

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

In the name of ALLAH the most Beneficent and the most Merciful

# Geography

For Class 6

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for

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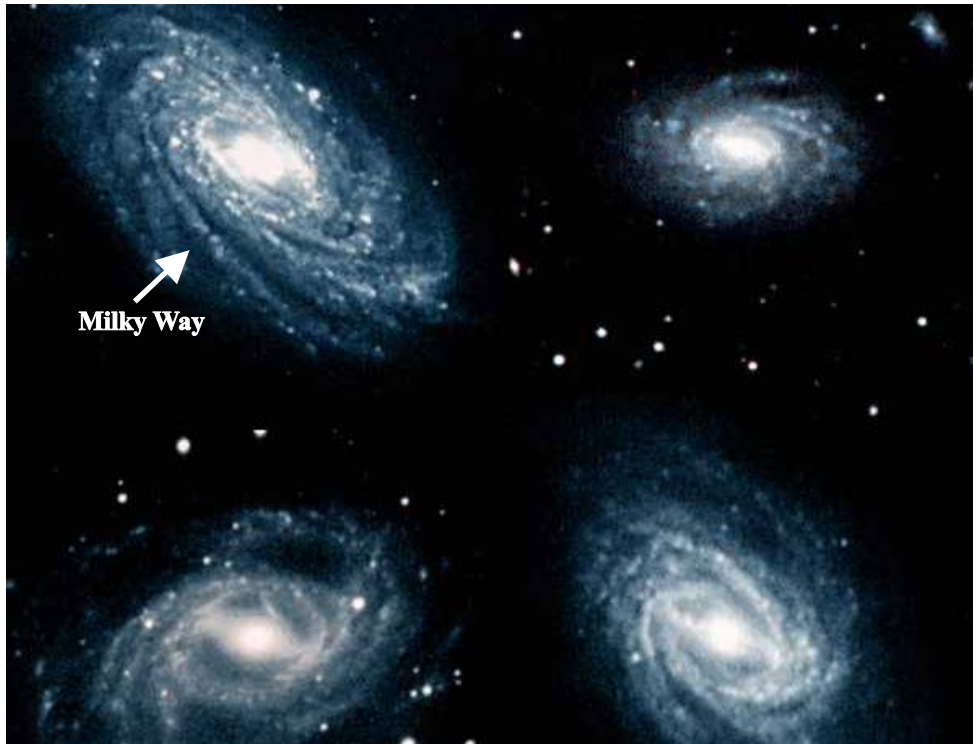
# Earth as a Planet

**After studying this chapter, the students will be able to:**

- ★ Describe the universe and its components.
- ★ Recognize the Sun as a star and source of energy for planets.
- ★ List other bodies of the solar system and describe their movements.
- ★ Describe the shape and size of Earth.
- ★ Explain the rotation of Earth on its axis, formation of days and nights, and changes in the length of days and nights during the year.
- ★ Explain the revolution of Earth and the change of seasons.
- ★ Describe the seasonal variation in the two hemispheres (Southern and Northern) at a time.
- ★ Describe the phenomena of Solar and Lunar Eclipses.
- ★ Draw diagrams of Solar Eclipse and Lunar Eclipse.
- ★ Label the continents and oceans on the given World Map.
- ★ Describe the continents and oceans.

## 1. The Universe

The vast system that has stars, planets, etc. is called universe. From the tiny air particles to the gigantic stars, all are parts of the universe. Human being, animals and plants are living components of the universe. Man cannot even imagine the vastness of the universe. He has failed to find the limits of the universe despite having advanced technology. There are countless groups comprising millions of stars and planets in the universe which are known as galaxies. Any two galaxies in the universe are distant from one another by hundreds of thousands of light-years. The galaxy in which our solar system lies is called Milky Way. Literally, this means a milk-like white path. In fact, the dim light of the innumerable stars of this galaxy appears as a white strip in sky during night hours.



**Milky Way and three other Galaxies**

## **2. Solar System and Earth**

In Greek language, the sun is called "Solair". The word "solar" is the English form of solair. The solar system comprises a sun and eight planets including the Earth.

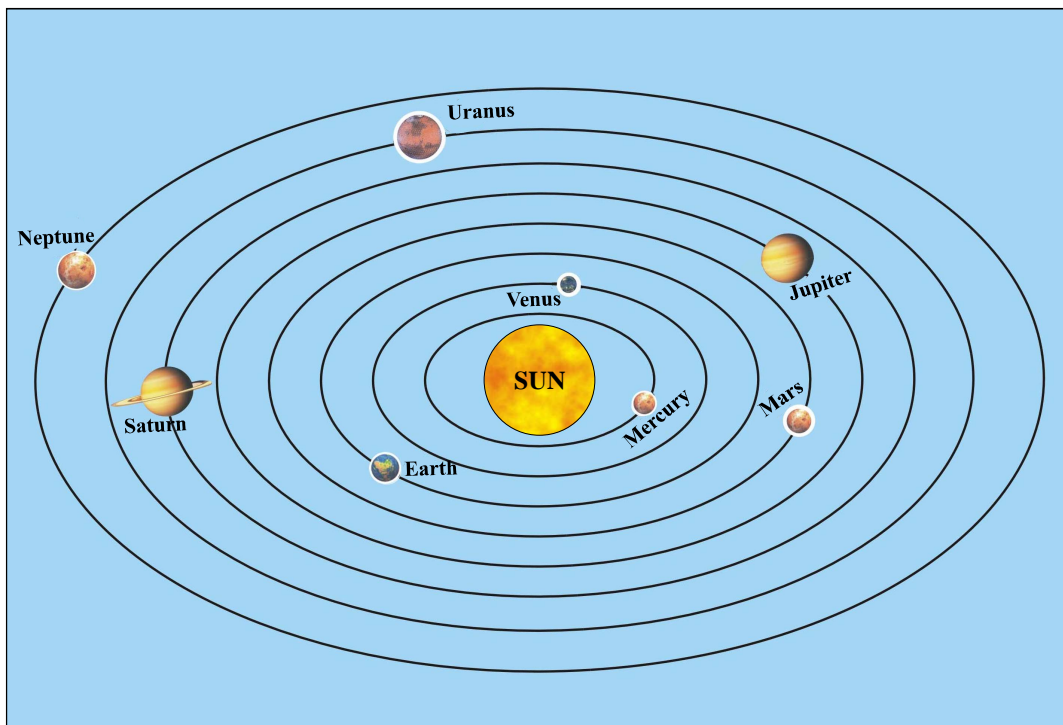
### **i. The Sun**

The heavenly bodies that emit their own light are called stars. The sun is a star because the light it emits is produced by ignition of gases within its body. The Sun is a gigantic mass of hot gases. All the planets are held by its gravitational

#### **Do you know!**

The aerial distance on earth are measured in miles or kilometre; but in the sky, they are measured by light-years. One light-year is the distance travelled by a beam of light in one year with the speed of 2,97,600 sq. kilometre per second.

force so firmly that they always keep a definite distance from it. The Sun is a huge source of light and energy that radiates in all possible directions in the universe. The sunlight reaches the earth in about eight minutes.



**Solar System**

## ii. The Planets

The heavenly bodies that orbit the sun are called planets. The planets do not have their own light; rather, they reflect the sunlight. All the eight planets of the sun are introduced in the table given ahead:

### Interesting to know!

A day of Venus is longer in time than its year. One year of Venus completes in 225 Earth days, while its one day completes in 243 Earth days. This is because of the very slow rotational speed of Venus.

**Table: Planets of solar system and their characteristics**

S. No	Name of Planet	Average distance from sun (million km)	Thickness/ Diameter (km)	Duration of one rotation (on Earth scale)	Duration of one revolution (on Earth scale)	Number of satellites (Moons)	Average temperature (C )
1	Mercury	57.9	4,879	58.7 days	88 days	0	167
2	Venus	108.2	12,104	243 days	225 days	0	464
3	Earth	149.6	12,756	23 hours, 56 minutes	365 days	1	15
4	Mars	227.9	6,794	24 hours, 37 minutes	687 days	2	-63
5	Jupiter	778.4	142,984	9 hours, 51 minutes	12 years	63	-110
6	Saturn	1433.5	120,536	10 hours, 14 minutes	29.5 years	61	-140
7	Uranus	2872.5	51,118	17 hours, 14 minutes	84 years	27	-195
8	Neptune	4495.1	49,528	16 hours, 3 minutes	165 years	13	-200

### 3. Shape and Size of Earth

The shape of Earth is almost round; however, its surface is quite uneven. Due to the ups and downs on its surface, the shape of Earth is generally compared to a wrinkled orange.

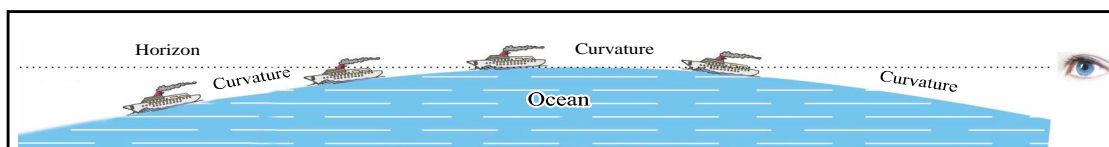
✦ The Sun, the planets and their satellites, all are round in shape. The Earth too is a planet, hence it also must be round.

✦ If the Earth were flat-shaped, there would have been a daytime or night in the whole world. But the fact is that there is always daylight in half of the Earth and night in the other half at the same time.

✦ When a ship is sailing off the coast, the lower parts of it disappear first; whereas its higher parts do so later. On the contrary, the higher parts of a ship approaching coast are seen first. This is possible only if the surface of ocean is round.

#### Do you know!

A day of Earth is about 24 hours long and its one year covers a period of 365 days and six hours. By summing these surplus 6 hours in each year, a complete additional day is obtained after every fourth year. Therefore, every fourth year in the solar calendar has 366 days and it is called the Leap Year.



**The effect of curvature of earth on visibility of a ship**

- ✦ Now-a-days, the communication satellites in space take the pictures of Earth from heights. These pictures show the Earth's round shape. The circumference of Earth is about 40 thousand kilometre and its diameter is about 12,756 kilometre. The total surface area of the Earth is 484 million square kilometre.

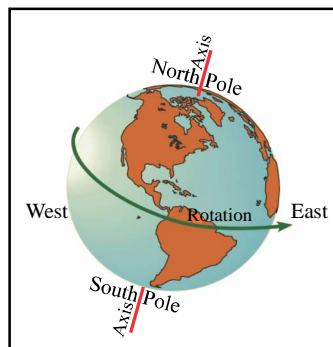
#### 4. Movements of Earth

In the solar system, the Earth has two significant movements:

##### I. Rotation

Rotation is the movement of Earth round its axis. The axis is an imaginary line that runs through the center of the Earth joining the north and south poles. It is tilted at an angle of  $23\frac{1}{2}^{\circ}$  from the vertical. The Earth completes a single rotation round its axis in 24 hours, creating days and nights. It rotates from west to east direction.

Since the Earth is spherical, its entire surface cannot have sunlight at the same time. It is daytime on the part that receives sunlight at a certain time and night on the other part.



Rotation of Earth

##### II. Revolution

It is the movement of Earth in its orbit. The orbit is the imaginary route round the Sun in the sky that the Earth takes. We know that the aeroplanes do have definite routes in air but those routes do not exist actually like roads on Earth. Similarly, the orbit of Earth is imaginary. The Earth completes one revolution in a year. As a result of the revolution, the following two important effects occur on the Earth:

##### i. Variation in the Length of Days and Nights

The tilt of the Earth's axis plays a key role in creating variation in the length of days and nights as well as in the change of seasons. The Sun lies almost in the center of the Earth's orbit. During the yearly cycle of the Earth's revolution, its North and South Poles tilt in turn towards the

#### Activity:

Take a globe of big size, a ball and a torch. Create darkness in the class room. Cast the torch light on the globe from a reasonable distance. You will find half the sphere of the globe facing the light being illuminating, where as its other half quite dark. Now rotate the globe anti-clockwise which will show you exactly how the phenomena of day and night occur and the sun remains at its place.



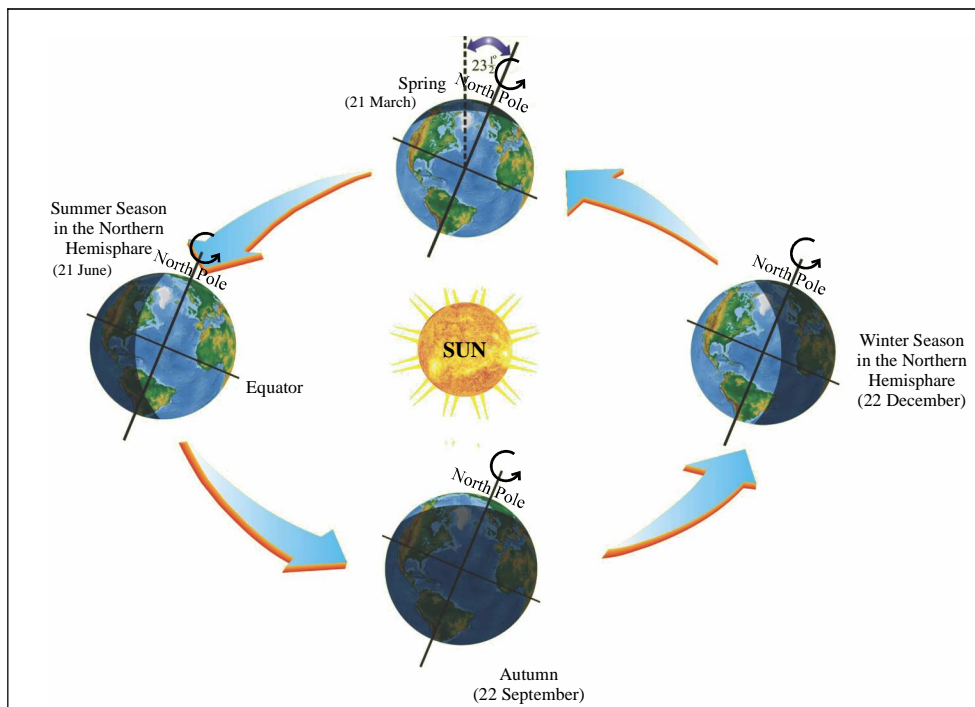
Sun. Each Pole remains tilted for three months. When the North Pole begins to tilt towards the Sun, the length of days in the Northern Hemisphere starts getting longer and nights shorter and shorter. While during the same period the days get shorter and nights longer and longer in the Southern Hemisphere. However, the length of days and nights remains almost equal throughout the year.

## ii. Change of Seasons

On the basis of temperature and rainfall, a year is divided into four seasons; namely, summer, winter, spring and autumn. The following two important factors play important role in the change of seasons:

### a. Angle of Sunrays Falling on Earth

The angle of the sunrays falling on Earth varies throughout the year. In summer season, the Sun shines almost overhead at noontime causing the shadows of trees to be short. Such sunrays are called vertical rays. In winter season, the Sun travels



**Earth's revolution and change of seasons**

close to the horizon across the sky even at noontime. Such sunrays are called slanting rays. The vertical rays produce more heat because, compared to slanting rays, they pass through thinner air and distribute over smaller area. A similar difference of heat is found between the morning sunshine and the noon sunshine. During morning, sunrays fall slantingly on the surface of the Earth.

During the revolution of Earth round the Sun, the vertical position of sunrays swings between the Tropic of Cancer ( $23\frac{1}{2}^{\circ}$  N latitude) and the Tropic of Capricorn ( $23\frac{1}{2}^{\circ}$  S latitude). That is why the areas between these two lines remain hot round the year. Away from these two lines towards their respective poles, the slant in sunrays increases consistently and thus remain cold.

#### **b. Duration of Daytime**

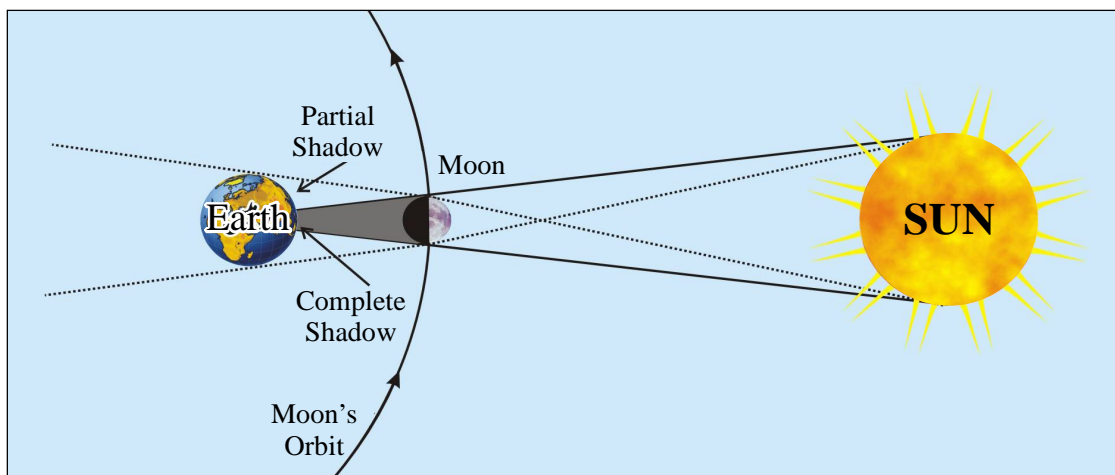
When the Earth receives greater amount of heat from the Sun during longer daytimes, it brings the summer season. For example, in Pakistan days and nights are generally of 14 and 10 hours during the months of June and July respectively. The same months are also the hottest ones. While, during the months of January and February, the daytimes are shorter, it is the winter season. Days and nights have equal lengths during the spring and autumn seasons; hence, both of them experience moderate weather conditions.

## **5. Eclipses**

The Earth receives natural light from the Sun and the Moon. The Sun has its own light; whereas the Moon merely reflects the sunlight towards the Earth. As a result of astronomical movements, sometimes the light from the Sun or Moon gets obstructed and does not reach the Earth. This situation is known as Eclipse. It has the following two types:

## I. Solar Eclipse

The Sun lies in the centre of the solar system. The planets, along with their satellites, revolve round the Sun. The Earth revolves round the Sun while the Moon revolves round the Earth. Sometimes the Moon comes right between the Sun and the Earth as a result of these movements. The part of the Sun appears dark, the light of which is obstructed by Moon from reaching to the surface of Earth. This situation is known as Solar Eclipse.



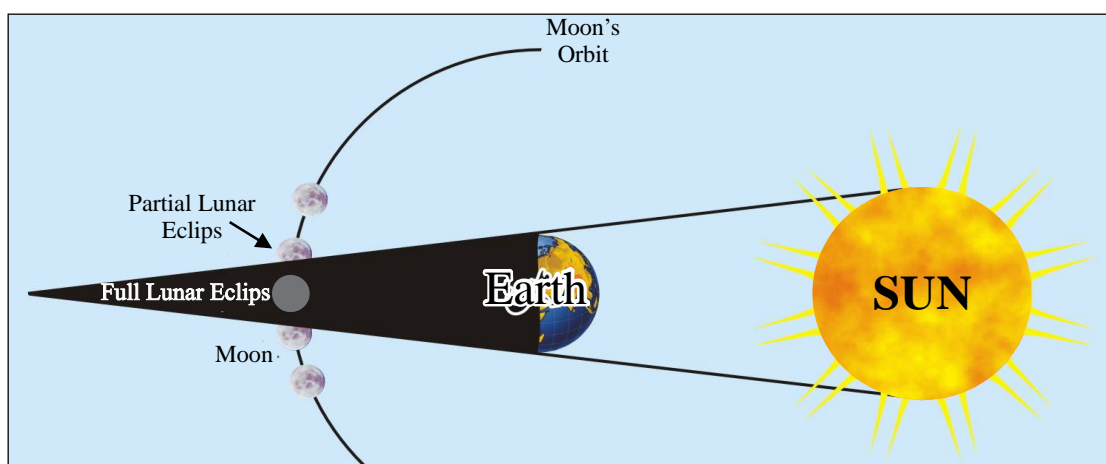
**Solar Eclipse**

### Activity:

Place a ball between a globe and a torch. A large part of the globe would not receive the torch's light, meaning that in a real scenario, the Sun would appear dark from that part of the Earth. This illustrates the situation of a solar eclipse. Next, place the ball behind the globe. Despite facing the torch light straight, the ball would be in darkness. This illustrates the situation of a lunar eclipse.

## ii. Lunar Eclipse

When the Earth comes between the Sun and the Moon, and obstructs sunlight from falling on the lunar surface then the Moon appears dark. This situation is called Lunar Eclipse.

**Lunar Eclipse****Remember!**

Solar eclipse can occur only in the first or last dates of lunar months, because only then the Moon can come between the Sun and the Earth. On the contrary, the lunar eclipse can occur only in the midst of a lunar month.

## 6. Continents and Oceans

On the basis of surface conditions, the Earth is divided into two major parts: land and water. A vast area of land is called continent, whereas a vast water-covered area is called ocean.

### I. Continents

A continent is a very broad area of land which is mostly encircled by seas or oceans. The smaller pieces of dry lands within oceans are called islands, which are counted as parts of the nearby continents. Similarly, the lakes inside continents are counted as parts of the same continents.

There are seven continents in the world:

#### i. Continent of Asia

This is the largest continent of the world. The important countries of Asia are Pakistan, India, China, Japan, Saudi Arabia, Iran, Indonesia, Malaysia, etc. Almost half of the world's total population lives in Asia.

## ii. Continent of Africa

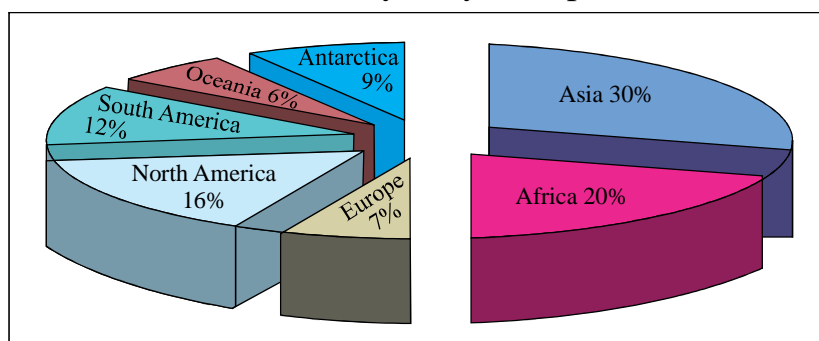
Its famous countries are Egypt, Sudan, Morocco, South Africa, Kenya, Congo, etc. The equator passes through almost the centre of this continent. It is also known as Dark Continent because of its thick forests. Some tribes of Africa bear very primitive cultural traits.

**Table: Salient features of the continents**

Name	Asia	Africa	Europe	North America	South America	Oceania	Antarctica
Area (million sq. km)	43.8	30.4	10.2	24.5	17.8	9.00	13.7
Number of Countries	48	54	44	23	12	14	0
Population (million) 2018	4436	1216	738	579	422	39	00

## iii. Continent of Europe

Contrary to the other continents, instead of any oceans, the Ural Mountain of Russia separates Asia and Europe from one another. Most of the countries of Europe are quite advanced in science. The Alps is the most famous mountain in Europe. The important countries of Europe are Great Britain, France, Germany, Italy and Spain etc.



**Area of continents (% of the world total land area)**

## iv. Continent of North America

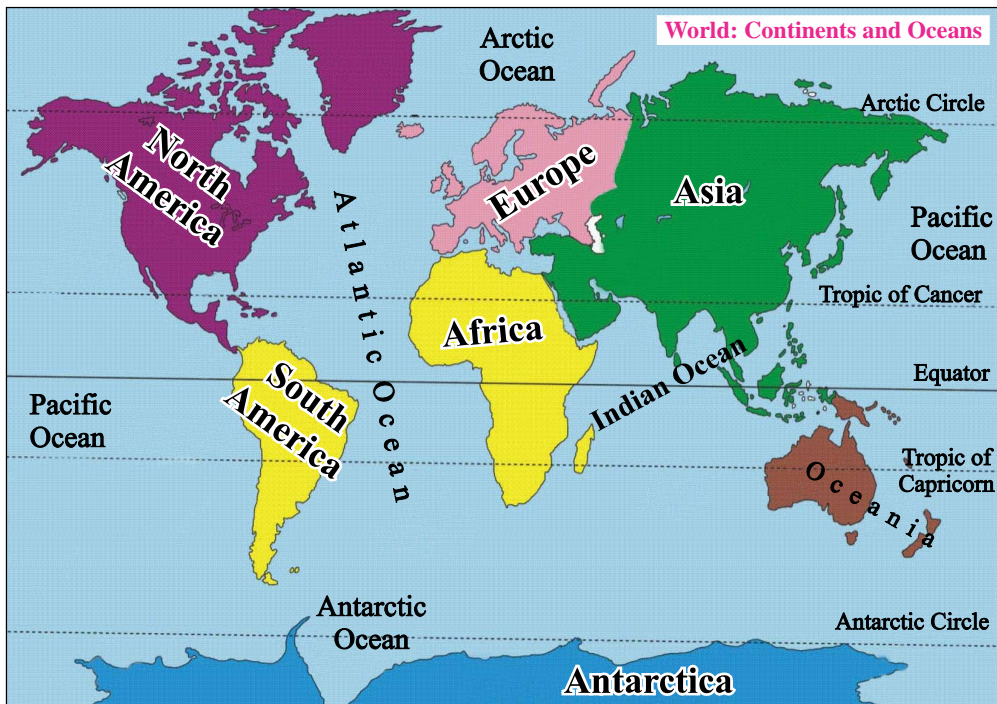
Its famous countries are United States of America, Canada, Mexico, Cuba, Guatemala, etc. Greenland, which is a big island, is



considered a part of this continent. Its northern part is called Alaska, which is covered by ice sheets being near to the North Pole.

#### v. Continent of South America

The Valley of Amazon River, which is famous for its thick forests, lies in this continent. The largest country of this continent is Brazil, which is almost half of the total area of it. Besides this, the other important countries are Argentine, Peru, Bolivia, Venezuela and Colombia etc.



Source: Basic map derived from the Survey of Pakistan's Atlas for Islamic Republic of Pakistan

#### vi. Continent of Oceania

The continent of Oceania is also called the continent of Australia. It is the smallest continent in terms of its area. Its countries are Australia, New Zealand, New Guinea and Fiji etc.

#### vii. Continent of Antarctica

It is the southernmost continent of the world marked by South

Pole. Since all of its area is covered with snow and glaciers, therefore, it is also known as Frozen Continent. It is uninhabited continent but frequently visited by researchers from all over the world.

### Do you know!

Pakistan established a scientific research station in Antarctica in 1991, which is known as Jinnah Station.

## II. The Oceans

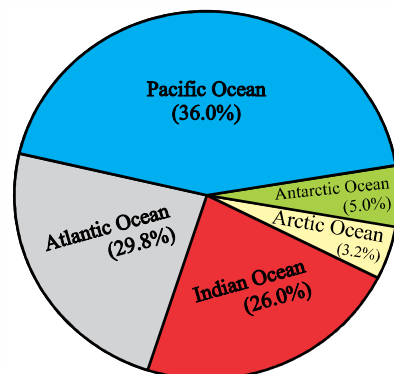
There are five large oceans in the world. Some seas are also parts of these oceans. For example, the Arabian Sea and Red Sea are parts of the Indian Ocean. Likewise, Mediterranean Sea, and the Caribbean Sea are parts of the Atlantic Ocean.

### i. Pacific Ocean

Pacific is the world's largest ocean, which is located between the continents of Asia, Oceania, North America and South America. Its total area is 155.5 million sq. kilometre. The Sea of Okhotsk, Sea of Japan, China Sea, etc. are among the important seas of this ocean.

### ii. Atlantic Ocean

This ocean spreads between the eastern coasts of North America and South America, and the western coasts of Europe and Africa. Its total area is 76.8 million sq. kilometre. Its important seas are Mediterranean Sea, Caribbean Sea, Baltic Sea, etc.



### Do you know!

The deepest place of the world, known as Mariana Trench, lies in the Pacific Ocean close to Philippines. This trench is eleven kilometre deep from the sea surface.

### iii. Indian Ocean

Indian Ocean lies to the south of Asia and the east of Africa. Its southern fringe meets the Antarctic Ocean. Its total area is 68.5 million square kilometre. The Gulf of Bengal, Persian Gulf, Arabian Sea and Red Sea are parts of this ocean.

### iv. Arctic Ocean

It is also called North Frozen Sea. This ocean is spread around the North Pole. The total area of the Arctic Ocean is 14.05 million sq. kilometre.

**Table: Salient features of the oceans.**

S.No.	Name	Area (million sq.km)	Average Depth (meter)
1	Pacific Ocean	155.5	4,028
2	Atlantic Ocean	76.8	3,926
3	Indian Ocean	68.5	3,963
4	Arctic Ocean	14.05	1,205
5	Antarctic Ocean	20.3	4,000 to 5,000

### v. Antarctic Ocean

It is also called South Frozen Sea. It is bordered by three large oceans –Pacific, Atlantic and the Indian Ocean, and the continent of Antarctica. Its total area is 20.3 million sq. kilometre.

#### **Do you know!**

The deep waters of both the North and the South Frozen Seas remain in liquid state throughout the year. There, some very delicious types of fish are found, which are caught with the help of hooks after breaking the upper frozen surface of these oceans.

**GLOSSARY**

Astronomical	That pertains to the heavenly bodies, e.g. stars, planets, etc.
Axis	The central point or line round which somebody moves.
Circumference	The distance measured around the outside of a circle.
Diameter	The straight line through the centre of a circle, which joins two opposite points on the circumference.
Freezing point	The point of temperature on which a liquid substance freezes to become solid.
Galaxy	A group of innumerable heavenly bodies (stars, planets, etc.), which work as a unit system in the heaven.
Gravity	The force with which the stars and planets attract each other.
Gulf	A long and narrow inlet of the sea water in land.
Heaven	The whole space above the earth; in simple words, the sky.
Horizon	The line around an observer where to him the earth and the sky appear met.
Island	A piece of land completely surrounded by water.
Orbit	The immaterial heavenly course, which a heavenly body takes to travel around another heavenly body.
Physical region	All that area which is internally identical in terms of any one or several physical characteristics; such as, relief, climate, vegetation, etc.
Reflection	The sending back of light by a receiving body without a change in the angle with which it was received.
Sea	A relatively smaller segment of an ocean.
Volume	Size; the total amount of space of something.

**Exercise****Q. 1. Fill in the blanks with appropriate words.**

- i. The galaxy which contains our Earth is called .....
- ii. The heavenly bodies which emit their own light are known as .....
- iii. The nearest planet to the Sun is .....
- iv. The heavenly bodies revolving round the ..... are called planets.
- v. When Earth comes right between the Sun and the Moon, then ..... eclipse occurs.

**Q. 2. Give brief answers to the following questions.**

- i. What are the components of the universe? Introduce any one of them.
- ii. What is the speed of light and what does the light-year mean?
- iii. Differentiate between stars and planets.
- iv. What is meant by an eclipse?

**Q. 3. Match the words of column A with those of column B.**

A	B
Milky Way	Planet
Mars	24 Hours
Rotation	Galaxy
Change of Seasons	Saudi Arabia
Continent of Asia	Revolution

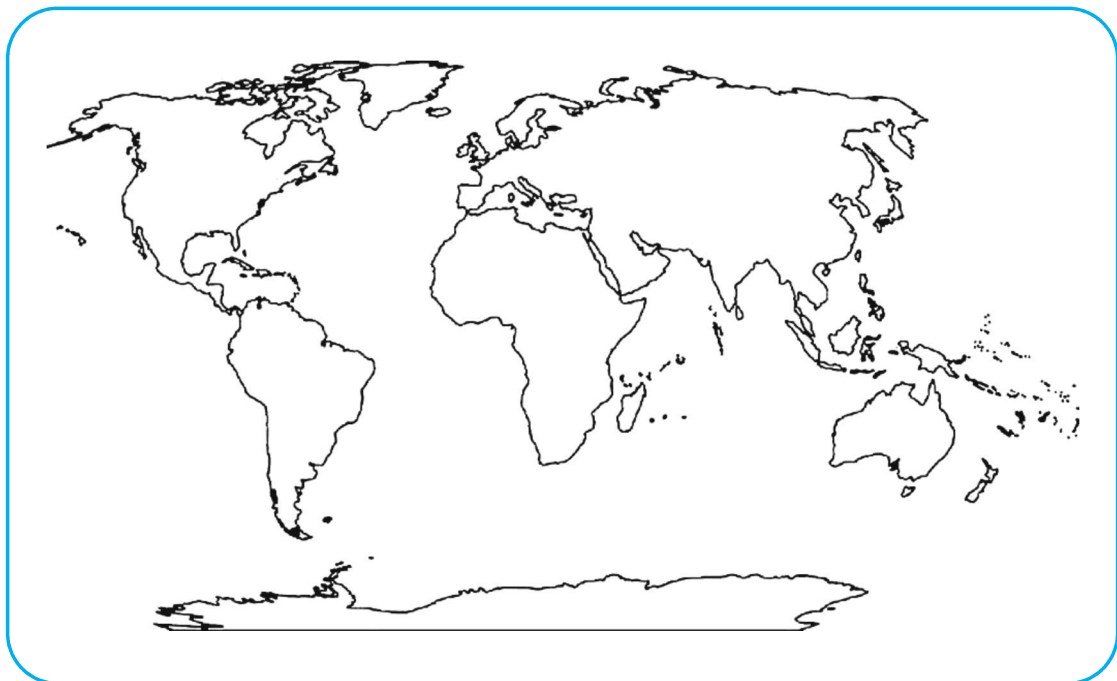


**Q. 4. Give detailed answers to the following questions.**

- i. What is the solar system? Describe its planets.
- ii. Discuss the movements of Earth and the consequent changes that happen.
- iii. Illustrate the lunar and solar eclipses diagrammatically.
- iv. Define a continent, and write a note on world continents.

**Activity:**

The teacher should instruct the students to show the world's oceans and continents by different colours in the sketch map given below:



# Globe, Maps and their Uses

After studying this chapter, the students will be able to:

- ★ Recognize globe as a model of Earth.
- ★ Define a map and state its importance.
- ★ Identify the cardinal points on a given map and different types of North.
- ★ Identify directions with reference to a specific location on a map.
- ★ Explain the concept of Scale and its types.
- ★ Measure the distance between two points on a map using a Map Scale.
- ★ Define latitudes and longitudes.
- ★ Identify important latitudes and longitudes.
- ★ Find the location of a place on a map using latitudes and longitudes.
- ★ Calculate the time difference between two places with the help of longitudes.
- ★ Recognize different types of Map Symbols on a map.
- ★ List the symbols.
- ★ Identify the physical and human features on a map with the help of Conventional Signs.
- ★ Describe the utility of a map and Atlas in everyday life.

## Introduction of Globe and Map

For best utilisation of Earth resources, the knowledge of their location and geographic interrelationship is essential. For this purpose, globes and maps are used. The introduction of these is presented in the following:

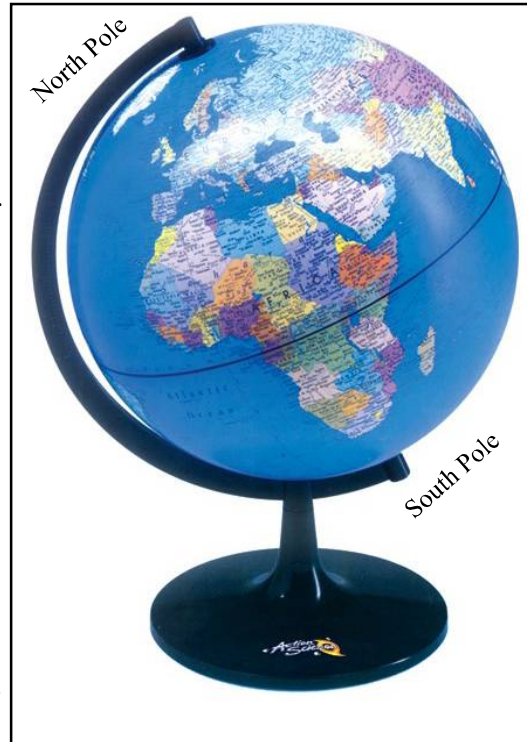
### I. Globe

Globe is a round-shaped small model of the Earth's sphere. The globe

has a scale on which the actual distances between different points on Earth are indicated. We know that a flat surface possesses a centre, corners and edges, hence on such a surface, the location of something can also be told verbally. But, since round bodies have neither centers nor corners and edges, therefore, a network of lines is drawn on them to indicate locations. Such lines on a globe are called latitudes and longitudes.

## II. Map

The expression of Earth features on flat surface (paper, cloth, leather, etc.), according to a scale is known as Map. For general use, maps are more useful than a globe. For instance, a globe has to show the whole Earth definitely, while on a map, small areas with larger details can also be shown. Moreover, the use of map is very helpful in transportation services; as it brings an entire area of interest to a single glance for understanding relations between places and commodities.



Globe

## 2. Elements of Map

Maps can provide adequate information only if they would contain the following elements:

- I. Title    II. Directions    III. Scale    IV. Conventional Signs
- V. Projection

### I. Title

The title of a map provides a brief but comprehensive introduction to the area and features shown on the map. For example, if it is the map of Pakistan showing population density, its title should be “Pakistan: Population Density”.

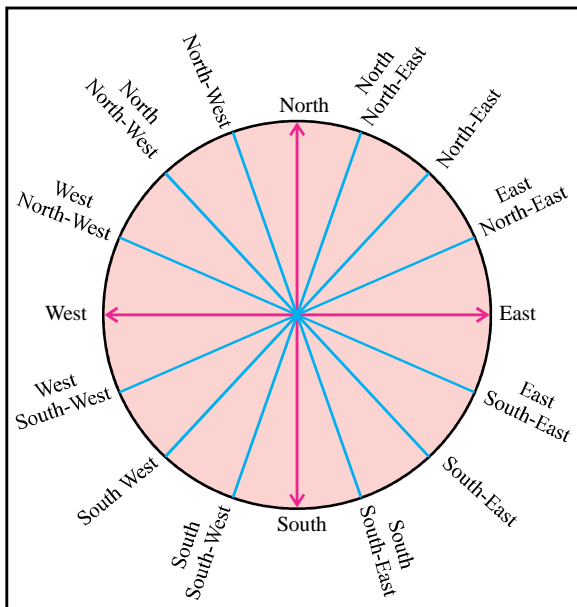
## II. Directions

The knowledge of directions is essential for understanding correct geographical positions. There are four principal directions: East, West, North, and South. From them, secondary directions can also be derived, such as north-east, south-west, etc. Mostly, the North direction is indicated on maps, which usually hints upwards. Once the North direction is ascertained, the other directions can be found easily. The South direction points to the bottom of a map, the East to its right and the West to its left side.

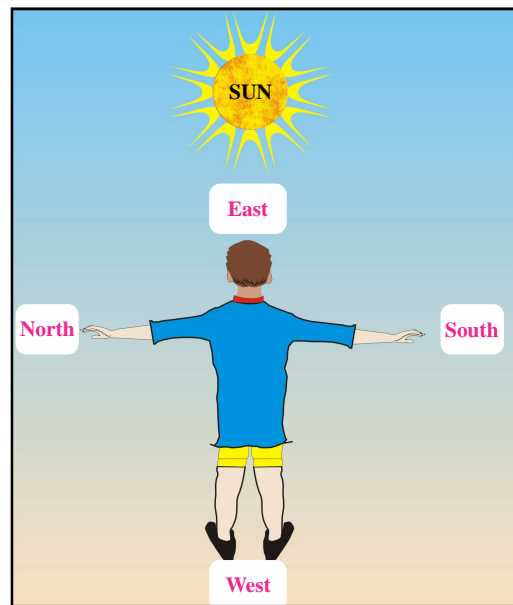
There are two important methods for finding the north direction:

### i. True North

It is also called Geographic North and is found with the help of the Pole Star. The True North is rarely indicated on maps.



**Primary, Secondary and Tertiary Directions**



**Four Primary Directions**

### ii. Magnetic North

It is found with the help of an instrument called compass. The magnetic north is commonly indicated on maps.

### III. Scale

The ratio which is established between the actual distance on Earth and the distance on map is called scale. The scale of a map can be expressed by the following methods:

#### i. Statement Scale

The scale, which is written in the form of a statement, is called statement scale. For instance: 1cm to 10 km etc.

#### ii. Ratio or Fractional Scale

In this type of scale, the unit of distance is not fixed. Rather, a ratio is determined that can be put into any unit of distance. For instance, 1:100 or  $\frac{1}{100}$ .

In the above scale, if the “1” means 1 centimeter on map, then the 100 would be 100 centimeters on Earth.

#### iii. Line Scale

In this type of scale, a line of suitable length is drawn and then divided into equal parts, depending on the length of the actual distance on Earth. For instance, if a distance of 20 kilometres is scaled by a line of 10 centimeters, the line is divided into five parts for every 4, 4 kilometres of distance on Earth.



Line Scale

### IV. Conventional Signs

In fact, a map is the expression of Earth's features by symbols, which are called conventional signs. While assigning symbols to features, it is made sure that their shapes should have a close resemblance with the

	Settlement		River/ Stream
	Lake		Water Tank or Tower
	Matelled Road		Tree
	Railway Line		Electric Transmission Line
	Road		Light House
			Under Ground Cable

Conventional Signs



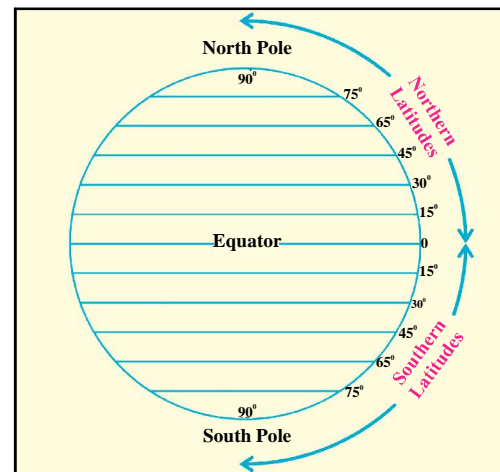
real shapes of the relevant features. Conventional signs are introduced signs are introduced by a list on maps, which is labeled as legend or key.

## V. Projection

The Earth is a sphere. Distortions will occur if a spherical surface is made flat. For example, the area enlarges, scale and directions change, and the shapes deform. Projections are helpful in minimizing such distortions on maps. By definition, a projection is the network of latitudes and longitudes on a plane surface.

### i. Latitudes

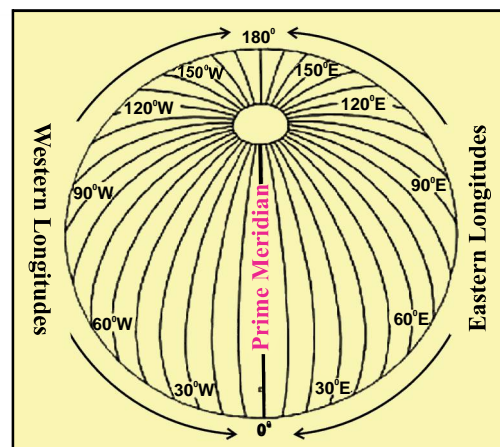
The imaginary lines of latitudes are drawn on a globe from East to West. The total number of their degrees is 180. The  $0^\circ$  latitude is known as Equator. All other latitudes run parallel and equally spaced to the Equator. Ninety degrees of latitudes lie to the North of Equator, while the rest Ninety degrees lie to its South.



Latitudes on a Globe

### ii. Longitudes

The imaginary lines of longitudes are drawn on a globe from North Pole to South Pole. The total number of their degrees is 360. They are also called the Lines of Meridians. The  $0^\circ$  longitude is known as Prime Meridian. 180 degrees of the longitudes lie to the East of Prime Meridian, while the rest 180



Longitudes on a Globe

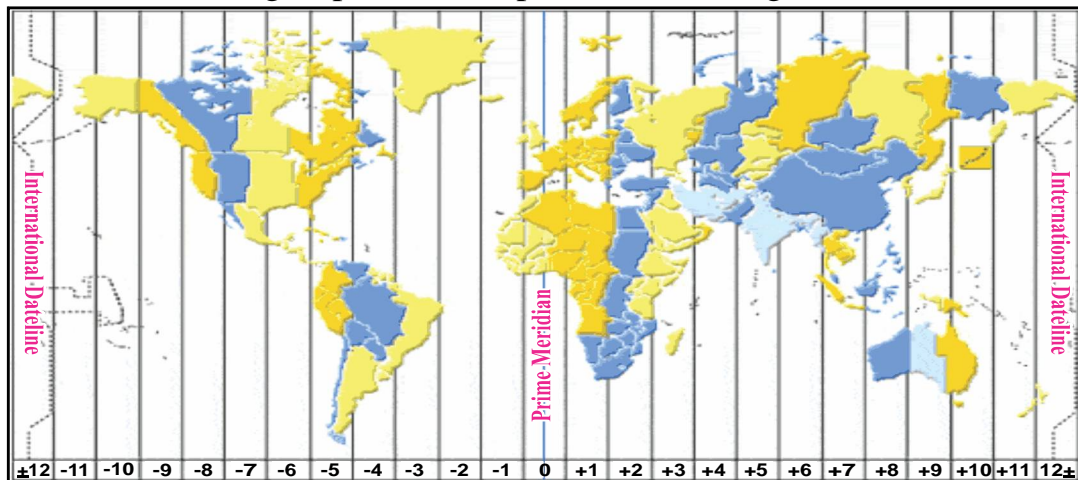
degrees lie to its West. Through the difference in longitude degrees, the difference in local times of any two places can be found. For instance, if the longitudinal difference between two places is 15 degrees, there would be a difference of 1 hour between their local times.

### Do you know!

The longitudinal difference between UK and Pakistan is  $75^\circ$ , so the time difference is 5 hours. It occurs in Britain when there is time for Isha Namaz in Pakistan, it is time for Zuhr Namaz in Britain. In fact, there is always Namaz time for all the five Namaz at any one or other parts of the world.

### 3. World Time Zones

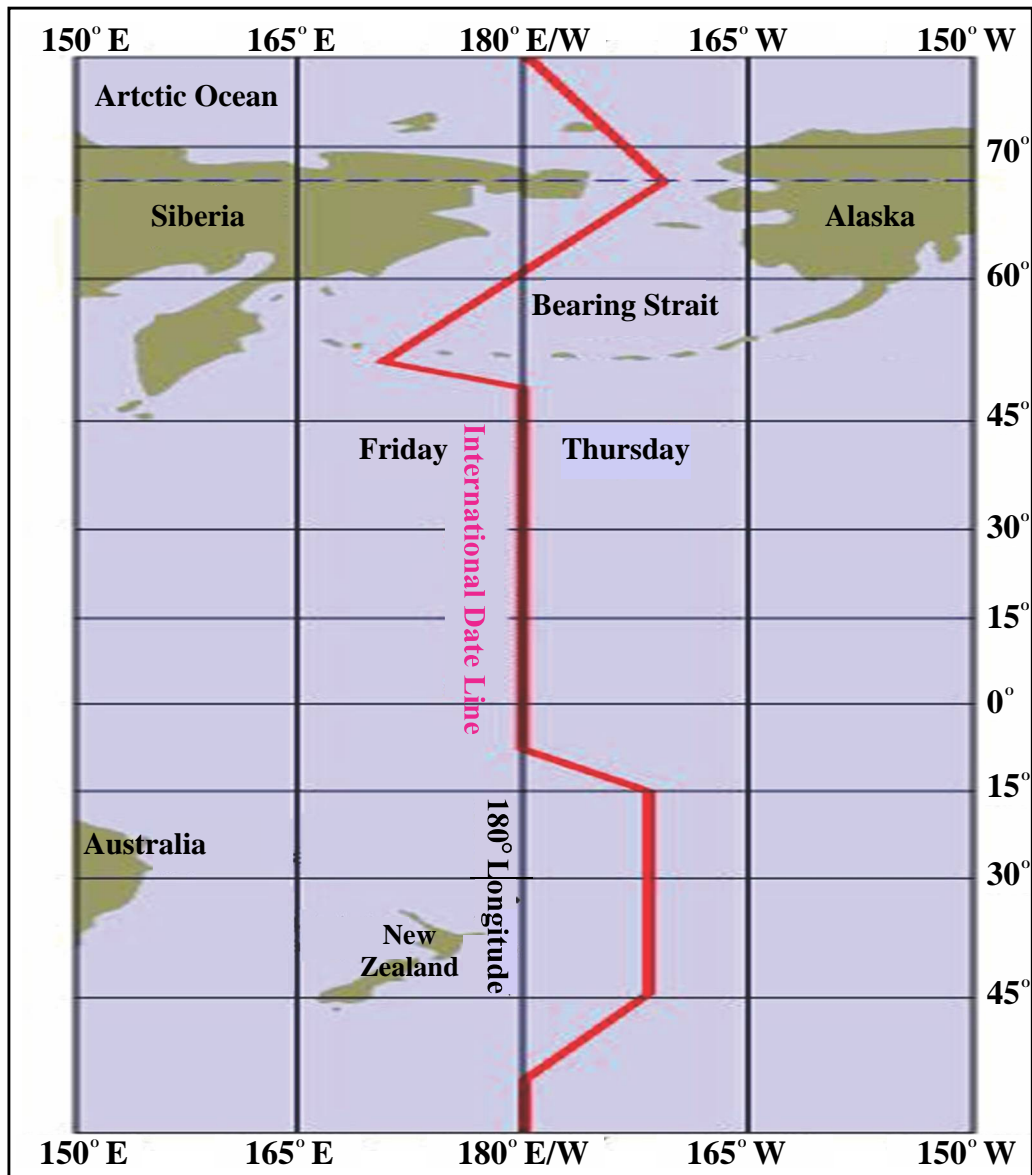
The world is divided East-West into 24 time zones of 15 Longitude degrees each. With the serial number of the Time Zones, which lies towards the East of Prime Meridian, plus (+) sign is assigned; and with those, which lie towards the West of Prime Meridian, minus (-) sign is assigned. According to the World Time Zones, increase or decrease of one hour takes place in the local time of areas after each interval of 15 degrees of Longitudes. For example, the local time of the countries located to the East of Pakistan is early, whereas it is late in the West. The first Time Zone is expressed by the number "0". It is common between the eastern and western zones and extends upto  $7\frac{1}{2}^\circ$  Longitude on both sides of the Prime Meridian. Neither plus (+) nor minus (-) is used with it. The twelfth, i.e., the last Time Zone is also common between the eastern and western groups. So, both plus and minus signs are used with it.



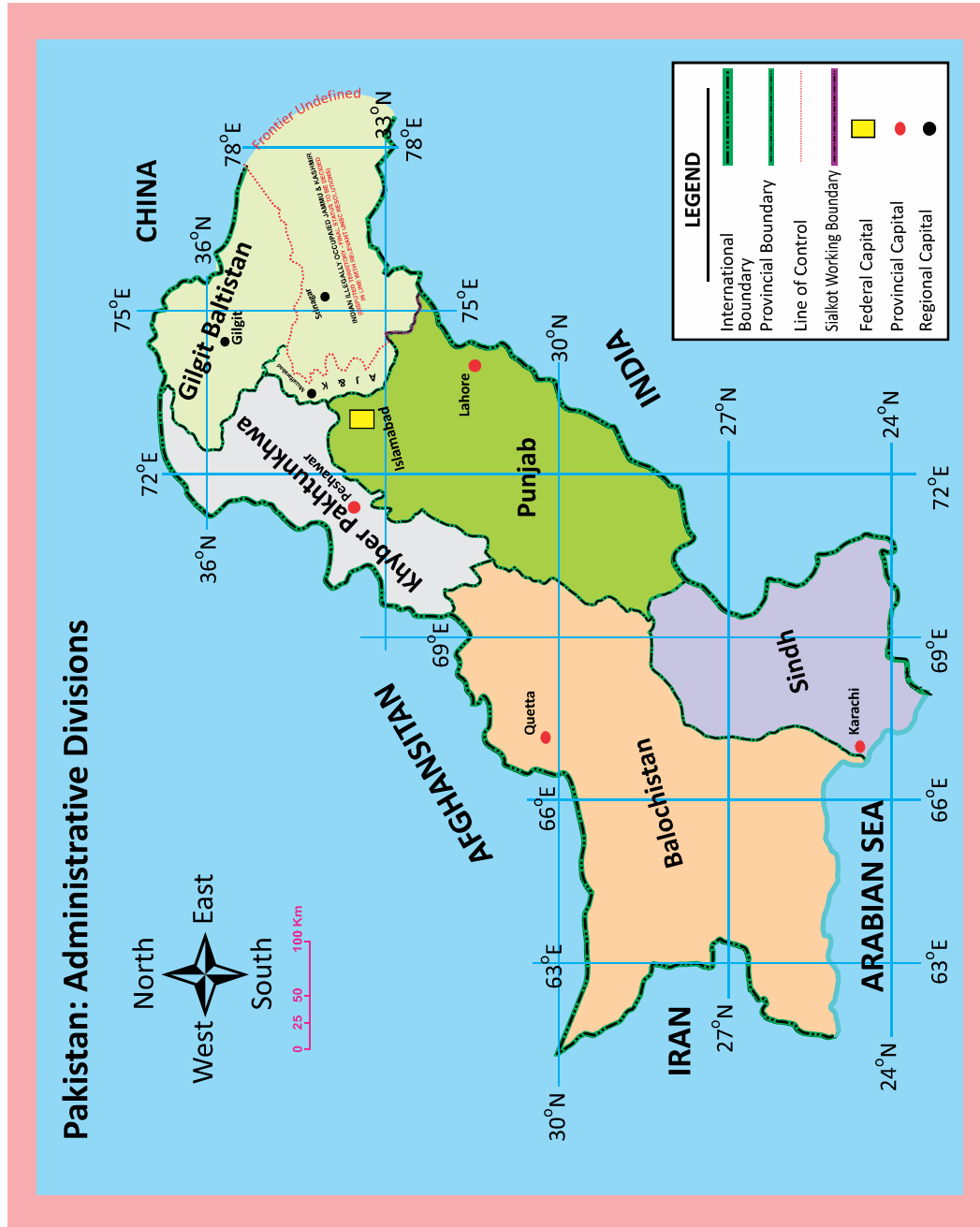
World Time Zones

#### 4. International Dateline

The  $180^\circ$  longitude and the International Date Line are the same. When sailors cross this line towards the west of it, they add one complete day to their calendar. On the contrary, when they cross this line towards its east, they subtracts one complete day from the calendar.



International Dateline on Map



Source: Basic map derived from Survey of Pakistan

## 5. Finding Locations on Map

On a map, the location of places can be found by two ways:

### i. Relative Location

The relative location of a place is found in terms of its relation to the location of some other known places. For example, the relative location of Pakistan is such that it lies to the West of India, to the South of Afghanistan and to the East of Iran.

### ii. Absolute Location

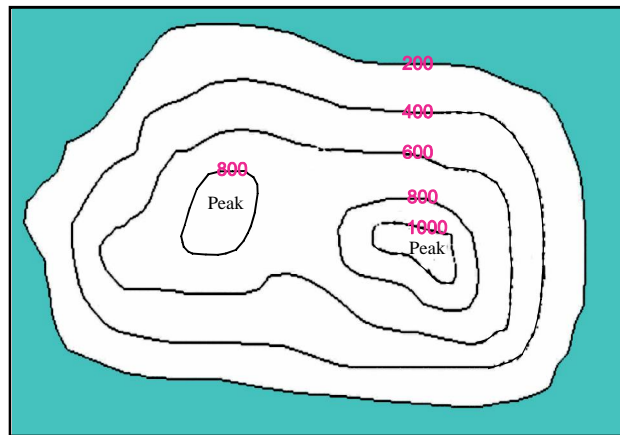
The absolute location is found in terms of longitudes and latitudes. For example, the absolute location of Quetta City is  $67^{\circ}$  East longitude and nearly  $30^{\circ}$  North latitude. In fact, these two lines pass through this city intersecting each other.

## 6. Showing Relief on Map

The variation in the slope of the earth surface is called “relief”. There are two important methods for showing relief on a map:

### i. Contouring

By this method, the altitudes of many places are found first; and latter the places having equal altitudes are joined by separate lines called contours. The contours are drawn on a map in equal intervals of altitude; hence, the contours of a steep slope would be closely spaced.

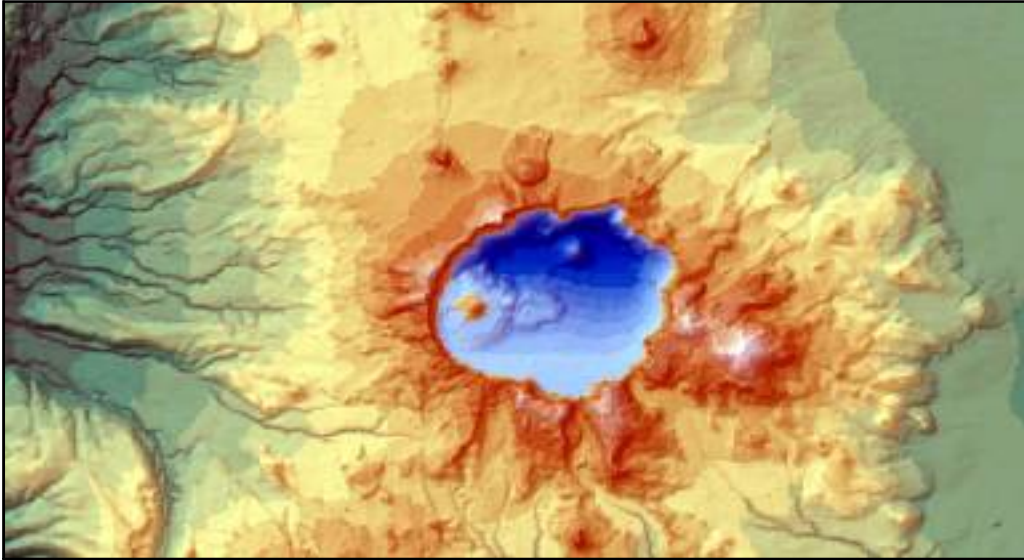


Contours (meter height)

### ii. Layer Tinting

By this method, different altitude levels are expressed by layers of different colours. By layer tinting, only the altitudinal variations for

larger regions (e.g. large mountains, vast plains or ocean depth etc.) can be expressed. Dark colours express either the highest or the deepest places.



**Layer Tinting**

## **7. Uses of Maps**

In term of purpose and use, there are different types of maps. Topographical maps are multi-purpose maps. They provide detailed information of the relief, settlements, streams, roads and tracks, farmlands, forests, etc. in a region. Cadastral maps are used to demarcate the areas of small pieces of lands such as a farm or a house. Likewise, there are weather maps, which express changes in weather conditions (e.g. temperature, cloudiness, precipitation, winds, etc.) in an area. The geological maps are useful in exploration of minerals. With the help of political maps, the international boundaries as well as the interprovincial or district boundaries within a country are defined.



## GLOSSARY

Calendar	The chart of days, weeks, and months of a particular year.
Compass	The instrument that shows north direction.
Equator	The 0° latitude; the imaginary line that divides the globe into two halves.
Greenwich	A locality in the London City of Britain.
Latitudes	The imaginary lines drawn East-West around a globe.
Location	A particular place or position on Earth.
Longitudes	The imaginary lines drawn on globe from North Pole to South Pole.
Pole Star	The star which shines exactly above the North Pole.
Sphere	A ball-shaped complete body, which has equal dimensions (length, width, breadth).

## Exercise

## Q.1. Fill in the blanks with appropriate words.

1. Choose correct word from the list given in parenthesis and fill in the blanks:

(Earth, four, 360, geographic, Equator)

- i. The total number of longitude degrees is .....
- ii. The 0° latitude is called .....
- iii. A globe is a small model of .....
- iv. Primary directions are ..... in number
- v. The True North is also called ..... North



**Q. 2. Mark (×) against the wrong, and (✓) against the correct statements in the following.**

- i. The maps are of round shape. ( )
- ii. The latitudes are drawn East-West. ( )
- iii. The 0° longitude is called International Dateline. ( )
- iv. The areas, which lie to the East of Pakistan, have early local time. ( )
- v. The contours show equal altitudes. ( )

**Q. 3. Give brief answers to the following questions.**

- i. Describe the relative location of Pakistan.
- ii. Define Scale, and describe its types.
- iii. Which instrument is used to find the magnetic North direction?
- iv. What is the International Dateline?
- v. Discuss the uses of topographical maps.

**Q. 4. Give detailed answers to the following.**

- i. Discuss the uses of globe.
- ii. Explain the elements of map.
- iii. Which important methods are used to show relief on a map?
- iv. How can the location of a place be found on a globe and on a map?  
What is the Magnetic North?

**Activity:**

Show a compass to the students and instruct them how to find the North direction by it.

# Earth as a Home of Human Beings

After studying this chapter, the students will be able to:

- ★ List the conditions that make Earth a habitable planet.
- ★ Describe various spheres of the natural environment and their role in sustaining life on Earth.
- ★ Describe the factors that shape the pattern of Human environment .
- ★ interaction with reference to:
  - Climate
  - Physical landscape
  - Water
  - Forests
  - Living world

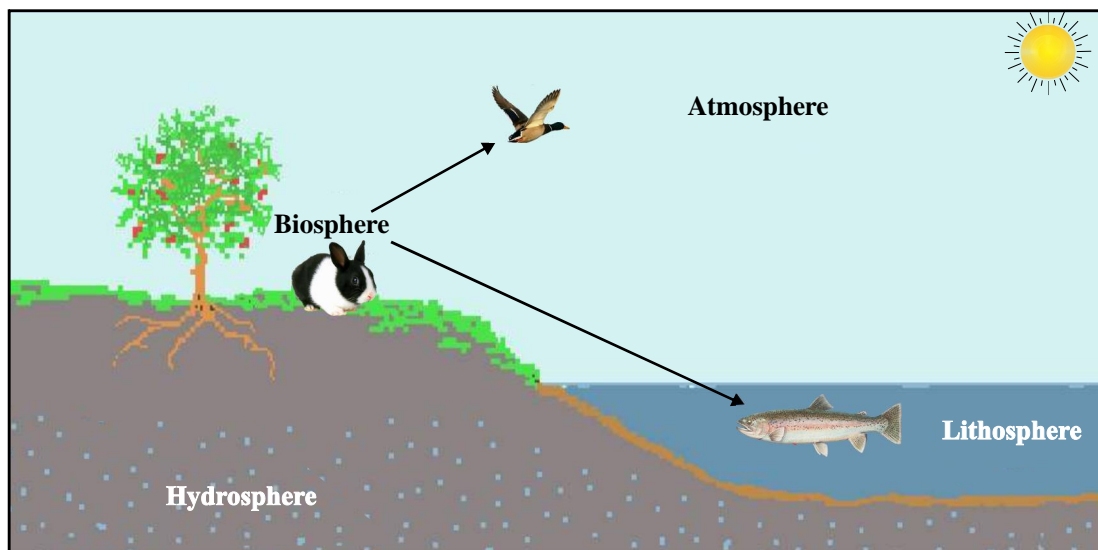
## 1. Natural Spheres of Earth

There is a great system of nature on Earth, which comprises four major components; namely, air, soil, water and life. These components exist on the Earth in such a way that each of them itself forms a separate sphere. Some of these secondary spheres are found everywhere on Earth (e.g. atmosphere), whereas, some others exist in patches (e.g. hydrosphere and biosphere). Moreover, all these four spheres are mixed together. For example, the biosphere is found blended in the other three spheres. Likewise, the hydrosphere is mixed in the atmosphere in the form of water vapors or droplets; and in the lithosphere in the form of lakes, rivers and groundwater.

### I. Atmosphere

The Earth is enveloped in a blanket of air, which comprises various gases, water vapors and dust particles. This air cover is called atmosphere. This

sphere has no definite upper limit, however, in terms of effect, it ends at an altitude of 1300 km. Close to the earth surface, the atmospheric particles exist in great quantity; hence, it is dense. With the rise in altitude, the density of particles reduces. That is why the air is relatively light at high altitudes.



**Natural Spheres of Earth**

### Advantages of Atmosphere

- i. The life on Earth is possible due to atmosphere. All living organisms inhale air. The animals require oxygen gas and the plants require carbon dioxide gas. The source of both of these gases is atmosphere.
- ii. All the weather elements like temperature, clouds, precipitation, winds, etc. are the conditions that appear in the atmosphere.
- iii. It is air which enables us to hear. If there were no air, we could see only one's moving lips but could not hear the voice.

### II. Lithosphere

The inanimate solid part of the Earth is called lithosphere. The word “lithos” is derived from Latin language, which means a stone or rock (stone is called "Hajar" in Arabic language). Ranging from the tiny clay particles to high mountains, all are made of rocks. The lithosphere is not only part of the continents but also part of the bottom of oceans.

### Advantages of Lithosphere

- i. This is due to the lithosphere that the Earth has a stable shape.
- ii. The lithosphere is like a solid floor upon which the other three spheres are resting.
- iii. This sphere is the abode and source of human settlements, agriculture, forests, minerals, etc.
- iv. The ruggedness of this sphere gives an exquisite look to the Earth; the flow of water is also due to it.

### III. Hydrosphere

Although, most of the hydrosphere is found in the form of oceans but it is not confined to them. Whatever and wherever water is found in the Earth system, it is considered the part of the hydrosphere. It means, the water found in the form of atmospheric moisture, rivers, lakes, glaciers and groundwater, all are included in the hydrosphere. It is estimated that about 71% of the Earth's surface is covered with water.

### Advantages of Hydrosphere

- i. Like air, the water too is a basic need of life. We drink water and on it depends the agricultural and natural vegetation.
- ii. Water maintains temperature to some moderate level in the bodies of organisms and in the atmosphere.
- iii. Water is a means for cleanliness and purification of our bodies and environment.
- iv. In the old ages, when vehicles and planes were not invented, the oceans and rivers were the means of transportation. Even today, the oceans play leading roles in the international trade.
- v. Water evaporates from oceans in vapour form and fall on earth as rain or snow.

### IV. Biosphere

This sphere exists in all the other three spheres. It comprises humans, animals, insects and all types of plants. This sphere is spread over from the bed of oceans up to about 8 km of altitude in atmosphere.

### Advantages of Biosphere

- i. The most important creature of the biosphere is mankind. This sphere contains all such elements which are essential for life.
- ii. All the organisms in this sphere are interdependent. For example, the plants synthesize food in the presence of sunlight, whereas the animals feed on the plants. The humans feed on both the animals and plants.

## 2. Human Environment Relationship

The combination of all such things or conditions, which affect human beings or human society, is called environment. Human beings and the environment have a deep interrelationship. This is, just as the environment forces humans to live life in some particular way, the humans also bring changes in the environment for meeting their needs. For example, we do observe that human lifestyle is not uniform all over the world. The reason is that the natural environment across the world is not uniform. When a person lives somewhere, he has to adopt such material and methods which are compatible to the natural conditions of that area. Likewise, we also find that when a certain horde settle in some area for a long period, the natural environment of that area gradually undergoes enormous changes. For instance, the uneven land is made plain, the forests are cleared or replanted, the rivers change their courses and the climate no longer maintains its original state, etc.

### I. Climate and Human Beings

Climate is the average aggregate effect of temperature, moisture, rain, winds, etc. in the atmosphere over a longer period of time. Humans and the climate affect each other. The impacts of climate are more profound upon human lifestyle and economic activities than the impacts of the other components of environment. The climate forces humans to follow a particular style of life regarding the things, such as dressing, architecture, agriculture, food, etc. Human impacts on climate are also evident. For example, the world's average annual temperature is gradually rising, which is believed to be the result of disbalance in the ratio of carbon-dioxide gas in atmosphere. Humans have a major role in the rise of this ratio. For example:

- i Humans exhale carbon-dioxide gas while breathing. Therefore, with the increase in human population, the carbon-dioxide gas is also increasing.
- ii. Humans are rapidly cutting down the forests, which are the means of absorption of carbon-dioxide gas.
- iii. When fuel is burnt in houses, factories and vehicles, it produces carbon-dioxide gas in large quantity.

## II. Physical Landscape and Human Beings

Physical landscape means the upper surface of Earth including mountains, plateaus and plains. A great diversity can be noticed in the lifestyles, mental and physical capabilities and economic activities in the people living in different types of physical landscapes. For example, there will be small patches of even land in the mountainous areas, due to which the houses as well as settlements are not vast usually. On the contrary, the houses and settlements both are usually larger in plains. The plains offer better opportunities for farming and industries; therefore, they are generally densely populated. Minerals can be explored relatively easier in mountainous areas rather than plains; therefore, mining is done on a large scale there.

Man also affects physical landscape. For example, he constructs highways, which result in soil erosion on mountain slopes and destroys the scenic beauty by deforestation. Likewise, Man levels the uneven lands for agriculture and buildings.

## III. Water and Human Beings

Water is essential for life. Allah Almighty says, “We have raised every living being from water”. It means that all organisms, wheather humans, animals, birds or plants, have some amount of water in their bodies. Humans are drawing benefits from all types of water resources. The oceans are a source of precipitation, on which our agriculture depends. About 80 percent of the international trade is carried out through oceans. Marine life (fish) is an important source of human food. Various types of salts and other precious materials are obtained from oceans. Some countries are generating electricity with the help of tidal waves. Agriculture and Industry require great amounts of

water, which is provided from rivers and underground resources. Wherever such resources are plenty, those areas are populous and prosperous. Electricity, which is the most important means of energy, is generated with the help of rivers. The climates of coastal areas are moderate; therefore, the cultural traits of the people of these areas differ from those of the people living in the interior of continents.

#### **IV. Forests and Human Beings**

The impacts of humans and forests upon one another are very obvious. Plants are a great bounty of nature. In fact, the beauty of Earth depends upon the existence of vegetation. The forests greatly affect our economy and culture. In the modern age, the use of metals has increased considerably, yet wooden goods are still considered to be better than the metallic ones. Furniture, doors, etc. are made of wood. Forests are a source of medicinal herbs and fuel-wood. Wildlife depends on forests. Forests help decrease carbon dioxide gas in the atmosphere. They protect the land around the rivers from erosion. Thus, not only they are helpful in the conservation of fertile soil but also save the dams from sedimentation.

#### **V. Organisms and Human Beings**

There is great diversity in organisms. It includes both the land and marine organisms. In common terms, the wild animals, birds, fish, insects and germs are included in the living world. Being very tiny, the germs could only be seen through a microscope. The animals are partners of humans in the course of life. A large share of our food is obtained from animals. We eat their meat and use their milk. Many of our industries depend on the wool and skins of animals. In the past, when vehicles were not invented, the animals were a great bounty of nature in transportation. The animals were a means of tourism, trade and even used in wars. Now-a-days too, they are being used for the same purposes more or less all over the world. Especially, in mountainous, desert and snowy areas, the people depend largely upon animals. The animals are used in agricultural activities. Animal dung is one of the best fertilizers for crops. The birds have also many advantages. They are the beauty of environment. They also



help in pollination. Fishery is the main occupation of most of the people living in coastal areas. That is why the boat and ship-making industry is quite thriving there. The insects are also not useless. They make the soil fertile by burrowing and help increase productivity by pollinating the flowers of plants. Even some of the germs are useful for us. Curd, vinegar and yeast-bread are the best examples of the usefulness of the germs..

### GLOSSARY

Annual temperature	The average temperature calculated for the whole year.
Deforestation	The cutting or burning down of all the trees in an area.
Earth's natural spheres	The four major spheres of earth; namely, lithosphere, hydrosphere, atmosphere and biosphere.
Erosion	The process whereby a land surface is gradually worn down by streams, wind, sea waves, etc.
Glacier	A large mass of ice on the mountains
Marine life	Connected with sea and the creatures that live there.
Medicinal herbs	The plants used for the cure of human diseases.
Microscope	A scientific instrument that makes extremely small things, such as tiny organisms to look larger.
Natural vegetation	The plants that grow spontaneously and without irrigation and other human care.
Synthesis	Combining different things to produce a new thing.
Sedimentation	The deposition of eroded material in oceans, lakes, dams, etc.
Uneven land	The land which is rugged.
Vapours	Water in gaseous form.

**Exercise****Q. 1. Fill in the blanks with appropriate words.**

- i. The solid rocky sphere of Earth is called.....
- ii. The atmosphere is ..... near the earth surface.
- iii. .... percent of the earth surface is covered with water.
- iv. The sphere of living beings is called .....
- v. Plants discharge ..... gas.

**Q. 2. Complete the sentences with correct choices.**

- i. There are ..... major natural spheres of Earth.  
a. six            b. four            c. three
- ii. The biosphere consists of .....  
a. all living beings            b. animals            c. plants
- iii. Some countries generate ..... with the help of ocean waves.  
a. gas            b. fuel            c. electricity

**Q. 3. Give brief answers to the following questions.**

- i. Why it is that the atmosphere is denser near the Earth's surface?
- ii. Which types of water resources are parts of the hydrosphere?
- iii. What are the components of biosphere?
- iv. How do humans affect the climate?

**Q. 4. Give detailed answers to the following questions.**

- i. What is the lithosphere? Also highlight its advantages.
- ii. Explain the Human-Environment interaction by giving examples.
- iii. Discuss the benefits of forests to human life.
- iv. What is meant by “organisms”? Describe the uses of the various types of organisms.

# Rocks

After studying this chapter, the students will be able to:

- ★ Define rocks, elements and minerals.
- ★ Describe various types of rocks according to their mode of formation.
- ★ Describe igneous rocks and their types.
- ★ Describe sedimentary rocks and their types.
- ★ Differentiate between mechanically, chemically and organically formed rocks.
- ★ Describe metamorphic rocks and their types.
- ★ List the important characteristics of various rock groups.
- ★ Identify rocks in their local areas.

## 1. Rock: Definition and Types

The smallest particle of matter is called atom. The atoms of similar characteristics combine to form elements and when the elements combine in a definite chemical proportion, they constitute minerals. The aggregate of minerals in the form of a solid substance is called rock. A rock can be hard such as granite or it can be soft such as chalk. The rocks have three major types:

- i. Igneous rocks    ii. Sedimentary rocks    iii. Metamorphic rocks

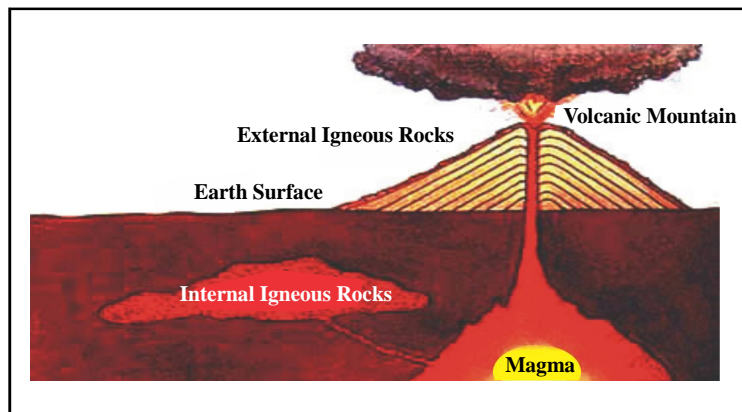
### I. Igneous Rocks

A rock that has become solid from a molten state is called igneous rock. The parent material of these rocks comes out from the Earth's interior, where all materials exist in molten state due to intense heat. Scientists believe that the Earth was once a part of the Sun. When it tore off the Sun, it too was extremely hot in the beginning. It gradually cooled down and later on its upper layer became solid. It means that the igneous rocks were formed on foremost on the Earth. Therefore, they are also called primary rocks.

The igneous rocks are further divided into two types:

**i. Intrusive Igneous Rocks**

The molten material in the Earth's interior is known as magma. A large quantity of gases also combines with magma due to which it exerts pressure to expand and erupt. If the magma solidifies before gushing out on the Earth's surface, the rocks formed are called intrusive igneous rocks. The examples of these rocks are granite and gabbro.



**Volcanic Mountain and Igneous Rocks**

**ii. Extrusive Igneous Rocks**

When magma reaches the Earth's surface, it is called lava. When lava solidifies, the resulting rocks are called extrusive igneous rocks. Basalt and Obsidian are examples of these rocks.

**Characteristics of Igneous Rocks**

- i.** The entire chain of igneous rocks have uniform mineral composition of the igneous material in an area.
- ii.** Igneous rocks do not have separate strata.
- iii.** Since the igneous rocks pass through melting phase, therefore, they do not contain fossils.
- iv.** The igneous rocks are harder as compared to the other types of rocks.



Granite



Scoria



Andesite

### Some Common Igneous Rocks

## II. Sedimentary or Stratified Rocks

Rocks gradually wear down. These pieces of rocks are transported by running water, glaciers, winds, etc. to the oceans, lake, deserts, etc. where they deposit layer upon layer. After ages, due to the enormous weight of overlying material, these layered sediments become hard to form rocks, which are called sedimentary or stratified rocks. These rocks have three major sub-types:

### i. Mechanically Formed Sedimentary Rocks

These rocks are formed by integration and compaction of the previously worn down rocky material. The compaction occurs due to the heavy weight of the overlying and some cementing material. Most of the sedimentary rocks are of this type. Conglomerate and shale are examples of this type of rocks.



Sedimentary Rocks

### ii. Chemically Formed Sedimentary Rocks

These rocks are formed from various chemical solutions. Natural agents, like rivers, winds, ocean waves, etc. deposit these saline material in low lying areas. Afterwards, as a result of the process of evaporation, the deposits consolidate in the form of rocks. Gypsum, rock salt and potassium are few examples of this type of rocks.

### iii. Organically Formed Sedimentary Rocks

These rocks are formed from the buried plant material or the bones and shells of sea organisms. Intense heat and pressure play vital role in their formation. Coal and limestone are examples of such rocks. The coal is formed when plants get buried. Limestone is the product of the remains of dead marine organisms.

#### Characteristics of Sedimentary Rocks

- i. The presence of strata or layers in these rocks is their typical identity.
- ii. These rocks contain fossils of plants and animals.
- iii. They are not as hard as the igneous rocks. Therefore, they wear down easily.
- iv. The chain of identical sedimentary rocks in any area is never extensive.



Conglomerate



Chalk



Gypsum

#### Some Common Sedimentary Rocks

### III. Metamorphic Rocks

These are the rocks which were once either igneous or sedimentary but the weight of the overlying material and the intense heat in the Earth's interior has changed their characteristics. A common example of metamorphic rocks is marble which is metamorphosed from limestone.

Metamorphism occurs in two ways:

#### i. Contact Metamorphism

The igneous or sedimentary rocks which stay close to magma in the Earth's interior change due to the intense heat and the weight of the



overlying material. This process is called contact metamorphism.

## ii. Regional Metamorphism

When crustal plates compress each other, enormous pressure builds upon the rocks in the Earth's hot interior. These conditions cause certain changes in the rocks across a large area.

### Do you know!

The outer solid layer of the Earth is made of a number of small and large size pieces known as “tectonic plates”. Due to the internal heat of the Earth, these plates move slowly in different directions resulting in earthquakes, volcanism, metamorphism, etc.



Marble



Gneiss



Slate

### Some Common Metamorphic Rocks

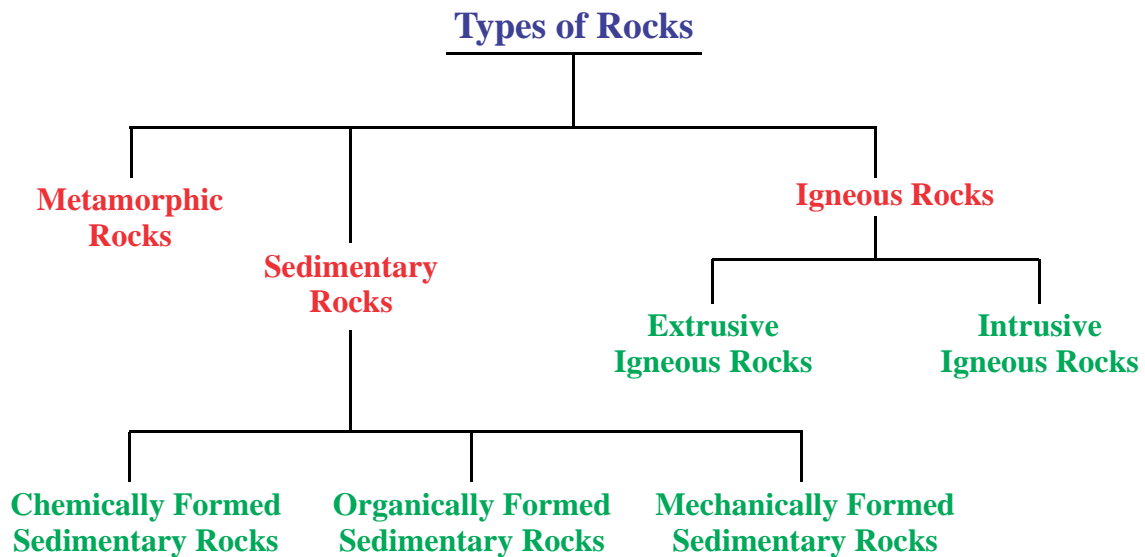
## Characteristics of Metamorphic Rocks

- i. Metamorphic rocks are usually heavier and harder than the other types of rocks.
- ii. Most of the metamorphic rocks become more valuable than their original states. The examples are diamond and marble.
- iii. When grains of the rocks expand by metamorphism, they become more beautiful.

### Do you know!

Diamond, which is a famous gemstone, is actually the metamorphosed form of ordinary coal. Coal is a soft material, whereas diamond is the hardest rock on Earth.





## GLOSSARY

Evaporation	The change of liquid into vapours; e.g. the change of water into water vapours.
Fossils	The parts or remains of animals and plants buried thousands of years ago and preserved in rocks.
Matter	Material/ substance; anything that has weight and occupies space.
Parent material	The material that is used to produce some other material.
Strata	The layers in rocks.

## Exercise

**Q. 1. Select appropriate word from the list in parenthesis and fill in the blanks.**

(primary, metamorphic, marine, sedimentary, magma)

- i. The hot molten material inside the Earth is called .....
- ii. The igneous rocks are also called ..... rocks.
- iii. Marble is a .....rock.
- iv. In .....rocks, the fossils of plants and animals are found.
- v. Organically formed sedimentary rocks are composed of the bones and shells of .....organisms.

**Q. 2. Give brief answers to the following questions.**

- i. What is a rock?
- ii. What are the distinctive characteristics of igneous rocks?
- iii. What is meant by the term “contact metamorphism”?
- iv. Describe the types of sedimentary rocks.

**Q. 3. Give detailed answers to the following questions.**

- i. Discuss distinctive characteristics of the major types of rocks.
- ii. Explain the formation process of various types of sedimentary rocks.
- iii. What is an igneous rock? Write a comprehensive note on this type of rocks.

### Activity:

The students may collect various types of rocks and identify the igneous, sedimentary and metamorphic rocks.

# Major Land Features

After studying this chapter, the students will be able to:

- ★ Differentiate between mountains, plateaus and plains.
- ★ Describe types of mountains according to their mode of formation.
- ★ Describe types of plateaus according to their mode of formation.
- ★ Describe types of plains according to their mode of formation.
- ★ Identify major land features on a map of the world.
- ★ List and locate main rivers of the world on a map.

## Introduction

Due to the continuous action of the internal and external geologic forces, some areas rise while some others subside; some become even while some others rugged. It creates the following major land forms on Earth's surface:

### 1. Mountains

A huge and high piece of land with a higher ratio of sloping surface than the plane surface is called mountain. According to some experts, an altitude of 1,000 metres is the minimum altitude for definition of a mountain. On the basis of structure, the mountains have the following four types:

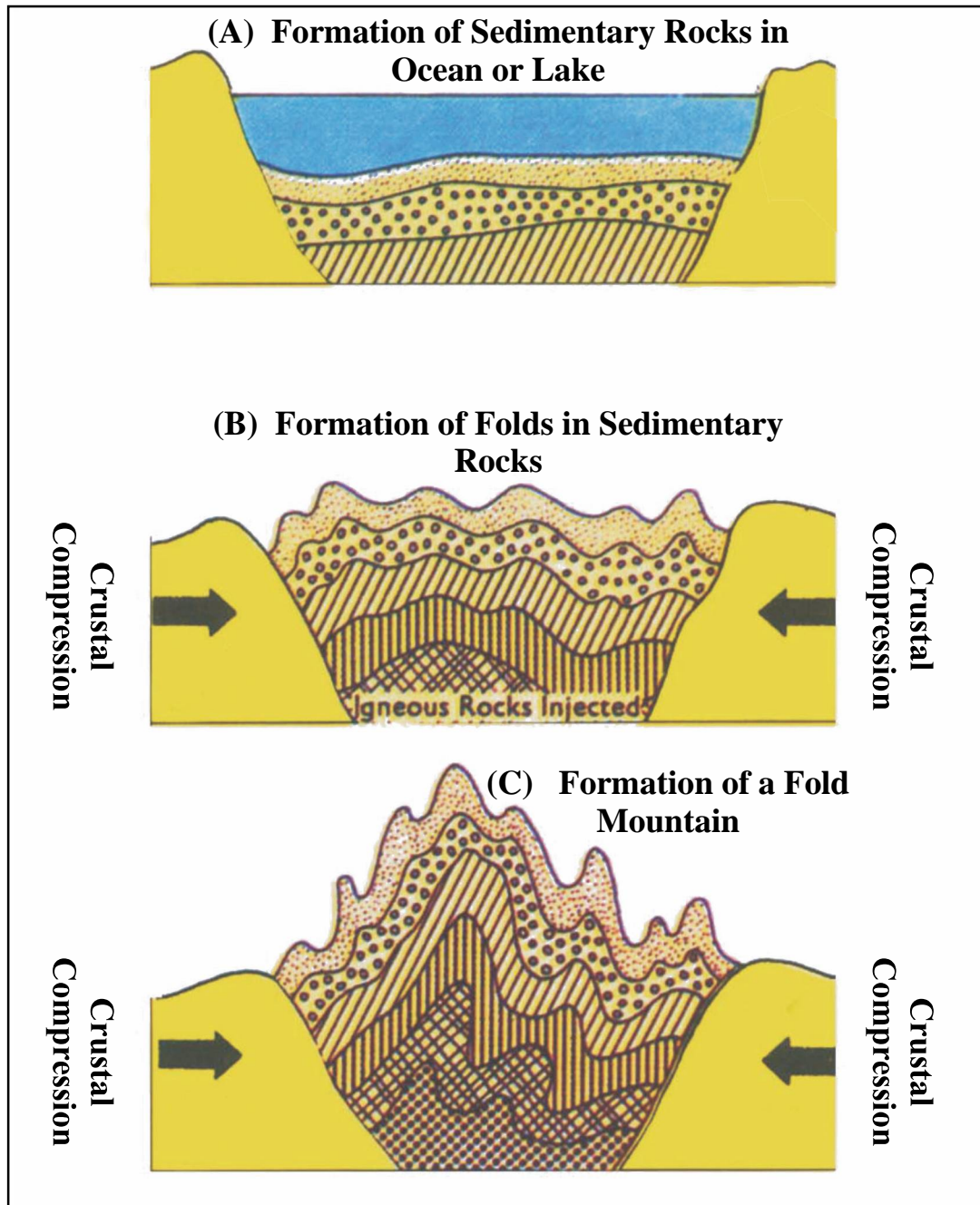
#### I. Fold Mountains

The Earth Crust consists of a number of plates called Tectonic Plates. The plates slowly move due to the Earth's internal forces. During the movement, some plates come to press against one another resulting in a gradual formation of folds in the rocks. If these folds are on a large scale, i.e. quite vast and high, it is called fold mountain. The great mountain

#### Activity

Spread a large sheet of paper on a table and then press it towards the centre from two opposite sides. Ups and downs, i.e. folds would appear in the paper. In a similar way, the Fold Mountains are formed.

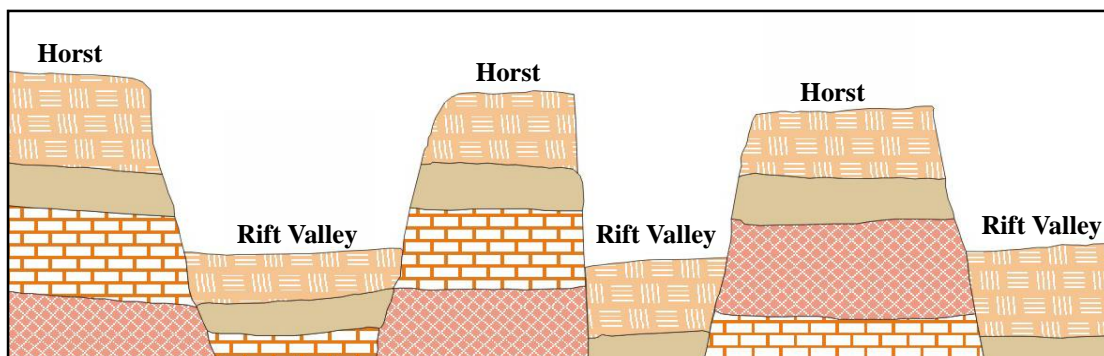
ranges of the world, like Himalaya, Hindukush and Alps, are fold mountains.



**Stages of the Formation of Sedimentary Rocks and Fold Mountain**

## II. Block Mountains

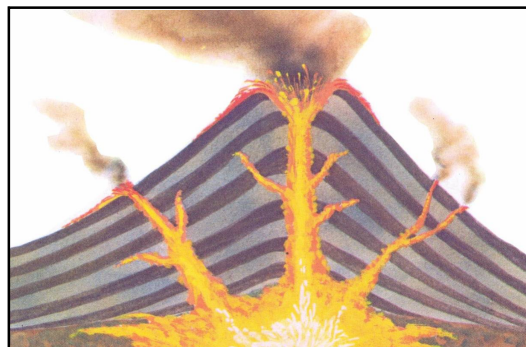
Sometimes fractures, called Faults, appear deep inside the Earth's crust where huge blocks of rocks either slide down relative to the normal Earth's surface or they rise up. The block that rise up is called horst, whereas the one which goes down is called as graben or rift-valley. If the elevation difference in the rocks is quite large, it is called block mountain.



**Block Mountain**

## III. Volcanic Mountains

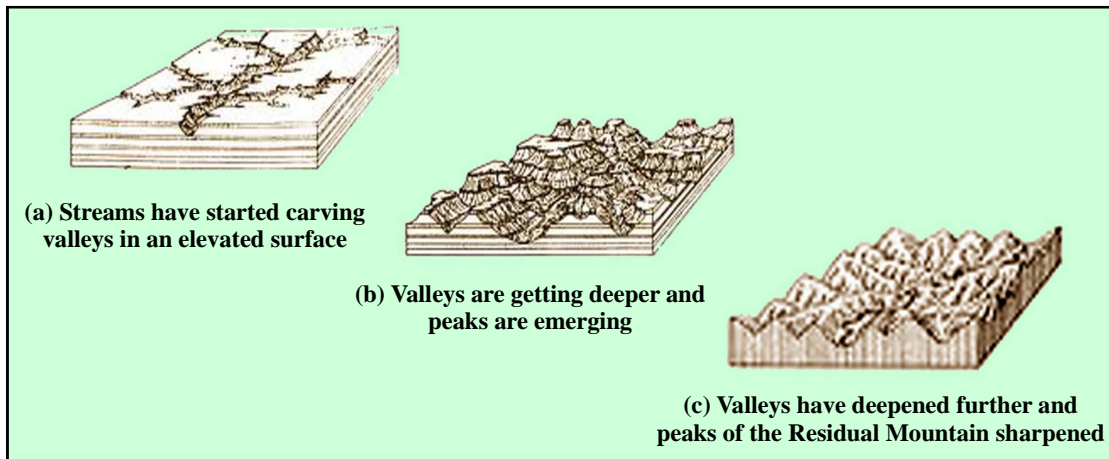
During a volcanic activity, lava erupts slowly and solidifies around the vent of the volcano. In this way, the vent builds up high and becomes a mountain which is called volcanic mountain.



**Volcanic Mountain**

## IV. Residual Mountains

Sometimes, the Earth's internal forces push up a part of it. In the beginning, the surface of this part of the Earth may be quite even but due to the variation in the hardness of rocks, the agents of erosion (e.g. river, glacier, wind, etc.) make it uneven by eroding it differently at places. In this way, some places become deep valleys while some remain high peaks. Such a landscape is called residual mountain.



**Stages of the formation of a Residual Mountain**

## 2. Plateaus

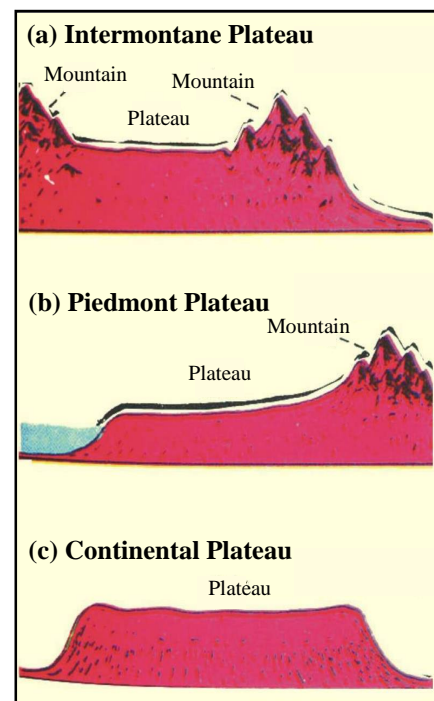
A large area of flat land that is quite higher than the land around it is called plateau. There are three major types of plateaus:

### I. Intermontane Plateaus

The plateaus that are surrounded by mountains are called intermontane plateaus. Most of the world's highest and vastest plateaus belong to this type.

### II. Piedmont Plateaus

These plateaus are found at the foothills of high mountains on the opposite side of which lies either a plain or an ocean. The plateau of Patagonia, which stretches from Andes Mountains up to Atlantic Ocean, is the best example of such type of plateaus.



**Types of Plateaus**

### III. Continental Plateaus

A plateau around which either oceans or plains are found is known as



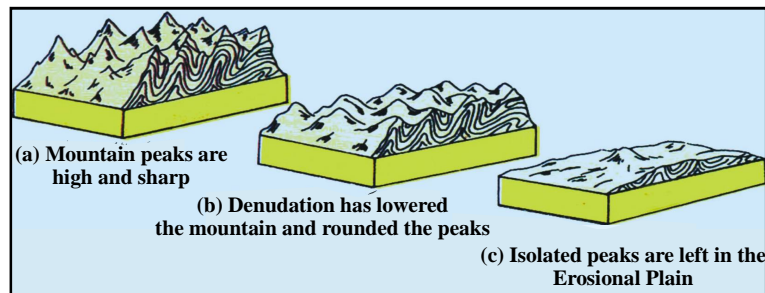
continental plateau. For example, the plateaus of Arabia and Spain.

### 3. Plains

A vast leveled piece of land is called Plain. Usually, the altitude of plains is less than one hundred metres from sea-level. They have the following three types:

#### I. Erosional Plains

When the Earth's internal forces uplift an area quite high above the sea-level, the effect of erosional activities increases on it. In the beginning, the area assumes the shape of an erosional mountain. Gradually, the valleys widen and the peaks wear down. Ultimately, a vast plain appears which may contain low hilly patches around that have not been completely eroded. Such a plain is called erosional plain.



**Stages of the formation of an Erosional Plain**

#### II. Flood Plains

Streams wash away soil from mountain slopes and fill up the surrounding lowlands when they overflow their banks during rainy seasons. Slowly, the water dries out and the sediments settle down in depressions. This process continues over millions of years and creates what we call flood plain. The Indus Plain of Pakistan is an example of such plains.

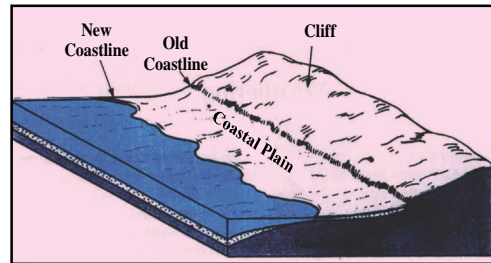


**Flood Plain**



### III. Coastal Plains

The ridges of rocks along a shoreline, which remain submerged under seawater, are eroded and smoothed by sea-waves. Now, if this smooth surface rises up and exposes by the Earth's internal forces, the plain formed is called coastal plain.



Coastal Plain

### Major Physical Features of the World

S.No.	Continent	Mountains	Plateaus	Plains	Rivers
1	Asia	Himalayas, Karakorum, Tien Shan, Zagros	Tibet, Balochistan, Potohar, Anatolia, Mongolia, Central Siberia	Plains of Indus, Tigris, Euphrates, Gangetic, Jumna, Mekong Rivers	Indus, Brahmaputra, Hwang ho
2	Africa	Atlas, Ethiopian Hills	Ethiopian Plateau	Plains of Nile, Zambezi Rivers	Nile, Congo, Niger, Orange, Zambezi
3	Europe	Alps, Pyrenees, Carpathians	Central Russian Plateau, Volga	North European	Danube, Rhine Seine, Volga, Tames
4	North America	Rockies, Appalachians	Colorado, Yukon, British Columbia	Central Plains	Mississippi, Missouri, Ohio, Mackenzie
5	South America	Andes	Kwahu, Brazil, Patagonia	Plains of Orinoco, Amazon and Paraguay Rivers	Amazon, Orinoco Paraguay
6	Oceania	Great Dividing, Southern Alps	Kimberley	Plains of Murray, Darling Rivers	Darling, Murray, Gilbert, Flinders



Alps Mountain, Europe



Mount Everest, Asia

#### Do you know!

The world's highest peak, Mount Everest, is located in the Himalayas. It is 8,850 metres above sea-level and lies within the territory of Nepal.



Source: Basic map derived from the Survey of Pakistan's Atlas for Islamic Republic of Pakistan





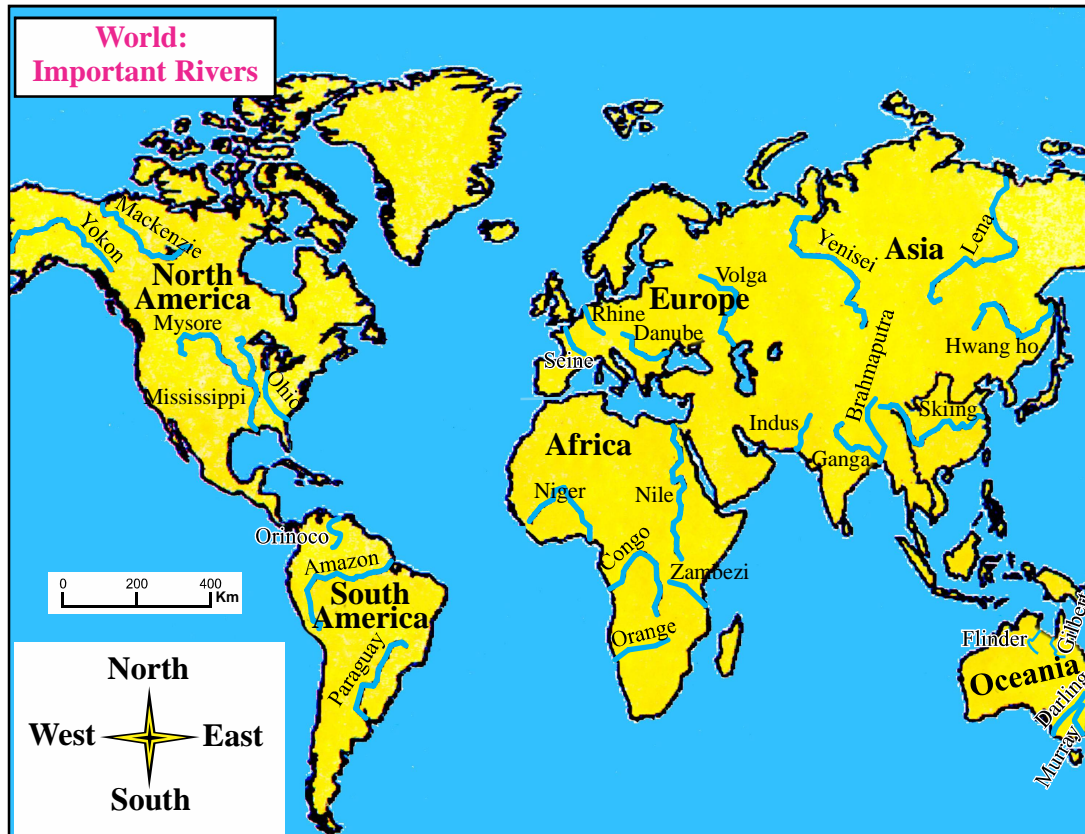
**Andese Mountain, South America**



**River Nile, Africa**



**Amazon River, South America**



Source: Basic map derived from Survey of Pakistan

## GLOSSARY

Earth Crust	The upper, solid part of the Earth.
Erosional agents	The forces that wear down rocks and shift the pieces of material to somewhere else.
External geological agents	The agents of change that work on the surface of earth and derive their energy from sun.
Faults	The large cracks in rocks where the two opposite blocks have moved substantially.
Folds	A bend in layers of rocks caused by underground movement in the Earth.

Foothills	The small hills at the foot of high mountains.
Internal geological agents	The agents of change that work inside the earth and derive their energy from its hot interior.
River valley	An area of flat land on either side of a river.
Sediments	The small broken down fragments of rocks.
Vent of volcano	The weak zone in rocks through which lava erupts.
Magma	The molten material inside the earth.
Lava	The molten material that erupts on earth's surface.

## Exercise

**Q.1. Mark (×) against the wrong and (✓) against the correct statements in the following.**

- i.** A vast leveled piece of land is called Plain. ( )
- ii.** The hot, molten material that erupts from the Earth's interior is called lava. ( )
- iii.** The sea-waves serve to form a flood plain. ( )
- iv.** Intermontane plateau is the one which is surrounded by mountains. ( )
- v.** Wind is one of the agents of erosion. ( )

**Q.2. Fill in the blanks with appropriate words.**

- i.** Volcanic mountains are formed after the solidification of .....
- ii.** A vast, high altitude and semi-plain piece of land is called .....
- iii.** The Indus Plain is an example of ..... plain.
- iv.** The Alps Mountain is located in the continent of .....
- v.** Tibet Plateau is located in the continent of .....

**Q. 3. Give brief answers to the following questions.**

- i. Describe the types of mountains.
- ii. How do flood plains take their forms?
- iii. Enlist the major landforms of Asia and Europe.
- iv. Define a plateau.

**Q. 4. Give detailed answers to the following.**

- i. Define a mountain and explain the formation of various types of mountains.
- ii. What is a plain? Explain the formation of erosional and flood plains.
- iii. Write a note on the world plateaus.

**Activity**

Provide a large map of the world's physical features to the students and ask them one by one to identify major landforms on it.

# Landscapes of Pakistan

After studying this chapter, the students will be able to:

- ★ Describe the following landscape features of Pakistan.
  - Mountains
  - Plateaus
  - Plains
- ★ Locate the major mountain ranges of Pakistan on a map.
- ★ Locate plateaus of Pakistan on a map.
- ★ Locate plains of Pakistan on a map.
- ★ Locate rivers of Pakistan on a map.
- ★ Describe the main characteristics of the deserts and coastal areas of Pakistan.

## Introduction

The land of Pakistan is uneven as a whole. Lofty mountains, vast plateaus, plains and deserts, all these exist here.

### 1. Mountains of Pakistan

The mountains of Pakistan are divided into three chains:

#### I. Northern Mountains

It includes the following three mountains:

##### 1. Karakorum

It is located on the Pak-China border. Its average height is 6,000 metres. K-2, the world's second highest peak, is located in this mountain range. The height of this peak is 8,610 metres above the sea-level. The Karakorum Highway, which connects Pakistan with China through Khunjerab Pass, passes through the Karakorum Mountain. It contains a number of famous glaciers among which Siachin is the most famous one. Hunza, Gilgit and Baltistan



are the beautiful valleys of this mountain range.

## 2. Himalayas

It is a long and the world's highest chain of mountains. The part which lies in Pakistan stretches across from the southern tip of Karakoram up to the Indus Plain. Its average height is 4,000 metre. In Pakistan, its highest peak is "Nanga Parbat", which is 8,126 metres above the sea-level. The Himalayas contain a number of large glaciers, which maintain the flow of our rivers by melting during summers. This mountain has a big role in causing monsoon rains in Pakistan. Important forests are also found here. Some very beautiful valleys, like Kaghan, Murree, Nathiagali, etc. are located in the Himalayas.

## 3. Hindukush

This lies between Indus and River Kabul. Its average height from the sea-level is 5,000 metre. Its highest peak is called "Tirichmir", which is 7,690 metre above the sea-level. Chitral, Dir and Swat are the lush green valleys of this mountain range. Here, transportation is done through narrow passes among which Lowari, Babusar, Muztagh, etc. are quite famous. There are thick forests of fine quality wood, which play a significant role in the economy of our country.

## II. North-Western Mountains

These are located between the Kabul and Gomal rivers. This chain includes the following two important mountains:

### 1. Koh-e-Sufaid

Since the high peaks of this mountain remain snow-capped most of the year, therefore, it is called Koh-e-Sufaid (white mountain). It stretches east-west between the Kabul and Kurram rivers. The average height of this mountain is 3,636 metre. Its height gradually reduces from north towards the south. Its highest peak is "Sakaram", which is 4,741 metre above sea-level. Kohat Valley lies in the foothill of this mountain. The guava fruit produced in this valley is very famous for its delicious taste.

## 2. Waziristan Hills

These small hills are located between Kurram and Gomal rivers. The Tochi and Gomal passes are parts of these hills, which provide routes between Pakistan and Afghanistan. Bannu Valley lies in the foothills of these mountains.

## III. Western Mountains

This chain includes the following two mountain ranges which are located between Gomal and Hub rivers:

### 1. Sulaiman Mountain

This mountain starts in the west of Gomal River and extends up to Bolan River. Initially, it stretches south-eastward from the north along the left side of Indus but near Sibi it turns north-westwards. Its average height is 1,500 metre. Takht-e-Sulaiman is its highest peak, which is 3,383 metre above the sea-level. Near Zhob Valley, this mountain range has important olive forests. Dhanasar Pass lies in this mountain range, which is the route between Zhob Valley and Dera Ismail Khan.

### 2. Kirthar Mountain

This mountain is located between the Indus Valley and Balochistan Plateau. It is a dry mountain, which stretches towards north-south direction. Its average height from the sea-level is only 300 metre. Instead of large trees, bushes and grass are found here in abundance; upon which herding is dependent. Sheep, goats, camels, cows, etc. are the common livestock of this area.

## 2. Plateaus of Pakistan

Pakistan has two vast plateaus:

### 1. Balochistan Plateau

It starts in the west of Kirthar Mountain and stretches northwards into Afghanistan and westwards into Iran. Its area is 3,47,190 square kilometres, and the height above the sea-level is 600 to 3,010 metre. Chaghi-Kharan Desert is found in its western part. A number of small mountain ranges are found here. Among them, Brahui Range, Raskoh, Chaghi Range, Saihan Range,

Central Makran Range, Hala and Pub ranges are the important ranges.

There are a number of rivers in this plateau but due to dry climate, they have little water-flows. These rivers are Pishin River, Dasht, Porali, Hingol and Hub River etc. The climate of this area is suitable for horticulture.

The fruits, like apple, grapes, apricot, plum, peach and cherries, which grow in the valleys of Zhob, Loralai, Pishin, Quetta, Ziarat, Mastung, Kalat, etc., have high demand in the national and international markets. In the desert lands, fine quality dates are cultivated.

## II. Potohar Plateau

Potohar Plateau is located between Indus and Jehlum rivers in the south of northern mountains. Its total area is 18,000 sq. kilometre and the height from the sea-level is 300 to 600 metre. This plateau contains large reserves of various minerals; particularly, the huge reserves of petroleum and coal are found here. The Salt Range is part of this plateau, where the world's finest salt is extracted from mines.

## 3. Plains of Pakistan

Most of the plains of Pakistan are formed by Indus River and its tributaries. They are as under:

### Do you know!

In May 1998, Pakistan conducted nuclear tests in the Raskoh Mountain of Balochistan Province. As a result, Pakistan became the first Nuclear Power of the Muslim World.



Environment of Balochistan Plateau

### **I. Upper Indus Plain**

The Upper Indus Plain stretches across from Attock up to Mithankot. Between these two localities, all the eastern tributaries (Jehlum, Chenab, Ravi, etc.) and the western tributaries (Kabul, Gomol, etc.) of Indus merge into it at various places. It is divided into four interfluves; namely, Sindh Sagar, Chaj, Rechna, and Bari. The small valleys, which are formed by the western tributaries of Indus, are also considered as parts of the Upper Indus Plain. Among these valleys, the Peshawar Valley, which is formed by River Kabul, is the largest one. The valleys of Bannu and Kohat have a great contribution in the agricultural economy of Khyber Pakhtunkhwa Province. These valleys are formed by Tochi and Kurram rivers respectively.

### **II. Lower Indus Plain**

From Mithankot downstream, the Indus flows as a single river up to Thatta, which is located a little beyond Hyderabad. In this vast region, the Indus changes its course here and there. At places along the river course, pieces of dry land are found, where forests have grown.

### **III. Indus Delta**

The area beyond Thatta up to the sea is called Indus Delta. Delta ( $\Delta$ ) is a letter of Greek alphabet, which looks like a triangle. The sediments, which a river deposits in the sea, slowly and gradually form the shape of a triangular plain, having its base towards the sea and apex towards the valley. At the apex of delta, the Indus River splits into a number of streams which fall into sea at different places.

## **4. Deserts of Pakistan**

A desert is a region which has an unfavourable climate for the growth of natural vegetation. Such regions often have sand dunes. Pakistan has the following three major deserts:

### **I. Thar-Cholistan**

These are two deserts but since they are contiguous, they are usually called by a common name, Thar-Cholistan. In fact, this whole desert belt is part of the Great Indian Desert, which stretches deep into India and Pakistan both.

The part of the desert, which lies in eastern Sindh Province, is called Thar; and the part, which lies in southern Punjab Province, is called Cholistan. This desert, on the whole, is suitable place for livestock herding. Cattle and goats are reared on a large scale over here.

## II. Thal Desert

This desert is located in northern Punjab between Indus and Jhelum rivers. It is close to Potohar Plateau and also called Sindh-Sagar Doab. The total north-south length of Thal Desert is about 300 kilometre; with minimum width of 35 kilometre and maximum 105 kilometres. This desert is spread in six districts of Punjab Province; namely, Bhakkar, Layyah, Mianwali, Khushab, Muzaffargarh and Jhang. Apart from herding, some farming on un-irrigated lands is also carried out here.

## III. Chaghi-Kharan Desert

This desert lies in the two western districts of Balochistan Province; namely, Chaghi and Kharan. It is the driest and most thinly populated area of Pakistan. Here, annual rainfall is around 2 inches. However, nature has endowed it with plenty of minerals. Besides sulphur, marble, iron ore and copper, it also contains reserves of gold and silver.

## 5. Coastal Areas of Pakistan

The narrow belt of land that stretches along the seashore is called as Coast. The coastal belt of Pakistan is nearly 1050 kilometre long and 40 kilometre wide. On the basis of its relation with provinces, it can be divided into two zones:



A Scene of Cholistan Desert

## I. Balochistan Coast

From Jewni in the west up to Cape Moari in the East, the nearly 750 kilometres long strip is called Balochistan coast. This whole strip is suitable for shipping and boating. In the near past, the Gwadar Port has been established here, which has great geo-political importance.

### ii. Sindh Coast

From Cape Moarhi up to Sir Creek, the nearly 300 kilometres long strip is called Sindh Coast. Two ports, Karachi and Bin Qasim, are located here, which serve as the backbones of Pakistan's economy. The Bin Qasim Port is especially developed for meeting the needs of Pakistan Steel Mills.

## GLOSSARY

Cape	A narrow extension of land into sea, which is surrounded on three sides by water.
Cattle	Cows and oxen.
Creek	A narrow extension of sea into land.
Distributerics	The smaller streams originating from a splitting river at the apes of its Delta.
Herding	Rearing of a large number of any one kind of livestock.
Interfluves	The land between two rivers, which receives flood water from both of them.
Monsoon rains	Rains during the summer season in Pakistan.
River bed	The land over which a river's water flows.
Sand dunes	The heaps of sand found in deserts.
Tributaries	The smaller rivers that merge and contribute their water to a larger river.

**Exercise****Q. 1. Complete the sentences with correct choices.**

- i. The Hindukush Mountain is part of the .....
  - a. North-Western Mountains      b. Northern Mountains
  - c. Western Mountains
- ii. The Karakorum Mountain is located on .....
  - a. Pak-China border                      b. Pak-India border
  - c. Pak-Afghan border
- iii. Sakaram is the highest peak of .....
  - a. Koh-e-Sufaid                      b. Waziristan Hills
  - c. Sulaiman Mountain
- iv. Pakistan conducted nuclear tests in 1998 at .....
  - a. Chaghi Hills                      b. Raskoh Range
  - c. Kirthar Mountain

**Q. 2. Choose the correct words from the list given in parenthesis and fill in the blanks.**

**(Eastern, Nanga Parbat, Dhanasar Pass, Kabul)**

- i. The mountain between Indus and ..... River is called as Hindukush.
- ii. The highest peak of Himalayas within Pakistan's territory is called as .....
- iii. .... is the route between Zhob Valley and Dera Ismail Khan.
- iv. River Jehlum is the .....tributary of Indus.

**Q. 3. Give brief answers to the following questions.**

- i. What are the benefits of Himalayas for Pakistan? Enlist any three benefits.
- ii. Describe the area and height of Balochistan Plateau.
- iii. Write a note on the western tributaries of Indus and the valleys they have formed.
- iv. What is a deltaic plain?

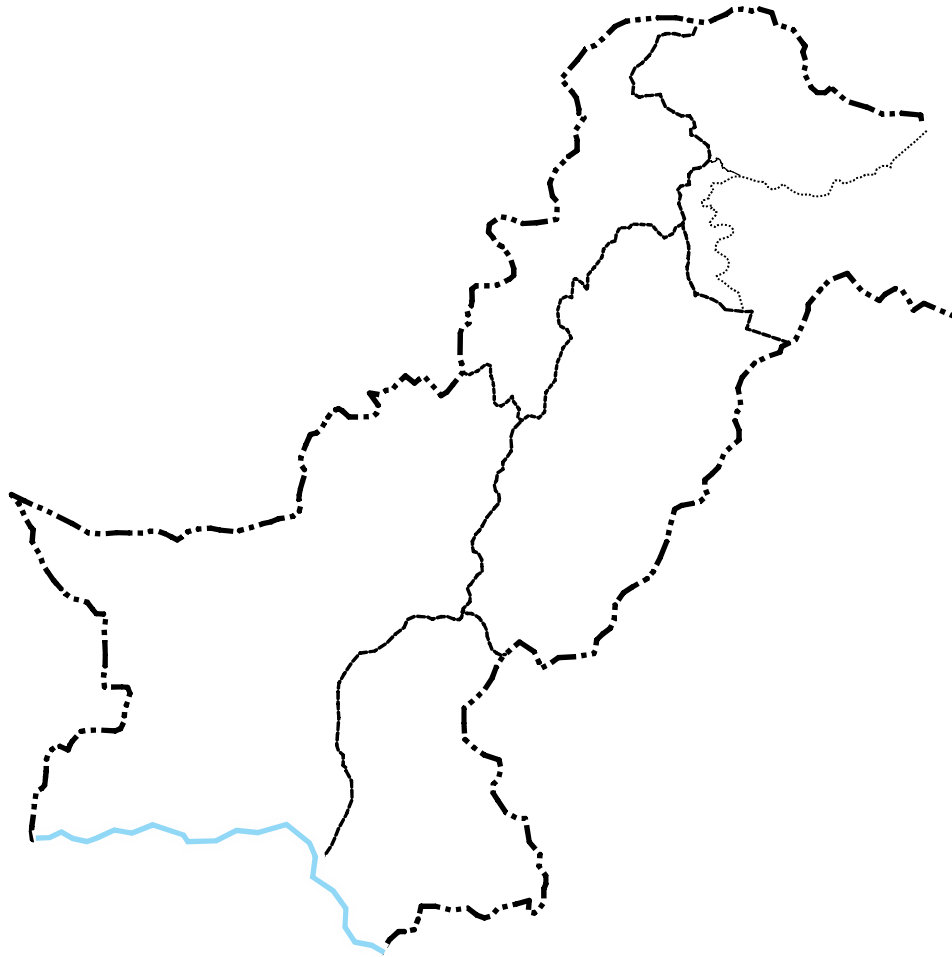


**Q.4. Give detailed answers to the following questions.**

- i. What are the major mountain chains in Pakistan? Describe any one in detail.
- ii. Write a note on Potohar and Balochistan plateaus.
- iii. Write the location and importance of the plains of Pakistan.

**Activity:**

Show all the major landforms of the country by different colours in the given sketch map.



# World Population

**After studying this chapter, the students will be able to:**

- ★ Locate clusters of world population on a map.
- ★ Explain the high, moderate and low-density population areas of the world.
- ★ Explain the factors leading to uneven distribution of population.
- ★ Describe the age and sex structure of Developed Countries (DCs) and Less Developed Countries (LDCs).
- ★ Explain the growth of population in LDCs/ DCs.
- ★ Explain why and where the people move.
- ★ Define factors of migration and urban-rural migration.
- ★ Describe problems of high population growth and its impact on environment.
- ★ Identify the population concentration areas of Pakistan.
- ★ Describe the problems caused by the high growth rate of population in Pakistan.
- ★ Explain the population density of Pakistan on a map.
- ★ Describe the age-sex structure of Pakistan.
- ★ Explain the growth of population in Pakistan.

## Introduction

It is essential for countries to conduct regularly the analysis of their population for future planning. The modern means of transportation and communication have brought the world closer together. Now, the people of one region cannot remain unconcerned towards the people of another region. Because, a country's development does not depend only on its own population, rather, the people of the whole world can be a source of either benefit or loss to

one another.

### 1. Population Distribution and Density

Population distribution means the number of people living in a region. Population density means the number of people living per square kilometre (or mile) of a region. Population distribution is uneven in the world. That is, there are great variations among continents in terms of the size of their population. For example, Asia covers 30% of the Earth's total land area but about 59.7% of the world's total population lives here. In this regard, Asia is the world's most populous continent. On the contrary, the ratio of the area of Africa in the world's total area is greater than its population ratio in the world's total population.

**Table: Area and population of the continents (2018 AD)**

S.No.	Continents	Area (% of world's land Area)	Population (% of world's total)
1	Asia	30	59.7
2	Africa	20	16.36
3	Europe	7	9.94
4	North America	16	7.79
5	South America	12	5.68
6	Oceania	6	0.54
7	Antarctica	9	00

Source: wikipedia, 2018

Oceania is the world's smallest continent in terms of population and area. Although, its area is 6% of the world's total, but its population is only 0.5%. Antarctica has 9% of the world's total area but has no permanent population. However, scientists visit this region for research purposes from all over the world.

## **I. Factors of Population Density**

The following factors affect the distribution and density of population:

### **i. Natural Factors**

These include physical features, e.g. mountains, plains deserts, and climate etc. We find that mountainous areas are usually less populated than the plain areas. Likewise, the areas with moderate climate are often thickly populated as compared to the areas having harsh climates.

### **ii. Economic Factors**

These factors are related to the activities of mankind. The areas, where job opportunities are enough, have dense population. In fact, the areas developed either agriculturally, industrially or in communication services, are always attractive to people.

### **iii. Social Factors**

These factors are related to the religious, political, historical, and recreational importance of a region. For example, Makka Mukarrama, Madina Munawwara and Jerusalem are densely populated. Likewise, the areas of political importance, like New York City, also have dense population.

## **II. Population Density Regions**

In view of population density, the world can be divided into three regions:

### **i. Low Density Regions**

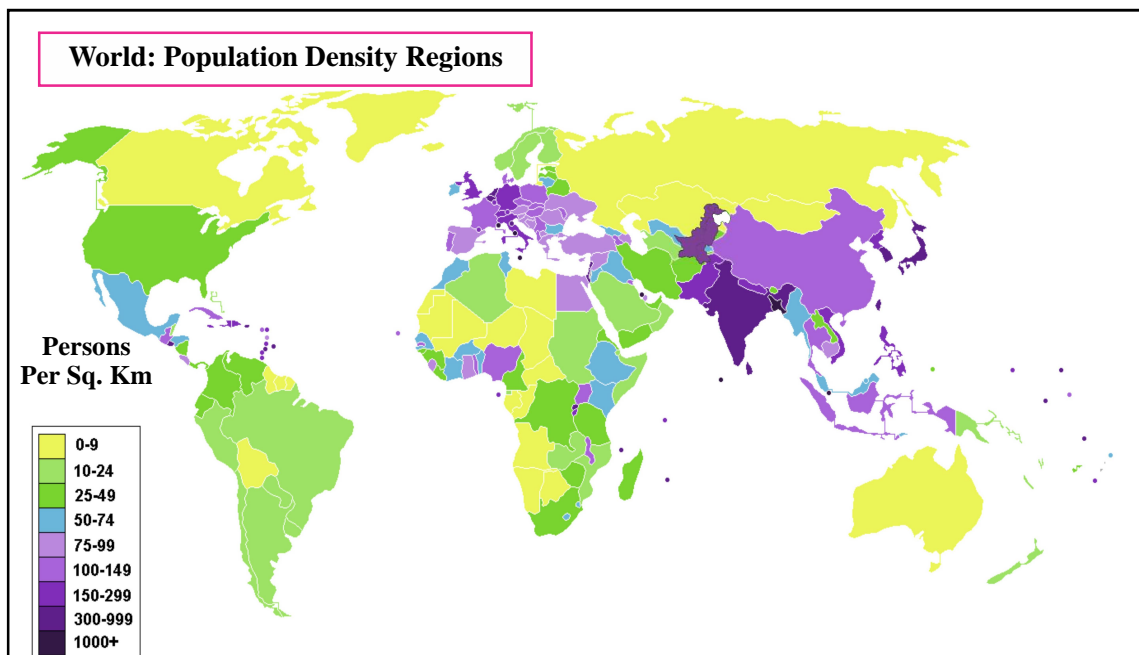
In this region, people live less than 10 persons per sq. kilometre. About half of the world's continental area has low population density. Basically, this is because of the physical environmental constraints. Besides, the lack of natural resources and modern technology is also significant. This region includes the areas around the poles; the thick equatorial forests and the high mountainous areas like Himalayas, Alps, etc. Within this region, some vast areas are completely uninhabited.

## ii. Moderate Density Regions

Here, people live 11 to 80 persons in per sq. kilometre. Although, the physical environment is not harsh, yet abundant resources and technological advancement are required to live comfortably. The grasslands of Russia, Australia, Argentina, Africa, etc. are parts of this region. Besides these, almost all the Western and Central Asia, some countries of Western Europe, the western coastal areas of Africa, Central USA and the equatorial areas of South America are included in this region.

## iii. High Density Regions

All those countries where more than 80 persons live in per sq kilometre are parts of this region. In Asia, the countries of Singapore, Japan, North Korea, South Korea, China, Pakistan, India, Bangladesh, Sri Lanka, Maldives, Palestine, Lebanon, Bahrain, etc. are very densely populated. Another similar region is the Caribbean Islands in North America. Apart from these, the central and north-western Europe, north-western USA, south-eastern coast of



Source: Basic map derived from the Survey of Pakistan's Atlas for Islamic Republic of Pakistan

Australia and a few small countries on the western coast of Africa are also included in this region.

## 2. Population Structure

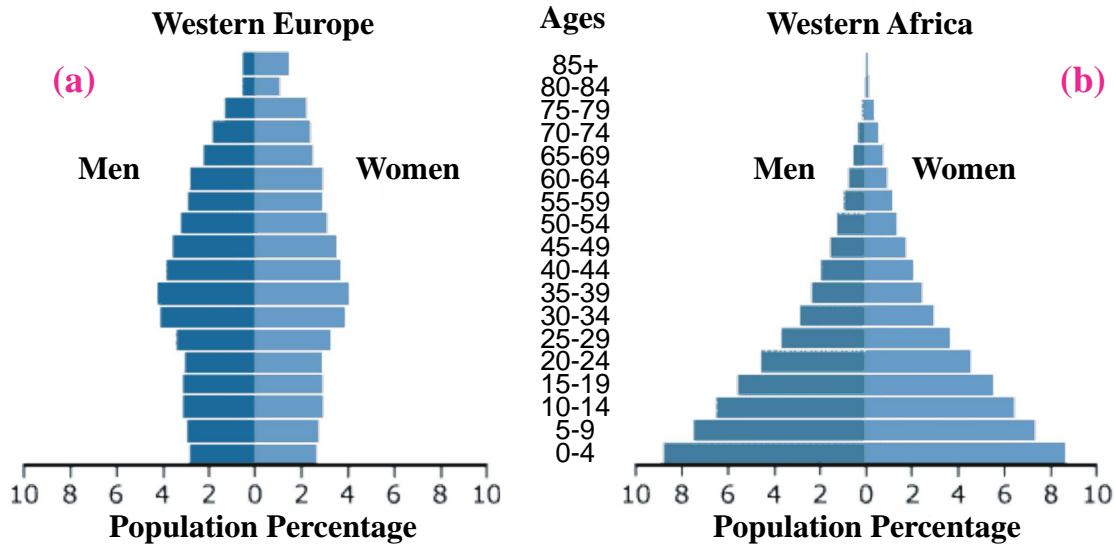
### I. Population Structure by Age

Age indicates the needs and capability of a man. On the basis of age, countries make future plans for their people. According to the 2018 statistics, the ratio of children, young and old age people is 26%, 65% and 9% respectively of the world's total population. This ratio varies greatly among the continents and their countries. The main reason is the variation in the level of their economic development. In developed countries, population growth rate has been reduced during the recent few decades, which has resulted in small ratio of children in their total population. But in the same countries, the ratio of old age people is quite large. The reason is, in these countries the average age is high because of high living standards and better health facilities. It means that a great number of people live more than 64 years. The situation is different in the less developed countries. There, due to high birth rate, the ratio of children in total populations is high. But in these countries, people hardly live more than 65 years because of their low living standard.

**Table: Age composition of world population (% of total population, 2018)**

S.No.	Region	Children (Less than 15 years age)	Young (15 to 64 years age)	Old Age (Above 64 years age)
1	World	26	65	9
2	Asia	24	68	8
3	Africa	41	56	3
4	Europe	16	66	18
5	North America	19	66	15
6	South America	25	67	8
7	Oceania	24	64	12

Source: [www.statista.com](http://www.statista.com)



Age-Sex pyramids of the (a) developed and (b) developing countries

## II. Population Structure by Sex

The difference in male-female ratio in a population indicates certain factors. We know that perceptions about the economic role of women vary among societies. In fact, due to the varying roles of women in different societies, the level of their economic development varies accordingly. For estimating the sex ratio, the number of females is taken as a base; i.e., the number of males per 100 females. For example, if sex ratio in a country is 106, it means, there are 106 males per 100 females.

### 3. Population Growth in the World

The growth of population is a phenomenon that continued everywhere and throughout the human history. But, during the last few centuries, the growth rate has been on the rise. It has been estimated that in the 800 BC, the world's total population was only 5 million; in 1650 AD, it was around 500 million. In 1850, the world's population became 1 billion. After 80 years in 1930, it doubled to 2 billion. To double again, it took only 45 years for the population to become 4 billion till 1975. In the year 2018, the world's population reached 7.6 billion, which means this time it took about 43 years to double.



The ratio of population growth is not uniform everywhere. In industrialized countries, it is less than the un-industrialized countries. This has several reasons like the trend of late marriages in industrialized countries, high rate of divorce, lack of desire for having children, etc.

**Table: The growth of world's population (in million)**

S.No.	Continents	1970	1980	1990	2006	2018
1	World	3697	4442	5280	6593	7632
2	Asia	2140	2630	3169	3984	4436
3	Africa	364	479	636	943	1216
4	Europe	656	692	721	731	738
5	South America	285	362	444	565	422
6	North America	232	256	283	336	579
7	Oceania	20	23	27	34	39

Sources: UNO, 2011 and wikipedia, 2018.

### Remember!

The world's total population increases only when birth rate exceeds the death rate. By migration, it does not increase, as wherever the people may go, they live on the same planet. The reason for the high growth rate of population is the decline in death rate, which has become possible due to advancement in medical science and widespread availability of health facilities. Apart from these, the improvement in the means of transportation has also helped control the effects of food shortages and famines.

## 4. Migration

Allah Almighty has created abundant resources in the world for the sustenance of mankind. The difference we see in human development in the world is basically because all societies do not work hard in the same manner.

When job opportunities would not be equally available everywhere, human population would begin to move elsewhere. The shift of residence by a person from his birth place to somewhere else is called migration. Human migration can be permanent as well as temporary; but in terms of economic and social consequences, permanent migration is more significant.

Migration has the following two types:

### **I. Internal Migration**

When people migrate from one locality to another within the country, is called "internal migration". It includes migration from a rural to urban area, from one urban to another urban area, from one rural to another rural area and from urban to rural area.

### **II. International Migration**

When people migrate permanently or for a long period of time from one country to another, is called "international migration". One important reason behind such migrations is the desire to achieve economic objectives; another reason is poor law and order situation. This type of migration brings changes in the size and structure of population in the countries. Population rises in countries where people migrate to; whereas, it decreases where people migrate from.

## **5. Environmental Effects of Population Growth**

The Earth is the home of mankind. Allah Almighty has bestowed all the authority to mankind to exploit the resources of the Earth. The Holy Quraan says, "Eat and drink from the Allah's sustenance (i.e. utilize resources) but do not create disorder on Earth". Unfortunately, mankind has rarely acted upon these holy commandments. For example:

- i. The Earth has a variety of energy resources, yet mankind mostly depends upon the forests for this purpose even today. This practice has caused environmental problems.
- ii. Had the mankind paid an early attention to the tapping of nuclear, solar, water and wind energies, etc. we might not have been facing environmental challenges.

iii. Mankind is now facing the problem of lack of groundwater. This too is because of its mismanagement. Nature provides us so much water in the form of rains that flood vast areas but still we fail in its conservation.

iv. Due to poor planning, all the job opportunities have concentrated in urban areas. Consequently, a big chunk of population is migrating from rural to urban areas. Thus, high population density in urban areas has caused several environmental and social problems.

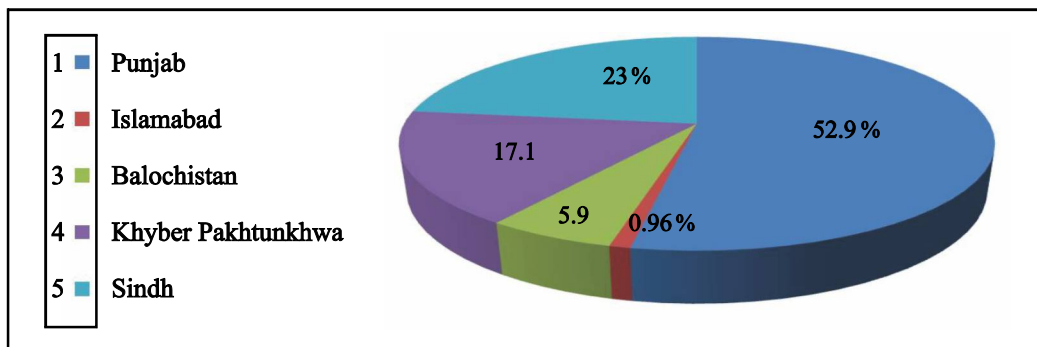
### Just think!

We see that in industrialized countries, where development is going on under proper planning, people are migrating to these areas from all over the world, yet their environment is improving rather degrading.

## 6. Population of Pakistan

### I. Population Distribution

Population distribution in Pakistan is uneven. The reasons are the unevenness of land, climatic differences, variations in job opportunities, etc.



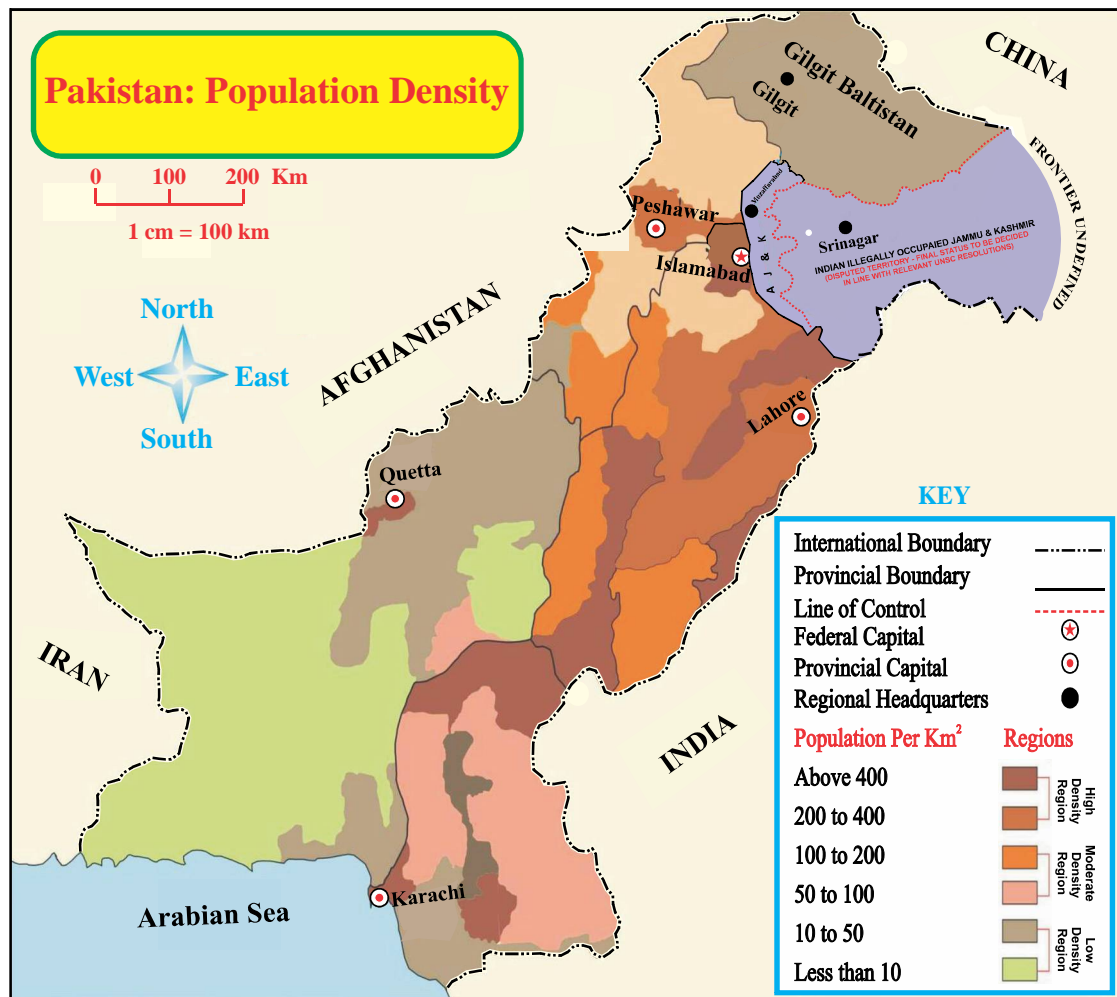
Pakistan: Distribution of Population, 2017 Census

The largest province of Pakistan in terms of area is Balochistan that covers about 44% of the country's total area. But, due to unfavorable physical conditions for human life, historically it has been less populated. According to the 2017 census, Balochistan's population is only 5.9% of the country's total

population. Whereas the population of Punjab province is 52.9%, while its area is only 26% of the country's total area. The reason is that it is a plain area where agriculture is developed; and because of enough raw materials, industry is also developed. According to the 2017 census, the population of Sindh Province is 23%, Khyber Pakhtunkhwa 17.1% and of the Islamabad Capital Territory it is only 0.96% of the country's total population.

## II. Population Density

For estimate the population density, the total area of a place is divided



Source: Basic map derived from the Survey of Pakistan

by its total population. According to the 2017 census, the overall population density in Pakistan is 261 persons per sq. kilometre. In terms of provincial population density, in Punjab 533 persons, Khyber Pakhtunkhwa 349, Sindh 340, and in Balochistan 36 persons live per sq. kilometre.

### Do you know!

According to the 2018 statistics, China is the first and Pakistan the sixth most populous country of the world.

## III. Population Growth

For future planning, it is essential for a country to collect the statistics of its population. For this purpose, Population Census Organization has been established in Pakistan, which has conducted six censuses so far.

**Table: Population growth history of Pakistan.**

Year	Total Population (million)	Annual Growth Rate (%)
1951	33.7	1.8
1961	42.9	2.45
1972	65.3	3.67
1981	84.3	3.06
1998	132.4	2.69
2017	207.8	2.4

Source: Population Census Report of Pakistan, 2017

After the creation of Pakistan, the first population census of the country was conducted in 1951. From the statistics of our second census conducted in 1961, annual growth rate of 2.4% was estimated during the last ten years. The census of 1972 recorded an annual growth rate of 3.7%, which is the highest in the country's recent history. After 1972, decrease in the annual growth rate of population is found. In 1981, this ratio reduced to 3.1%, whereas in 1998, it further dropped to 2.6%. According to the 2017 census, it is 2.4%.

#### IV. Population Structure

##### i. Age-Sex Structure

Like growth rate, the knowledge of age group and gender ratios is also important for future planning. In terms of age, population is divided into three main categories; namely, children, young and aged. According to the 1998 census, the age structure of Pakistan's population is as under:

- i. Children (less than 15 years age) 34.8% of the total population
- ii. Young (15 - 64 years age) 60.7% of the total population
- iii. Aged (above 64 years age) 4.5% of the total population

The children and aged people cannot earn their living; hence they depend upon others. Young people are called active labour force of a country. Children are the future labour force, hence future planning depends on the ratio of children in a country's population. For their sake, educational institutions, hospitals and job opportunities are provided in advance.

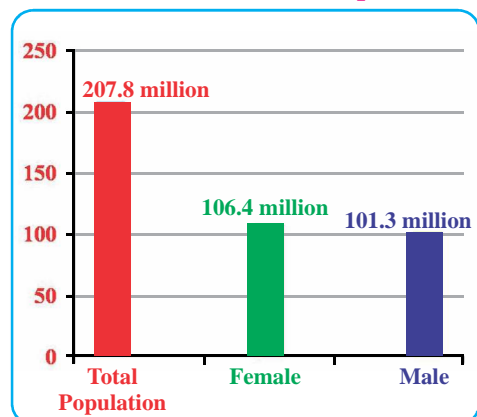
The statistics also reveal that in every age group, the number of males is greater than the number of females. According to the 2017 census, sex ratio in the country is 106. It means where there are 100 males, there are 106 females. This ratio varies among the provinces.

**Table: Sex ratio in Pakistan's population.**

Provinces	Sex Ratio
Punjab	103.5
Sindh	108.6
Khyber Pakhtunkhwa	103.6
Balochistan	110.6

Source: Population Census Report of Pakistan, 2017

**Pakistan: Male/ Female Population**



Source: Population Census Report of Pakistan, 2017

## ii. Rural-Urban Structure

The rural-urban structure of population reflects the nature of economic activities in a country. Industry is usually developed in urban areas. Therefore, where urban population is larger in size, it indicates the trend of industrialization there. On the contrary, if the size of rural population is larger, it indicates the dominance of primary economic activities. All the areas, which are now parts of Pakistan, have been with agricultural background. At the time of independence too, most of Pakistan's population was rural. In 1951, the rural-urban ratio in Pakistan was 82.4% and 17.6% respectively. By 1981, it became 71.7% and 28.3%. In 1998 census, 67.5% of Pakistan's population was rural; 32.5% was urban. According to the 2017 census, 36.4% of Pakistan's population is urban and the remaining 63.6% is rural.

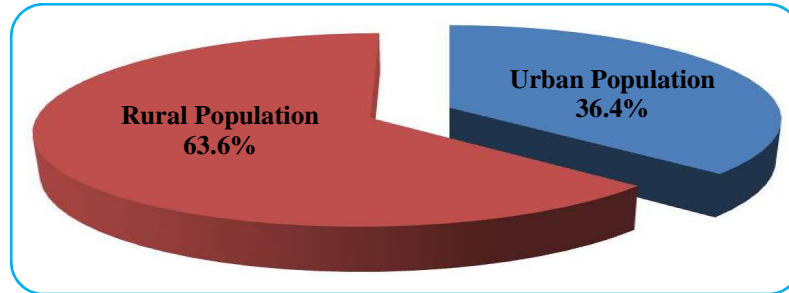
**Table: Rural-urban structure of Pakistan's population.**

Census Year	Rural Population (% of total)	Urban Population (% of total)
1951	82.4	17.6
1961	77.5	22.5
1972	73.5	26.5
1981	71.7	28.3
1998	67.5	32.5
2017	63.6	36.4

Source: Pakistan Population Census Report, 2017

The increasing ratio of urban population indicates that employment in industrial and service sectors is increasing. The decreasing ratio of rural population indicates that the development in our agricultural sector is not based on employment of more people rather it is due to the use of modern technology and scientific methods.



**Pakistan: Rural-Urban Population Ratio**

Source: Population Census Report of Pakistan 2017.

## V. Internal Migration

The ratio of internal migration in Pakistan is small. According to the 2017 statistics, a total of 10.8 million people had migrated from their birth places to some other places within the country. This amounts to 5.2% of the total population. However, in 1998 census, only 8.2% and in 1981 just 6.1% of the country's population comprised internal migrants. It shows that compared to the 1998 figures, internal migration is decreasing in Pakistan. Among all types of migration, the rural to urban migration is most common. The basic reason is the lack of employment opportunities in rural areas. Besides, the availability of basic necessities of life and better health and education facilities in urban areas are also one of the main factors. Province-wise, the ratio of internal migration varies. The reduction of internal migration as per 2017 census, compared to the 1998 census, means that better living conditions are now becoming available in rural areas, as well as in small cities.

**Table: Internal migration in Pakistan**

Province of Birth	Total Migrants (in Thousand)	Migration within Province (%)	Migration out of Province (%)
Balochistan	249	45.7	54.3
Punjab	670	64.8	35.2
Khyber Pakhtunkhwa	647	68.5	31.5
Sindh	283	28.4	71.6

Source: Pakistan Population Census Report, 2017

Among the rural to urban migrants, most of them to big cities like Karachi, Lahore, Peshawar, Quetta, Islamabad, Rawalpindi, etc.

## GLOSSARY

Economic activities	Those activities by which people earn for their necessities of life.
Equatorial forests	The thick forests along the earth's equatorial belt –the belt about 10 degrees of latitudes both north and south of the equator.
Industrialized countries	those countries, where industries are highly developed, such as Japan, China, USA, etc.
Labour force	The young people of a country that can perform some economic functions.
Living standard	The quantity and quality of total goods and services available to the people.
Means of communication	The sources used to share messages, like postal services, telephone, radio, television, etc.
Moderate climate	A climate neither hot nor cold.
Physical	The environment constituted by natural phenomena, such as land forms, climate, forests, etc.
Raw material	The material used for manufacturing something of. for example, cotton is a raw material for cloth making.
Square kilometre	an area of one kilometre length in four directions.

## Exercise

## Q. 1. Fill in the blanks with appropriate words.

- i. In terms of population, .....is the world's most dense continent.
- ii. Low density region is the one where less than .....persons live per sq. kilometre.
- iii. Age of childhood is up to .....years.
- iv. Change of residence from one locality to another within country is called ..... migration.
- v. According to the 2017 census,.....% of Pakistan's population is urban.

**Q. 2. Mark (×) against the wrong and (✓) against the correct statements in the following.**

- i. Antarctica is a populous continent. ( )
- ii. The physical factors include mountains, plains, climate, etc. ( )
- iii. Population density refers to the number of people per unit area. ( )
- iv. Migration from one city to another city within the same country is called international migration. ( )
- v. In most areas, the lack of underground water is mainly due to human negligence. ( )

**Q. 3. Give brief answers to the following questions.**

- i. Provide statistics of population distribution in various continents.
- ii. What is the meaning of population density?
- iii. Differentiate between the population age-structure and sex structure.
- iv. Describe a few types of internal migration.

**Q. 4. Give detailed answers to the following questions.**

- i. Explain the factors that can influence population density.
- ii. Write a note on the world's population density regions.
- iii. What is Migration? Describe its various types.
- iv. Discuss the growth of population in Pakistan.

### Activity

The teacher may divide students into two groups. Let one group highlight the merits of high population growth and the other one its demerits.

# Human Settlements

**After studying this chapter, the students will be able to:**

- ★ Define human settlement and dwellings.
- ★ Discuss the location and site of settlement.
- ★ Describe rural settlement and village forms.
- ★ Sketch out the location and site of the towns of early civilizations on a map.
- ★ Describe the concept of settlement hierarchy (Hamlet to Mega-City).
- ★ Explain urban functions (manufacturing, business, religion, education services, etc.).
- ★ Describe the problems of large cities and their solutions.
- ★ Locate important cities on the world map.

## Introduction

Like food and clothing, shelter is also a basic human need. This need is not confined to mankind only; rather, most of the animals also build caves, burrows, and nests for their safety and comfort. However, Man wants to live in a society. The reason is, contrary to other animals, the needs of Man are so diverse that he cannot fulfil them individually. To fulfil mutual needs, settlements of various sizes are built, which operate systematically as clusters of houses.

### 1. Location of Settlements

Usually, settlements appear by chance. For example, sometimes a nomad tribe temporarily stays somewhere on its way to a destination or it frequently halts there for its meadows. But once it finds a suitable place for a purpose, the frequency of its visits and the duration of its stay increase. Some people construct houses here and gather much of goods: hence migration

becomes difficult for them. Gradually a permanent settlement is established. Initially, settlements may be small but as population increases they gradually grow larger, even to the size of big cities. In the growth of a settlement, two types of locations play important roles.

## **I. Site**

A specific piece of land that a settlement occupies is called site. For example, a settlement built on a plain area, has a plane site; if built on a mountain slope, has a sloping site. It means that site refers to the characteristics of the specific piece of land upon which a settlement exists. It includes the houses, internal roads, water resources, adjacent forests and agricultural farms, etc. A site does not depend on the outside conditions of its settlement.

In the following text, a few important sites are being introduced where settlements were being established historically.

### **i. River Confluences**

The point where two rivers meet is called "confluence" and the settlements built on such sites are called "confluence towns". These types of settlements are more common than all other types. The confluence sites are very useful for settlements especially when the merging rivers are navigable for ships or boats.

### **ii. River Meanders**

In plain areas, meanders (turns) develop in river courses, which sometimes take quite curvy shapes. These points are generally considered as very suitable for settlements. This is because the interior side of the meander allows access to the river's water at many points on the one hand and its exterior side serves as defence line against external enemies on the other.

### **iii. Mountain Passes**

A narrow route between mountains is called "pass". Historically, settlements have been built on such sites. The cities of Peshawar and Quetta are the best examples, which are built at the tips of Khyber and Bolan passes respectively.

#### iv. Water Springs

Water is the basic need of mankind. In ancient times, drawing out of underground water was very difficult. Therefore, wherever a natural spring was found, settlements were built in its surroundings.

#### v. Trade Routes

The routes, which are frequently used for trade purposes, are called trade routes. Settlements have been established at suitable distances along such routes throughout the history.

### II. Situation

At the beginning, a site plays decisive role in the establishment of a settlement because it has less population and ordinary objectives to achieve. But as the population grows, the local resources become insufficient for their needs. Therefore, a settlement can grow large only if it has links with other settlements around it for the supply of additional resources. The term “situation” refers to the functional ties of a settlement with other settlements, resources, and routes, which are found in the surroundings of a site. A settlement surrounded by other resourceful settlements and regions, and there is no physical or political barrier to have access to them, would definitely flourish. Otherwise, it will gradually Perish.

#### Just think!

The piece of land on which Quetta City is established is not having ideal characteristics to justify establishment of such a large city over here. In the development of this city, the surrounding fertile lands, mineral rich areas, the Bolan, Lakpass and Kozhak passes etc. have enormous contribution.

## 2. Types of Settlements

On the basis of population size, means of economy, social system, architectural style, etc. the settlements can be divided into two types: i) rural settlements, ii) urban settlements. Their introduction is as follows:

### I. Rural Settlements

The definition of rural is not uniform across the world. In Pakistan, a settlement with a permanent population of 5,000 is defined as rural settlement.

In such settlements, the government may be providing amenities, like drinking water, electricity, gas, etc. however, they are not administered by any local official body. Rather, the provision of all types of facilities is controlled at tehsil or district level. In fact, the basic difference between urban and rural settlements is that the former has some types of local administrative bodies, whereas the latter do not the rural people are mostly farmers. Except a few shops, no major trade is found in rural settlements. Generally people of the same cast or tribe live in rural settlements. Rural dwellings are usually spacious and simple and few paved streets and draining system are found.

## II. Urban Settlements

The smallest unit of urban settlements is called town, which consists of around 25,000 people. Apart from having a larger population, urban settlements have the distinction of being administered by a local official body, which is responsible for water supply, sewerage system, street pavements and waste disposal. The same body looks after the affairs of fire brigade, worship places and recreation facilities. Town Committees are responsible for the administration of small towns, whereas large cities are administered by Tehsil Municipal Administrations (TMAs) or Municipal Committees. Provision of civic services to the cantonment areas adjacent to cities is the duty of Cantonment Boards.

The major economic activities in urban areas include manufacturing, commerce and delivery of services (e.g. banking, education, and healthcare). Urban areas normally have dense populations. Here, an organized sewerage system is found; and the pavements and street lights are officially managed.

## 3. Settlement Hierarchy

Just as settlements vary in terms of population size and architectural style, they also vary in terms of types and standard of occupation of the people. The hierarchy of a settlement is determined on the basis of its capacity to cater to the needs of other settlements around it. In this regard, settlements have the following order of hierarchy:



### **I. Hamlet**

This type of settlements consists of nearly 5 – 6 houses. They are usually found close to, but isolated from a large settlement. Besides a small worshipping place, these settlements are not self-sufficient in other daily needs; they also do not possess hinterlands.

### **II. Village**

A village is a larger settlement, which contains a few shops, a Jamea Masjid, a madresa or school, in some cases a post office, etc. These facilities serve the village's own population as well as those of the surrounding hamlets.

### **III. Town**

In a town, all goods and services are available which are found in villages, but in addition, few goods and services of high standards are also found. Due to such goods and services, a town attracts customers from even more distant places. The distance between any two towns is often greater than the distance between any two villages.

### **IV. City**

Cities offer goods and services of the highest standard. Apart from these best facilities, they also provide many other facilities, which are found in settlements of the low hierarchies. It means that the business scope of a city is very vast.

### **V. Metropolis or Mega City**

Sometimes one or few cities of a country grow excessively larger engulfing a number of smaller cities of the surrounding. There may be different reasons but the most significant one is the state policy. For example, sometimes a state establishes its higher institutions in these few cities or grants special tax concession to investors. As a result, the people settle in these cities in large number. Karachi and Lahore are the two metropolitan cities of Pakistan. Karachi has achieved this status due to the ports it contains.

## **4. Urban Functions**

Urban function means the activities in a city which attract people from

far and wide. A city usually performs great many functions. For example, every city has a few small or big factories, a few big educational institutions, hospitals, commercial and recreational centers, administrative departments, etc. However, any one function dominates all others to the extent that it becomes the identity symbol of the same city. For example, in Islamabad a number of educational institutions, hospitals, commercial and recreational centers, etc. exist but the most prominent feature is its being the political centre of the country.

Few important functions of cities are as under:

#### **I. Administrative Function**

Civil Secretariat, High/ Supreme Courts and Military Headquarters are big administrative departments. The cities where these types of departments exist are considered as administrative cities. Islamabad, Rawalpindi and the four provincial capital cities are administrative centers of Pakistan.

#### **II. Political Function**

Senate, National Assembly and provincial assemblies are the superior political institutions of Pakistan. The offices of these bodies are established in Islamabad and in the provincial capital cities (Quetta, Peshawar, Karachi, Lahore); hence these cities are considered political centers of the country.

#### **III. Educational Function**

The highest educational institutions are called universities. The cities where a number of such institutions are found are the cities of educational function. Most of the population of such cities comprise students, teachers and those who render services in educational institutions.

#### **IV. Industrial Function**

Most of the population of these cities is employed in industrial sector. Hub, Sialkot, Faisalabad, Gadoon Amazai, etc. are the cities of industrial function.

#### **v. Trade Function**

In these cities, most of the population is engaged in trading activities. Chaman, Taftan and Torkham are known for their trade functions.

## VI. Religious Function

The cities of Makkah Mukarramah, Madina Munawwarah and Jerusalem (where Alaqsa Masjid is located) are the religious centers of Muslims. Similarly, the Vatican City for Christians and Amritsar for Sikhs are the cities that perform religious functions.

## VII. Residential Function

The most prominent feature of these cities is the existence of vast residential colonies. During daytime, the inhabitants go to work in industrial zones, defence installations or mining sites outside the city and come back to their homes in the evening.

## VIII. Tourism Function

In Pakistan, the development of the cities of Murree and Ziarat is due to their recreational functions. Such cities become crowded with tourists and visitors in specific times.

## IX. Mining Function

Mach, which is the mining city of Balochistan; located at Bolan Pass, is a good example in this respect. Mining activities have been carried out in the surroundings of this city since long. To meet the needs of miners, this city has been developed.

## X. Port Function

These cities develop on such coastal sites where shipping facilities are available. The city of Gawadar is a recent example. Before the development of this port, it was not that famous but now it has achieved international fame.

## 5. Important Cities of the World

### I. Makkah Mukarramah

This magnificent city of Saudi Arabia is the centre of the Muslim World. Hazrat Muhammad-ur-Rasool Ullah Khatam-un-Nabiyeen (صلی اللہ علیہ وسلم) was born in this city. The most sacred worshipping place of Muslims, Khana Kaaba, is located here. Its soil is gravelly and the whole topography is hilly. It is the capital of Makkah Province of Saudi Arabia and is located 72 kilometre to the east of Jeddah City, which serves as its port on the coast of Red Sea. It is

administered by municipal committee, which comprises a team of locally elected 14 members. The head of the committee is called “Amin”. The Valley of Ibrahim is the centre of this city. The city centre is called “Batha”. According to the 2018 statistics, permanent population of Makkah Mukarrama is over 14.9 million. Because of population density and non-availability of enough plane land, it has no airport. Jeddah airport is used for the access to this holy city.



**Makkah Mukarramah and Masjid al Haram**

## **II. Karachi**

Karachi is located in southern Pakistan on the coast of Arabian Sea. It is the capital of Sindh Province. The Indus River merges into sea 100 kilometres to the east of Karachi. After the creation of Pakistan, this city became the first capital of the country. Later, this role went temporarily to Rawalpindi and ultimately to Islamabad. Karachi is the largest city of Pakistan in terms of area and population both. According to the 2017 census, it has 14.9 million people. Now, its population has exceeded the figure of 15.7 million. A large number of industries have been established here, among which Pakistan Steel Mills is renowned in the world. Besides, most of Pakistan's textile industry is

established in established in Karachi. The city has two industrial estates: (i) Sindh Industrial Estate, Manghopir Road; (ii) Landhi Industrial Estate. In both of these, there are textile mills, which produce a variety of cloths, and a large number of factories of cement, fertilizer, glass, paint, etc. According to an estimate, 26% of the industries of Pakistan are located in Karachi. This city is the hub of Pakistan's international trade. The trade of Afghanistan is also carried through this port.

### III. Shanghai

It is the largest city of China. It was built as a walled city in 1553 AD. It is located on the coast of China Sea, which is to the east of China. Shanghai is located close to the delta of River Yangzi. It is also named as “the Paris of East”, “the Queen of East”, etc. because of its beauty. This city is the biggest trade centre of Far-East. It also serves as the China's political, industrial, communication and financial hub. The total area of Shanghai is 6,340 sq. kilometre and, according to the 2018 statistics, its population is around 22.3 million. This city has a number of spectacular sites, which attract people from all over the world. Among those sites, the 400 years old Yu Yuan Garden, Shanghai Museum, Jade Buddha Temple, Huangpu Dam, etc. are the most famous. For tourist services, the city offers a number of five star hotels. For intercity transport services, Shanghai has great many roads and railways. It has two airports and a sea port. Shanghai port is one of the busiest ports in the world.

### IV. Tokyo

In fact, Tokyo is the name of a vast area of Japan, where this city is located. This is a metropolis, which has dozens of other cities, towns and villages. Literally, metropolis means the mother of cities. The territory of Tokyo is spread over Kanto Plain, which is located in the east-central part of the Honshu Island. This territory is surrounded from south-east by the Gulf of Tokyo, which is very helpful in sea trade. Apart from being the capital of Japan's democracy, it is also the crown seat of Japanese kingdom. Tokyo is considered one of the world's best trade centers. Its income is far greater than the incomes of all other world's metropolises. The head offices of

the world's biggest investment and insurance companies are located in Tokyo. It is the world's most densely populated city. Its area is 2,187 sq. kilometre and, according to the 2018 statistics, its population is around 37 million. This area receives 1,407 mm rainfall annually, which suggests a humid climate. Japan is a country, which is frequently hit by earthquakes. In 1923, Tokyo was struck by a great earthquake, which took a toll of around 150 thousand human lives.

#### **V. New York**

Among the 52 states of United States of America, New York is the one, which is located in the northern part of it. New York is a city of the New York State. It is located on the eastern coast of America along the Atlantic Ocean. River Hudson flows down close to it. New York City consists of five districts, which are called boroughs. They are Brookline, Queens, Staten Island, Manhattan and Bronx. Although, it is not the capital of USA, yet, because of the Headquarters of United Nations, it is the world's political hub. The area of New York City is 830 sq. kilometre and, according to 2018 statistics, its population is about 8.6 million.

#### **VI. Mumbai**

The previous name of Mumbai was Bombay. It is the capital of the Indian state of Maharashtra. It has a natural port located on the coast of Arabian Sea. It is the entertainment and financial centre of India. Its biggest industry is the film industry. Among the other important industries are ship making, textile, transport machinery, diamond polishing, oil refineries, etc. The India's big financial institutions, like Mumbai Stock Exchange, National Stock Exchange, Reserve Bank, etc. are established here. Mumbai is the most densely populated city of India. There are plenty of shanty towns in the city. Its area is 438 sq. kilometre and, according to the 2018 statistics, its population is about 12.9 million.

#### **VII. London**

It is the capital of Britain. This city is situated on both sides of the River Thames, i.e. the River Thames runs across it. The area of London is 1,579 sq. kilometre and, according to 2018 statistics, its population is around 8.9 million.



London is one of those big international cities where people of every religion, colour and creed are living together in large number. London is one of the leading trade and financial centers of the world. It contains a large number of banks and investment companies, which include the Bank of England, Stock Exchange, Insurance companies, departments of financial audits and legal consultancies, etc. London is also one of the busiest ports of the world.

## **6. Problems of Big Cities**

No doubt, cities are useful in fulfilling day to day human needs. They also offer great opportunities in education and technical skill. But when a city grows too big, it causes complex problems. Few major problems of big cities are as under:

### **i. Shortage of Residential Accommodation**

People come to cities from far and wide in order to find employment or do business. Much of the land under the cities is covered by roads and government buildings. Therefore, the private land owners specify much of their property to commercial buildings, which brings in relatively greater income. Consequently, residential accommodations are compromised. The solution to this problem is that the governments should reserve residential areas in cities and ban their non-residential use.

### **ii. Traffic Jams**

In cities the residential, commercial and educational areas etc. are isolated and distant from one another; hence, timely arrival at destinations is possible by vehicles only. Due to these facts, traffic Jams become a routine even in normal conditions. Especially, in the opening and closing hours of work places, this problem becomes the worst. To solve this problem, the roads may be broadened and saved from encroachments.

### **iii. Environmental Pollution**

Most of the commodities we use have some non usable parts too. For example, the skins of fruits and vegetables, their packing, etc. Likewise, human and livestock residue, emissions from factories and vehicles, smoke and noise also pollute the environment substantially. If the city is small, such pollutants



would be less in quantity; hence would be easily disposed off. But in the case of big cities, this problem is at worst level. However, it can be solved by public awareness and training, and improvement of sanitation services in cities.

#### iv. Lack of Life Amenities

Water supply, electricity, gas, telephone, etc. are the common civic amenities. More or less all cities have arrangements for their provision; however, those measures always prove insufficient due to the fast growing population. To avoid shortfalls, it is essential to have a long-term planning while starting any type of development projects in cities.

#### v. Lack of Education and Health Facilities

Education and healthcare are among the basic human needs. With growing population, growth in opportunities is also essential. Schools, colleges, hospitals, etc. require vast pieces of land, which can be hardly provided in big cities. The best solution to this problem is that in small cities and towns, high grade education and health facilities may be provided so that the people of those areas are not compelled to go to big cities.

### GLOSSARY

Amenities	Civic facilities, like electricity, gas, telephone, water supply, etc.
Commercial buildings	The buildings used for business activities.
Fire brigade	The department in charge of extinguishing fire if it would break out.
Five star hotel	A big and luxurious hotel.
Hierarchy	From bottom to top classification.
Hinterland	The area outside a settlement, particularly a port, which is provided with goods and services by the settlement or port.
Humid climate:	The climate characterized by excessive amount of precipitation (rain, snow, etc.).
Industrial estate:	An area zoned and planned for the purpose of industrial development.
Jamea masjid:	A relatively larger masjid, where Jummah namaz is also offered.
Sewerage system:	The system of draining used water out of a settlement.

## Exercise

### Q. 1. Give brief answers to the following questions.

- i. What is meant by site of a settlement?
- ii. Enlist any two distinctive characteristics between rural and urban settlements?
- iii. What is “river confluence”?
- iv. What is the population of Makkah Mukarramah City as per the 2018 Statistics?

### Q. 2. Match the words of column A with those of column B.

A	B
Site	Ziarat
Group of Houses	Settlement
Khana Kaaba	River Confluence
Mumbai	Natural Port
Tourism Function	Makkah Mukarramah

### Q. 3. Choose correct word from the list given in parenthesis and fill in the blanks.

(situation, urban settlements, Muslims, Arabian Sea, densely populated)

- i. Karachi is located in southern Pakistan on the coast of .....
- ii. Tokyo is the world's most..... city.
- iii. ....means, the surrounding settlements and highways, etc. of a settlement.
- iv. Town is the smallest unit of .....
- v. Makkah Mukarramah is the sacred city of .....

### Q. 4. Give detailed answers to the following questions.

- i. Discuss the problems of big cities and their solution.
- ii. What do urban functions mean? Give examples.
- iii. Write a note on any two of the following:
  - a. Shanghai      b. New York      c. London
- vi. Describe the salient features of rural and urban settlements.

### Activity

The teacher may ask the students to enlist the problems and facilities in the local city or the nearest big city.

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