

CHAPTER

1

Topographical Sheets: Colours, Signs and Symbols

We Will Learn

- Interpreting Contours on the Topo Sheets
- Identifying Landforms through Contours
- Interpretation and Analysis of a Topo Sheet

Introduction

In the previous classes, you have learnt that a topographical map gives a representation of a small area in great detail on a sheet of paper using signs, symbols and **contour** lines.

It helps us to locate different landmarks of a place and its features, and calculate the distances based on a scale. Topographical maps also aid in identifying roadways, railways, settlements, vegetation, rivers, lakes and drainage basins.

Interpreting Contours on the Topo Sheets

Topographical maps depict natural relief features and human-made features of a small area in a detailed manner. We have learnt that **eastings** are contour lines that run vertically on the map

while **northings** are those that run horizontally. These imaginary lines in brown are used to represent the ups and downs of a specific relief feature of an area. Contour lines are drawn to join places having the same altitude above the mean

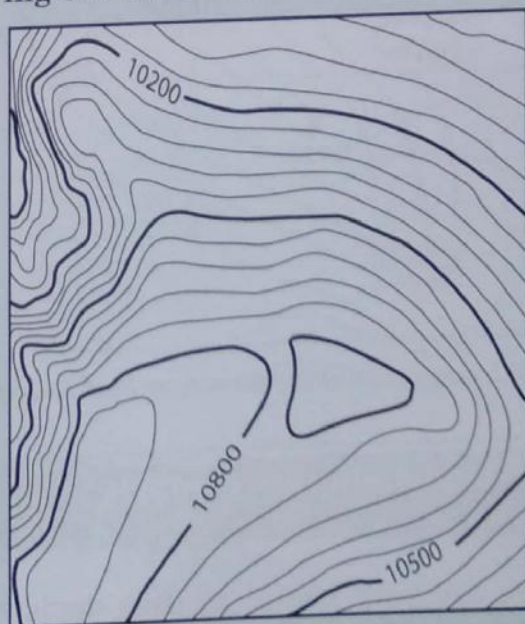


Fig. 1.1 Contour Lines Representing Relief Features

sea level (see Fig. 1.1). The vertical distance between two successive contours on a map of RF 1:50,000 is 20 m. This gap between two successive contours is called the contour interval. To calculate the altitude, a thick brown line is drawn at every 100 m. This brown line is called the index contour.

Cartographers use survey instruments to calculate and find out the heights above the ground. Certain points are marked to show the heights on a map. These are called spot heights. They show heights in metres above the mean sea level. Once the accurate points are known on the map, it is possible to interpolate them by joining equal heights on the map (see Fig. 1.2). For example, spot heights having an equal height of 400 m can be joined by an imaginary line, which is the contour line. The spot heights that are high are drawn far away from those at lower heights.

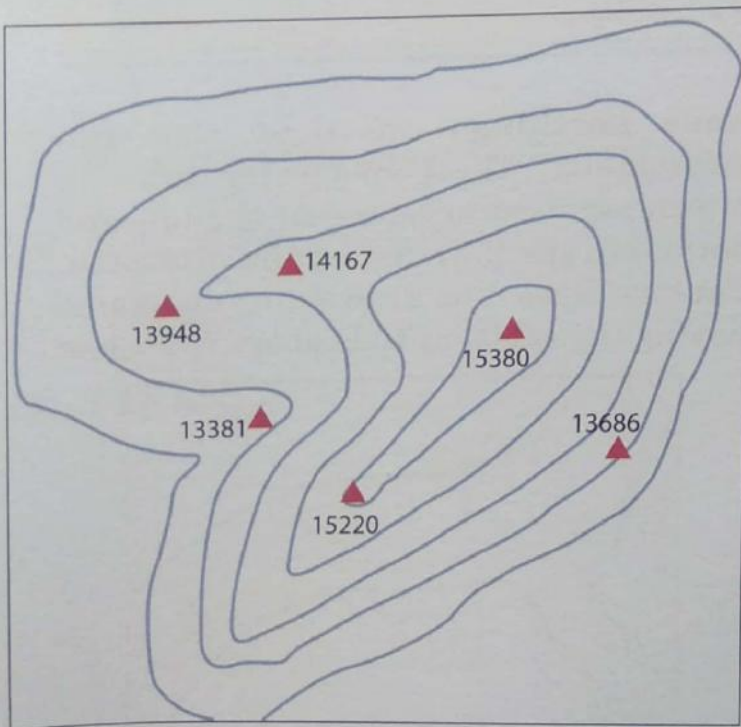


Fig. 1.2 Interpolation of Contours from Spot Heights

Identifying Landforms Through Contours

Contours are very useful as they depict the slope in a landform. They are significant to identify heights in a topographical area.

Slope

Spacing between the contours of different slopes helps in identifying whether the slope is steep or gentle. When the contours are spaced widely, the slope is gentle while closely spaced contours indicate steep slopes (see Fig. 1.3).

Contour lines, usually, never intersect each other.

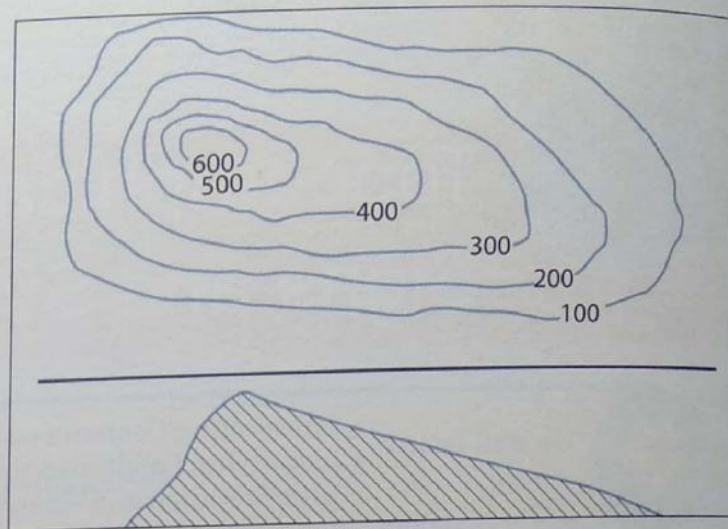


Fig. 1.3 Gentle Slope and Steep Slope

Cliff

Cliff is a vertical landform which rises from the lower ground; it can be very steep too. It is represented when two contours meet together or when the contour lines are placed one on top of the other as shown in Fig. 1.4. There may be high and low points between the cliffs.

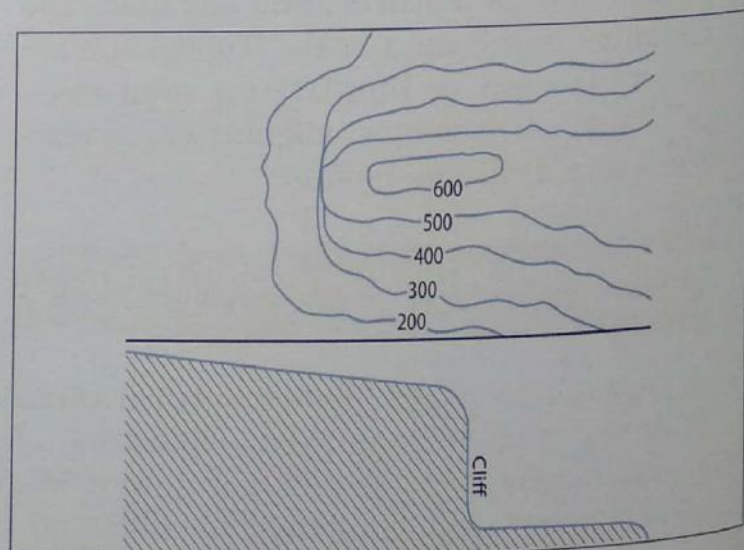


Fig. 1.4 Cliff

Conical Hill

A conical hill is depicted through contour lines that are equally spaced and heights are shown to increase towards the centre in a circular contour hill. Contours representing a contour hill are shown in concentric circles as shown in Fig. 1.5. The slopes are equal in all directions. The innermost contour of a **conical** hill has the highest spot height showing the summit of the hill.

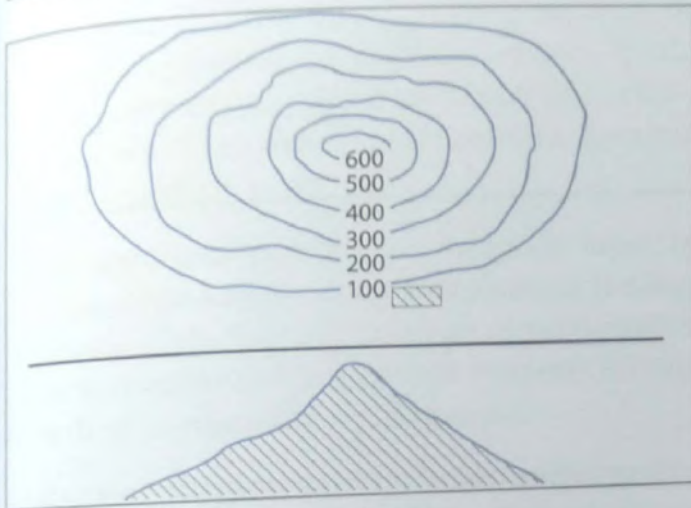


Fig. 1.5 Conical Hill

Plateau

A plateau is a flat-topped, steep-edged highland. When closely spaced contours are drawn but the innermost contour is very wide, it depicts a plateau (see Fig. 1.6). The closely spaced contours show the steep slopes of a plateau. The very wide innermost contour shows the flat, table-like top of a plateau.

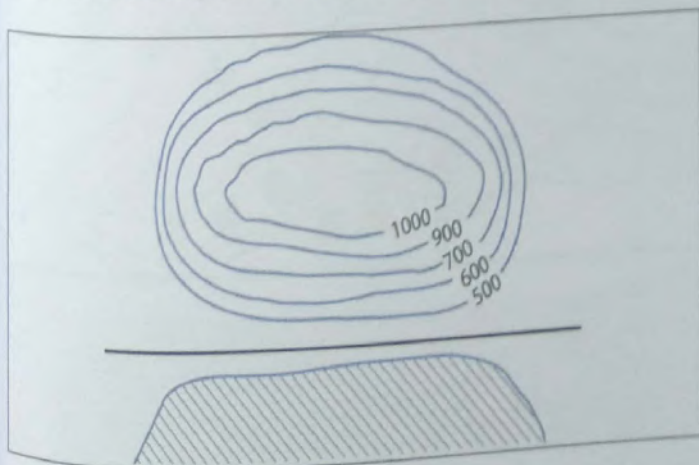


Fig. 1.6 Plateau

Ridge

A long, narrow upland with sharp edges and several peaks is called a **ridge**. The slopes of a ridge may be gentle or steep. It looks like a range of hills. On a contour map, the ridge is indicated by oval contour lines. Lines closer to each other indicate steepness. (see Fig. 1.7).

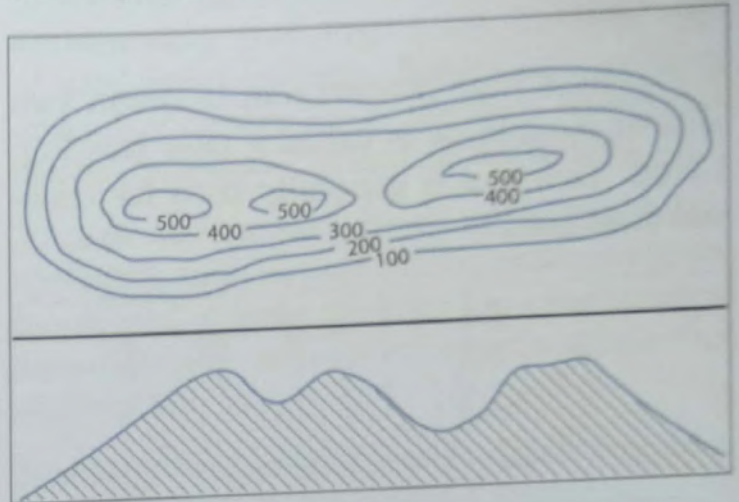


Fig. 1.7 Ridge

Saddle

A shallow depression between two hills or areas of higher ground is called a **saddle** as shown in Fig. 1.8. Sometimes, depressions are formed due to streams or glaciers flowing close to each other.

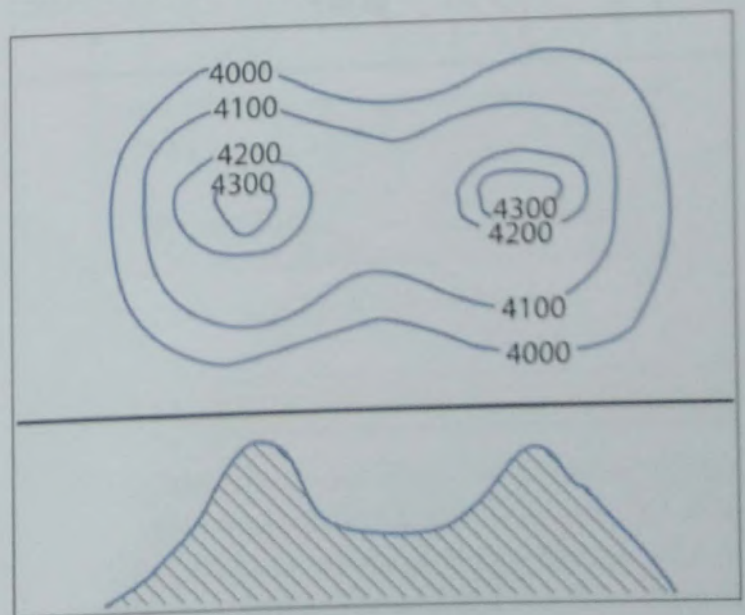


Fig. 1.8 Saddle

Col, Gap and Pass

Col is also a depression between two hills but it is neither too deep nor very wide [see Figure 1.9(a)]. On a contour, a drop indicates a col.

A low depression on the ground cutting through hills or close to it is called a gap [see Fig. 1.9(b)].

A gap at a higher elevation between two hills or mountains is called a pass [see Fig. 1.9(c)]. This gap is generally used for trade and transport.

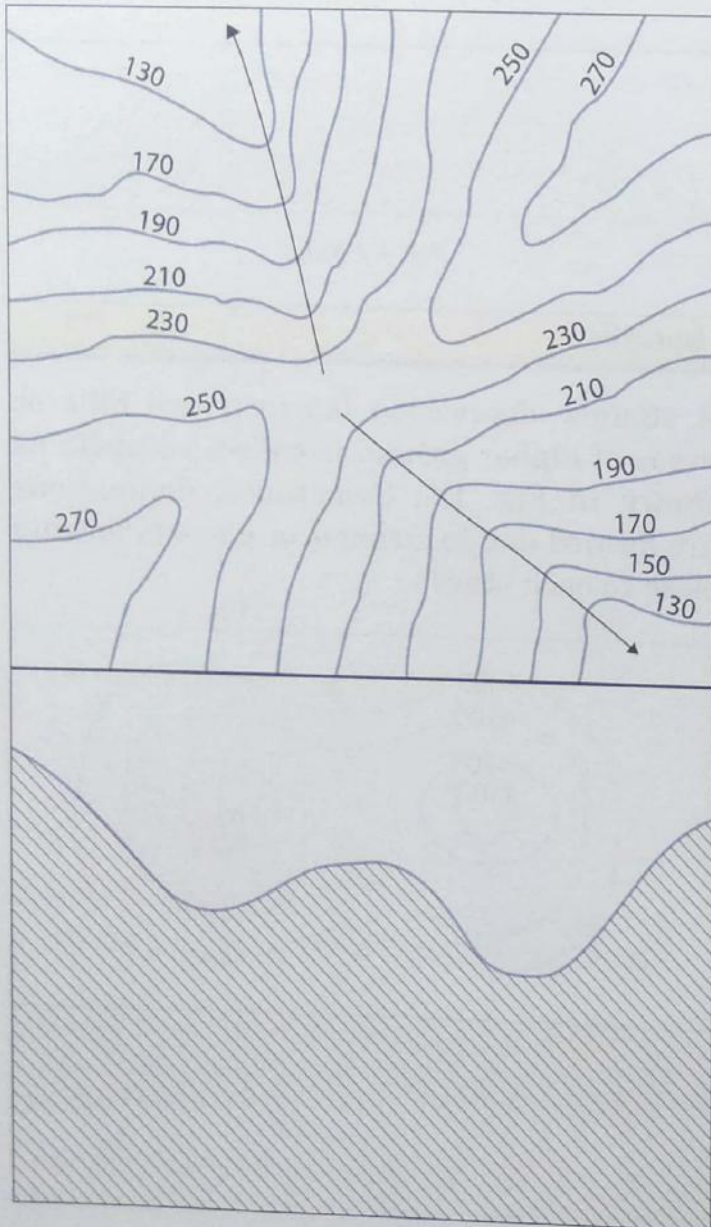


Fig. 1.9(a) Col

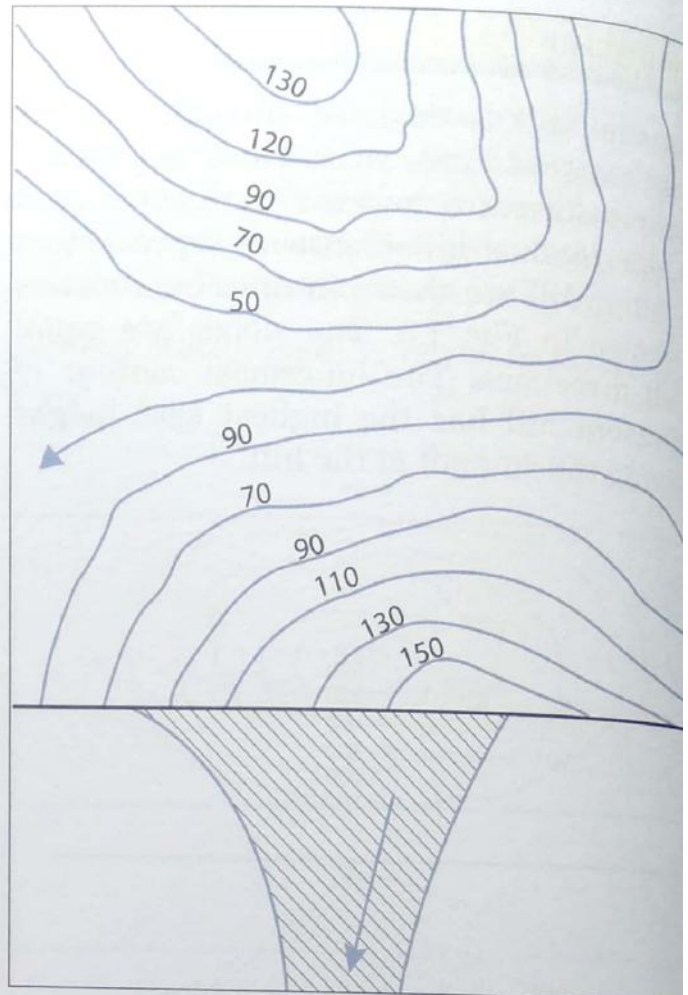


Fig. 1.9(b) Gap

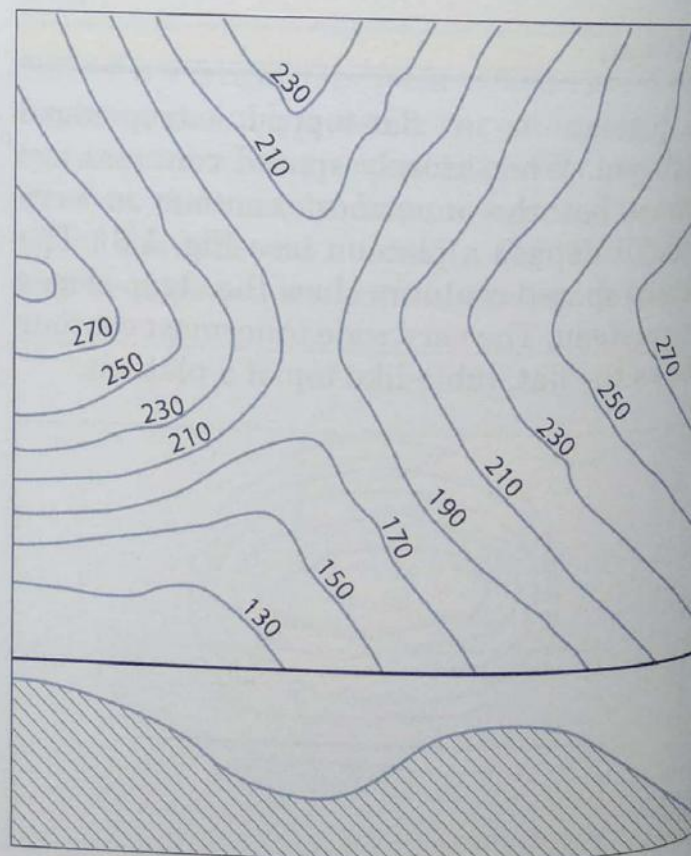


Fig. 1.9(c) Pass

Settlement Patterns

People usually settle near a river, in a plain or in an area where land is **arable** and it is easy to develop a wide network of transportation. These areas where people settle are called **settlements**. Settlements may be temporary, as indicated by an empty square box □, or permanent, as indicated by a solid square box ■.

Temporary settlements are usually set up by farmers during the harvest season or lumberjacks during the logging season. Tents and huts are usually seen as forms of shelter. Sometimes, temporary settlements become permanent with time.

Permanent settlements are usually seen in villages, towns and cities. Permanent houses are forms of shelter in this type of settlement. Land and water are important reasons for the growth of permanent settlements.

As settlements grow and flourish, a distinctive pattern is noticed and is referred to as the shape of the settlement as seen from above. Linear, nucleated and dispersed are some examples of the different patterns of settlement growth.

Linear Settlements

Settlements that are developed and noticed along a railway line, metalled road or course of a river are called **linear settlements** (see

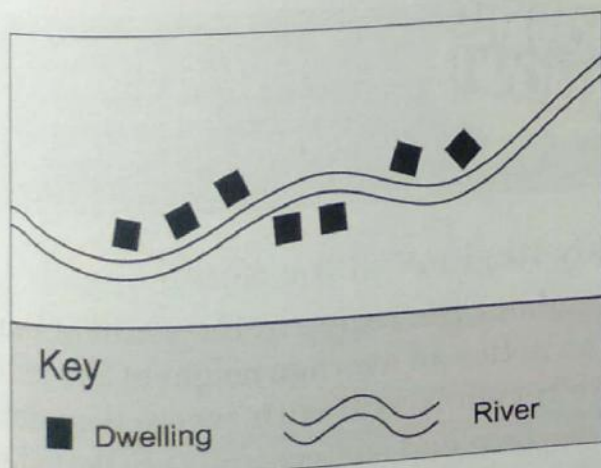


Fig. 1.10 Linear Settlements

Fig. 1.10). In this settlement pattern, houses are grouped along a line. These settlements grow due to the advantage they offer for trade and transport.

Nucleated Settlements

Settlements that develop into major villages, towns and cities in plains, or in terrains with favourable conditions are called **nucleated settlements** (see Fig. 1.11). In this type of settlement pattern, houses are grouped around a centre or a nucleus. These are densely populated or may be clustered.

In such settlements, there are many public amenities such as post offices, police stations, hospitals, places of worship, reservoirs, cemeteries, metalled roads, railway stations etc.

Nucleated settlements usually depict economic prosperity, opportunities and facilities.

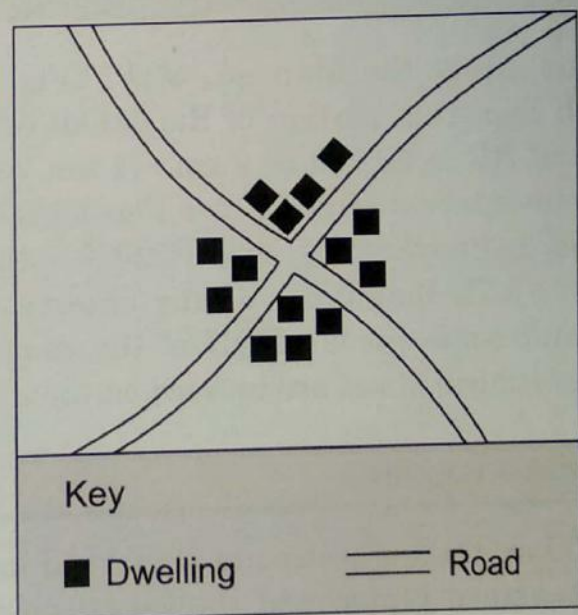


Fig. 1.11 Nucleated Settlements

Dispersed Settlements

Settlements that develop in remote areas which are located far from a water source or fertile lands or around large farms where very few people reside are called **dispersed settlements** (see Fig. 1.12). This settlement

pattern sees scattering of houses over a large area. Permanent and temporary huts are found in this type of settlement.

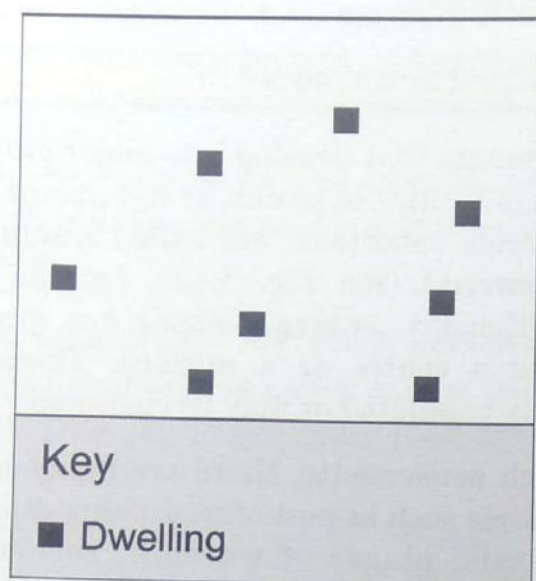


Fig. 1.12 Dispersed Settlements

Interpretation and Analysis of a Topo Sheet

Let us study the Map no. 45D/7 (Fig. 1.3) which depicts a portion of Rajasthan with a scale of RF 1: 50,000 or 2 cm = 1 km, and a contour interval of 20 m (see Fig. 1.13). The region is marked by the 24°20'N latitude and 72°25'E longitude. Kindly observe that QC and some parts of QD of the complete topographical sheet are covered on the map.

Physical Features

At 800 m, the highest point is marked in the northeastern region and the lowest point is near the river bed of Banas. Identification of the physical topography can be clearly seen as the hilly region of the north, with River Banas showing the lowlands and the occasional dunes in the south depicting the sandy arid regions.

The Hilly Region of the North

The presence of several peaks along the

hilly region is prominent. A few peaks have a median height of 700 m. Most of the hills are 500 m high with the exception of Jawar hill which peaks at 533 m. Contour height is at 200 m showing steep slopes. A dissected highland develops when rivers rising from these hills cut through their valleys. Presence of badland topography, **knoll** and rocky knobs suggest a rocky, rugged and uneven terrain. This also depicts extreme weathering and erosion. River Banas and Khariya Nadi are two streams that crisscross the hills developing steep slopes and cliffs. The region faces both the agents of denudation, that is, wind and river. The seasonal streams indicate aridity of the land. The presence of ridges, cols and saddles is evidence that the region experiences continuous denudation.

The Lowland Near River Banas

The lowland areas are bordered with higher lands with contours 170–220 m. These lowlands are formed due to the erosion by River Banas and its tributaries. The flow of the River Banas determines the slope of the region, that is east to west. The decreasing elevation of the ground from east to west is indicated by spot heights 192 m, 172 m to the east and 167 m to the west. The valley region is an arid land that is interspersed with ravines and badland topography.

GOOD TO KNOW!

Lake Baikal in Russia is the largest and deepest freshwater lake in the world.

Sandy Regions of the South

Throughout the region in the south of Banas, we can notice an average height of 200 m. This entire region is arid with severe denudation. The western and eastern ends are dotted with small conical hills which peak at 317 m. If we

(Portion of Topo Map from Survey of India Sheet No. 45 D/7)

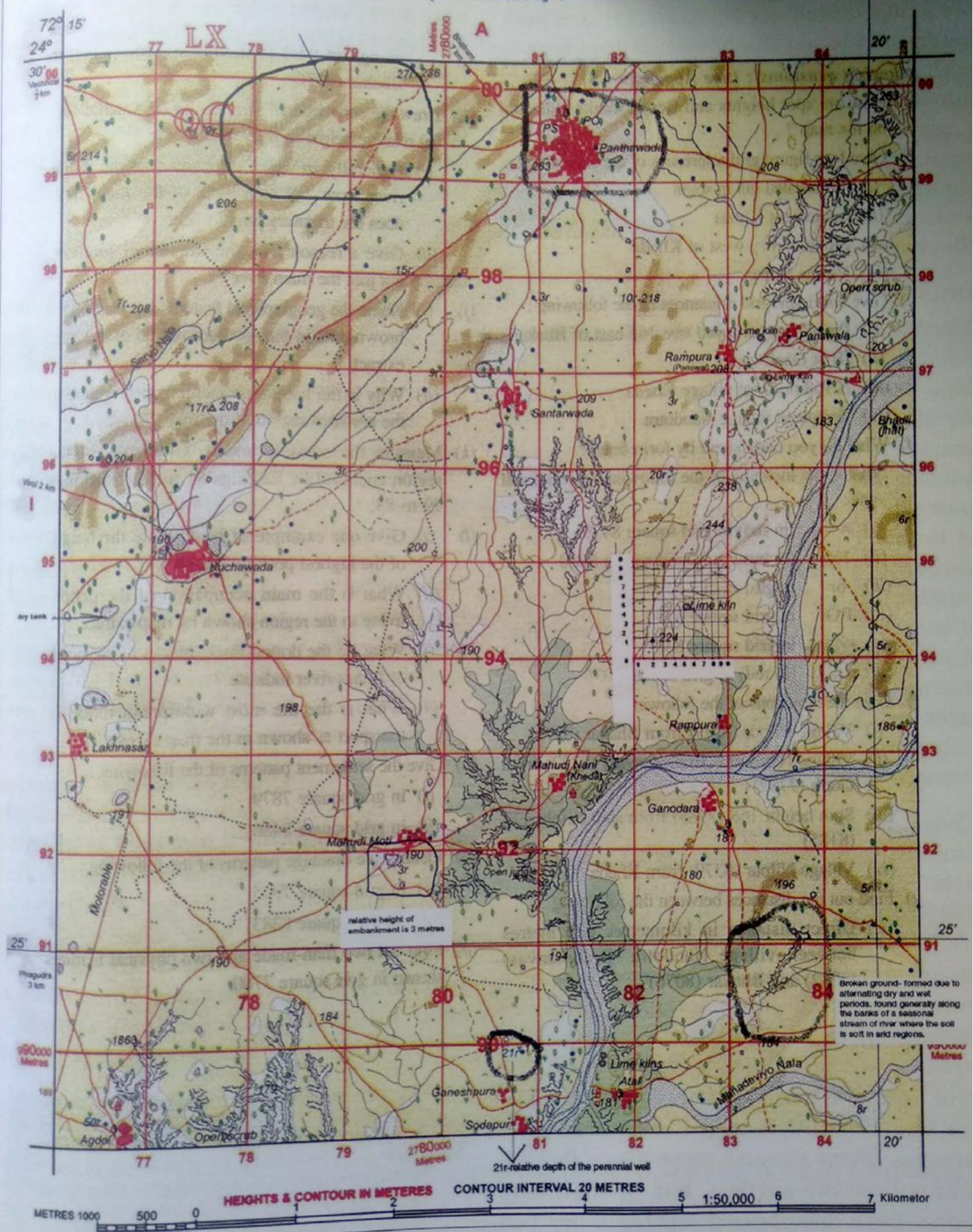


Fig. 1.13 Extract of the Survey of India Map Sheet no. 45D/7

follow to the west of Balaram Nadi, we can see a ridge-saddle-col topography with a peak height of 364 m. The outline of this region, with its sandy features, is marked with sand dunes, hills and small depressions. These are a result of wind erosion blowing away the sand by deflation. Depositional features are clearly caused by the work of sand dunes. The shifting and permanent dunes are equally illustrated on the map.

Drainage Features

The River Banas typically contributes to the main amount of drainage water. However, Sipu River which is a tributary of Banas River equally dominates the drainage in the north-eastern part of the map. The presence of river islands and seasonal streams are evident of poor rainfall in this region. The sandy dry bed of the river is noticeable as it has a narrow perennial channel flowing through it. The number of braided channels of the Banas River clearly depicts its lower course. Sipu River and Balaram Nadi also share the same narrow perennial water channels in a dry river bed. A tributary of Sipu, Varka Nadi, is only partly perennial but becomes seasonal towards the mountains.

These characteristics clearly indicate the amount of precipitation, which is quite poor. The two rivers, Khariya and Arado, also show similar patterns of drainage. The trellis pattern is observed throughout the mountainous regions while the dendritic pattern is more predominant. The sandy region, due to its aridity, has disappearing streams which are visible on the map. The grid squares demarcated as 9575, 7973 are undefined, ephemeral or intermittent streams. These streams were once a flowing channel on the surface, but in their due course have disappeared leaving a dry bed and are only flowing underground henceforth.

Depositional features such as river islands, boulders and rocks in the dry bed are predominant characteristics of the flow of the Banas River. During the monsoons, the river erodes extensively which is evident by the presence of relative heights 7r, 8r, 13r and 22r. Gully erosion, which causes badland topography, is primarily due to the Balaram Nadi and south Sipu Nadi.

Vegetation

Due to the lack of proper rainfall and a high rate of denudation, the vegetation found is often sparse and scrub. The hilly region of the north is covered with fairly dense mixed jungle. Jasor Hill has a fair amount of dense mixed jungle which signifies a typical forest. Observing the central part of the map, we can locate arable land which is interspersed with a wasteland.

Settlements

Human beings require flat levelled land, closeness to a perennial water source, good logistical transport network and abundance of well-placed resources to settle in an area and develop a habitat.

The biggest settlement on the arid landscape is Chitrasani. A post office and a railway station are one of its prime settlement features. There are two big nucleated settlements—Dantiwada and Panthawada. Both these settlements also have a post office and a police station. Settlements close to arid areas have perennial-lined wells as their primary and dependable sources of water. Dispersed or isolated settlements

Fact File

The Congo River, also known as the Zaire River, is the lifeline of Central Africa. Along with its tributaries, it provides 14,500 km of navigable shipping routes to the region. It is over 750 feet deep and on an average carries 41,000 cubic metres of water to the Atlantic Ocean every second!

usually are not found in forested areas, badland topography and areas with denuded hills. The sandy areas of the south do have some small settlements such as villages of Antroli, Sangla, Bhatamal, Moti, Bhutedi and Ramsida. Human habitation tends to live in well-resourced areas and not in rugged topography where the settlement population cannot thrive.

In-text Question

Use the Internet under the supervision of your teacher or an elder. Select satellite images and identify a lake, a river, an agricultural land, a road, a canal, a barren land, a snow-covered mountain, a post office, a police station, a railway line and a linear settlement.

Glossary

contours: imaginary lines drawn to join places having the same height

eastings: lines running vertically across a topographical map

northings: lines running horizontally across a topographical map

spot heights: certain points are marked to show the heights on a map

conical: shaped like a cone

knoll: a small hill

ridge: upland with several peaks

arable: land suitable for growing crops

saddle: shallow depression between two hills

settlements: areas where people settle

linear settlements: settlements that are developed and noticed along a railway line, metalled road or course of a river

nucleated settlements: settlements that are developed in major villages, towns and cities in plains, or in terrains with favourable conditions

dispersed settlements: settlements that develop in remote areas which are located far from a water source or fertile lands or around large farms where very few people reside

Summary

- Topographical maps depict natural relief features and human-made features of a small area in a detailed manner.
- Spot heights are heights shown in metres above the mean sea level. Accurate pinpoints of heights known on the map can be used to interpolate lines joining equal heights above the mean sea level.
- Spacing between the contours of different slopes helps in identifying whether the slope is steep or gentle.
- When contour lines are equally spaced and heights are shown to increase towards the centre in a circular contour, it depicts a conical hill.
- When closely spaced contours are drawn but the innermost contour is very wide, it depicts a plateau.
- The slopes of a ridge may be gentle or steep.
- On a contour, a drop indicates a col.

- A low depression on the ground cutting through hills or close to it is called a gap.
- A gap at a higher elevation between two hills or mountains is called a pass.
- People live in settlements that are usually linear, nucleated or dispersed.
- Lack of rainfall and a high rate of denudation can affect the vegetation of a region. Hence, the vegetation found is often sparse and scrub.
- The hilly region, however, is mostly covered with dense mixed jungle.
- Human beings require flat levelled lands, closeness to a perennial water source, good logistical transport network and abundance of well-placed resources to settle in an area and develop a habitat.
- Human habitation tends to live in resourceful areas and not in rugged topography where the settlement population cannot thrive.

Exercise



A. Fill in the blanks.

1. settlements are developed along a railway line, metalled road or course of a river.
2. The contour lines of a hill are evenly spaced in the form of
3. The show altitude in metres above the mean sea level.
4. Topographical maps represent and features to depict the varied physical features of the Earth.
5. settlements show permanent or temporary huts which are located far away from one another.
6. In the hilly region of the north, hill peaks at m.
7. and contribute to the drainage on the north-eastern part of the map.

B. Match the columns.

- | | |
|----------------------------------|--|
| 1. 45D/7 | a. to begin reading a topo sheet |
| 2. South-west corner | b. barren land |
| 3. Sipu river | c. the biggest settlement on an arid landscape |
| 4. White portion in a topo sheet | d. have narrow perennial channels |
| 5. Chitrasani | e. badland topography |
| 6. Balaram Nadi | f. Well-resourced areas |
| 7. Human beings | g. topo sheet number |

C. State whether the following statements are true or false.

1. Dispersed settlements depict economic prosperity and possibility of various occupations and several public facilities and amenities.

2. When contours are widely spaced it depicts conical hill.
3. At every 20 m interval, a thick brown contour line called **contour index** is drawn to indicate calculated height.
4. The northern hilly region is covered with fairly dense mixed jungle and open jungle.
5. The highest point occurs at 500 m in the northeastern region and the lowest point is near the riverbed of the Banas River.

D. Answer the following questions briefly.

1. What do topographical maps help us to learn?
2. What is a contour line?
3. Define a ridge. How can you identify a ridge on a topo sheet?
4. What is a saddle?
5. How is a gap different from a pass?
6. What does gully erosion do in a region?
7. Name one settlement on an arid landscape. What are its features?

E. Answer the following questions in detail.

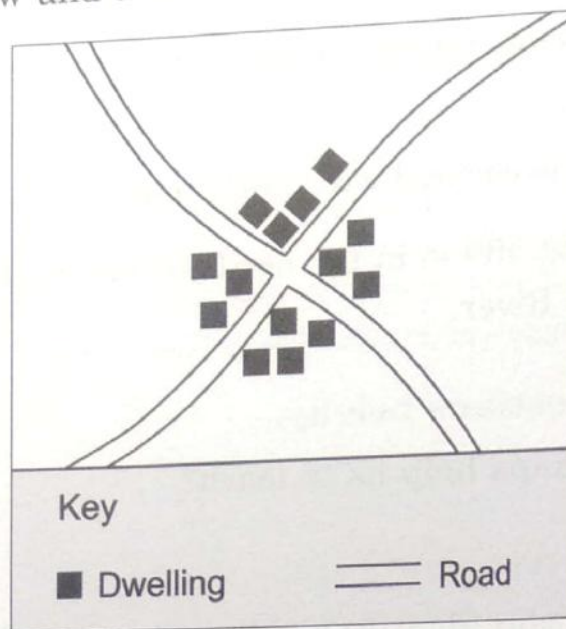
1. Differentiate between nucleated settlement and dispersed settlement with the help of diagrams.
2. Describe the drainage features as shown on Map no 45D/7.
3. Explain the physical features as shown in the hilly region of the north.
4. Write the definition of contour interval, index contour and spot height.
5. Demonstrate the difference between a conical hill and a plateau with the help of contour lines.
6. Describe the drainage features of the Banas River.
7. What resources do human beings need to settle? Why do they need it?

Do It Yourself

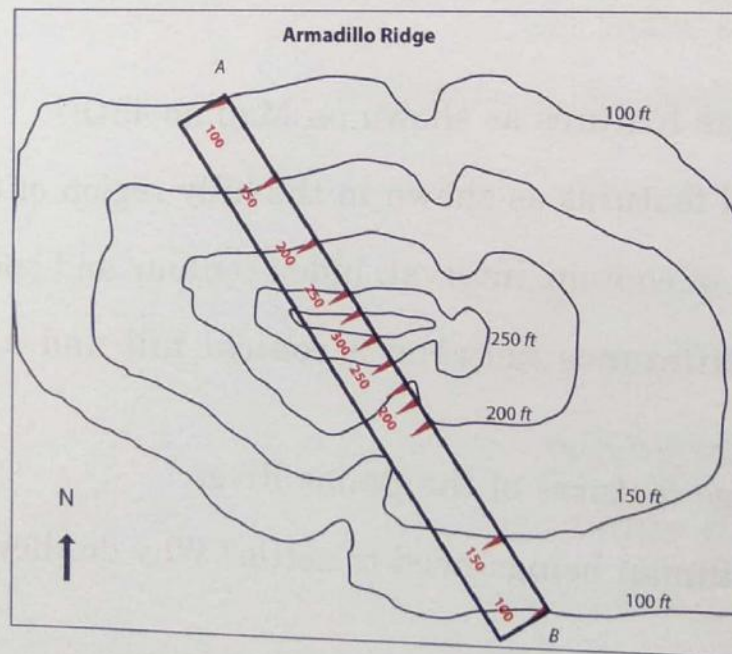


1. Make a chart on relief features through contour lines. Draw the different relief features shown on a topographical map using contour diagrams. Name them and write their characteristics.

2. Look at the image below and answer



- Identify the type of settlement shown in the picture.
 - List two characteristics of this type of settlement.
 - Write three public facilities found in this type of settlement.
3. Take a graph sheet. Draw the heights on the Y-axis taking a scale of 1 cm to 100 cm. Replicate the same markings on the X-axis. Draw a line AB at a length and draw another line of the same length. Mark all the points in line with the AB line. Once all the points have been marked, join with a brown pencil to draw a relief. You will see that different types of relief can be drawn in the same way.



Web Links

- <http://study.com/academy/lesson/how-to-read-topographic-and-geologic-maps.html>
- <http://geokov.com/education/map-scale.aspx>
- http://www.gaorienting.org/Education/BeginnerGuide/map_reading.htm



CHAPTER 2

Population



We Will Learn

- Growing Population of the World
- Population Distribution Trends in the World
- Overpopulation
- Underpopulation
- Factors Affecting Population Change
- Composition of Population

Introduction

Population is the number of human beings staying or living in one place. Current estimates based on worldometers, provided by the United Nations, suggest that the world population is at 7.7 billion. China with 1.4 billion has the largest population, followed by India with 1.3 billion people.

The spread of population in both the densely and sparsely populated areas of the world make it difficult to correlate the relationship between resources consumed and the population. But they are very closely related. The increase in population demands greater resources. This constant surge in population, single-handedly, threatens the survival of human beings due to the rapid depletion of natural resources of a country. It is a grave situation for **demographers** predict that natural resources are being consumed far more quickly than they are being produced. However, it is also noted that densely

populated zones in the world are, often, the most resourceful areas of the world too.

Demography is the statistical study of human population.

Growing Population of the World

The current world population is growing at a rate of about 1.08 per cent per year. The following graph (see Fig. 2.1) shows the estimates of population growth from 1951 to 2019. In 1951, the growth rate of population was 1.18 per cent, peaking at

GOOD TO KNOW!

Worldometers show real-time world statistics about population, government, economics, society, media etc. The statistics are reliable and accurate, though the website is not run by any government.

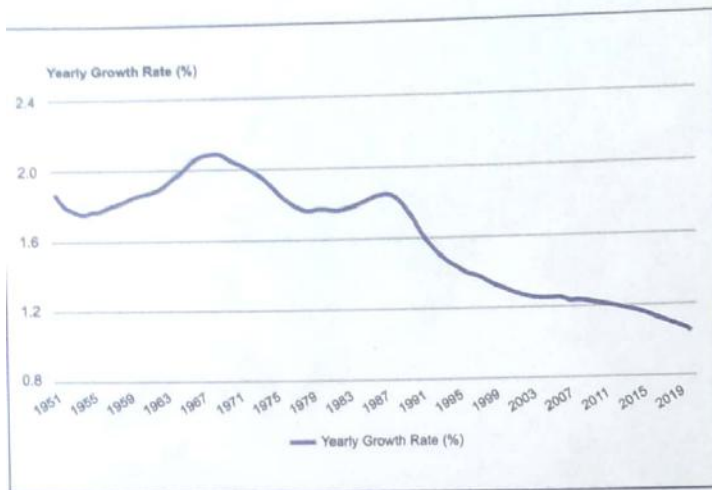


Fig. 2.1 United Nations, Department of Economics and Social Affairs, Population Division (2013)

2.09 in 1967-68. Year 2020 will see a dip in world population growth rate from 1.08 to 1.05 per cent as estimated by Worldometers.

Population Distribution Trends in the World

The pattern in which the population is spreading across the world is called population

distribution. However, it must be noted that most of the land surface of the Earth is actually unsuitable for human habitation. The entire world population of 7.6 billion people is concentrated in only 20 per cent of the land surface of the Earth.

Let us learn about the top ten most populated countries of the world as depicted in Fig. 2.2.

In-text Question

Identify the other 7 countries that are the most populated after China, India and the US.

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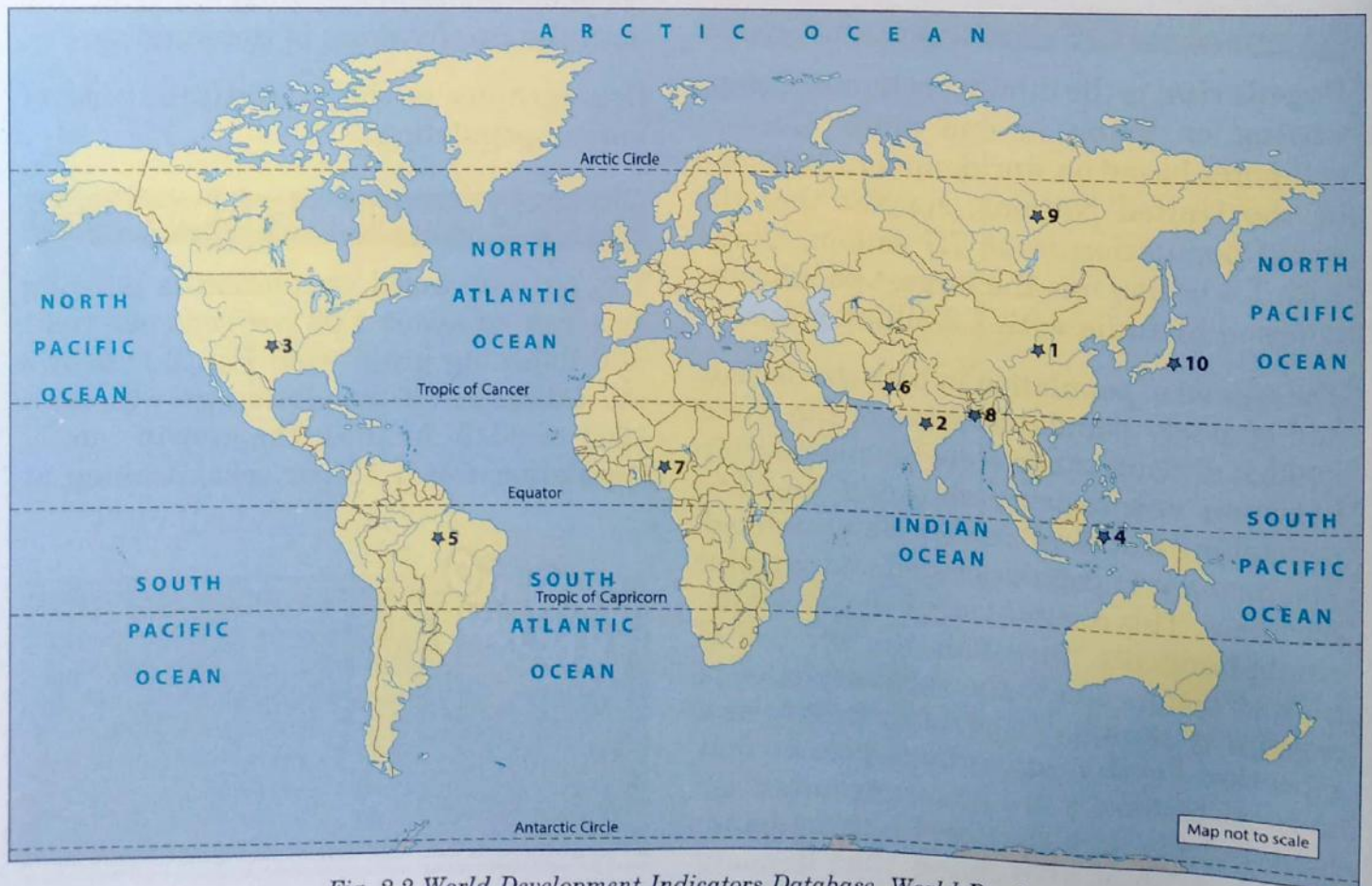


Fig. 2.2 World Development Indicators Database, World Bank



Fig. 2.3 World Map Showing the Population Density

Population Density

The concentration of human population that is spread over per square kilometre of the land surface of the world is called **population density**.

Population density can be calculated as below:

$$\text{Density of Population} = \frac{\text{Total Population}}{\text{Total Area}}$$

Places with favourable conditions, such as fertile lands, sufficient perennial water supply, ample amount of rainfall, moderate climate and available opportunities of livelihood have a higher density of population.

Less developed countries of the world have a higher density of population while the developed countries have an average low density of population (see Fig. 2.3).

Areas of High Density

The riverine plains of Asia, which occupies only about one-fifth of the world area, has the highest population density. The Ganga Plains of India has one of the highest densities of population.

The industrial areas of north-west Europe comprising France, UK, Germany and Denmark also have a high density of population. Europe, which is the second smallest continent in the world, occupies only one-twenty-fifth of the total area of the world. However, it shares one-ninth of the world population. Temperate cool climate, development in industrial growth and technological advancement, along with the availability of different natural resources are the main reasons for high density of population.

The temperate regions of the USA, Mexico and Brazil have a large concentration of population in the continents of North and South America. The frigid regions in these continents are sparsely populated. Some of the major factors responsible for the high density of population in these countries are the advancement of science and technology, vast stocks of natural resources, varied job prospects and better living standards. It also has a huge influx of immigrant population due to the positive pull factors.

The Nile Valley region, the Mediterranean coastal region and the coastal South African region have a higher concentration of population. The factors that are responsible for such high density of population are the availability of natural resources, cool climate, emerging markets and flourishing trade and commerce, offering better opportunities of livelihood.

Areas of Moderate Density

Some areas of the world have a moderate density of population. The regions of the world that have a moderate population are the central parts of the USA, tropical western Africa, Russia, eastern Europe, the Deccan plateau region of India and central China. Immoderate climate, inadequate rainfall and absence of sustainable resources are some of the factors that act as hindrances to concentration of a high-density population.

Areas of Low Density

The dry and arid regions of the desert, followed by the high altitude mountainous regions and the regions covered with dense and inaccessible forests, are some of the regions which are most unsuitable for human habitation. Due to such factors, these places are some of the most sparsely populated regions of the world. The hot and wet equatorial forests are also one of the most inhospitable areas of the world, where the population is equally sparse. Insufficient land for agricultural practices, lack of

transportation facilities, water supply and extreme climatic conditions are the factors responsible for low population growth in these regions.

Some of the regions with low-density population are Mongolia, Iceland, Botswana, Suriname, Namibia, northern Canada, Australia and New Zealand. Due to large stretches of desert and inaccessible terrain, Australia is known as the land of the Outback.

In-text Question

'Countries with stable government have high density of population.' Do you agree with this statement?

.....
.....

Overpopulation

Overpopulation is a term used to refer to a very large number of people living in a particular area. In such conditions, the availability of resources falls short in meeting the increasing needs of the growing population. This happens either due to a sudden increase in population or depletion of resources. A situation of overpopulation may lead to high rates of unemployment, unhygienic living conditions, a breakout of air and water-borne diseases due to poor environmental conditions. India, Bangladesh and China are examples of overpopulated countries of the world.

In any given area, the available resources are adequate to support a certain number of people only. This is referred to as the optimum population. People enjoy high standards of living and sufficient resources for utilisation when the population is optimum. The ratio of people and resources are well balanced. This balance is disturbed if the number of people is drastically higher or lower than the optimum population figures.

Impact of Overpopulation

As the density levels start to rise in the population of a country, it severely impacts the economic and environmental factors of the society.

Of the many things, overpopulation directly impacts resources which often get overused and depleted. Over utilisation of resources creates scarcity of water, food shortages starvation, hunger and poverty. If such situations are not controlled, and alternate sustainable measures of development are not implemented, then there is a serious risk of human sustainability.

Overpopulation may create unemployment as stiff competition leads to a declined number of available jobs. Growth of slums and unhygienic living conditions become rampant as the availability of land to accommodate the rising population becomes insufficient.

The imbalance in the ratio of supply and demand for food and day-to-day commodities results in an increased cost of living. To accommodate all needs of human beings, the burning of fossil fuels and large-scale deforestation also grows significantly. This high levels carbon emissions leads to global warming and depletion of the ozone layer. Biodiversity in our ecosystem is also at risk as the population pressure on land increases.

These adverse impacts of overpopulation can be reversed or improved through awareness programmes targeting the use of renewable energy, environmental awareness, family-planning, advanced healthcare facilities and sustainable development programmes.

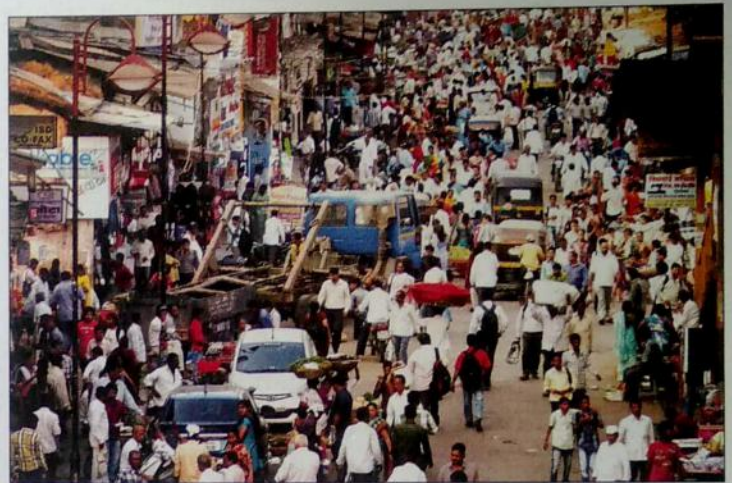
Underpopulation

Underpopulation is a situation where there are too few people to realise the exact economic potential of an area or its natural resources. In simpler terms, we can predict that the available resources of a particular area have

sufficient means of supporting a far bigger population than what is present. For example, the fertile temperate grassland region known as the Prairies of North America is an example of a region that is underpopulated.

Underpopulation of a region may result due to a high death rate and low birth rate or high levels of emigration.

In-text Question



Look at the picture and answer the following.

1. Explain how an increase in population is directly related to an increase in pollution.
2. Enumerate two adverse effects of pollution on human life.
3. Suggest two ways to improve this situation.
4. How does an increase in population escalate global warming?

Impact of Underpopulation

Let us review the positive and negative impacts of underpopulation.

Positive impact: Underpopulation could possibly result in better job opportunities in an open market due to the absence of too much competition. The availability of resources is in abundance, and there are reduced levels of pollution.

Fact File

Japan and Germany are the two developed countries that are experiencing a decline in their population due to a higher CDR than a CBR.

Negative impact: Underpopulation often has inadequate numbers of skilled labour which impacts the development of industries and technology. The underpopulated region has fewer taxpayers and lower income to support the local government. Sometimes, the variance between the young and old age groups become too wide. This can cause fewer numbers of people eligible to work as they might be too young or too old.

In-text Question

What kind of changes are we seeing in the European countries due to the growing number of Syrian and African refugees taking shelter in these countries?

.....

.....

Factors Affecting Population Change

The most dominant factors affecting population change are as follows.

Crude Birth Rate

Crude birth rate (CBR) or birth rate is the number of live childbirths per 1,000 persons in a given year. The term 'crude' in birth rate is used since it does not refer to age and gender differences amongst a population. In developing countries, the birth rates are generally higher, the need for a bigger family to generate more income is greater than in poor families. Whereas, in developed nations the combined income from both working men and women are suitable enough to sustain a high standard of living. Hence, birth rates tend to be lower.

A low birth rate number of 10 and 20 is beneficial for both economic and environmental development. However, high birth rate numbers between 40 and 50 create pressure on sustainable resources. Such undue pressure can lead to poverty and food shortages.

Countries with highest birth rate (per 1,000 people) in 2014*

Niger 7.6
Somalia 6.5
Mali 6.2
Chad 6.2
Angola 6.1
Democratic Republic of the Congo 6
Burundi 5.9
Uganda 5.8
Gambia 5.7
Nigeria 5.7



Countries with lowest birth rate (per 1,000 people) in 2014*

Portugal 1.2
Hong Kong 1.2
Macao 1.2
Singapore 1.3
Moldova 1.3
Bosnia and Herzegovina 1.3
Spain 1.3
Poland 1.3
Greece 1.3

$$\text{CBR} = (\text{Number of births} \times 1000) / \text{Population number in a given year}$$

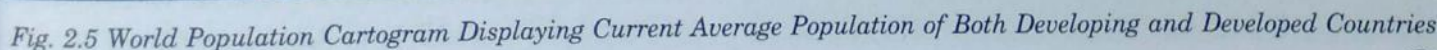
Crude Death Rate

Fact File With 1.3 billion people, the population of India is the second-largest in the world. This is about one-sixth of the world's population. India occupies just about 2.4 per cent of the world's land and supports over 17.31 per cent of the world population.

1000 is high. We can see the low number of CDR value in developed nations but in some countries in Asia and Africa, the CDR is very high.

In-text Question

The crude death rate is often high in African nations, but some western countries also have a high CDR number. Why is it so?



Population Growth Rate

Population growth rate (PGR), in simple terms, is the increase in the number of individuals in a population. Many countries in South East Asia, Africa, South America and the Middle East have seen a sharp rise in the population growth rate since the early 1960s. The PGR can be calculated using the following formula:

$(\text{birth rate} + \text{immigration}) - (\text{death rate} + \text{emigration})$

The current average population of both developing and developed countries is shown in Fig. 2.5.

Migration

Migration in geography refers to the movement of humans from one place to another. This movement is usually from one country to another, but migratory movements within the country are also common. People leave their native countries to move to another country in search of better prospects in education, high-paying jobs and a desirable quality of life. But sometimes, it is also due to political unrest within a country, high rate of unemployment and low salary structure with respect to one's educational achievements. Migration can be both permanent and temporary.

Emigration is the process of people moving out of a country. **Immigration** is the process of people coming into another country with the plan to settle down. The outflow of emigrants and inflow of immigrants are one of the major reasons for population change throughout the world. Due to migration, there is growth in newly built towns and cities and it promotes growth in population. Migration often has a mixed base of people with different ethnic backgrounds settling in the same area. This often influences rich cultural enrichment. But sometimes, large-scale migration can lead to racial tensions and can potentially cause overcrowding if

sufficient lodging and housing facilities are unavailable. Too much migration of skilled and highly educated people can cause brain drain in the emigrating country.

In-text Question

What can be the reasons for a growing influx of population from rural areas coming to the cities?

Composition of Population

Population composition refers to the characteristics in the distribution of the population in terms of age, sex, socioeconomic data and cultural composition. By differentiating such characteristics, we can measure the distribution of one group of people with the other. Let us read the characteristics that determine the composition of the population.

Age Composition

Age composition is the most fundamental characteristic among the population composition. It refers to the number of people in different age groups in a country. This helps us in identifying the birth rate (fertility) and the death rate (mortality) in a particular society. This, in turn, helps us in determining the social and economic structure of the population according to the number of children, the working-age and old age population.

Sex Ratio

Sex ratio is a comparative analysis in the number of females per 1,000 males in a given population density. Through this ratio, we can determine the equality between the male and female population in a society. India has an uneven sex ratio of 940 females for every 1,000 males. This majorly persists

as a discrepancy due to female foeticide, as it still continues in some parts of the country. Additionally, the delayed response of healthcare services to interior and remote parts of the country, coupled with inadequate medical facilities, has often led to high mortality rates of females.

Population Pyramid

A **population pyramid** is usually represented on a graph that illustrates the age and sex composition of a specific population. On the graph in Fig. 2.6, we can see that the distribution of population in percentage figures is marked on the X-axis. The Y-axis represents the age group of the population from 0–100 with an interval age gap of every five years. The actual graph data in the middle has the percentage of males on the left and on the right are that of females.

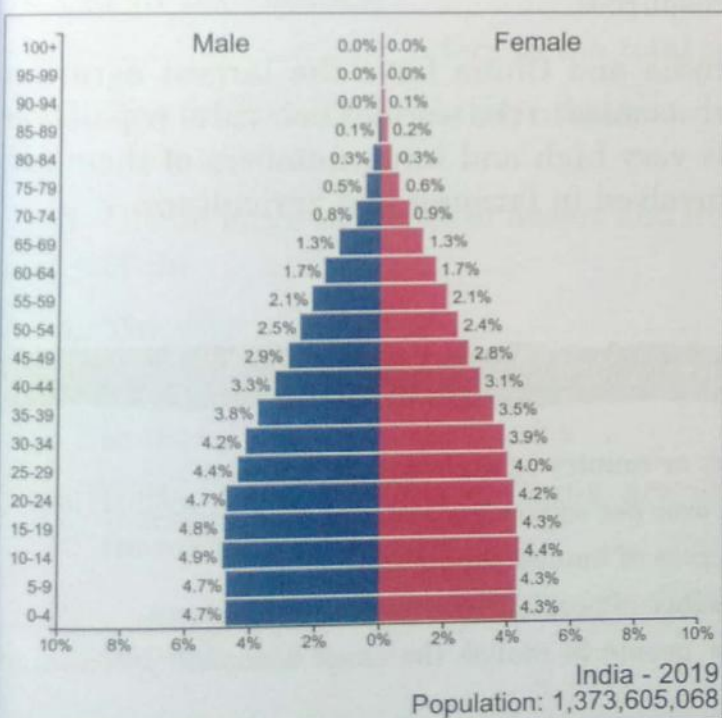


Fig. 2.6 Population Pyramid of India, 2019

The pyramid graph for India shows high birth rate as shown in Fig. 2.6. It demonstrates a wide base and narrow top which suggests a high rate of fertility and growing population. It further shows that the female population

between 0 years and 54 years is lower than the male population. This can be explained by the continuing discrepancy between the male and the female child. The tapering tip of the pyramid shows high mortality rate, stating that **life expectancy** is not too high.

India is one of the fastest developing nations in the world. The high birth rate and the death rate, sometimes, also signifies the population structure of a developing country. The advantages of better medical care, education facilities and high standards of living are not dispersed equally and certain areas of the population do not have access to such services for positive growth.

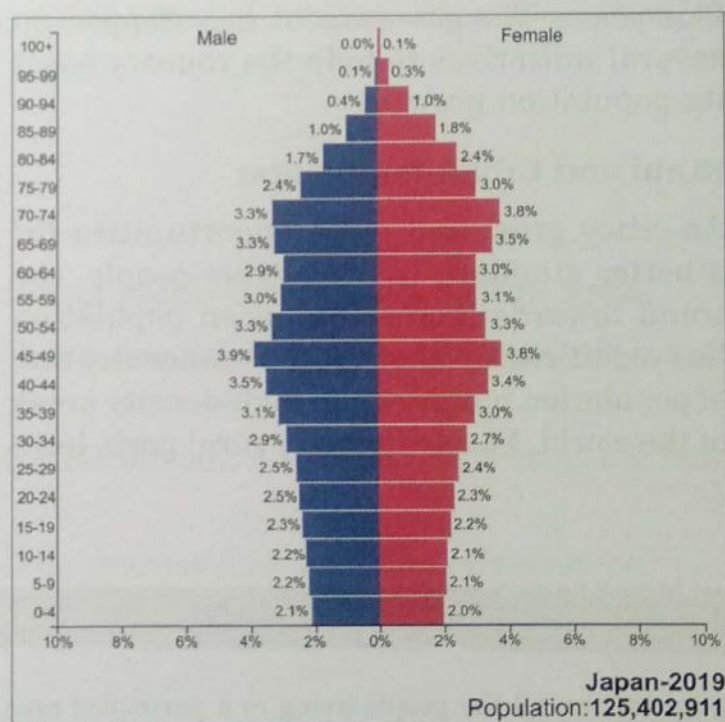


Fig. 2.7 Population Pyramid of Japan, 2019

GOOD TO KNOW!

Census is the official enumeration of the population of a country or the world as a whole. This is done once every 10 years.

Census counting started in 1881 in India. Every two years, the UN population division publishes the World Population Prospects. In India, the next Census will be held in 2021.

Japan is the world's third-largest economy and is one of the most technologically advanced countries of the world. However, the age-sex pyramid structure of this particular country, as seen in Fig. 2.7, shows a large number of elderly and middle-aged adults. This results in an almost rectangular base of the pyramid. The mortality rate is very low when compared to the statistics of India. There is a longer life expectancy, due to advanced healthcare benefits and a reformed society that can cater to the various needs of its citizens. This trend signifies higher standards of living and good quality of life. Japan has experienced a record low number of births in the past four years. The government has stepped up several initiatives to help the country boost its population growth.

Rural and Urban Population

As cities grow and more opportunities for a better standard living attract people, the trend towards increasing urban population has significantly shot up. The concentration of population has grown in high-density areas of the world. People living in rural parts have

moved into urban areas that are already cramped. This trend is particularly common in Asian, South Asian and African countries where the urban population in the major cities of these nations has continued to grow. With the increasing economic development and access to resources, there has been a trend towards increasing urban population. According to estimates provided by the 2014 revision of the World Urbanization Prospects by UNDESA's Population Division, India, China and Africa have the highest urban population and continues to grow at a high rate. Some government agencies predict that by 2045, the urban population alone in the world will surpass 6 billion human inhabitants. Such massive volumes can result in high unemployment rates, unaffordable and poor housing, problems in transportation and public access, and over utilisation of energy and sustainable resources.

India and China have the largest agrarian economies in the world. Their rural population is very high and large numbers of them are involved in farming and agriculture.

Glossary

population: all the people living in a particular area, city or country or the world as a whole

population density: concentration of population spread over per square kilometre of land surface

demographer: an expert who studies the changing structure of human population

overpopulation: a term used to refer to a very large number of people living in a particular area

underpopulation: a situation where there are too few people to realise the exact economic potential of an area or its natural resources

crude birth rate: the number of live births per 1000 persons in a given geographical area per year

crude death rate: the number of live deaths per 1000 persons in a given geographical area per year

life expectancy: the number of years a person is likely to live

immigration: the process of coming to live permanently in another country that is not one's own

emigration: the process of leaving one's own country to go and settle in another country

age composition: the number of people in different age groups in a country

sex ratio: the comparative analysis in the number of females per 1,000 males in a given population density

Summary

- Topographical maps depict natural relief features and human-made features of a small area in a detailed manner.
- A population is the number of human beings staying or living in one place.
- The way in which the population is spreading across the world is called population distribution.
- Population density is the concentration of the human population spread over per square kilometre of the land surface.
- The riverine plains of Asia, which occupies only about one-fifth of the world area, has the highest population density.
- Overpopulation means a very large number of people living in a particular area. This has a negative impact on people.
- Underpopulation is a situation in which there are too few people to realize the exact economic potential of an area or its natural resources. This too has a negative and positive impact on the people and place.
- Crude birth rate or birth rate is the number of live childbirths per 1000 persons in a given year.
- Migration in geography refers to the movement of humans from place to another. This movement is usually from one country to another, but migratory movements within the country are also common.
- The population pyramid is usually represented on a graph that illustrates the age and sex composition of a specific population.

Exercise



A. Fill in the blanks.

1. refers to the total number of people inhabiting a specific area.
2. The highest population density has been recorded in the riverine plains of
3. Due to large stretches of desert and inaccessible terrain, Australia is known as the land of the
4. The direct impact of is the overuse and depletion of resources.
5. The discrepancy in in India persists as female foeticide still continues in many parts of the country.
6. India, Bangladesh and China are examples of some of the most countries of the world.
7. is the process of people coming into another country with the plan to settle down.

B. State whether the following statements are true or false.

1. China with 1.4 billion has the largest population in the world.
2. Immigration is a major factor that causes overpopulation in many countries in the world.
3. In rural areas, people are typically engaged in agricultural activities.
4. An adverse sex ratio shows the equal position of men and women in society.

5. In a population pyramid, the youngest age group is shown at the bottom.
6. The Prairies of North America is an example of a region having underpopulation.
7. Japan and Germany, the two developed countries, are experiencing an increase in their population.

C. Distinguish between

- a. Overpopulation and underpopulation
- b. Emigrants and immigrants
- c. Population pyramid of a developed and a developing country
- d. Birth rate and death rate
- e. The positive and negative impact of underpopulation

D. Answer the following questions briefly.

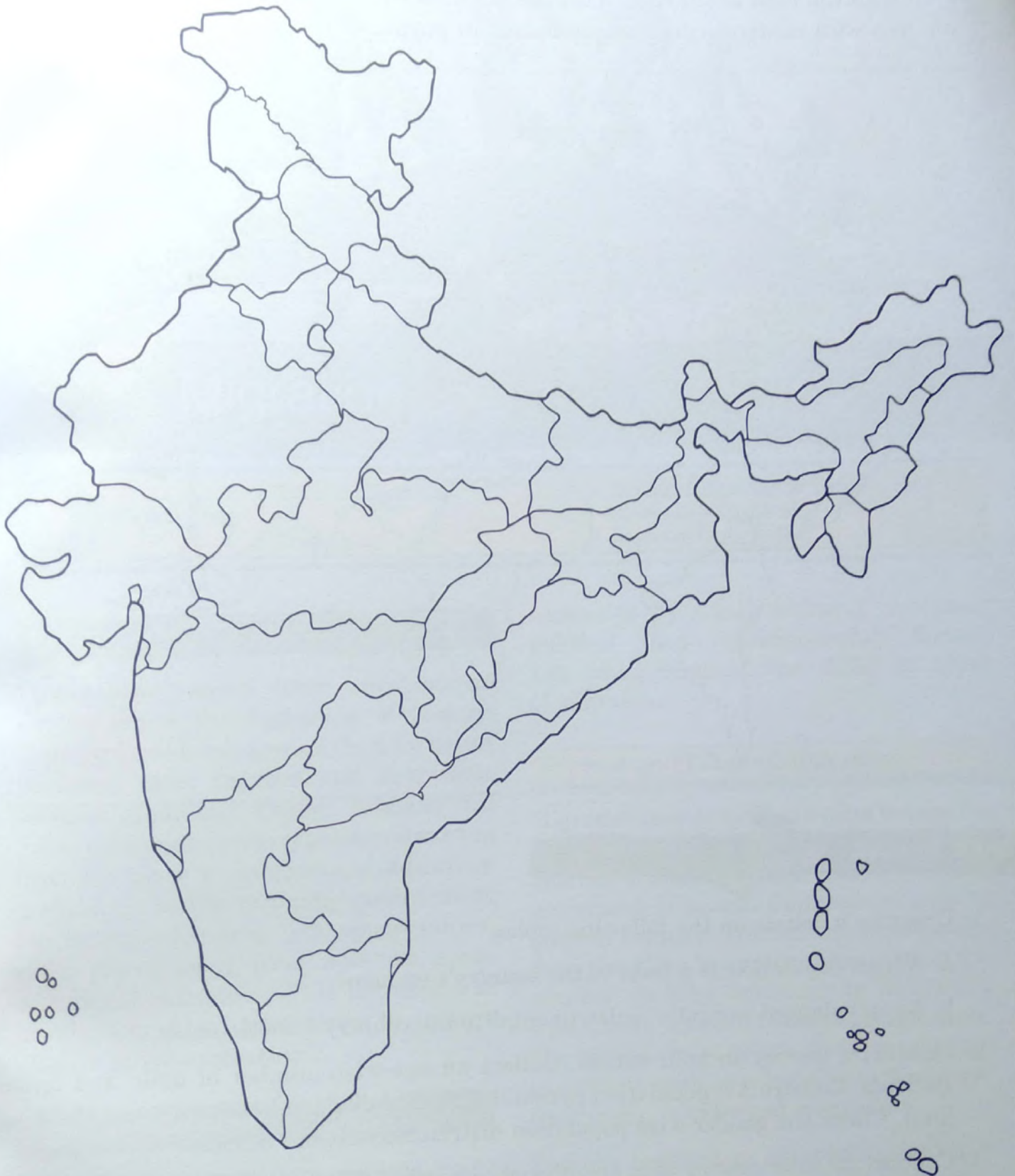
1. Define population density.
2. How is population distribution connected to resources?
3. How does migration affect the population?
4. What is the crude birth rate?
5. Write two factors that cause population growth in a developing country.
6. Name the regions that have a low density of population in the world.
7. What are the factors that lead to the low density of the population in many regions of the world?

E. Answer the following questions in detail.

1. Write a note on the distribution of population in the world.
2. Write the positive as well as the negative impact of underpopulation.
3. What is sex ratio? What is the meaning of favourable and unfavourable sex ratio?
4. Explain the four factors that affect the population of a place.
5. Explain the population pyramid with the help of an example of population pyramids of a developing and a developed country.
6. What are the adverse effects of overpopulation?
7. Emigration brings a mixed bag of opportunities. Discuss.

F. Map Work

1. On an outline map of India, mark the areas of high density, areas of moderate density and mark clearly and make a legend for the map. You may take help from the internet.



2. On an outline map of the world, mark the following:

An area having high density in red, an area having low density population in pink, an area with the high death rate in orange, an area with high life expectancy in red dot, an area with moderate density population in purple.



Do It Yourself



1. Organise a debate on the following topics.
 - a. A high population is a boon to the country's economy.
 - b. An unbalanced sex ratio is detrimental to the country's development.
2. Conduct a survey in your school. Collect an age-wise number of male and female students. Construct a population pyramid. Let each division have two years of the age limit. Check the gender-wise population distribution in your school.
3. Conduct an interview in your neighbourhood with different helpers and workers. Find out where they were born, why they moved to the city, how much do they earn in a month, how much do they save and are they happy to live in the city. Write a report as per your findings and present a PowerPoint presentation in the class.