

GEOGRAPHY

CHAPTER-21

THE EARTH – OUR LIVING PLANET



After studying this chapter you learn :

- Other names of the Earth.
- The size of the Earth and distribution of water on it.
- To recognise the continents and oceans of the world.
- About latitudes and longitudes, time, local time standard time and international date line.
- To mark (locate) the oceans and continents on the world map.

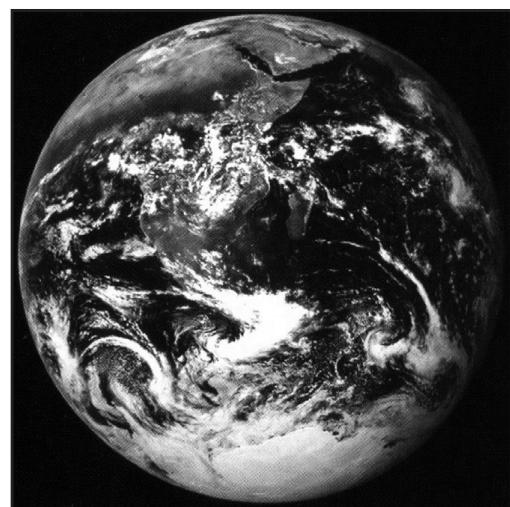
Do you know where we are living?

We are living on the Earth. It is the third planet from the Sun. The Earth is the home for all forms of life like plants, animals and human beings because of its suitable distance from the Sun, range of temperature, life supporting gases, atmosphere, water cycle etc. Our Earth is called by many names. Some of them 'Living Planet', 'Unique Planet', 'Watery Planet', 'Blue Planet'.

Size of the Earth: Distribution of Land and water bodies

The Earth is the fifth largest planet in the Sun's family. The diameter of the Earth is approximately 4 times greater than the Moon and it is around 107 times less than that of the Sun.

The total geographical area of the Earth is 510 million sq kms of which 361 million sq kms (70.78%) is covered by water and 149 million sq kms (29.22%) is covered by land. Thus the Earth has unequal distribution of land and water. The ratio between the land and the water bodies is 1: 2.43.



Earth

The Earth's shape is often described as Geoid, which literally means 'Earth shaped', or 'Oblate spheroid'. The Earth is flattened at the poles and bulged at the equator. The Equatorial diameter of the Earth is 12756 kms and the Polar diameter is 12714 kms. Equatorial circumference - 40,076 kms and Polar circumference - 40,008 kms. The difference of 42 kms in diameter is the proof for regarding the earth as Geoid.

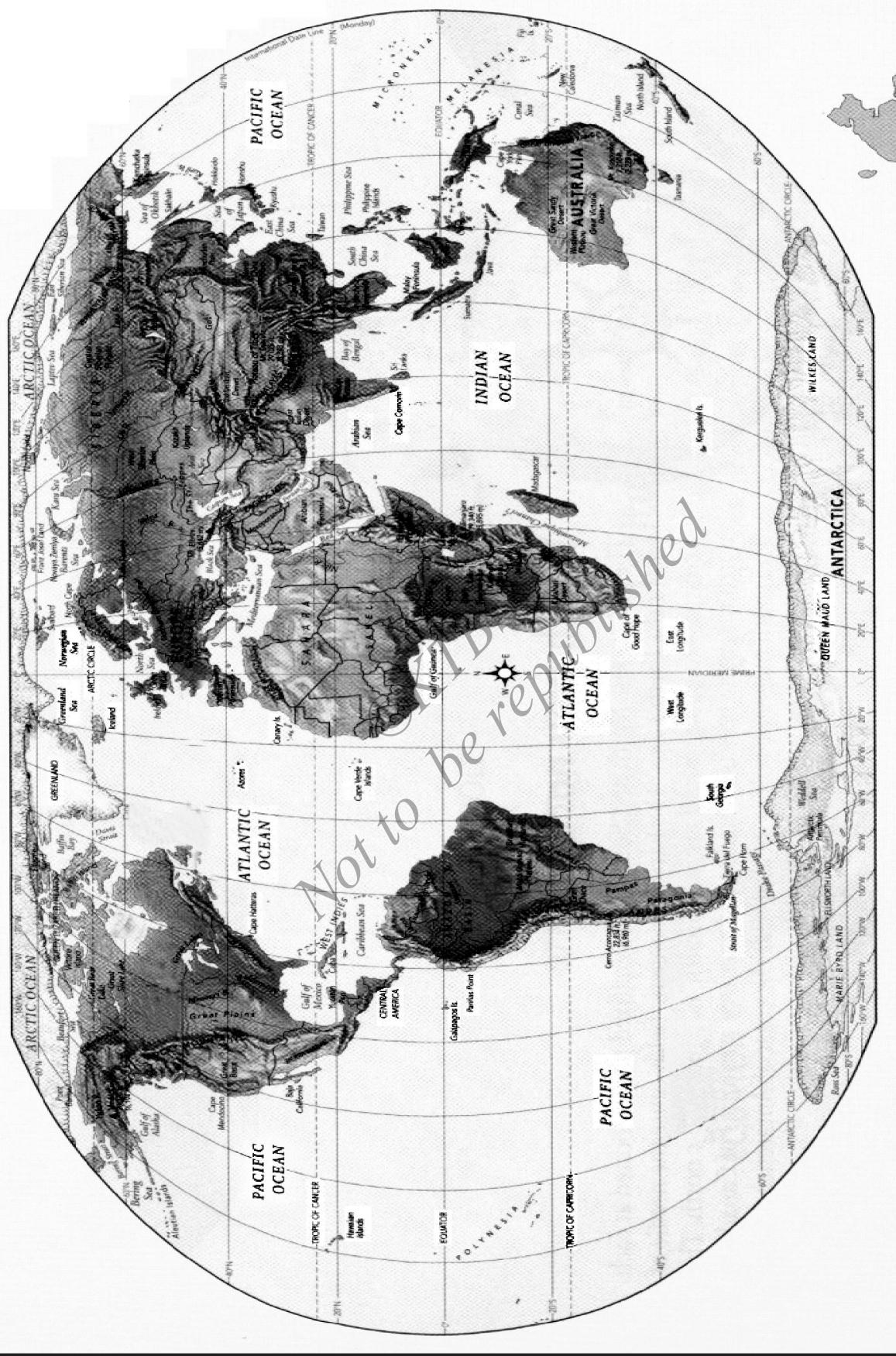
The land bodies of the Earth are known as Continents. There are seven continents, namely Asia, Africa, North America, South America, Antarctica, Europe and Australia. The continents are land masses of large size. Asia is the largest continent in the world while Australia is the smallest continent. The large water bodies on the Earth are called oceans. There are four major oceans. They are the Pacific ocean, the Atlantic ocean, the Indian ocean and the Arctic ocean. The Pacific is the largest and deepest ocean while the Arctic is the smallest and shallowest ocean.

The land and water bodies are unevenly distributed between the Northern and the Southern hemispheres. The Northern Hemisphere has 60% of land and 40% of water. Therefore it is called the 'Land Hemisphere'. On the other hand there is 81% of water and 19% of land in the Southern Hemisphere and so it is called the 'Water Hemisphere'.

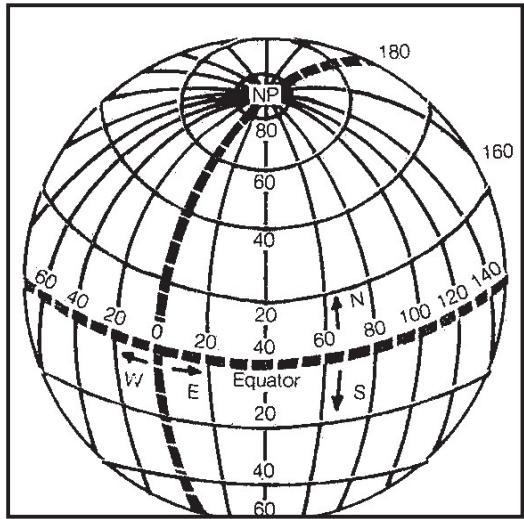
Latitudes and longitudes

How do we understand the location of a place, direction and distance between places?

The Earth is spherical in shape. Therefore it is difficult to locate the places, the direction and calculate distance between places. In order to understand the relations between different places on the Earth and their exact location, we have to understand their position, their distance from any fixed point and also their exact direction. To know the position, distance and direction east and west or north and south, a network of lines are drawn on the globe. These are known as lines of latitudes and longitudes. The horizontal lines are the lines of latitudes and the vertical ones are the lines of longitudes. These lines intersect each other at right angles and create a network called grid or graticule.



World Physical



PARALLELS OF LATITUDE AND MERIDIANS OF LONGITUDE

LATITUDES : Latitude is an imaginary line which joins all the places which have the same angular distance north or south of the equator. It is measured in degrees. The Equator (0°) is the longest line of latitude known as the Great circle. It is equal to the circumference of the Earth. Other lines of latitudes are of shorter length. The length of lines of latitude decreases with the distance from the equator. All lines of latitudes are circles and parallel to the Equator. Therefore, lines of latitude are called parallels of latitude.

There are 90° of latitudes on each side of the equator - 90° of North and South are points. Including equator totally there are 181 latitudes on the globe. The ground distance between two degrees of latitudes is 110.4 kms.

Important latitudes

1. 0° latitude-Equator or Great Circle.
2. $23\frac{1}{2}^{\circ}$ North latitude – Tropic of Cancer.
3. $23\frac{1}{2}^{\circ}$ South latitude – Tropic of Capricorn
4. $66\frac{1}{2}^{\circ}$ North latitude – Arctic Circle.
5. $66\frac{1}{2}^{\circ}$ South latitude – Antarctic Circle.
6. 90° North – North pole.
7. 90° South – South pole

LONGITUDES : The imaginary lines that intersect equator at right angle joining the north and south are called longitudes.

On the globe, longitudes are shown as a series of semi-circles that run from pole to pole passing through the equator. All lines of longitude are of equal length. Lines of longitude are called Meridians ('meri'-mid and 'dian'-day) because all places along the same meridian of longitude experience noon or mid-day at the same time.

The meridian passing through Greenwich (England) has been chosen as Prime Meridian. It is marked as 0° longitude. There are 180 of longitudes to the east of Greenwich and 180 to the west. Thus there are 360 of longitudes. The zone between the Prime Meridian and 180° E longitude is called the Eastern Hemisphere. The opposite zone is called the Western Hemisphere.

The distance between two consecutive longitudes decrease gradually with distance from the equator. This is because the meridians of longitude converge at two poles. On the equator the distance between two consecutive meridians is 111 kms.

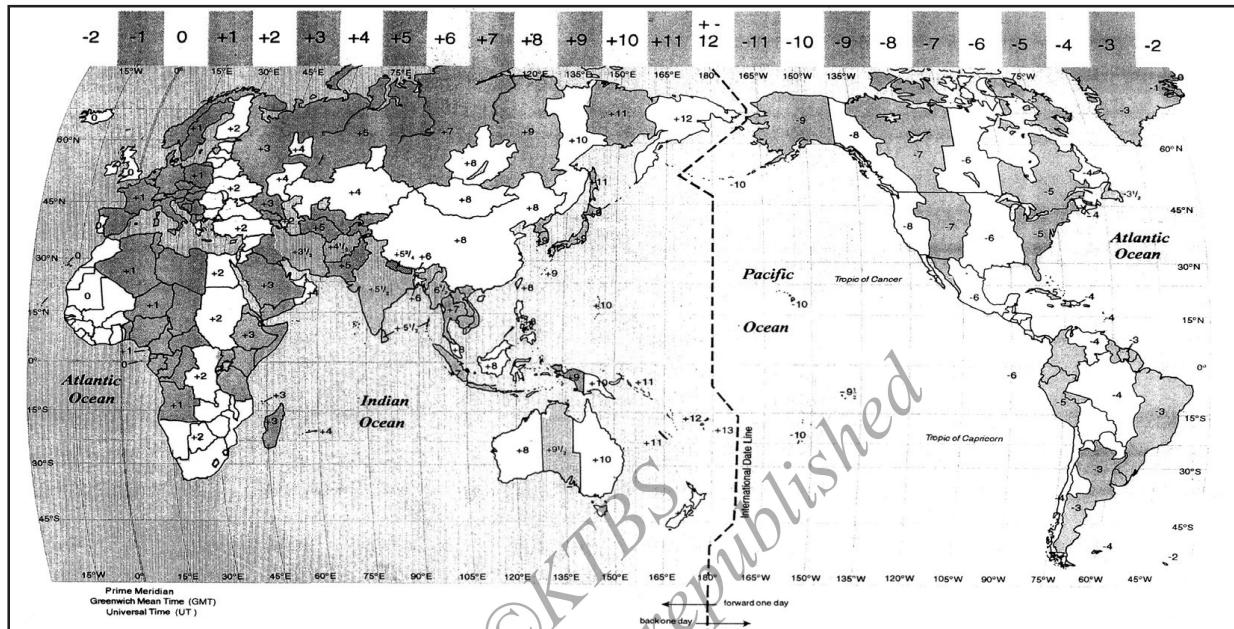
Longitude and Time : There is a definite relation between longitude and time. The earth is rotating on its axis and completes one rotation in 24 hours. This means 360 longitudes are covered in a period of 24 hours. This gives rise to a time difference of 4 minutes for every one degree of longitude, 60 minutes or one hour for every 15 degrees of longitude ($360 \times 4 = 1440 / 60 = 24$ hours). The time difference is to be added (E.G.A- East-Gain-Add) in case of places to the east of G.M.T and in case of places to the west the time difference is to be subtracted (W.L.S- West-Lose-Subtract).

Local time : The time according to the longitude of a place or according to the position of Sun at that place is known as the Local time. This is based on the local meridian passing over that place. When the Sun is shining vertically over the longitude it is 12 noon at that place. All places situated on the same meridian have the same local time. Every longitude has its own local time.

Standard time : As the local time varies from place to place, it would create considerable confusion if each place were to follow its own local time. In order to avoid confusion many countries follow uniform time throughout the country. Such uniform time is based on the central meridian of the country or the meridian on which the most important city is located. This uniform time which is followed throughout a country is called Standard Time of that country.

In India, $82\frac{1}{2}^{\circ}$ East longitude is considered as the Standard Meridian of the country. It passes through Allahabad of Uttar Pradesh. The time based on this Meridian is called the Indian Standard Time (IST). It is 5 hours and 30 minutes ahead of G.M.T.

Time Zones : In certain countries of the World, where the longitudinal extent is so large (more than 45° of longitude) that there is often a difference of three to four hours between one part and the other, the land surface is divided into Time Zones. The whole globe is divided into 24 such time zones so that the time in each zone differs from the other by only one hour.



Time Zones and International Date Line

Large countries like Russia, USA, Canada and Australia have vast longitudinal extent. Therefore they have different time zones. Russia has 11 time zones, USA and Canada have 5 time zones and Australia has 3 time zones.

International Date Line (IDL) : The problem of time in countries of the world was solved first by the standard time and then by the zonal time. But the circumnavigation of the world brought a new problem in keeping the correct date and day in the week for the travellers. Therefore a line passing through 180° meridian diametrically opposite to the G.M.T was adopted as the point where circumnavigators should make adjustments. This line is supposed to pass Pacific ocean along the 180° meridian but makes short detours in order to avoid land masses. This is known as the International Date Line because the date and day is changed whenever people cross this line by ships or aeroplanes.

Any ship crossing this line from west (Asia to North America) to east takes a day twice while the ship crossing this line from east (North America to Asia) to west drops one day.

EXERCISES

I Fill in the blanks with suitable words :

- 1 The total geographical area of the Earth is _____ Sq. Kms.
- 2 The shape of the Earth is _____ .
- 3 The equatorial and polar diameters of the Earth is _____ and _____ Kms.
- 4 The $23\frac{1}{2}^{\circ}$ North latitude is called as _____ .
- 5 The Indian Standard Time is based on _____ longitude.

II Answer the following questions briefly :

- 6 Why is the Earth called 'Living Planet'?
- 7 Why are the Northern and Southern hemispheres called Land and Water Hemispheres?
- 8 What are latitudes and longitudes?
- 9 Mention the difference between local time and standard time.
- 10 What is the International Date Line?

III Define the following :

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|-----------------------|--------------------------|
| 11. Unique planet | 14. Continents |
| 12. Size of the Earth | 15. Prime Meridian |
| 13. Geoid | 16. Indian Standard Time |

IV Terms to Remember :

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|-------------------|-----------------------------|
| 17. Living Planet | 20. Antarctic circle |
| 18. Equator | 21. Zonal Time |
| 19. Arctic circle | 22. International date line |

V Activity :

23. List out the countries of the Eastern hemisphere and Western hemisphere on the basis of longitudes.

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