used for understanding the mutual relationship among the various features on the earth's surface and the periodic changes undergone by them. Overlay analysis is helpful in understanding the changes in the area of crops, the changes in land use etc.

For example. If we want to understand the changes in the area under paddy cultivation in Thrissur district by the year 2015 compared to 2000, all we have to do is to overlay the land use maps of Thrissur in the corresponding years.

Buffer Analysis

Suppose if we want to find out the number of houses located within three kilometre radius of your school, the possibility of buffer analysis can be used effectively. If the spatial data of the place where your school is located is subjected to buffer analysis in GIS, a circular area with 3 km radius can be created around your school so as to find out the number of houses in that area. (fig 6.15)

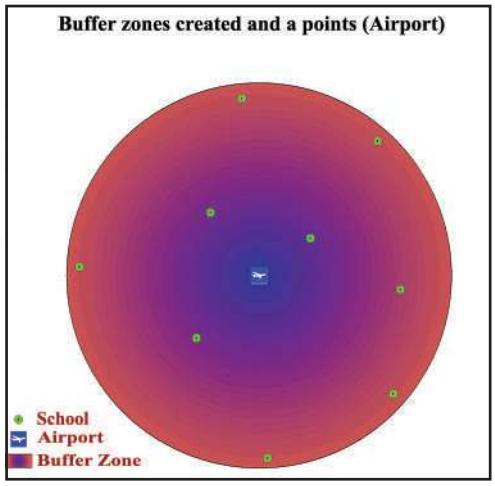


Figure 6.15

Suppose a road in your region is widening from 5 m to 8 m as per the government decision. In such a situation , a zone of required width is created along the existing road by using the possibility of buffer analysis in GIS. Thus we can easily determine how much land has to be acquired and how many people will become homeless.

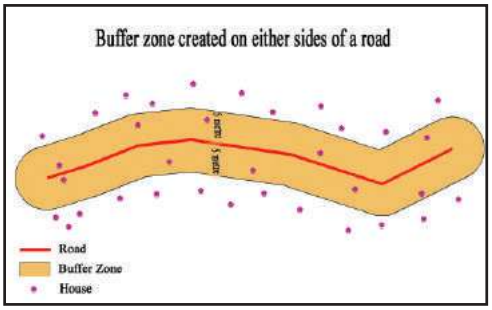


Figure 6.16

A circular zone created around a point feature or a parallel zone created aside a linear feature in buffer analysis is called buffer zone.

Network analysis

In contrast to the other two types of analysis, the network analysis deals only with linear features on a map. Linear features include roads, railways lines and rivers etc. The possibilities of network analysis can be used to find out the easiest and less congested roads from one place to another.

The possibilities of this analysis can also be used by tourists to plan the maximum number of attractive destinations in the available time. This may also help to bring an accident victim to a suitable hospital through less congested roads.

Use of GIS

By using GIS, we can

- compile data from different sources
- update and incorporate data easily
- conduct thematic studies
- represent geographic features spatially
- generate visual models of future phenomena and processes based on the data collected
- prepare maps, tables, and graphs
-

Satellite based Navigation System

Nowadays satellite-based tracking systems are used for monitoring the location and movement of objects on the earth's surface. It is used in several sectors like map making, transportation etc. The most important among this is the Global Positioning System of the United States of America.

Figure 6.17

Global Positioning System (GPS)

The Global Positioning System helps sensing the latitudinal and longitudinal location and elevation of objects on the earth's surface along with the corresponding time.

In this system a series of 24 satellites placed at six different orbits between the altitudes 20000 and 20200 km above the earth's surface locate objects. We can locate places with the help of the

Indian Regional Navigation Satellite System (IRNSS)

The State - of - the art satellite - based navigation system developed by India is Indian Regional Navigation Satellite System. Apart from India a radius of 1500 kilometers including the Indian Ocean and countries like Pakistan and China come under its surveillance.

signals received from the satellites in our handheld device. The GPS requires signals from at least four satellites to display information like the latitude, longitude, elevation, time, etc. in it. More satellites are being included in this system for enhancing accuracy. Though started initially for the U.S. defence, this facility is now open to the public since 1980.

List the other potentials of GPS.

Now onwards it is Bhuvan...

Bhuvan is a satellite based geo-portal platform developed by the ISRO for the purpose of preparing maps of Indian territory by using its own satellites. Bhuvan made its humble beginning in March 2009. Basically it is a remote sensing image portal. The prime function of Bhuvan is to prepare online maps by the maximum utilization of GIS and remote sensing technologies. Satellites belonging to IRS service are used for data collection. The map making facilities available with Bhuvan are more effective than that of the Google Earth and Wiki mapia. Bhuvan can prepare very precise maps since the spatial resolution of the photographs made available by Bhuvan is 10 metres. Let us have a glance at the services provided by Bhuvan. The following facilities can be availed by visiting the web portal https://bhuvan-app1.nrsc.gov.in.

- *Bhuvan 2D - It provides 2D visualization of Indian terrain.*
- *Bhuvan 3D - it enables 3 dimensional visualization of the features on the earth surface.*
- *Information related to climate and environment.*
- *Disaster Management Support Services.*
- *Ocean services.*
- *Services related to agriculture.*

School Bhuvan

School Bhuvan is a map based e-learning portal for the students which provides awareness on country's natural resources, environment and their role in sustainable development. It is an initiative of the ISRO with National Council of Educational Research and Training. Learners can avail this facility by clicking the icon "School Bhuvan" on Bhuvan web portal.

My Map

Create a map/GIS is a mapping tool available on Bhuvan web portal for preparing maps of any region in India by obtaining the details of the surface features with the help of GIS technology.

Will you prepare a map of your region by using this service with the help of your teacher?

Flood control

In the contemporary history of Kerala, it has witnessed the most devastating monsoon flood in the year 2018. The intensity of the flood faced by our state and the damages it caused are inexplicable. The possibility of satellite remote sensing has been utilized very effectively to overcome this natural disaster. We used this technology for the preparation of flood hazard maps of affected areas, estimation of loss due to flood, understanding the post flood conditions of rivers and the assessment of damages of the areas flooded. The details of the surface features collected through remote sensing can be analyzed with the help of GIS to prepare flood predicting models by identifying areas vulnerable to flood.

GIS is one of the fastest developing technologies. This technology is being effectively applied in various fields like industry, education, agriculture, planning, irrigation, forestry, transportation, disaster management, disease control, market analysis, tax collection, defence, tourism, natural resource management etc. GIS has now become one of the most useful technologies in trade, communication, resource management, and planning and development in particular. The wide use of GIS technology give way to tremendous job opportunities in this field. Many world class institutions conduct various courses and training programmes in geo - informatics which includes GIS technology, remote sensing and so on. Candidates can grab better job opportunities by taking part in such courses and training programmes.

The details of some institution in India conducting such courses are given below

Indio institute of Remote sensing (www.iirs.gov.in)

Survey of India (www.surveyofindia.gov.in)

IITs in India like IIT kharagpur - Earth science (www.iitkgp.ac.in)

IIT kanpur - Earth science (www.iitk,ac.in/es/)

The world is fast leaping towards progress. The relentless quest for knowledge and the untiring efforts of man are the base for all these advancements. New discoveries and advancements in technology have made human life better. Hope you will also

get involve in the efforts to make use of the technological progress for the welfare of mankind.

Let us assess

- Compare active remote sensing and passive remote sesing.
- What is the use of overlap in aerial photographs?
- Briefly explain Geostationary and Sun Synchronous satellites.
- List out the fields where remote sensing is used.
- What is the merit in using layers in GIS?
- Write down the possibilities of overlay analysis.

7

India: The Land of Diversities

We were then camping above 16,000 ft. Leaning on a rock, I observed the atmosphere and surroundings. The mountain ranges stood like a fort around us. Beyond them were the sparkling snow clad peaks.... Mountains everywhere. Spread one after the other. Lush green meadows and perilously steep paths. The cold began to get more intense. After sipping Negi's tea for a while, I returned to the cave.

Devabhoomiyiloode - M K Ramachandran
(A translation)

The lines you have read is from the famous book 'Devabhoomiyiloode' written by Sri. M K Ramachandran, the renowned traveller and writer who has made numerous journeys along the Himalayan ranges.

What is mentioned here is the mountain topography extending along the northern border of India. India's topography is diverse. Huge rivers originating from the snow clad mountains and discharging into the sea after flowing through vast plains

Location of India

Latitude : 8°4' to 37°6' North
Longitude : 68°7' to 97°25' East

Indian peninsula

A peninsula is the land surrounded by ocean on three sides. The southern part of the Indian sub continent is surrounded by oceans and hence it is known as Indian peninsula.

expansive agricultural plains, extensive plateaus, scorching deserts, elongated coastal plains, a number of islands…! The diversities of our country are really enchanting. This chapter deals with these diversities.

Find answers to the following questions with the help of an atlas.

- The countries belonging to the Indian sub continent.
- Countries sharing land frontier with India.
- The countries sharing ocean frontier with India.

In the Himalayas

Observe Fig 8.1. We can see a number of mountain ranges to the northern side of India.

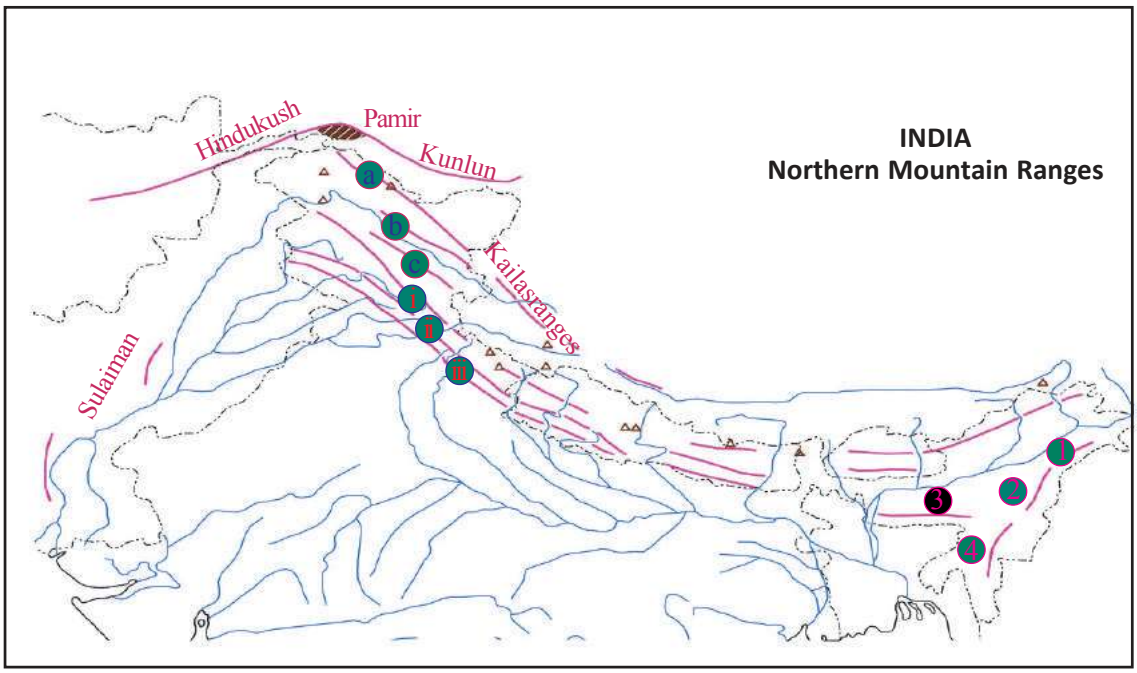


Fig 7.1

Pamir plateau - The roof of the world

The Pamir plateau situated in Central Asia is known as the roof of the world. The mountain ranges such as Hindukush, Sulaiman, Tien Shan, Kunlun, Karakoram, etc. radiate to different directions from the Pamir knot. The Kailas ranges in Tibet are an extension of the Karakoram mountain ranges.

These mountain ranges starting from the north west of Kashmir and extending up to the eastern boundary of India is known as the Northern Mountains. The Northern Mountains that function as a great wall can be classified into the Trans Himalayas, Himalayas and the Eastern Highlands. (Table 7.1).

Northern mountain region		
Trans Himalayas	**Himalayas**	**Eastern Highlands**
(a) Karakoram	(i) Himadri	(1) Patkai Bum
(b) Ladakh	(ii) Himachal	(2) Naga hills
(c) Zaskar	(iii) Siwaliks	(3) Garo, Khasi, and Jaintia hills
		(4) Mizo hills

Table 7.1

Mountain ranges belonging to the Northern Mountains are shown in the table. Write the names of these ranges at appropriate places in the given map (Fig 7.1).

Trans Himalayas

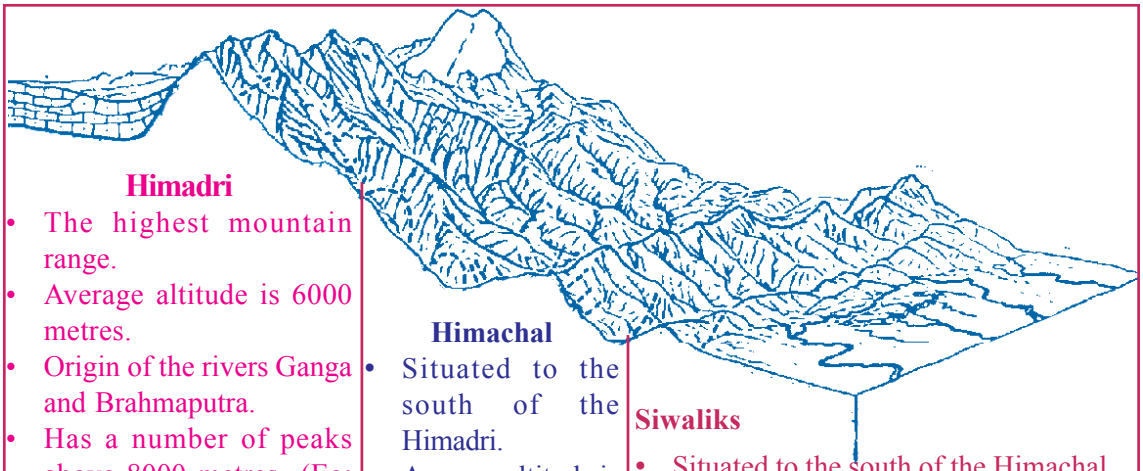
Trans Himalayas include Karakoram, Ladakh, and Zaskar mountain ranges. Mount K2 (8661m) also known as Godwin Austin, the highest peak in India, is in the Karakoram range. The average height of the Trans Himalayas is 6000 metres.

Himalayas

The Himalayan mountain range forms an arc shaped physical division extending between the north - west trans himalayas and the south-east eastern highlands. These mountain ranges have a length of about 2400 kilometres. Many of the world's highest peaks are situated here. The height of these mountains tend to decrease towards the east. The width of these mountain ranges is just about 150 kilometre in Arunachal Pradesh, whereas it is around 400 kilometre in the Kashmir region. This physical division extending over 5 lakh square kilometres comprises of three parallel mountain ranges. Let us see the characteristic features of each.

Mount Everest

Mount Everest, the highest peak in the world is in the Himalayas. It is situated in Nepal and has an altitude of 8848m.



Himadri

- The highest mountain range.
- Average altitude is 6000 metres.
- Origin of the rivers Ganga and Brahmaputra.
- Has a number of peaks above 8000 metres (Eg: Kanchenjunga, Nandadevi)

953IJ2

Himachal

- Situated to the south of the Himadri.
- Average altitude is 3000 metres.
- The hill stations like Shimla, Darjeeling, etc. are situated in the southern slopes of this range.

Siwaliks

- Situated to the south of the Himachal.
- Average altitude is 1220 metres.
- As the Himalayan rivers cut across this range, its continuity breaks at many places.
- Broad flat valleys seen along these ranges are called Duns. (Eg: Dehradun)

Passes across the northern mountain region

Passes are the comparatively narrow natural passages across the mountain ranges. These mountain passages have a significant role in linking the cultures prevailing on both sides of these sky scraping mountain ranges.

Passes	Places connected
• Lipu lekh	Uttarkhand - Tibet
• Shipki la	Himachal Pradesh - Tibet
• Soji la	Srinagar - Kargil
• Nathu la	Sikkim - Tibet

In accordance with altitude a wide variety of vegetation prevails here. Oak, chestnut, maple etc. are seen at an altitude of 1000 to 2000 metres and above this are the coniferous trees such as deodar, spruce, etc.

Eastern Highlands

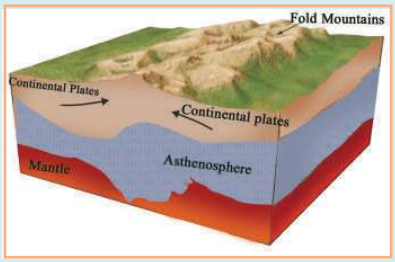
You have marked the major hills belonging to the eastern highlands in the outline map (Fig 7.1).

This region which is at an altitude of 500 to 3000 metres is also known as Purvachal. Cherrapunji, the place receiving the highest rainfall in the world is situated here. This region is covered by dense tropical rainforests.

- *Find out the states along the eastern highlands with the aid of an atlas.*
- *Mark the mountain ranges belonging to the northern mountains in the outline map of India.*

Birth of the Himalayas

Scientists are of the view that the northern mountains were formed as a result of convergence and the resultant folding up of the bed of the ocean named Tethys which was situated between the Indian plate and the Eurasian plate .The fossils of marine creatures excavated from here support this argument.



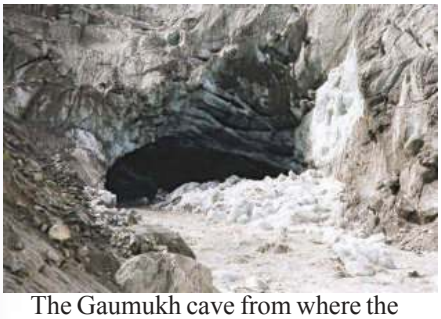
The soil generally found in the northern mountain region is fertile mountain soil.

Human life in the lap of the Himalayas

The major means of livelihood is animal rearing that depends purely on the grasslands here. Sheep are commercially reared in Kashmir and Himachal. The valleys of Siwaliks have been formed by the deposition of alluvium brought down by the Himalayan rivers. Apart from potato, barley, and saffron, fruits like apple and orange are cultivated here. The largest production of tea in India comes from Assam mountain ranges. The northern mountains are described as the paradise of tourists due to its natural beauty. Hill stations like Shimla, Darjeeling, Kulu, Manali, etc. are situated here.


Safffron cultivation in Kashmir


A tea plantation in Assam


The Gaumukh cave from where the Ganga originated


Manasarovar lake

Significance of the Northern Mountains

Let us see the role played by these mountain ranges in moulding the climate and human life of India.

- Have been protecting us from foreign invasions from the north since ancient times.
- Block the monsoon winds and cause rainfall throughout North India.
- Prevent the dry cold winds blowing from the north from entering India during winter.
- Caused the emergence of diverse flora and fauna.
- Source region of rivers.
-

The snow - clad peaks and glaciers in the Himalayas are rich sources of fresh water. Numerous great rivers take birth through the confluence of streams originating from the melting snow. These rivers are known as Himalayan rivers. They are also enriched by the copious rain along the valleys. Following are the major Himalayan rivers.

- Indus
- Ganga
- Brahmaputra

Find out the major Himalayan rivers, the states through which they flow, and their tributaries with the help of the map provided (Fig 7.2) and complete Table 8.2. Don't forget to refer the atlas.

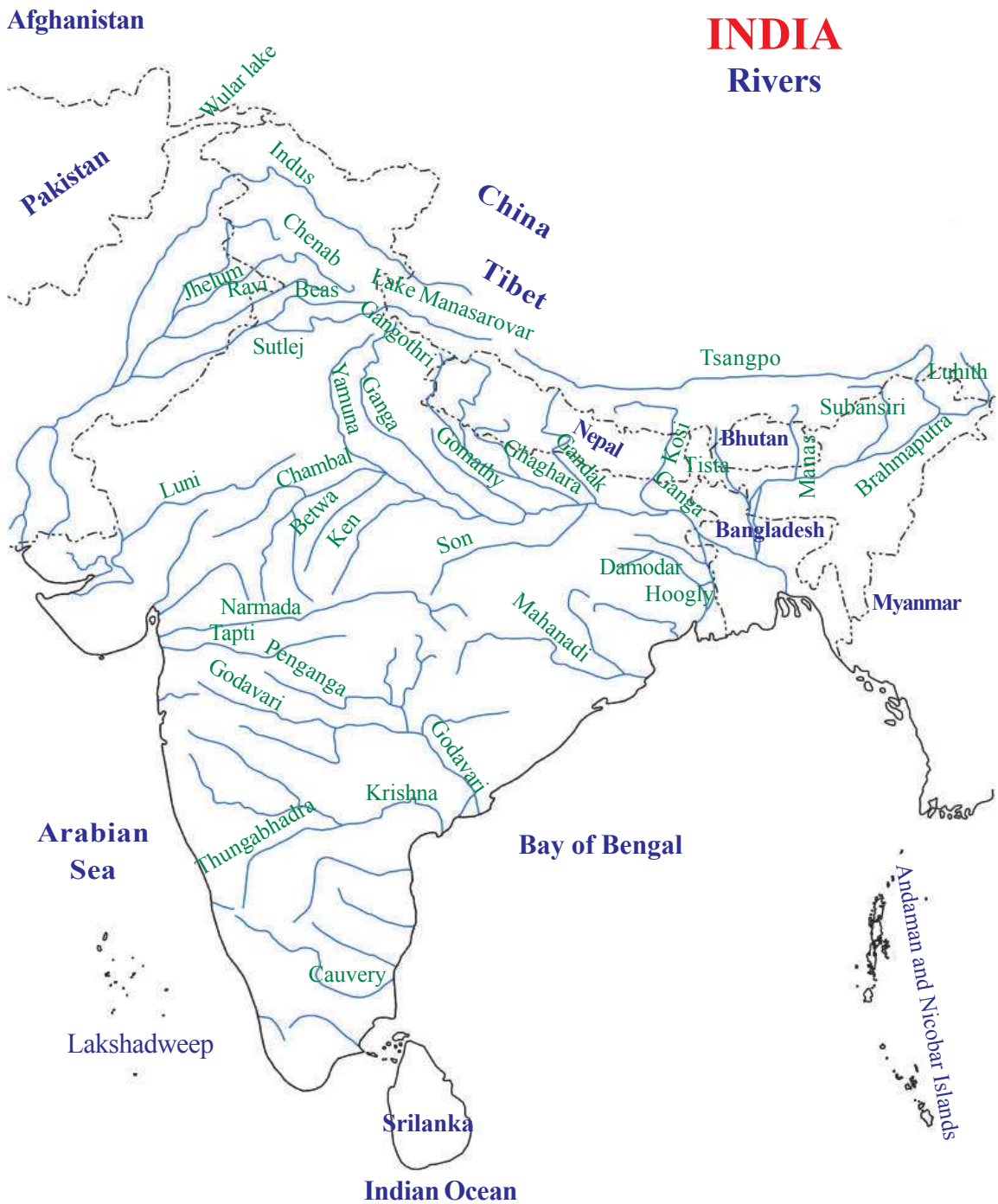


Fig. 7.2

Himalayan rivers

Himalayan rivers	Origin	Length	Tributaries	States through which it flows	Sea which it joins
Indus	Manasarovar lake in Tibet	About 2880 Km (Only 709 Km of this river flows through India)	• Jhelum •	• • •	Arabian Sea
Ganga	Gaumugh caves in the Gangothri glacier	About 2500 Km	• Yamuna •	• • •	Bay of Bengal
Brahmaputra	Chema-yung-dung glacier in Tibet	About 2900 Km (Only 725 Km in India)	• Tista •	• • •	Bay of Bengal

Table 7.2

Along the plains...

The fertile land extending across seven North Indian states forms the Northern Great Plains.

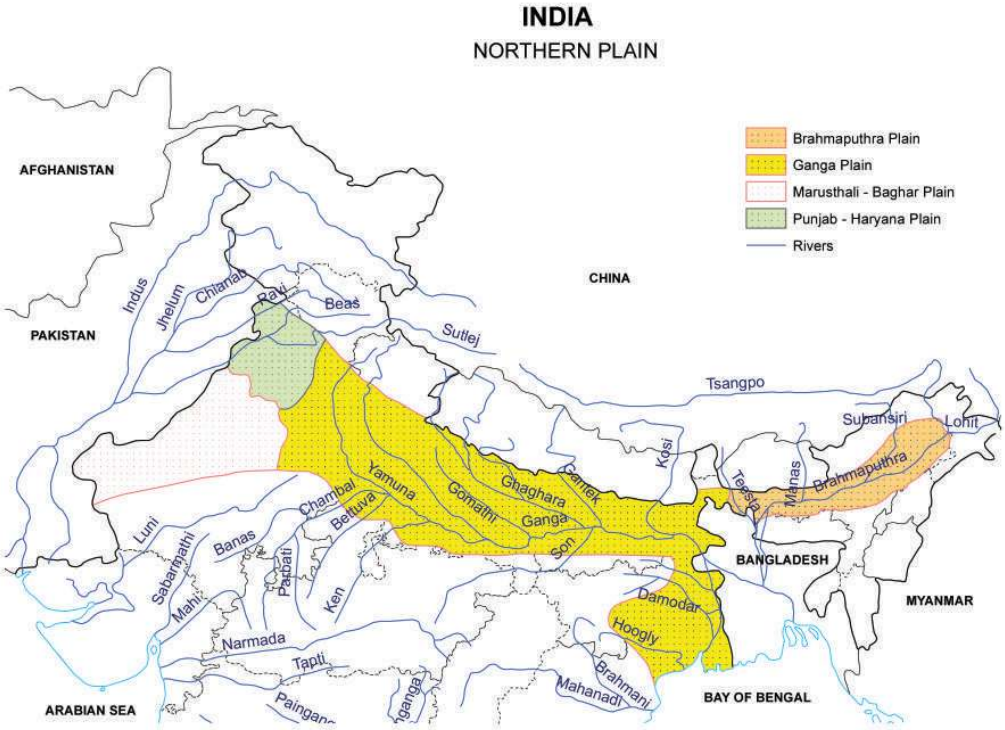


Fig. 7.3

From the given map (Fig 7.3) locate the Northern Great Plains and list the states across which it is spread.

- *West Bengal*
- *Bihar*
-

You have learnt that the Himalayas have been formed by the folding up of lithospheric plates due to convergence. During the formation of the Himalayas, a huge depression of more than 2000 metre depth took shape along the south parallel to the Himalayas.

This extensive plain took shape as a result of the continuous deposition by the rivers flowing down from the Himalayas for thousands of years. This plain, extending over seven lakh square kilometres and with kilometres of thick sediments, is one among the few extensive alluvial plains of the world. This plain is generally known as the Indus-Ganga-Brahmaputra plain. The highly fertile alluvial soil is a characteristic feature of this plain.

Where else can alluvial soil be found in India?

Refer atlas and identify the physical divisions located on either sides of the northern plains.

The river borne plains

The northern plains are classified based on the sediments deposited by different rivers.

Name of the plain	River causing deposition
Punjab-Haryana plain	River Indus and its tributaries
Marusthali -Baagar plain of Rajasthan	Luni and Saraswathi rivers
Ganga plain	River Ganga and its tributaries
Brahmaputra plain of Assam	River Brahmaputra and its tributries

Mark the location of the northern plains in the outline map of India.

The granary of India

A variety of crops such as wheat, maize, rice, sugarcane, cotton, pulses, etc. are cultivated here. This region is known as the granary of India. The Northern Great Plain is one of the most densely populated regions in the world.

The network of roads, rails and canals are largely concentrated in the northern plains. Why?

Rainfall is scarce along the western parts of the northern plains. That is why most regions in Rajasthan are deserts. This desert is known as Thar Desert.

River Luni and the long vanished river Saraswathy have had significant role in the formation this portion of the plain.

Thar Desert

Population is sparse in this region. Why?

Dry and salty desert soil is found in this region. Thorns and bushes form the natural vegetation here. You might remember that Kerala receives more rainfall within a day than the annual rainfall received in Rajasthan. What you see in Fig 7.4 are common scenes in the Thar Desert.

Fig 7.4

Bajra, jowar, etc. are the main crops cultivated in Rajasthan. These crops require very little amount of water to grow. Here cultivation is done mainly with the help of irrigation.

The Punjab plain is an extensive plain formed by the deposition of the Indus and its tributaries. Major crops here are wheat, maize, and sugarcane.

Prepare a seminar paper on the topic 'Influence of the northern great plains in the agricultural economy of India' and present in the class. You can collect more information from the media and other reading materials.

The Peninsular Plateau

Entire portions of Madhya Pradesh, Jharkhand and Chhattisgarh as well as parts of Maharashtra, Karnataka, Tamil Nadu, Telengana, Odisha and West Bengal together form a plateau known as the peninsular plateau.

The peninsular plateau made of hard crystalline rocks forms the oldest and the most extensive physical division of India.

Major features of the peninsular plateau are shown in the map (Fig 7.5). Read the map and list out these features.

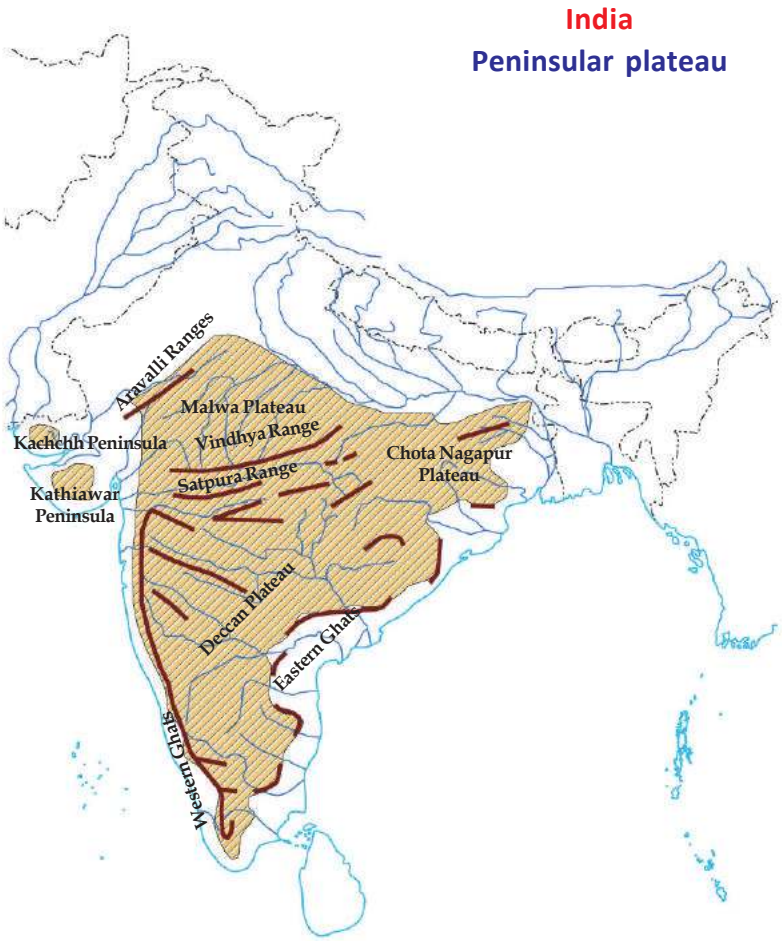


Fig. 7.5

- Aravalli ranges
-
-
-
-
-
-
-
-

Mark the major features of the peninsular plateau in the outline map of India.

95CEKP

This undulating physical division of India extends about 15 lakh square kilometres. It includes varied topography such as mountains, plateaus, and valleys. The highest peak in this region is the Anamudi (2695 m) situated in the Idukki district of Kerala. As the peninsular plateau holds numerous deposits of diverse minerals, this region can be termed as the store house of minerals.

The major vegetation of this region receiving seasonal rain is tropical deciduous. The trees found in this region are teak, sal, sandalwood, bamboo, etc. But the rainy western slopes of the Western Ghats have tropical rain forests.

A major portion of the deccan plateau, which is the southern part of the peninsular plateau, has been formed by the cooling of lava that spread over the region millions of years ago. Black soil is extensively found in this region made of igneous rocks, named basalt. As this soil is best suited for cotton cultivation, it is also called black cotton soil. Red soil also occurs in large quantities. This soil formed by the weathering of igneous and metamorphic rocks is comparatively less fertile. The presence of iron gives red colour to this soil. Laterite soil is formed in the regions with monsoon rains and intermittent hot seasons.

The peninsular plateau is also the source region of many rivers.

Observe the map (Fig 7.2) and find out the rivers flowing through the peninsular plateau.

- *Mahanadi*
-

The rivers originating from the elevated regions of the peninsular plateau are known as peninsular rivers. As these are rain fed rivers, the water flow in these rivers decreases in summer.

Observe the map (Fig 7.2) and complete the table by classifying the peninsular rivers based on their direction of flow.

West flowing rivers	*East flowing rivers*
• Narmada	• Mahanadi
•	•
•	•

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Some of the peninsular rivers are tributaries of the Ganga and the Yamuna. Identify them with the help of the map (Fig 7.2).

See the origin, length, and tributaries of major peninsular rivers given in the table (7.3). Complete the table after identifying the states through which they flow and the sea which they join.

River	Origin	Approximate length	Major tributaries	States through which it flows	Sea which it joins
Mahanadi	Maikala Ranges (Madhya Pradesh)	857 Km	Ib, Tel	•	•
Godavari	Western Ghats (Nasik district of Maharashtra)	1465 Km	Indravathi, Sabari	•	•
Krishna	Western Ghats (Mahabaleswar in Maharashtra)	1400 Km	Bhima, Thungabhadra	•	•
Kaveri	Brahmagiri Ranges in Western Ghats (Karnataka)	800 Km	Kabani, Amaravathi	•	•
Narmada	Maikala Ranges (Chhattisgarh)	1312 Km	Hiran, Banjan	•	•
Tapti	Muntai Plateau (Baitul distruct in Maharashtra)	724 Km	Anar, Girna	•	•

Table 7.3

Jog Falls

Godavari is the longest among the peninsular rivers. Waterfalls are common in most of the peninsular rivers. The highest among these is the Jog Falls (225 metres) in the Sharavathi River in Karnataka.

Most of the peninsular rivers enter the plains by forming waterfalls. Why is it so?

You might have understood the characteristics of the Himalayan and Peninsular rivers. Let us have a comparative study of them. Observe the table

Himalayan rivers	Peninsular rivers
• Originate from the Himalayan mountain ranges	• Originate from the mountain ranges in the peninsular plateau.
• Extensive catchment area	• Comparatively smaller catchment area
• Intensive erosion	• Intensity of erosion is less
• Create gorges in the mountain region and meander in plains	• Do not create deep valleys as they flow through hard and resistant rocks
• High irrigation potential	• Less irrigation potential
• Navigable along the plains	• Potential for inland navigation is low
•	•

Table 7.4

The names of some major towns and cities situated along the river banks are given below. Prepare a table in the given format by identifying the river banks along which each is located. Also locate these towns and cities in the outline map of India.

New Delhi, Agra, Devaprayag, Varanasi, Allahabad, Patna, Guwahati, Kolkata, Ludhiana, Srinagar, Ahmedabad, Surat, Vijayawada, Thiruchirappalli, Tanjavur, Coorg.

Cities along river banks	River
• New Delhi	•Yamuna
•	•

Human life in the plateau

Cotton, pulses, groundnut, sugarcane, maize, ragi, chilli, etc., are the major agricultural crops of this region. Iron ore, coal, manganese, bauxite, limestone, etc. are the major minerals found here. Hence agriculture, mining, and mineral based industries are the major economic activities.

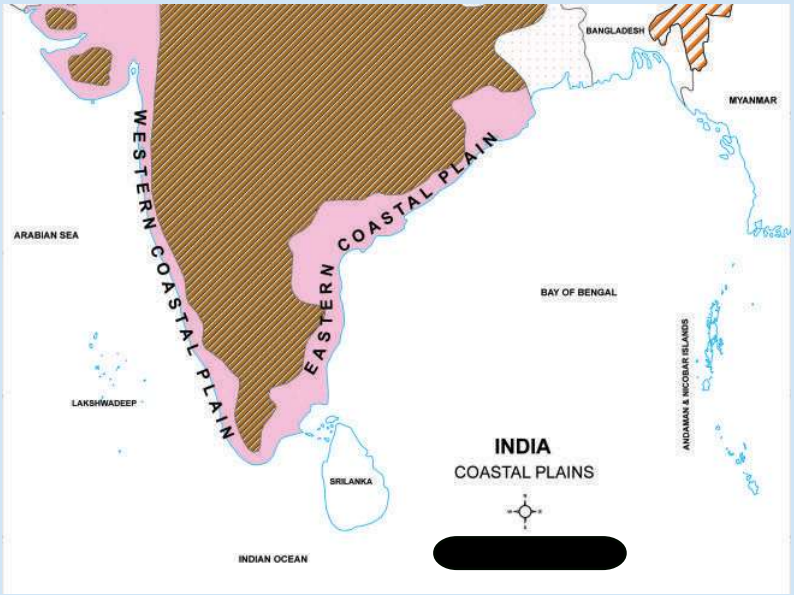
Along the beautiful coastlines...

Each sea coast in India is as vividly picturesque as a painting in water colours. Suppose you are travelling from West Bengal to Gujarat along these beautiful coasts. Which are the states you would pass through?

- Odisha
-

The approximate length of this coast line is 6100 kilometres extending from the Rann of Kutchh in Gujarat to the Ganga-Brahmaputra delta. The coastal plain of India can be divided into two. Familiarise the coastlines and their characteristic features by observing the table and the map.

Western coastal plain	Eastern coastal plain
• Between the Arabian Sea and the Western Ghats	• Between the Bay of Bengal and the Eastern Ghats
• From the Rann of Kutchh to Kanyakumari	• From the Sundarban delta region to Kanyakumari
• Comparatively narrow	• Comparatively wide
• Can be divided into Gujarat coast, Konkan coast, and Malabar coast	• Can be divided into north Zircar plain and Coromandal coast
• Backwaters and esturies are seen	• Delta formation takes place
•	•



Alluvial soil is present throughout the coastal plains. Rice, coconut, etc., are widely cultivated here.

Deltas are commonly formed along the eastern coastal plain, but not along the west coastal plain. Why is it so?

Mark the coastal plains in the outline map of India .

Human life along the coasts

Fishing is the main occupation of the people in the coastal plains. Tourism also has great possibilities here. Rice and coconut are the major agricultural crops along the west coast.

Rice is extensively cultivated in the basins of the Mahanadi, Godavari, Krishna, and Kaveri along the east coast.

To our own islands...

The Lakshadweep islands are situated in the Arabian Sea at a distance of about 300 kilometres off shore from Kochi. There are 36 islands in this island group, of which only 11 are inhabited. Bangaram, Kadamath, Minicoy, Kavarathi, Agathi, Androth, Kalpeni, Aminidivi, Chethlath, Bithra and Kilthan are the major islands. Kavarathi is the capital of Lakshadweep.

An island lagoon in Lakshadeep

Lagoons, sandy beaches and coral reefs are the specialities of the Lakshadweep island group. People depend largely on sea for their sustenance as agriculture is sparse here. Fishing and tourism are the major sources of income.

Mark the Lakshadweep Islands in the outline map of India.

Let us get to know another island group.

This group of islands is situated in the Bay of Bengal.

The Andaman and Nicobar islands include about 200 islands of Andaman group and 19 islands of Nicobar group. Most of these islands are not inhabited. Many of them have dense forests. The only volcano in India is situated in the Barren Island here. Port Blair is the capital of Andaman and Nicobar islands. The Indira Point at the southern most tip of the Nicobar islands is considered as the southern end of India.

Mark the Andaman and Nicobar islands in the outline map of India .

The natives of the Andaman and Nicobar group of islands

Don't forget to name the map you have completed as 'India: Physiography'.

Now you might have understood that India is divided into five major physiographic divisions namely Northern Mountains, Great Northern Plains, Peninsular Plateau, Coastal Plains, and Islands and also that each of these divisions influence the life of people in India.

Climate

Note the conversations of children from different places in India.

It is clear from their conversations that the climate in India varies from place to place and time to time. Like physiography, climate also is diverse. What causes this spatial diversity in climate? What factors are responsible for these differences in climate? Let us find out.

The factors influencing the climate of India are:

- Latitude
- Physiography
- Nearness to sea
- Altitude
-

The seasons in India can be generally classified into four.

- Cold weather season
- Hot weather season
- Southwest monsoon season
- Retreating monsoon season

"Experienced heavy showers today. Using the instrument called rain gauge we measured the rain and displayed it in the school notice board."

Kerala -15 June

"It is so dry that even drinking water is scarce here. June is the hottest month."

Rajasthan - 10 May

"Cold is so severe here that the schools are closed for two days. This weather is said to be caused by the location of this place away from the sea."

Rajasthan - 10 January

"The one day cricket match supposed to be conducted at the Chinna swamy Stadium,Chennai has been postponed. We were really looking forward to see the match"

Tamil Nadu - 20 November

Cold weather season

December - January - February

Fig 7.6

Haven't you seen the pictures (Fig 7.6)? These are some of the winter scenes of North India. You might have heard from the media about the extreme cold of North India. Why is it so ? India experiences winter when the position of the sun is over the southern hemisphere. Most places in India experience intense fog and snowfall occurs in the valleys of the Himalayas during this season.

Which are the months of cold weather in India?

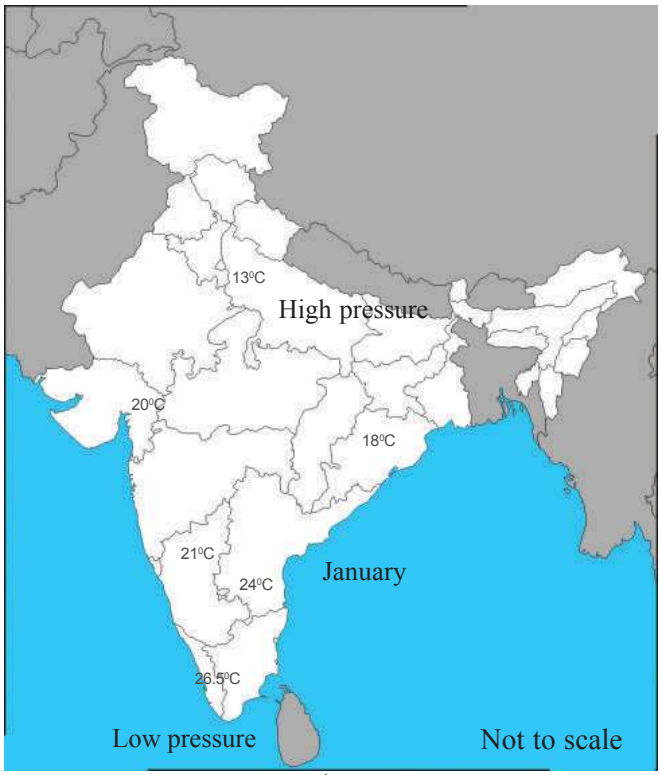


Fig 7.7

See the map (Fig 7.7).

The average day temperature recorded in the month of January at different places in India are shown in the map. Examine this to infer the pattern of change in temperature. Why does the temperature decrease from south to north?

The coastal regions experience comparatively high temperature. Why?

During the cold weather season days are generally warm and nights are severely cold in North India. Snowfall is a common phenomenon in the hill stations like Manali and Shimla. The phenomenon called western disturbance is another peculiarity of the season. The cyclones originating in the Mediterranean Sea during winter, gradually shifts towards the east and reaches India. This causes winter rainfall in the northern plains, especially in the Punjab region. This rain is much beneficial for the winter crops. Jet

streams, the strong upper air currents in the troposphere have a significant role in bringing the western disturbance to India.

Hot weather season

The pictures (Fig 7.8) given here are some scenes of hot weather experienced in different parts of India. Observe the map (Fig 7.9) to understand the distribution pattern of temperature in May. Isn't the temperature in North India very high compared to the southern regions located close to the sea? Why does this happen? India experiences hot weather when the sun is over the northern hemisphere. It is in Barmer in western Rajasthan that the highest temperature of summer is felt. Loo, mango showers, etc. are some local winds experienced in India during this season. You have learnt about these winds in the earlier chapter.

March-April-May-June

Fig 7.8

Fig 7.9

Kalbaisakhi

Kalbaisakhi is the phenomenon of heavy showers with thunder occurring in the West Bengal region during the hot weather season. Roaring winds and hailstones are the characteristics of this rain.

Southwest monsoon season

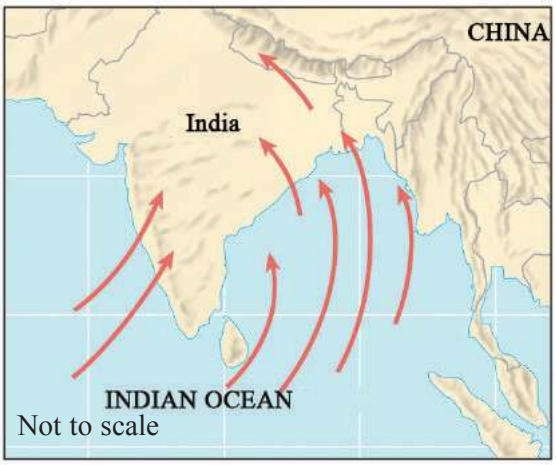


Fig 7.10

Observe the map (Fig 7.10). The direction of the flow of the southwest monsoon winds is shown here. The highest rainfall season of India is caused by these winds.

Which months does India experience southwest monsoon?

When the sun is over the northern hemisphere, North Indian regions experience intense low pressure. Owing to the high pressure over the oceans, wind blows from high pressure to low pressure regions, that is, from the Indian Ocean to the Indian sub- continent. As the winds deflect towards right due to coriolis effect, they reach India as southwest monsoon winds.

June-July-August-September

Fig 7.11

Because of the peculiar shape of the Indian peninsula, the southwest monsoon winds bifurcate into two branches on entering the land.

- Arabian Sea branch
- Bay of Bengal branch

The Arabian Sea branch that reaches the coast of Kerala by early June causes heavy rainfall here. Then it advances to the states of Karnataka, Goa, Maharashtra, and Gujarat and causes rainfall in the western parts.

Rainfall is comparatively less along the eastern slopes of the Western Ghats. Why?

Rainfall is scarce in the Rajasthan region because the monsoon branch entering through Gujarat blows parallel to the Aravalli mountain ranges.

By what name is the southwest monsoon rain known in Kerala?

The Bay of Bengal branch of the monsoon advances northward by absorbing more moisture from the Bay of Bengal. On reaching West Bengal, crossing the Sundarban delta, it bifurcates into two branches. One branch reaches the northeastern states through the Brahmaputhra plains and causes heavy rainfall there.

What is the role of eastern highlands in bringing heavy rainfall to the northeastern states?

The other branch enters the Ganga plains and causes rainfall in West Bengal, Bihar, Uttar Pradesh, etc. This branch merging with the Arabian Sea branch in the Punjab plains advances north further and causes heavy rainfall along the foothills of the Himalayas.

Retreating monsoon season

By the end of September, as the sun apparently shifts towards the southern hemisphere, intense high pressure develops over the northern plains. Comparatively low pressure over the Indian Ocean causes wind to blow from the northern part of India

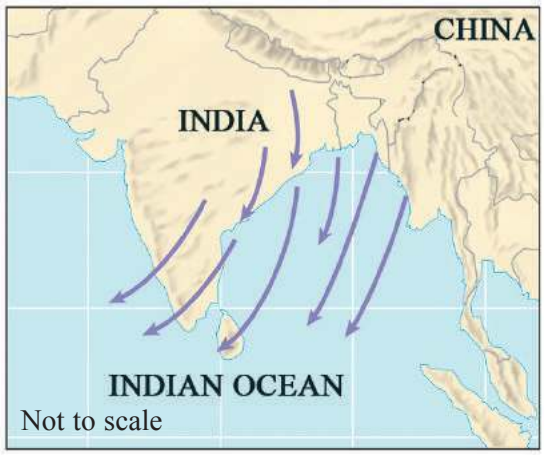


Fig 7.12

towards the Indian Ocean. Look at the map (Fig 7.12) to understand the direction of these winds.

What causes the rightward deflection of these winds?

These winds known as northeast monsoon winds are dry winds that do not generally cause any rain in India. This season termed as north east monsoon is actually a transition period between the rainy season and the forth coming winter. This season experienced during the months of October and November makes the days unbearable due to high temperature and humidity. This phenomenon is known as October heat.

The winds blowing from land to sea due to the attraction of low pressure over the Bay of Bengal takes a northeast to southwest direction. It absorbs moisture from the Bay of Bengal and causes rainfall along the coromandal coast, especially the Tamil Nadu coast. This is the main rainy season of Tamil Nadu, Kerala and some parts of Karnataka also receive northeast monsoon rains.

By what name is the northeast monsoon rain known in Kerala?

Distribution of rainfall in India

Observe the map (Fig 7.13).

This map is prepared based on the amount of rainfall received in India. Analyse the map and find answers to the following questions.

- Places receiving more than 200 cm rainfall
  - ➢ Kerala
  - ➢
- Places receiving less than 60 cm rainfall
  - ➢ Rajasthan
  - ➢
- Reasons for these imbalances in the distribution of rainfall
  - ➢ Physiography
  - ➢

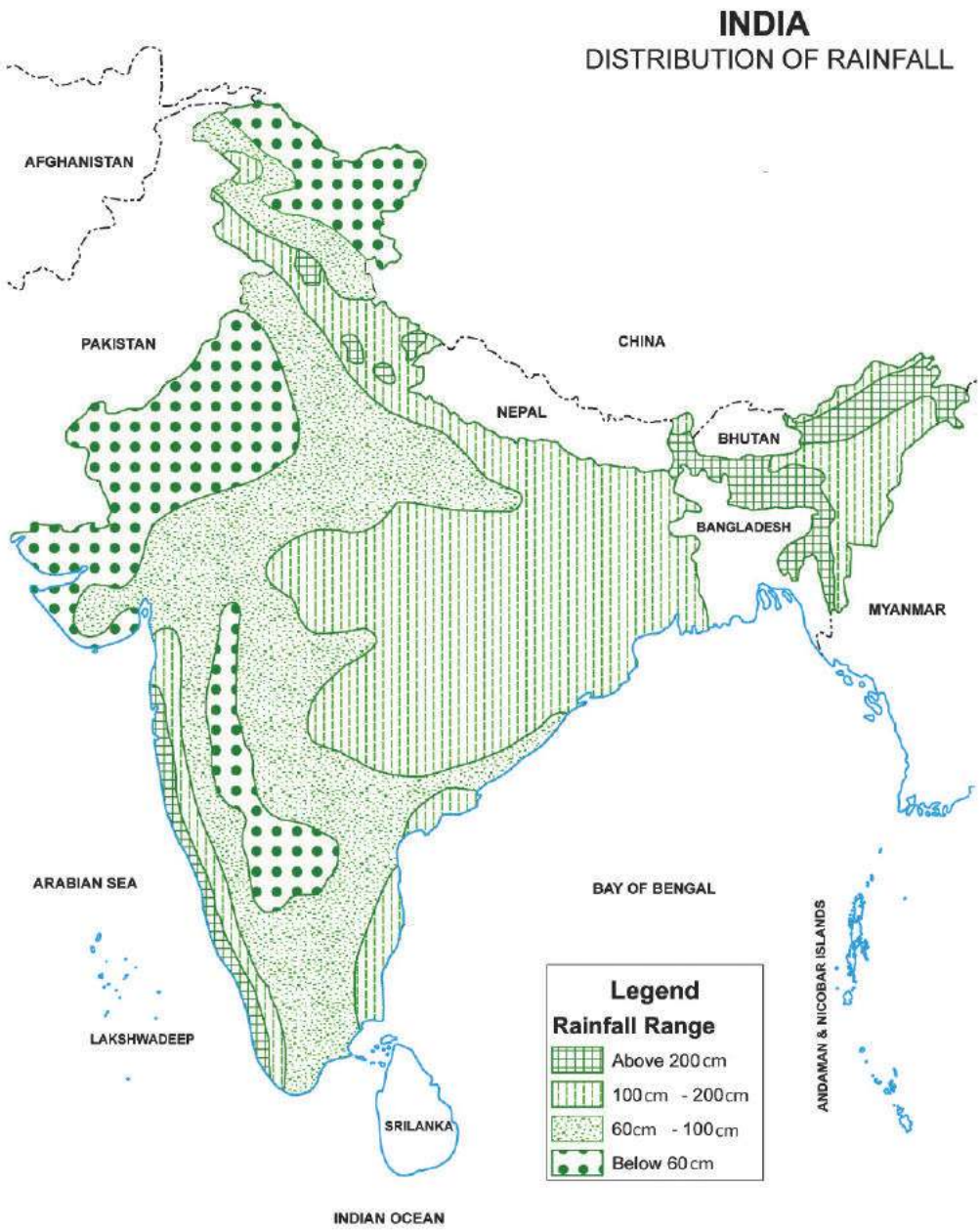


Fig 7.13

Each of the geographical characteristics of India does justice to the title 'The land of diversities.' These diversities persist in every aspect such as physiography, climate, lifestyle, culture, flora and fauna, natural resources, etc. and form the basis of India's prosperity. It is our responsibility to safegaurd these diversities.

Let us assess

- Himalayan ranges are described as a natural barrier. Justify the statement.
- List the differences between the Peninsular and Himalayan rivers.
- The northern plains are the backbone of the Indian economy. Write your inferences by analysing the statement.
- The northern plains of India are densely populated compared to other places. Give reasons.

Extended activity

- Observe the map and find out the neighbouring countries of India sharing land frontier with one, two, three and four Indian states respectively.
- Prepare a flow chart to represent the physiographic divisions and subdivisions in India and display it in the classroom.

8

Resource Wealth of India

Fig 8.1

Some of the factors related to the development of India are shown in the collage above (Fig 8.1). Identify and list them.

- Agriculture
-
-

The physical features of India considerably influence these diverse human activities. We have discussed the physical characteristics of India in the previous chapter. India is blessed with diverse natural resources. Extent of land, physiographic characteristics, climate, soil types, etc. form the

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basis of our resource potential. Resource utilisation is as significant as resource availability for the development of the country. This chapter deals with the geographical characteristics of different sectors such as agriculture, mining, industry, transport, etc. that influence the economy of India.

Agriculture and agro-based industries

India is an agricultural country. Nearly two-third of our population depends on agriculture for their livelihood. In addition to food crops, the agricultural sector also provides raw materials for some industries. Crop diversity is a characteristic feature of India.

What geographical factors are favourable for the cultivation of diverse crops in India?

- Diverse topography
-

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As we know, the climatic conditions required for the cultivation of all the crops are not the same. We have different crops suited to each season. On the basis of the period of cultivation, we have three distinct cropping seasons - Kharif, Rabi, and Zaid. Observe the table given below and examine the classification of the crops based on their cropping seasons.

Cropping seasons	Sowing period	Harvesting period	Major crops
Kharif	June (Onset of monsoon)	Early November (End of monsoon)	Rice, maize, millets, cotton, jute, sugarcane, groundnut
Rabi	November (Beginning of winter)	March (Beginning of summer)	Wheat, tobacco, mustard, pulses
Zaid	March (Beginning of summer)	June (Beginning of monsoon)	Fruits, vegetables

Small grains are called millets. Food crops such as jowar, bajra, ragi, etc. come under this category.

Agricultural crops

The diverse agricultural crops of India can be classified as food crops and cash crops. The crops which can directly be consumed as food are called food crops. Cash crops are those having industrial and commercial significance.

Let us familiarise with the major food crops in India, their distribution and geographical requirements for the growth.

Agriculture as culture

Agriculture is the purposeful utilisation of land for sustenance by man. Agriculture has been the chief means for the livelihood of man since ancient times. The term agriculture in English has been derived from two Latin words, 'Ager'and 'cultur'. 'Ager' means land and 'cultur' means cultivation. In Latin 'Agercultur'means agriculture. Other than crop production, horticulture, animal husbandry, forestry, pisiculture, etc. also come under agriculture.

Rice

- Rice, the staple food crop of India is a kharif crop.
- Alluvial soil is most suitable for rice cultivation.
- Rice requires high temperature (above 24° C) and a good amount of rainfall (more than 150 cm).
- Rice is being cultivated in regions with less rainfall with the aid of irrigation.
- Rice is mostly cultivated in river basins and coastal plains. Rice is also cultivated by making terraces along the slopes of Siwaliks.

The rice cultivating regions in India are shown in the map (Fig 8.2). Find out the states where rice is cultivated.

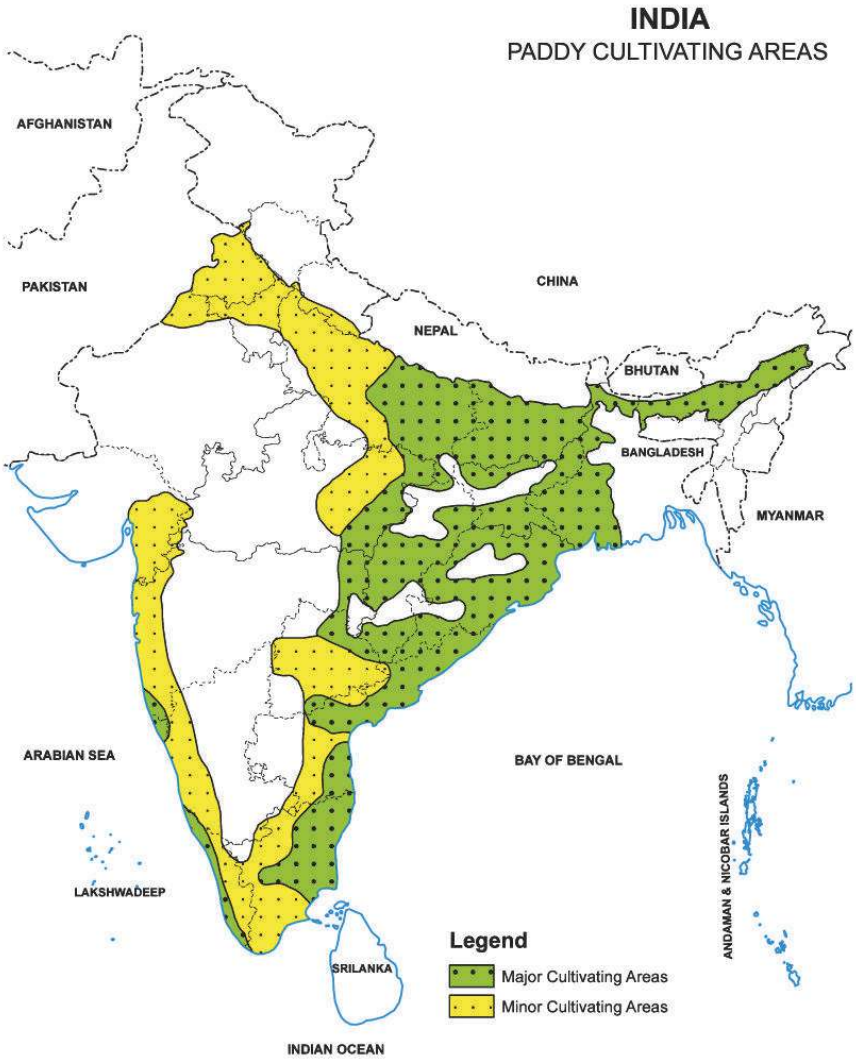


Fig. 8.2

Wheat

- Wheat, the second major food crop produced in India is a rabi crop.
- Well drained alluvial soil is ideal for wheat cultivation.
- The crop which is mainly cultivated in temperate regions requires 10°C to 26°C temperature and 75 cm of rainfall.

- Wheat cultivation in India is mainly dependent on irrigation as it is a winter crop.

Find out the wheat cultivating states in India from the map (Fig 8.3).

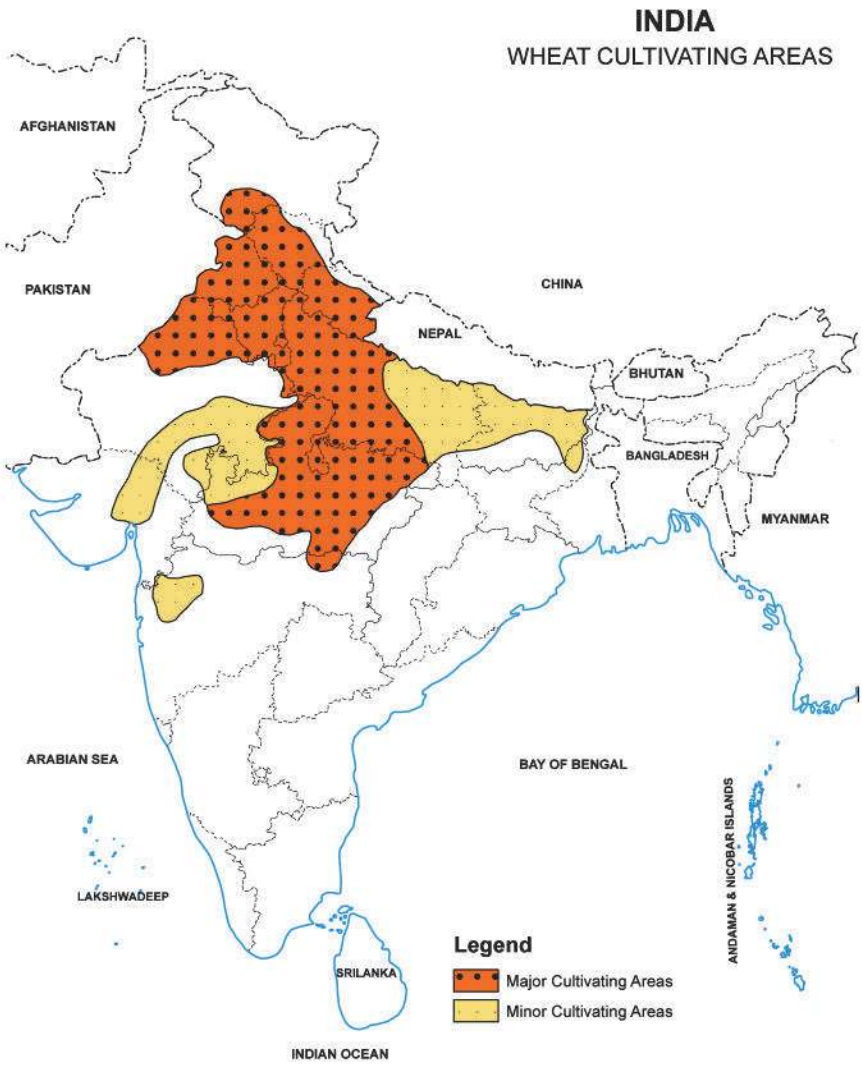


Fig. 8.3

Why don't we cultivate wheat in Kerala?

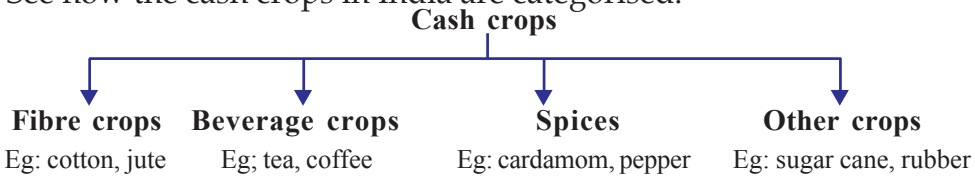
Maize

- Maize is the third major food crop produced in India.
- In India, maize is cultivated in both summer and winter.

- Cultivated in regions receiving an annual average rainfall of 75 cm.
- Well drained fertile soil is ideal.
- Maize is mostly cultivated in Madhya Pradesh, Karnataka, Rajasthan and Uttar Pradesh.

In addition to rice, wheat, and maize, the food crops in India also include barley, millets, pulses, etc.

See how the cash crops in India are categorised.



Cotton cultivation and cotton textile industry

Observe the map (Fig 8.4).

Cotton growing regions in India as well as the cotton textile industrial centres are shown in the map. Find out the states where cotton is cultivated.

Frost free growing season, 20° to 30° Celsius of temperature, and a small amount of annual rainfall are the geographical requirements for cotton cultivation. Black soil and alluvial soil are most suitable.

Cotton is known as 'universal fibre', as it is used worldwide in the textile sector. India ranks fourth in cotton production.

Cotton textile industry is the largest agro-based industry in India. The first cotton textile mill was established at Fort Glastor near Kolkata in 1818. However, large scale production started at Mumbai in 1854. Mumbai being the most important cotton textile centre in India, the city is termed as 'Cottonopolis'. Look at the favourable factors that helped Mumbai to become the most important cotton textile centre.

- Easy availability of raw materials from neighbouring regions.
- Cheap availability of power.
- Export and import possibilities of the Mumbai port.

Fig. 8.4

- Fresh water availability.
- Human resource availability.

Next to Mumbai, Ahmedabad in Gujarat is a major cotton textile centre. Identify the other cotton textile industrial centres from the map (Fig 8.4).

Jute farming and jute industry

Jute is another fibre crop in India. Hot and humid conditions are ideal for its growth. High temperature and rainfall above 150 cm is essential for jute cultivation. Well drained alluvial soil is required. The Ganga-Brahmaputra delta region of West Bengal is the major jute producing region. Jute cultivation is

mainly confined to West Bengal, Assam, and some parts of Odisha.

Mark the jute cultivating states in an outline map of India and incorporate it in your map collection.

Jute and jute products from India are really significant in the international trade due to its low cost. Among the nations of the world, India ranks second in jute production.

What all products can be made out of jute fibre?

Tea

India is the largest producer of tea in the world. The tea plantations of India are confined to Assam, West Bengal, Kerala, and Tamil Nadu.

Label the tea producing states in the outline map of India and incorporate it in your map collection.

Hill slopes having an annual rainfall range of 200 to 250 cm and 25° to 30° Celsius of temperature are most favourable for tea plantations. Well drained soil rich in humus content is required for this plantation crop.

The tender tea leaves collected from the plantations are processed in the nearby factories and marketed. Tea is a major export commodity of India.

Tea is cultivated in Idukki and Wayanad districts of Kerala. What are the factors favouring this?

Coffee

India stands sixth in the production of coffee, which is a tropical plantation crop. Coffee plantations of India are confined to the Western Ghat ranges of Karnataka, Kerala and Tamil Nadu. Moderate temperature and high rainfall are the requirements for coffee cultivation.

India mainly produces the high quality coffee seed namely 'Arabica,' which has great demand in the international market. Two-third of the total production is from Karnataka. After harvesting the coffee beans, they are processed in the factories and marketed.

Mark the coffee producing states in the outline map of India and incorporate in the map collection.

Spices

India is famous for spices like cardamom, pepper, nutmeg, clove, ginger, etc. right from the ancient times.

What was the role of spices in attracting Europeans to India?

Plantations of spices are concentrated mostly to the ranges of the Western Ghats. Here, the favourable factors are well drained forest soil or sandy soil and the tropical climate with large amount of rainfall.



Sugarcane cultivation and sugar industry

- Sugarcane, which is a tropical crop, requires hot and humid climate.
- Black soil and alluvial soil are ideal for sugarcane cultivation.
- India ranks second in the production of sugarcane.

In the map given (Fig 8.5), you might have noticed the sugar mills shown along with the sugarcane cultivating regions. The sugarcane harvested must be immediately brought to the factories so as to extract the juice out of it. Otherwise the amount of sucrose in the sugarcane might decrease.

Fig. 8.5

Sugar mills are concentrated in sugarcane producing regions. Why?

Uttar Pradesh is the leading producer in both sugarcane and cane sugar. In India both sugar and jaggery are produced from sugarcane.

Find out the states producing sugarcane by analysing the map (Fig 8.5).

Rubber

Rubber cultivation requires temperature above 25° Celsius and rainfall of more tham 150 cm. Lateriate soil which is generally not suitable for other crops is good for rubber.

Kerala is the leading producer of rubber in India. It is a major source of income in Kerala.

Rubber is cultivated on a small scale in certain parts of Tamil Nadu and the Andaman and Nicobar islands.

The fall in the price of rubber affects Kerala the most. Why?

List out the major agro-based industries in India.

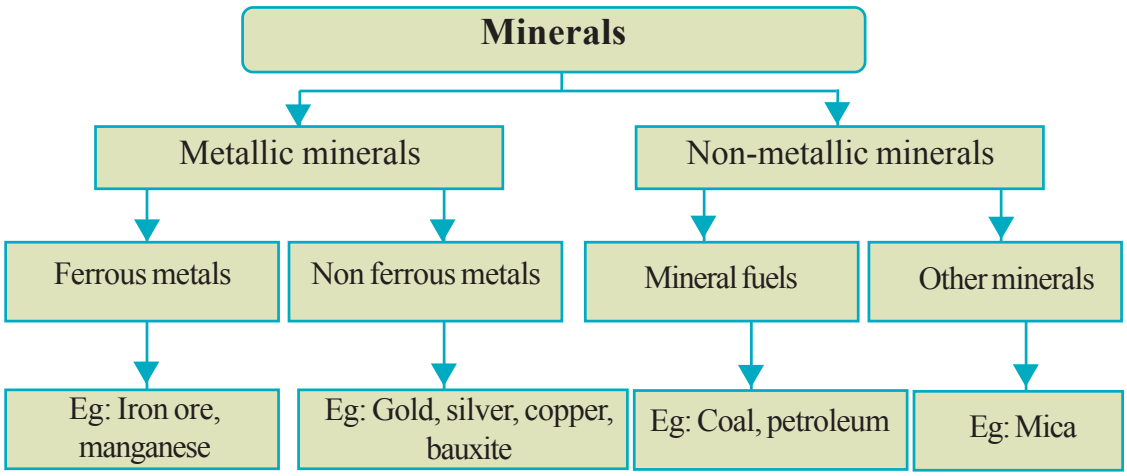
Rubber from abroad

Brazil is the birth place of rubber. It was Sir. William Henry, a British, who first brought rubber seeds to India in 1875. The rubber cultivation, started along the hill slopes of central Travancore, spread to the northern districts as a result of the migration to Malabar.

Minerals and mineral based industries

India is blessed with a wide variety of mineral resources. Most of the mineral resources of India are found in the igneous and metamorphic rocks of the peninsular plateau. Mineral resources provide raw materials to mineral based industries, just as agricultural crops contribute to agro-based industries. It is the mineral resources that form the industrial base of India.

Let us see how the major minerals are classified.



Metallic minerals are the sources of metals which can be classified into ferrous metals and non ferrous metals. Let us discuss some major minerals and associated industries in India.

Iron ore deposits and iron and steel industries

Iron is extracted from iron ore. There are four types of iron ores found in India, namely, magnetite, haematite, limonite, and siderite. Nearly 20% of the total iron ore reserves in the world is in India.

India ranks fourth in iron ore export. 50 - 60% of the iron ore mined in India is exported to Japan, Korea, European countries, the Gulf countries, etc. There has been a drastic increase in the domestic consumption of iron ore.

Look at the table to understand the major iron ore mining regions in India.

State	Major mining centres
Odisha	Sundargarh, Mayurbhanj, Jhar
Jharkhand	Singhbhum, Durg
Karnataka	Bellary, Chikmagalur, Shimoga, Chitradurga
Goa	Marmagao
Tamil Nadu	Salem, Nilgiris

The iron and steel industry is the largest mineral based industry

in India. Iron ore, coal, manganese, limestone, dolomite, etc. are the raw materials required for iron and steel industries.

Coal is also a major raw material for the iron and steel industry. The advantageous location of iron ore mines close to the coal mines in India has much industrial significance.

Other than the raw materials mentioned above, the availability of water, transportation facilities, export facilities, availability of labour, etc. are also considered while setting up of iron and steel industries.

Details regarding the major iron and steel industries are given in the table.

Mark the location of major iron and steel industries in the outline map of India and incorporate in the map collection.

Iron and steel plant	Place of location	Features
Tata Iron and Steel Company Ltd. (TISCO)	Jamshedpur (Jharkhand)	Largest private sector iron and steel plant.
Indian Iron and Steel Company (IISCO)	Kulti, Burnpur, Hirapur (West Bengal)	First public sector iron and steel company.
Visweswarayya Iron and Steel Ltd. (VISL)	Bhadravathi (Karnataka)	First iron and steel plant in south India.
Hindustan Steel Limited, (HSL) Bhilai	Durg (Chhattisgarh)	Established in collaboration with Russia in 1959.
Hindustan Steel Limited, (HSL) Rourkela	Sundargarh (Odisha)	Established in collaboration with Germany in 1959.
Hindustan Steel Limited, (HSL) Durgapur	Durgapur (West Bengal)	Established in collaboration with the UK in 1962.
Hindustan Steel Limited, (HSL) Bokaro	Bokaro (Jharkhand)	Established in collaboration with Russia in 1964.

Manganese

- Manganese is a metallic mineral largely used in the iron and steel industry.
- Manganese deposits are generally found near iron ore mines.
- Odisha is the leading producer. Karnataka, Maharashtra,

and Madhya Pradesh are the other major manganese producing states.

- Manganese is used to make ferro alloys.

Observe the table to know about some other minerals in India.

Minerals	Uses	Major producing states
Gold	For making jewellery	Karnataka
Silver Karnataka	For making jewellery, in electro-plating,	Rajasthan, Jharkhand, in photography
Copper	Conductor in electrical goods industries	Jharkhand, Rajasthan, Madhya Pradesh
Bauxite	Ore of aluminium. Used for making aircrafts, electrical equipments, domestic utensils, etc.	Jharkhand, Chhattisgarh, Madhya Pradesh, Odisha
Mica	Used as insulator in electrical industries.	Andhra Pradesh, Rajasthan, Jharkhand, Bihar

In the outline map of India, mark the places of occurrences of the minerals which you have got to know from the table and incorporate the same in the map collection.

Mineral fuels

We depend on mineral resources for our energy demands in sectors such as industry, agriculture, transport, etc. Coal, petroleum and natural gas are the major energy resources. These are also called fossil fuels. Let us examine them in detail.

Coal

- Coal is the major source of thermal power in India.
- Coal is a major industrial fuel.
- Most of the coal found in India is of medium grade of bituminous type.

- West Bengal, Jharkhand, Odisha, and Chhattisgarh are the producing states.
- The largest coal field in India is Jharia in Jharkhand.
- The less energy efficient coal namely lignite is found in Neyveli in Tamil Nadu.

A coal mine

Petroleum and natural gas

- Petroleum is the chief energy source for transportation through road, rail or air.
- Other than petrol, diesel, etc. numerous by-products are also obtained from petroleum such as chemical fertilisers, artificial rubber, artificial fibres, vaseline etc.
- Petroleum mining in India started at Digboi in Assam.
- Petroleum producing states in India are Assam, Gujarat, and Maharashtra.
- The largest of the oil fields is the Mumbai-High in Maharashtra.
- Natural gas is the fuel obtained along with petroleum. Exclusive reserves of natural gas also exist, especially along the coasts of Tamil Nadu and Andhra Pradesh.

Mumbai - High

Petroleum deposits are mostly confined to the coastal regions. Why?

Nuclear minerals

Uranium and thorium are the major nuclear minerals. There are rich reserves of uranium in the states of Jharkhand, Rajasthan,

and Maharashtra. Thorium is produced from ilmenite and monazite deposits largely found in the coastal sands of Kerala and Tamil Nadu.

Following are the major nuclear power plants in India.

- Tarapur (Maharashtra)
- Rawatbhata (Rajasthan)
- Kalpakkam and Koodamkulam (Tamil Nadu)
- Kaiga (Karnataka)
- Kakrapaara (Gujarat)
- Narora (Uttar Pradesh)


Koodamkulam nuclear power plant

Non-conventional sources of energy

The mineral resources such as coal, petroleum, etc. are being harnessed for energy requirements since ages. Hence such energy sources are called conventional sources. However, these minerals are getting exhausted from the earth due to their non-renewable nature. Also, the burning of these minerals creates large scale environmental pollution. As a remedy to this, we have started utilising the non-conventional sources of energy. Solar energy, wind energy, wave energy, tidal energy, biogas, etc. are the major non-conventional energy sources in India. These cheap, renewable, and environment - friendly sources are given much priority in India.


Prepare a seminar paper on the topic 'Non-conventional sources of energy' by enquiring their advantages and present it in the class.

Transport

Look at the collage. Let us see how these varied means of transport are influencing the development of the nation.

Efficient mode of transport is essential for ensuring the required raw materials in the areas of production and to bring the products to the consumers. Modes of transport are selected in accordance with the physical characteristics of each region.

Road transport

Road transport is the most important means to link the rural and urban centres scattered throughout the country.

See how the roads in India are classified based on the construction and management.

Roads

National Highways	State Highways	District Roads	Village Roads
National Highways are the major roads in the country linking the state capitals, major cities, ports etc. The union ministry is responsible for the construction and management of such roads.	State Highways are the major roads connecting the state capitals with the district head quarters. State governments are responsible for the construction and maintenance of such roads.	District roads are those linking the district headquarters with the important places within the district. These roads are built and maintained by the district panchayats.	Village roads are those ensuring the domestic movement within the villages. More than 80% of the roads in India are village roads. The construction and maintenance of such roads are done by the local self governments.

Which are the National Highways passing through Kerala?

The six- lane super highways connecting the metropolitan cities in India such as Delhi, Mumbai, Chennai, Kolkata are together named as 'the Golden Quadrangle Super Highway'. The National Highway authority of India is responsible for such roads.

The density of roads is not uniform everywhere in India. The development of road network is mainly determined by the physiography and level of economic development of the region.

The density of roads is more over the northern plains, but less over the north eastern states. Why?

Railways

The largest railway network of Asia is in India. The Indian Railways is also the largest public sector undertaking in India. Rail transport is equally important for cargo as well as passenger transport. Railway plays a decisive role in the industrial development of India.

The rail transport in India was started in 1853. The first train ran along the 34 km-long rail between Mumbai and Thane. For administrative convenience, the Indian railway is divided in to 16 zones.

Enquire and identify the railway zone to which the rail network of Kerala belongs. Where is its headquarters?

Observe the table to understand how the Indian Railways is classified based on the gauge width of rails.

Rail gauge	Width between the rails	Proportionate rail length in India
Broad guage	1.676 metres	74 %
Metre guage	1 metre	21 %
Narrow guage	0.762 metre / 0.610 metre	5 %

The projects to replace metre guage and narrow guage tracks to broad guage are on at an accelerated pace. The steam engines have given way to diesel and electric locomotives. Metro rail projects are being established in major cities.

Is there any metro rail project in Kerala?

Konkan Railway

The completion of the Konkan railway in 1998 is the most notable achievement of the Indian Railway. The total length is 760 Km between Roha in Maharashtra and Mangalore in Karnataka. This track constructed across 146 rivers has about 2000 bridges and 91 tunnels. The longest railway tunnel in Asia (6.5 Km) is on this track. Maharashtra, Goa, and Karnataka are the partners in this venture.

Water transport

Water transport is the most convenient means to transport cargo on a large scale. Look at the common advantages of water transport.

- The cheapest means of transport.
- Suitable for large scale cargo transport.
- Does not cause environmental pollution.
- Most suited for international trade.
-

Water transport can generally be classified in to two:

- Inland water transport
- Marine transport

Water bodies like rivers, lakes and canals are used for inland water transport. Following are the waterbodies largely used for inland water transport in India.

- Ganga-Brahmaputra rivers and their tributaries
- Godavari-Krishna rivers and their tributaries
- Buckingham canal of Andhra -Tamil Nadu region
- Mandovi and Zuvari rivers of Goa
- Back waters of Kerala

Five of the inland waterways in India were declared as national waterways after the formation of the Inland Water Transport Authority in 1986.

National Waterway 1 (NW 1)	Allahabad to Haldia in the river Ganga (1620 Km)
National Waterway 2 (NW 2)	Sadia to Dubri in the river Brahmaputhra (891 Km)
National Waterway 3 (NW 3)	The west coastal canal in Kerala from Kollam to Kottappuram (205 Km)
National Waterway 4 (NW 4)	Canal from Kakinada to Puducherry linking Godavari and Krishna (1095 Km)
National Waterway 5 (NW 5)	Brahmani - Mahanadi delta river system linked to east cost canal (623 Km)

Inland water transport is utilised not only for passenger and cargo transport, but also for fishing and tourism.

Discuss the significance of inland waterways in the tourism sector of Kerala and prepare notes.

There are about 12 major and 185 minor ports situated in the west and east coasts of India. The ports in India have great significance in International trade. Following are the major ports in India.

- Kandla
- Mumbai
- Nheva sheva
- Marmagao
- Mangalore
- Kochi
- Tuticorin
- Chennai
- Visakhapatanam
- Paradip
- Haldia
- Kolkata

Worksheet

The location of major ports in India are marked in the map (Fig 8.6). Write the names of the ports in the corresponding location. If needed, use the atlas.

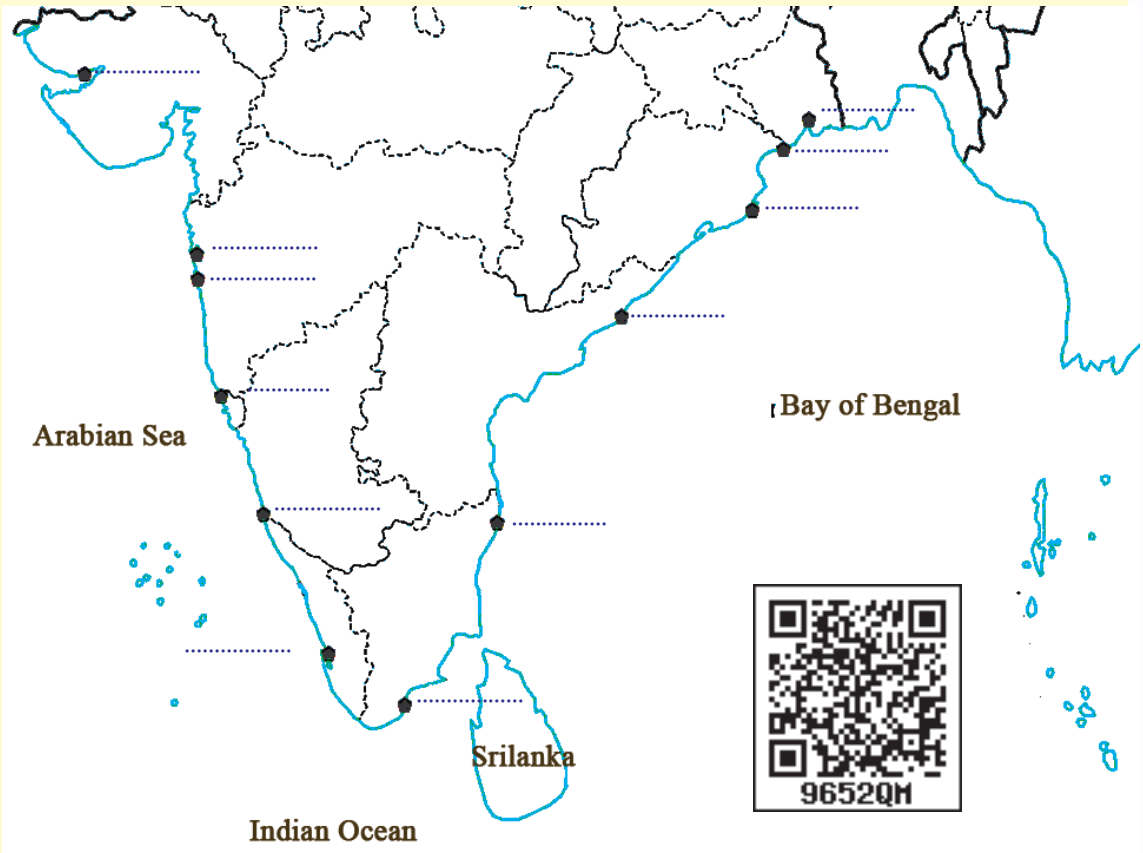


Fig. 8.6

Vizhinjam Deep Sea Port Project

With the realisation of the Vizhinjam Deep Sea multipurpose port, Kerala will have two major ports. The project proposed to establish in public-private partnership (PPP) is developing the container port in the first stage. The nearness to the international shipping route as well as the natural depth of more than 24 metres are the characteristics of the proposed port.

Air transport

The air traffic in India is under the control of Airport Authority of India. There are 126 airports including 11 international airports under this establishment. The international and domestic flight services are respectively handled by the corporations Air India and Indian Airlines. A number of private companies also operate flight services in India.

How many International airports are there in India? Which are they?

Now you might have understood that the resource diversity of India cannot be expressed in words. By judicious and scientific utilisation of these diverse resources, our country's bright future can be ensured.

Let us assess

- "Starts cultivation with the end of the winter season and harvests before the monsoon rains." Identify the agricultural season to which the statement is related. Which are the major crops cultivated in this season?
- Sugar mills are confined to sugarcane producing regions. Why?
- Make short notes
  - i. Golden quadrangle
  - ii. Universal fibre
- Identify the ports mentioned
  - i. Southern most major port of India
  - ii. Major port in Karnataka
  - iii. Major port other than Kolkata in West Bengal
- Identify the mineral resource for which the following places are known.
  - Neyveli
  - Jharia
  - Digboi

Extended activities

- Prepare the distribution map of major crops on a chart paper and display it in the classroom.
- Prepare a table showing the places connected by the major National Highways in India with the aid of an atlas.
- Collect the pictures of trains in India along broad gauge, metre gauge, and narrow gauge and incorporate it in the picture collection.

9

Financial Institutions and Services

Examine any Indian currency note with you. Which are the currency notes that are used in India? Do you know which institution has the right to print these notes? Look at the picture given.

Have you seen this anywhere? This emblem can be seen on Indian currency notes. It is the emblem of the Reserve Bank of India, which is the institution that has the right to print Indian currency notes. Let us understand more about the Reserve Bank of India.

Fig 9.1

Reserve Bank of India

The Reserve Bank of India is the apex bank of India. It was established in 1935. Its headquarters is in Mumbai. Find out the important functions of the Reserve Bank of India from the chart given below.

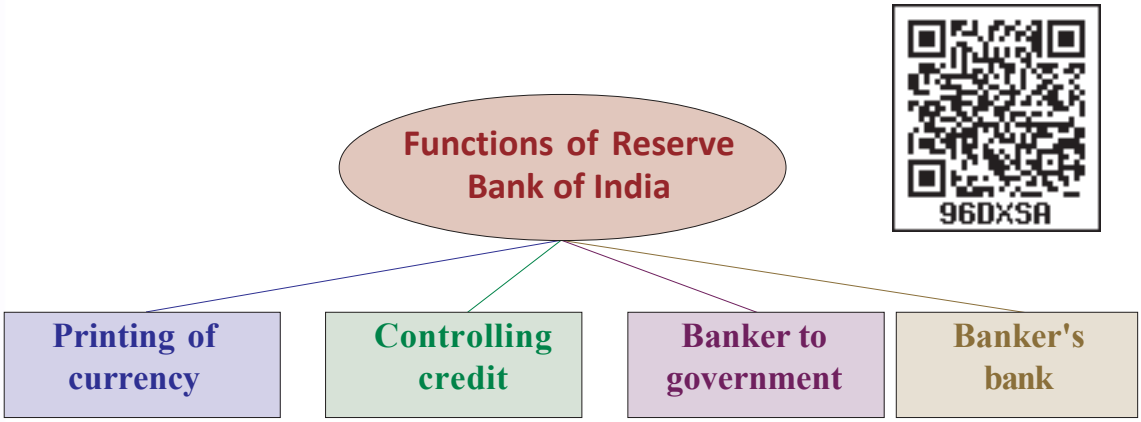


Fig 9.2

Which are the currency notes in use today? All currencies except the one rupee note are printed by the Reserve Bank of India. The one rupee note and its subsidiary coins are issued by the Central Finance Department.

Controlling credit

The Reserve Bank of India increases the money supply in Indian economy through the distribution of printed currency and through credit creation. Control of credit is one of the main functions of the Reserve Bank. This is made possible by bringing about changes in the rate of interest. As rate of interest increases, volume of loans decreases and vice versa.

Banker to government

Another function of the Reserve Bank of India is to serve as the banker to the central and state governments. As a banker to the government, the Reserve Bank of India accepts deposits from the government, sanctions loans and renders other banking services to them. The Reserve Bank of India does not charge any fees for these services.

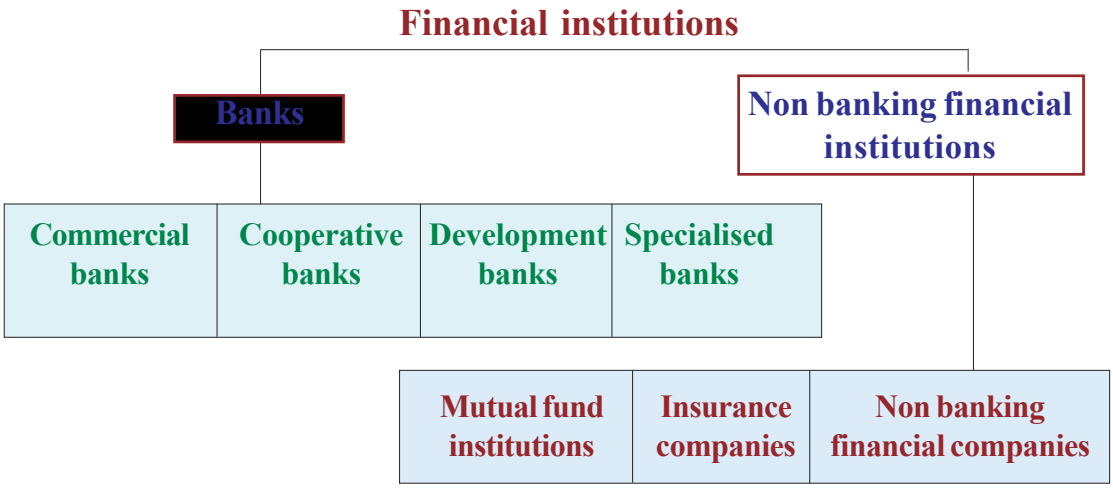
Banker's bank

The Reserve Bank is the apex bank of all banks. To advise and assist all banks in their operations is a function of the Reserve Bank. It acts as a last resort to all banks in their financial matters.

We have understood that the Reserve Bank is the apex bank which controls all other banks. Moreover, it controls and gives the necessary directions and advices to the financial institutions in the country

Financial institutions

Financial institutions are those institutions where financial transactions like deposits, loans etc. take place. Examine the chart given below.



We can find the financial institutions functioning in financial sector by analysing the chart. Let us see each one in detail.

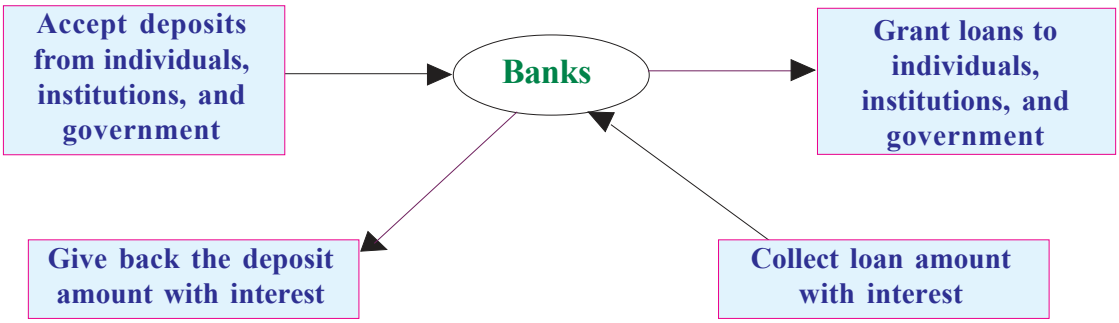
Banks

Have you visited any banks? Which are the banks functioning in your area? List them.

Fig 9.3

- State Bank of India
-
-
-
-

Banks are institutions that accept deposits from the public and grant loans to the needy subject to conditions. They operate on the basis of the general guidelines and conditions set by the Reserve Bank of India. Look at the chart given below.



It is clear from the chart that interest is paid for the deposits accepted. Similarly, it is clear that interest is imposed on the loans provided. The rate of interest on loans will be higher than the rate of interest given for deposits. The difference between these interests is the main revenue of the banks.

Prepare a note on the functioning of banks by visiting a bank in your area and analysing the chart.

Growth of banks in India

The Bank of Hindustan established in 1770 is India's first modern bank. The growth of the banking sector since then can be divided into three phases.

The first phase stretches from 1770 to the nationalisation of banks in 1969. In this phase, the presidency banks, Bank of Bengal, Bank of Bombay, and Bank of Madras were established by the British East India Company. The operation and the growth of banks were slow during this phase.

The second phase stretching from 1969 to 1990, witnessed a speedy development of banks. The view that banks should operate with the aim of social progress led to the nationalisation of 14 banks in 1969 and six banks in 1980. In 1993, the nationalised bank, New Bank of India was merged with the Punjab National Bank. As a result, there are only 19 nationalised banks in India.

In the third phase, stretching from 1991 onwards, banks started rendering services, other than their basic functions. There were several banking reforms which helped in quick and time saving services, ease of procedure, etc. Introduction of Automated Teller Machines (ATM), credit card, phone banking, net banking, core banking, etc. are the results of the third phase of development.

The private banks which received license during this period introduced new and innovative functions at a much quicker pace. Such banks are known as new generation banks.

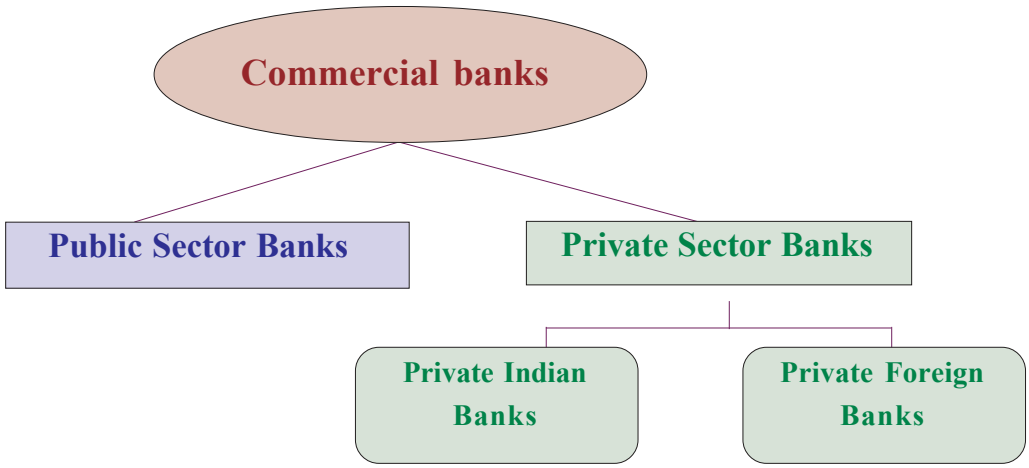
Even though banks basically perform the same functions, there exist differences in some operations. On the basis of operations, banks are classified into commercial banks, cooperative banks, development banks, and specialised banks.

Nationalised banks

- Central Bank of India
- Bank of India
- Punjab National Bank
- Bank of Baroda
- United Commercial Bank
- Canara Bank
- Dena Bank
- Syndicate Bank
- Union Bank of India
- Allahabad Bank
- Indian Overseas Bank
- Bank of Maharashtra
- Indian Bank
- Vijaya Bank
- Corporation Bank
- Andhra Bank
- Oriental Bank of Commerce
- Punjab and Sindh Bank
- United Bank of India

Commercial Banks

Commercial banks are the oldest banks and have many branches. These banks, which play a major role in the country's financial activities, accept deposits from the public and grant loans to trade, industry, agriculture etc., subject to certain conditions.



Regional Rural Banks (RRBs)

These banks were established in 1975 to provide regional banking services to different states in India. They help small farmers, agricultural labourers, small entrepreneurs, etc. by providing loans.

The different types of commercial banks can be understood from the flow chart.

Public sector commercial banks are owned by the government. Their functions are controlled by the Reserve Bank. State Bank of India and its associate banks, nationalised banks and regional rural banks together constitute public sector commercial banks. Private Indian commercial banks and private foreign commercial banks are owned by private individuals. They also operate under the control of the Reserve Bank of India.

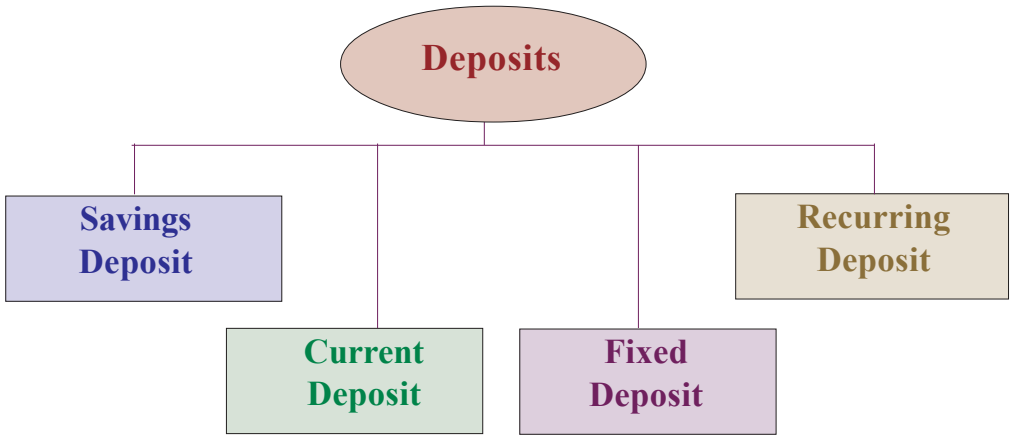
Private foreign commercial banks are those banks which have registered in India but have headquarters in a foreign country.

Function of Commercial Banks

Let's see the important functions of commercial banks.

Accepting deposits

The main function of commercial banks is to accept deposits from the public. The bank provides interest for the amount deposited. By analysing the flow chart let us see the ways in which deposits are accepted by commercial banks.



Savings Deposit

This scheme helps the public to deposit their savings. Banks provide low interest rate for such deposits. The depositor can withdraw the money from the deposit, subject to restrictions. Different banks have adopted different regulations regarding the number of times and the amount of money that can be withdrawn during a particular time period. The details of the amount deposited and withdrawn are stated in the passbook provided by the bank.

Examine a passbook and write down the details in it.

- *Account number*
-
-
-

Current Deposit

This deposit facilitates depositing and withdrawing money many times in a day. This deposits are used mainly by traders and industrialists. This type of deposits does not receive any interest.

Discuss why current deposit does not receive any interest.

Fixed Deposit

Fixed deposits are ideal for depositing money in banks by individuals and institutions for a specific period of time. The interest rate is calculated on the basis of the time period for which the money is deposited. If the money is withdrawn only after the completion of the specific time period, then the specified interest rate will be provided. But if the amount is withdrawn before the maturity of deposits, then the interest rate will be lower.

Recurring deposits

Recurring deposits receive a specific amount every month for a specified period of time. The interest rate of recurring deposits will be higher than that of saving deposits but less than that of fixed deposits. The interest rate will be less if the deposits are withdrawn before the maturity date.

Providing loans

The amount of money accepted as deposit from the public is granted as loans by the banks. Banks provide different types of loans to individuals and institutions. The interest rate of loans will be higher than the interest rate of deposits. There will be differences in the interest rate depending on the duration of loan, its purpose, etc.

Normally, bank loans are provided by accepting a collateral. A few are mentioned below:

- Physical assets - gold, property documents, etc.
- Fixed deposit certificates

Banks also provide loans by accepting salary certificates. The loans given to individuals and institutions by accepting such collaterals are called cash credit. What are the purposes for which banks provide cash credit to the public?

- Agricultural purposes
- Industrial purposes
- Constructing houses
- Purchasing vehicles
- Purchasing home appliances
-

What are the purposes for which banks provide loans? Find out and expand the list by visiting any commercial bank or by interviewing bank officials in your area.

Another type of loan given by commercial banks to individuals is overdraft. This is an opportunity for a customer to withdraw money over and above the balance in his/her account. This facility is provided to individuals who have frequent transactions with the bank. Generally, this opportunity is provided to individuals who maintain current deposits. Let us see an example of overdraft.

Assume that an individual requires Rs. 12000 but has only Rs 10000 in his account. The bank can give Rs. 12000. The additional amount of Rs 2000 is given as overdraft. Bank charges interest for the additional amount.

We have understood the basic functions of banks. Complete the given table based on what has been learnt.

Basic functions of banks			
Accepting deposits		Providing loans	
Different types of investments	Features	Loans	Features
•	•	•	•
•	•		•
•	•	•	•
•	•		•

Other facilities and services provided by banks

Besides the basic functions, banks provide other facilities and services to the public.

Some of the services and facilities provided by commercial banks are given below.

Majority of the banks provide locker facilities to individuals and institutions for keeping their valuable assets (gold, property documents, etc.). One key of the locker will be with the owner and the other will be with the bank. The locker can be opened only when both keys are jointly used. A certain amount is charged for availing this facility.

Demand draft is the facility provided by the banks to send money from one place to another. It is not necessary to have an account for this.

The picture shows the application form for a demand draft and a specimen demand draft.

Observe the form and write down the details that have to be provided while applying for DD.

Fig 9.4

Banks provide an opportunity to transfer money from anywhere in the world either to one's own account or to someone else's account. This service is called mail transfer. Telegraphic transfer is the mechanism which can transfer money through a message. It is faster than mail transfer.

The facility to withdraw money any time without going to the bank is made possible through Automated Teller Machine (ATM). Today majority of the banks have this facility. Now Automated Teller Machines of some banks provide the opportunity to deposit and withdraw money. For this, banks provide ATM debit cards.

Fig 9.5

Find out the details on an ATM card and list them.

- Card number
- Name of the bank
- Emblem of the bank
-

Plastic money

Without keeping money in hand, all money requirements can be fulfilled by using cards. Such cards are called plastic money.

Money may be lost if we are not cautious while using ATM cards. The important things to be followed are:

- Make sure that there is no one at the counter.
- Do not share the ATM Personal Identification Number (PIN)
- Assure the balance amount on receiving the receipt of money withdrawal.
- Do not carelessly throw away the receipt

Banks provide credit card facility which helps in purchasing products without having to keep money on person. Credit card is also a plastic card. Using this, goods and services can be purchased even without having sufficient cash in one's account. The money has to be remitted to the bank later within a specific period. A bank account is necessary for this.

Banks provide services like the payment of insurance premium, telephone and electricity bills, and rendering services like mobile recharging, booking journey tickets, etc. Some of the transactions of the government which were once operated only through the treasuries are now done through banks. Service pension is also disbursed through banks.

Certain amount is imposed as service charge or commission for such services provided by banks to the public.

Have you used any of the services provided by banks? If yes, share the experience.

Modern trends in banking sector

Let us see some of the novel features of the banks that provide service using advanced technology.

Electronic banking (E- Banking)

Availing banking services has been made easy by computerisation and the availability of ATM facility. Electronic

banking is a method by which all transaction can be carried out through net banking and tele banking. Any time banking, anywhere banking, net banking, mobile phone banking, etc. are part of electronic banking. For this, the assistance of the bank employees is not required. Bank account and net banking facility alone are required for this. How is this helpful?

- Money can be sent and bills can be paid anywhere in the world from home
- Saves time
- Low service charge

Let us see some facilities of electronic banking.

Core banking (Centralised Online Real-time Exchange Banking)

Core banking is the facility which is arranged in such a way that the branches of all banks are brought under a central server so that banking services from one bank to another is made possible. As a result, ATM, debit card, credit card, net banking, tele banking, mobile banking, etc have been brought together. Naturally, transactions have become simple.

9B941N

By using this facility, an individual can send money from his bank account to his friend's account elsewhere.

Co-operative Banks

Co-operation, self help and mutual help are the working principles of co-operative banks. The main aim of co-operative banks is to provide monetary help to common people especially the villagers. Farmers, artisans, small scale entrepreneurs, etc. chiefly avail the services of co-operative banks. The main aims of co-operative banks are the following:

9BHZ3B

- Provide loans to the public.
- Protect the villagers from private money lenders

- Provide loans at low interest rate
- Encourage saving habit among people

Look at the different levels of cooperative banks being represented here.

State Cooperative banks	• Apex body in the state cooperative sector • Provides financial assistance to district cooperative banks and primary cooperative banks.
District Cooperat'ive banks	• Operate at district centres • Provide assistance and guidance to primary cooperative banks.
Primary Cooperative banks	• Function in villages • Area of functioning is limited • Encourage saving habit in villagers • Provide loans to villagers at low interest rate

Along with fulfilling the basic banking functions just like commercial banks, cooperative banks disburse different types of loans to persons residing in villages and cities.

Prepare a note on the loans provided by cooperative banks by visiting any cooperative bank in your locality or by interviewing a bank employee.

Development banks

Apart from commercial banks and cooperative banks, development banks also operate in the financial sector. These banks provide long term loans for various needs such as modernisation of industries. Now, these banks provide loans to agriculture and trade sectors. Some of the important features of development banks are given below.

- Work as an agent that helps in the development of different sectors (agriculture, industry, trade, ...).

- Provides loans for construction of house, small scale industry, and basic infrastructure development.

The Industrial Finance Corporation of India (IFCI) is a development bank in India.

Specialised Banks

Specialised banks provide financial help for the development of certain specific sectors. They provide help to start new enterprises. Certain specialised banks and their features are detailed below

Bank	Features
• EXIM Bank of India (Export Import Bank of India)	• Provides loans for exporting and importing products. • Provides instructions to individuals who come into this sector.
• Small Industries Development Bank of India (SIDBI)	• Provides help to establish new small scale industries and to modernise existing industries. • Aim is to vitalize village industries.
• National Bank for Agricultural and Rural Development (NABARD)	• Apex bank in India which functions for the development of villages and agriculture. • Unites all the banks which operate for the development of villages. • Provides financial assistance to agriculture, handicraft, small scale industries, etc.

Some new banks have emerged in the banking sector with certain specific aims. Among these banks, the important ones are:

- Mahila banks
- Payment banks
- Micro Units Development and Refinance Agency (MUDRA) Bank

Bharathiya Mahila Bank was started in November 2013. The slogan of this bank is ' Women empowerment is India's empowerment'. Today, this bank has branches in various states. Though the bank accepts deposits from all, it provides loans mainly to women.

Payment banks have been established to help the low income groups, small scale industrialists and migrated employees. They do not provide all facilities provided by banks. Let us see some of their features.

- Accept deposits upto only one lakh rupees from individuals.
- Provide interest on deposits as specified by the Reserve Bank of India.
- Do not provide loans
- Charge a specific fee as commission for bank transactions.
- Only debit cards will be provided.

A recently introduced bank for providing short term loans is MUDRA Bank. MUDRA Bank provides financial help to small scale entrepreneurs and micro finances.

We have discussed the banks working in the financial sector. Apart from these, there are non banking financial institutions as well.

Non Banking Financial Institutions

These institutions work in the financial sector but do not perform all the functions of a bank. They do basic functions such as accepting deposits, lending loans, etc. whereas some services like withdrawal of cash by cheque, mail transfer, lockers are not provided.

Let us see the main non banking financial institutions in India and their operation.

Non Banking Finacial Companies

These are non banking financial institutions that operate under the supervision of the Reserve Bank of India. They are registered under the Company Act, 1936 and carry out the basic functions of the banks. The main services provided by such banks are:

- Provide loans for hire purchases
- Provide loan for construction of house
- Provide gold loan
- Provide loan on the basis of fixed deposits
- Running *chitty*
- Kerala State Financial Enterprises (KSFE) is the major non banking financial company operating in Kerala.

Visit a KSFE branch and prepare a note by collecting more information.

Mutual Fund Institutions

Mutual fund is a mode of investment. Common man is not always able to invest in the share market directly. This limitation can be overcome through mutual fund. Money is collected from various investors and is invested in share markets, debentures, etc. The profit or loss from this is distributed among the investors.

Such institutions operate in both private and public sectors. Institutions working in public sector are the Unit Trust of India (UTI), Life Insurance Corporation Mutual Fund (LIC MF), SBI mutual fund, etc.

Insurance companies

Things that can be insured
Individual's life
Wealth
Vehicles
Items in institutions
Agricultural crops
Export goods
Temporary enterprises (circus, trade fairs...)

Insurance companies are institutions that provide financial protection to individuals' life and wealth. They assure social security and personal welfare. The first insurance company of India was established in Kolkata in 1818.

Today, insurance companies operate in public and private sectors.

A major institution in India working for the protection of individual's life and health is the Life Insurance Corporation of India (LIC).

Non life insurance companies that protect individuals from loss due to accidents, natural calamities, etc also operate in India. The General Insurance Company and four related companies are the non life insurance companies operating in the public sector.

Microfinance

The aim of microfinance is to provide different financial services including micro credit to common people. This helps in encouraging saving habit among the low income groups in the society and to seek self employment. The Kudumbasree and men self-help groups operating in Kerala and are examples of this.

Let us see a few major goals of microfinance.

- helps in collective development by mobilising money from individuals.
- helps to increase the standard of living of the poor.
- encourages saving habit
- makes use of the individual potential for group development.
- provides loans to members in need
- starts small scale enterprises

Men / women in a locality join together and form small groups, which usually do not exceed 20 members. Each member invests a fixed amount in the group. Banks also provide loans at a low interest rate to these groups. The working capital of such groups is the amount collected from the members and the loans provided by banks at low interest rate. This amount is disbursed as loan among members in need.

By using this capital and with the help of local self government several small scale units function today. It is possible to protect the poor from the local money lenders through the activities of self help groups. Some of the units operated by such groups in Kerala are given below. Find out more and add to the list.

- Pickles and snacks units
- Soap and washing powder units
- Hotels
- DTP centres
-
-

Visit the Kudumbasree units / self help groups in your area and prepare a report on their activities.

Let us assess

- "Reserve Bank of India acts as a last resort to all banks in their financial matters." Substantiate the statement on the basis of the functions of the Reserve Bank of India.
- Explain the basic functions of banks.
- Explains the aims of mahila banks, payment banks and MUDRA bank.
- Evaluate how microfinance helps the common man.

Extended activities

- Make an album of the emblems of different banks.
- Visit ten houses in your locality and prepare a report on their transactions with financial institutions

  Hints :

  - What services are availed?
  - What type of institution is approached?
  - What are the suggestions to improve the functioning of institutions?
- Organise a discussion related to the policies and procedures of the Reserve Bank of India by colleting news from the media.

10

Consumer : Satisfaction and Protection

Observe the pictures. We visit these institutions for various requirements. Discuss the requirements satisfying for which we visit them and list them out.

- Purchasing vegetables for cooking food.
- To avail treatment for diseases.
-
-

Can you prepare a list of our wants?

It is clear that modern man has various wants such as food, cloth, shelter, education, health, entertainment, etc. For this, we use goods and services. Find out the goods and services used by you.

Do we pay for all the goods? Do all services have to be rewarded? We are now in a situation where even water and air have to be paid for. Think about the reasons for that.

- Scarcity of resources
- Increase in wants
-
-

Consumption, consumer

Consumption is the satisfaction of human wants using goods and services. A consumer is a person who purchases and uses goods and services by paying or agreeing to pay a price. In order to satisfy our wants, we depend primarily on sale outlets and service centres. Production, distribution, and consumption are inter related economic activities. In reality, all economic activities are meant to satisfy the consumers.

Satisfaction of the consumer

"A customer is the most important visitor on our premises. He is not dependent on us. We are dependent on him. He is not an interruption in our work. He is the purpose of it. He is not an outsider of our business. He is a part of it. We are not doing him a favour by serving him. He is doing us a favour by giving us an opportunity to do so."

Gandhiji

Have you noticed Gandhiji's words? Discuss whether such a situation prevails today in sale outlets and service centres.

While purchasing products, we ought to pay different prices for the same product in different shops. We wish to get goods at a fair price. What are the other aspects that a consumer expects while purchasing products and using services?

- Quality
- Reliability
- After sale services
-
-

Look at the experience given below.

In the month of June, Anu and Vinu reached school with new umbrellas. Even though both of them used their umbrellas carefully, after two weeks Anu's umbrella was so damaged that it could not be opened. Vinu could use his umbrella well till the year end.

In the above experience, which consumer was fully satisfied? Why?

Doesn't such experience happen in your life? Share it in the class.

The act of fulfilling the wants of the consumer through the consumption of goods and services is called satisfaction.

We read news related to food poisoning after having food from hotels.

There are various circumstances where the consumers are exploited or cheated.

- Selling low quality products
- Adulteration
- Charging excess price

- Manipulation in weights and measures
- Delay in making services available
-
-

Draw cartoons and collect reports and pictures on the subject 'consumer exploitation' and conduct an exhibition in the class.

What are the problems faced by consumers in the market?

Situations that lead to the exploitation of the consumers increase with the increase in the extent and intensity of consumption.

Consumers must be able to consume with ease and without being exploited. For this, laws, administrative measures, and consumer education, etc. are necessary. Let us see some laws existing in India.

Consumer Protection Act 1986

The Consumer Protection Act 1986 clearly defines the consumer's rights and sets up special judiciary mechanisms for consumer protection in India.

Let us see some of the rights of the consumer as per the Act.

- The right to be protected against the marketing of goods and services which are hazardous to life and property.
- The right to be informed about the quality related aspects of goods and services.
- The right to have access to goods and services at fair prices.
- The right to be heard and to seek redressal at appropriate forums.
- The right to consumer education.

The consumer courts were established as a result of this Act.

Consumer courts

There may be situations in which the consumers are not satisfied with the dealings of the producers and distributors. Under such circumstances, they can approach the consumer courts which are mechanisms for assisting or helping them as per the law. Consumer courts play an important role in ensuring justice to the consumers. They settle consumer disputes by various means including ensuring compensation for the consumers. The consumer courts are able to create confidence in the consumers and bring about a qualitative change in their lives.

Today, in India, consumers are utilising the services of consumer courts operating fruitfully at three levels- district, state and national.

Let us see the structure and jurisdiction of the district, state and national consumer courts.

Consumer courts	Structure	Jurisdiction
District consumer disputes redressal forum	- functions at district level - president and two members - at least one woman member	After collecting evidence based on the complaint filed by the consumer, verdicts are given where the compensation claimed does not exceed Rs 20 lakhs.
State consumer disputes redressal commission	- functions at state level - president and two members - at least one woman member - state government has the right to appoint more members.	Verdicts are given on consumer disputes where compensation claimed is above Rs. 20 lakhs but upto rupees one crore.
National consumer disputes redressal commission	- functions at national level - president and not less than four members - Central government has the right to appoint more members.	Verdicts are given on disputes where compensation claimed exceeds rupees one crore

The procedures of the consumer courts are different from those of the general courts. The important features of consumer courts are as follows:

- Simple procedures
- Fast assurance of justice
- Less court expenses

It is sufficient to submit before the court a written petition about the loss and damages faced by the consumer. A nominal fee is charged on the basis of the value of the compensation claimed by the petitioner.

മാതൃക

ബഹുമാനപ്പെട്ട തിരുവനന്തപുരം ജില്ലാ ഉപഭോക്തൃ തർക്ക പരിഹാര

ഫോറം മുമ്പാകെ

സി. സി. നമ്പർ : .....

1) പരാതിക്കാരൻ : പരാതിക്കാരുടെ പേരും മേൽ വിലാസവും പിൻകോഡും മൊബൈൽ നമ്പറും സഹിതം

2) എതിർകക്ഷി : എതിർകക്ഷികളുടെ പേരും മേൽ വിലാസവും പിൻകോഡ് സഹിതം

3) പരാതി(വിശദമായ വിവരണം)

4) പരിഹാരങ്ങൾ:-

5) ഹാജരാക്കുന്ന് രേഖകൾ

1.

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ഒപ്പ്

പരാതിക്കാരൻ

N.B:- *എതിർകക്ഷി ഒന്നാണെങ്കിൽ ഒരു അസൽ പരാതിയും 3 കോപ്പിയും രേഖകളുടെ 3 കോപ്പിയും ഹാജരാക്കേണ്ടതാണ്. എതിർകക്ഷിയുടെ എണ്ണം കൂടുന്നതനുസരിച്ച് പരാതിയുടെയും രേഖകളുടെയും അധികം കോപ്പി (ഓരോന്നു വീതം) ഹാജരാക്കേണ്ടതാണ്.* ഒരു ലക്ഷം വരുന്ന പരാതിക്ക് 100/- രൂപയും ഒരു ലക്ഷം മുതൽ 5 ലക്ഷം വരുന്ന പരാതിക്ക് 200/- രൂപയും 5 ലക്ഷം മുതൽ 10 ലക്ഷം വരുന്ന പരാതിക്ക് 400/- രൂപയും 10 ലക്ഷം മുതൽ 20 ലക്ഷം വരുന്ന പരാതിക്ക് 500/- രൂപയും ഡി.ഡിയായി ഹാജരാക്കേണ്ടതാണ്. Nationalized Bank-ൽ നിന്നും എടുത്ത ഡി.ഡി മാത്രമേ സ്വീകരിക്കുകയുള്ളൂ. Phone No. 04712721069 *ഡി.ഡി എടുക്കേണ്ട അഡ്രസ്സ് : PRESIDENT, CDRF, Thiruvananthapuram.*

Observe the sample form reproduced above and find out the details to be furnished while filing a complaint.

Situations when complaints about consumer disputes can be filed:

- When the purchased product is damaged or defective.

- Defective services received from government/ non government/ private institutions.
- Appropriation of price over and above the amount legally fixed or marked on the outer casing.
- Violation of the prevention of adulteration law
- Sale of products which are harmful to life and safety
- Loss due to trading methods which lead to unfair practices and limited consumer freedom.
- Giving misleading advertisement for increasing sales

Is advertisement a boon or bane? Organise a debate on this topic.

A student joined a university study centre and remitted the fees. But when the study materials were not made available in time, the student contacted the study centre and was informed that the university has discontinued the course. The study centre was not willing to refund the fees paid. The student filed a complaint against this in the consumer court. The court verdict was to refund the entire fees paid and the student got the fees refunded.

You have read about the experience of a complaint being settled in a consumer court.

Collect from the media different news related to the verdict of consumer courts.

Evaluate the extent to which the consumer courts are helpful in protecting the rights of consumers.

The following are the compensations for consumer disputes obtained through consumer courts.

- Replacing the product
- Repayment of cash paid or excess amount appropriated
- Monetary compensation for the loss

- Direction to rectify the defects in services.
- Stopping harmful trade practices
- Prohibition of the sale of harmful food items
- Reimbursement of the expenses incurred in lodging the complaint

According to the Consumer Protection Act 1986, apart from the consumer courts, three - level advisory councils have been set up. They are the district consumer protection council, state consumer protection council, and national consumer protection council. The responsibility of these councils is to advise the respective governments on consumer rights.

Prepare a report on the procedures of consumer courts by interviewing a legal expert.

Apart from the Consumer Protection Act 1986, there are many other Acts for the protection of the consumers. Important among them are mentioned below.

Sale of Goods Act, 1930

It ensures that the prescribed conditions of sale are met while purchasing products. Violation of guarantee, warranty, after sale services, etc. comes under this Act.

Agriculture Produce (Grading and Marking) Act, 1937

This Act is meant for determining the standard of agricultural products.

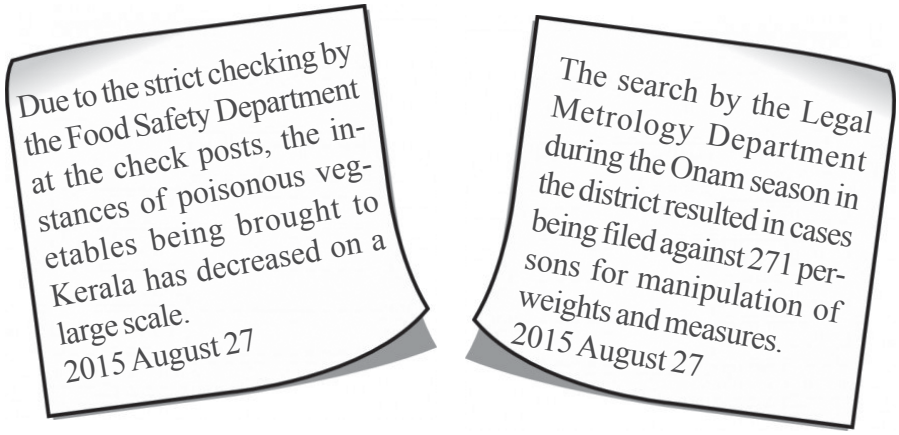
Essential Commodities Act, 1955

This Act protects the consumers from supernormal profit, hoarding, black marketing, etc.

Weights and Measures Act, 1976

This Act is helpful in preventing cheating in weights and measures.

Administrative mechanism



Note these newspaper clippings. Which are the departments that have taken actions? There are different departments and institutions working for the protection of consumers' interests. Let's take a look at some of them.

- Legal Metrology Department → ensures the weights and measures standards
- Food Safety Department → ensures the quality of food products
- Central Drugs Price Control Committee → controls price of medicines
- Drugs Control Department → ensures the quality and safety of medicines.
- Food Safety and Standard Authority of India → ensures the quality of food products at various stages like production, distribution, storage, sale and import.

Find out more institutions and departments like the above and collect news related to them.

There are some symbols that are given on the basis of assessing the standard of products and institutions. The symbols help the consumers in ascertaining the quality of products and institutions. Let us see some of them.

ISI	• ISI stamp is given by the Bureau of Indian Standard (BIS) to ensure a fixed quality of products . This symbol can be seen in products such as electrical appliances, cement, paper, paint and gas cylinder.
ISO	• International Organisation for Standardisation (ISO) certifies the quality of goods and services of more than 120 countries including India. • International Organisation for Standardisation (ISO) gives certification to different products and service institutions like hospitals, banks, etc.
BIS 100% Hall Marked Jewellery	• It indicates the purity of gold jewellery
CE	• This symbol is used internationally to certify the safety of electronic and electrial appliances
भारत सरकार AGMARK एगमार्क GOVERNMENT OF INDIA	• Agmark symbol is used to ensure the quality of agricultural and forest products.
VEG NON-VEG	• These symbols are marked to distinguish between vegetarian and non vegetarian food items.
FPO	• It certifies the safety and quality of products processed from fruits and vegetables. FPO is the short form of Food Products Order.

Make a list of the products which have these symbols.

Intervention of the society

Official mechanisms and laws alone cannot ensure the satisfaction of the consumers. Intervention of an alert society is necessary for this.

What are the ways in which the intervention of the society can be made possible?

- Functioning of consumer organisations
- Consumer awareness
- Public interest litigation
-
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Consumer education

Everyone is a consumer. Variety in products, personal interest, increasing demands, influence of market force, etc. has complicated and widened the scope of consumption. Consumer education is necessary for the acquisition of right habits by the consumers.

What are the ways by which consumer education can be ensured?

- Awareness programmes
- Inclusion in the curriculum
- Observance of the National Consumer Day
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What are the ways in which consumers are empowered through consumer education?

- Helps to consume sensibly as per the wants.
- Helps to acquire information regarding products and services
- Enables the consumer to make the right choices.

National Consumer Day

In India, December 24 is observed as the National Consumer Day. In 1985, the United Nations Organisation passed a resolution on the guidelines regarding consumer protection. On that basis, Government of India passed an Act on consumer protection. This Act came into force on 24 December 1986.

- Makes the consumer aware of his/her rights
- Makes them capable of intervening in consumer disputes

Let us see what habits will be formed as a result of consumer education programmes.

- *ask for the bill for every purchase made*
- *make sure that the weights and measures are accurate*
- *make sure, while purchasing packed items, that the name of the product, date of packing, expiry date, weight, price, and producer's/distributor's address are stated*
- *note the symbols representing the standard of the products*
- *understand how to use and operate the products purchased*

Prepare a consumer awareness wall magazine listing right consumer habits.

Prepare a note on the importance of consumer education

A happy consumer society can be created only with the combined effort of the government, non-governmental institutions, and society.

Let us assess

- The satisfaction of the consumers is the main aim of all economic activities. Do you agree with this statement? Why?
- What are the situations in which the consumers are exploited?
- What are the rights included in the Consumer Protection Act?
- The Consumer courts guard consumer rights. Substantiate.

- How do advertisements adversely affect the consumer? Explain with examples.
- Compare the functioning of the legal metrology department and the district consumer redressal forum.
- What all can be included in the seminar paper to be presented in a seminar in the school on World Consumer Day?
- Describe the ways in which you can intervene in the consumer disputes in your area?

Extended Activities

- Prepare a magazine including different types of creative work and articles related to consumer protection.
- Make a power point presentation with slides on consumer awareness.
- Organise a class level exhibition by collecting news pertaining to the functioning of consumer courts and related institutions.

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Security Features of a Genuine Indian Currency Note

We have to know more about currency notes used for financial transactions. Genuine currency notes have certain security features. Awareness of those features can save us from being duped.

- **Paper**

  Banknotes are printed on special watermarked paper with substrate cotton and cotton rag. This gives the banknotes a unique "touch feel" and "crackling sound".

- **Watermark**

  The portrait of Mahatma Gandhi, the multi-directional lines and an electrolyte mark showing the denomination value appear in this section and these can be viewed better when the banknote is held against light.

- **Security Thread**

  All banknotes carry a security thread, partially exposed and partially embedded, with readable window. The security thread of notes up to Rs 500 denomination contains "Bharath" in Hindi and "RBI" in English alternately. Rs 1000 denomination notes additionally contain "1000" as a numeral in the security thread.

- **Micro lettering**

  The letters "RBI" and the denomination value as a numeral can be viewed with the help of a magnifying glass in the zone between the portrait of Mahatma Gandhi and the right vertical band. (However, only letters "RBI" is seen in Rs. 10 denomination).

- **Intaglio Printing**

  The name Reserve Bank of India, the Guarantee Clause, the Promise Clause, the Signature of RBI Governor, the Portrait of Mahatma Gandhi, the Reserve Bank Seal, the Ashoka Pillar Emblem, the Central Denomination Value in words and figures are printed in intaglio, i.e., in raised prints which can be felt by touch.

- **Fluorescence**

  The number panels of banknotes are printed in fluorescent link.

- **Optically Variable Ink**

  The colour of the denomination in numeral appears green when the note is held flat and changes to blue when the note is held at an angle. The font size also appears reduced. This feature is available only on notes of Rs. 500 and Rs. 1000 denominations.

- **Latent Image**

  The vertical band contains the denomination in numeral. This can be seen by keeping the note flat on the palm of your hand at eye level and viewing it against the light.

Printing and circulation of forged notes are offences under Sections 489A to 489E of the Indian Penal Code and are punishable in the courts of law by fine or imprisonment or both.