

SOCIAL
The Globe : A Model Of
The Earth



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LESSON
PART 1





In this lesson, we shall learn about :

- ◆ The Globe : A model of the earth
- ◆ Rotation and revolution of the earth
- ◆ Latitudes and Longitudes
- ◆ Important parallels of Latitudes
- ◆ Earth grid
- ◆ The International Date Line

□ *New Words*

equator, grid, parallel, pole, latitudes, longitudes, meridian

Our earth is the only planet of the solar system which has life. It has many unique features. It has living beings, plants and animals. It has lofty mountains, thick forests, large seas and oceans, vast fertile plains, plateaus and valleys.

Long long ago, people believed that the earth was flat and it was surrounded by water. They thought, if they went to the extreme ends of the earth, they would fall down from its flat surface. About 450 years ago, a Polish astronomer **Copernicus** said that the earth is not flat, it is round in shape. But no one believed his theory.



Flat Earth Theory



Flat Earth



Copernicus

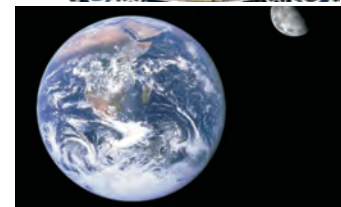


Galileo



Magellan

Later **Galileo Galilei**, a well known scientist and astronomer from Italy also confirmed that the earth is round and it revolves round the sun. In 1522, **Ferdinand Magellan** sailed around the earth and proved that the earth is round. Today, photographs taken from the satellites and by astronauts in space also have proved that the earth is round.



Earth as seen from space

■ *Some Facts :*

The earth is the fifth largest planet, and the third nearest planet to the sun at a distance of 149,597,900 km.

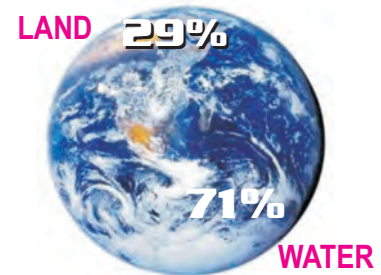


To study about the earth is very difficult. The surface of the earth is very vast and it consumes a lot of time to go to the each part of the earth. To solve these problems, man made a small model of the earth called **globe**. It is spherical in shape and has drawings of all the features of the earth. It is more accurate and to study with it is easy. Thus, we can say that a globe is a man-made model of the earth which gives us accurate idea of the location of places on the earth. Now we will study a globe carefully to know interesting things about the earth.

The earth is made up of water and land. About 71 percent of the earth's surface is covered with water. The land area is only 29 percent. The huge water bodies on the earth's surface are called **oceans** and **seas**. There are **five Oceans** in the world. These are named as the **Pacific Ocean**, the **Atlantic Ocean**, the **Indian Ocean**, the **Arctic Ocean** and the **Antarctic Ocean**.



Globe



Some Facts :

The Indian ocean is the only ocean which is named after a country-India. The Pacific is the biggest ocean and the Arctic is the smallest one.

The small bodies of water are fully or partly landlocked. They are of different types and sizes. They are known as seas, bays, gulfs, straits, lakes, rivers and channels.

Among these water bodies, there situated different land masses. These land masses are called **continents**. There are seven continents on the earth.



They are **Asia, Europe, Africa, North America, South America, Australia** and **Antarctica**. Asia is the biggest continent. Australia is the smallest continent. Antarctica is the only continent which remains frozen round the year, therefore it is known as the **white continent**.

Some Facts :

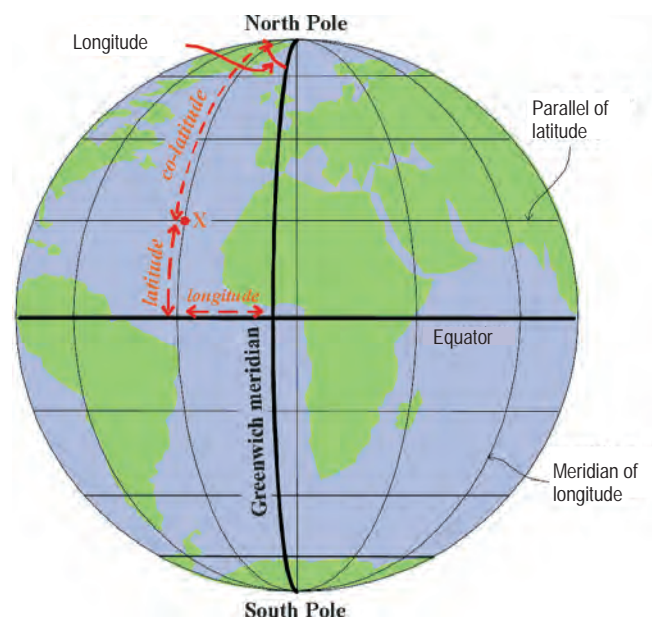
The continent Antarctica stores about 70% fresh water reserves of the world, as ice. The continent Australia is known as the 'Continent of Islands'.

Think and Discuss

Can you tell, in which continent does our country India lie ?

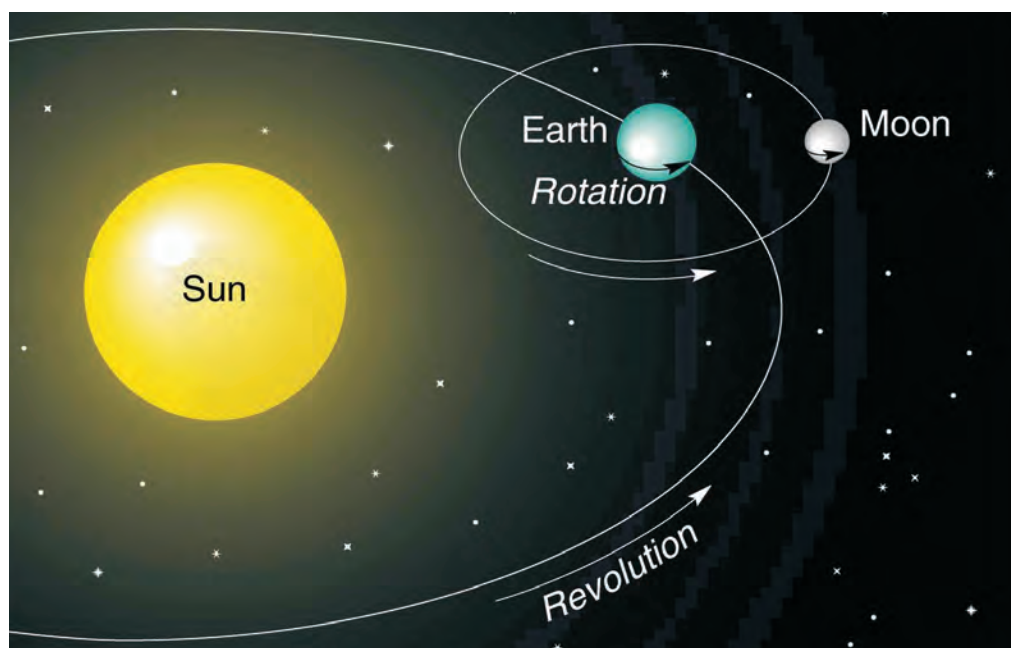
Look at the globe. It has two end points. The point at the top is called the **North Pole** and the point at the bottom is called the **South Pole**. There is a circle running across, exactly in the middle of the two poles, is called the **Equator**. It is an imaginary line which divides the earth into two parts. The half part to the north of the Equator is called the **Northern Hemisphere** while the other half part to the south of the Equator is called the **Southern Hemisphere**. The word 'Hemisphere' means 'half of a sphere'. The 'sphere' means the 'round shape of any object'.

Most of the land surface is in the Northern Hemisphere while the Southern Hemisphere is almost covered by the oceans. Hence, the Northern Hemisphere is called the **Land Hemisphere** and the Southern Hemisphere is called the **Water Hemisphere**.



Rotation and Revolution :

We know, the earth rotates on its axis. **Axis** is an imaginary line which runs from one pole to the other through the middle of the globe. It makes an angle of 66.5° . The moving of the earth on its axis is called **rotation**. The earth takes 24 hours to take one complete round. The side of the earth which faces the sun has day while the side which turns away from the sun has night.



Rotation and Revolution



The earth not only rotates on its axis but also moves round the sun. This movement of the earth around the sun is known as **revolution**. The earth takes 365 days and 6 hours to complete its one round. This span of time is called **one year**. A year has 365 days. Every fourth year has 366 days. Such a year is known as the **Leap year**. The month of February in a leap year has 29 days instead of the usual 28 days. During the revolution, the different parts of the earth face the sun for different periods during a year. These different periods are known as **seasons**. There are four seasons in a year - **winter, spring, autumn** and **summer**.



December - January



March - April



September - November



May - June - July

Think and Discuss

How many seasons do we have in our country? Can you name them?

Activity

Draw the diagram of the spinning of the earth in your notebook.

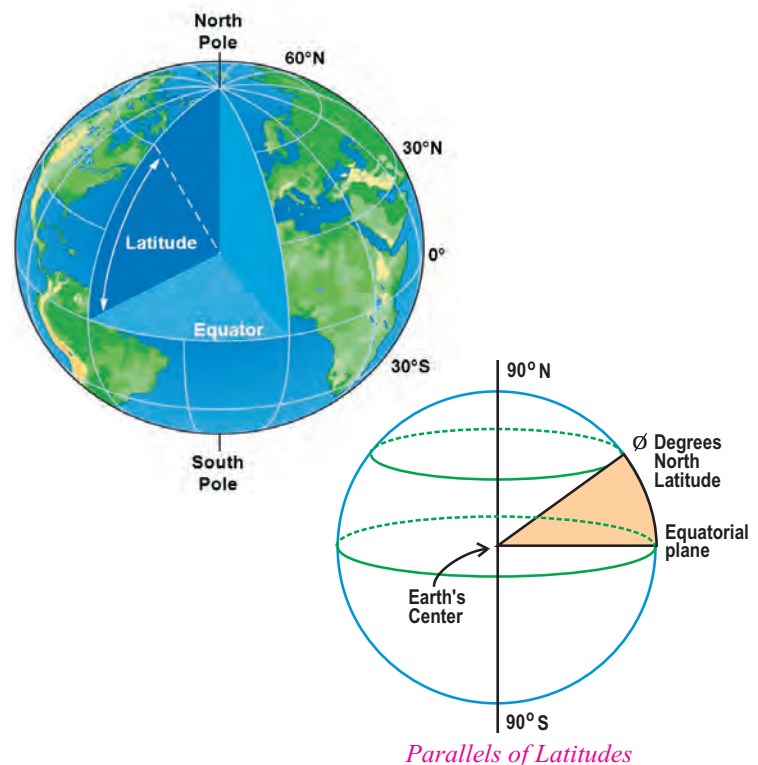
Latitudes and Longitudes:

Looking at the globe carefully, we find several lines crossing the earth vertically and horizontally. These are imaginary lines which run around the earth.

The lines running parallel to the Equator in the East-West direction are called Latitudes or Parallels of Latitudes. The other lines running from the North Pole to the South Pole in the North-South direction are called **Meridians** or **Meridians of Longitudes**.

Paralles of Latitudes :

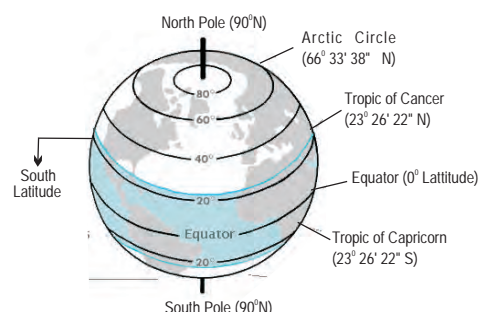
There are 90 latitudes or parallels in the North and 90 latitudes in the South of the Equator. These lines help us to find the exact location of a place on the earth.



Some Facts :

Latitudes are parallel to each other and they do not meet each other.

Important Parallels of Latitudes : The parallels of latitudes have been numbered from 0° to 90° . The largest parallel line is the Equator. It represents the 0° latitude. There are 90 latitudes below the Equator. As the lines go far from the Equator, they become shorter till 90° N (the North Pole) and 90° S (the South Pole) which are only points.



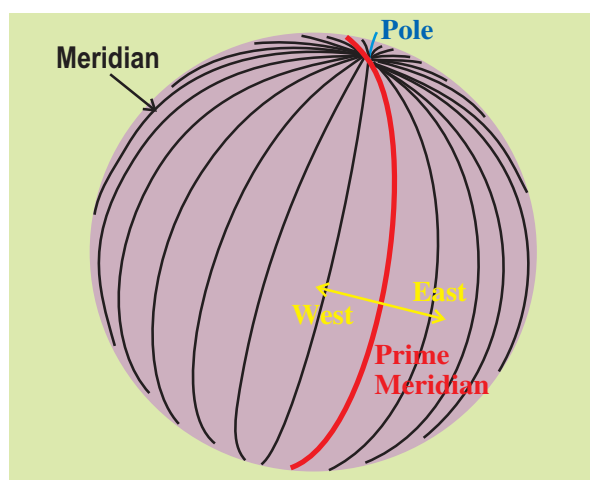
Important Parallels of Latitudes

Some important parallels of latitudes are:

1. **The Tropic of Cancer :** It lies in the Northern Hemisphere at a distance of $23\frac{1}{2}^{\circ}$ N from the Equator.
2. **The Tropic of Capricorn :** This parallel is similar to the Tropic of Cancer. But it lies in the Southern Hemisphere at a distance of $23\frac{1}{2}^{\circ}$ S from the Equator.
3. **The Arctic Circle:** This circle lies at a distance of $66\frac{1}{2}^{\circ}$ N from the Equator.
4. **The Antarctic Circle:** It is similar to the Arctic Circle. But it lies at a distance of $66\frac{1}{2}^{\circ}$ S from the Equator.

Remember

The latitudes North of the Equator are always marked N and latitudes South of the Equator are marked S.



Longitudes

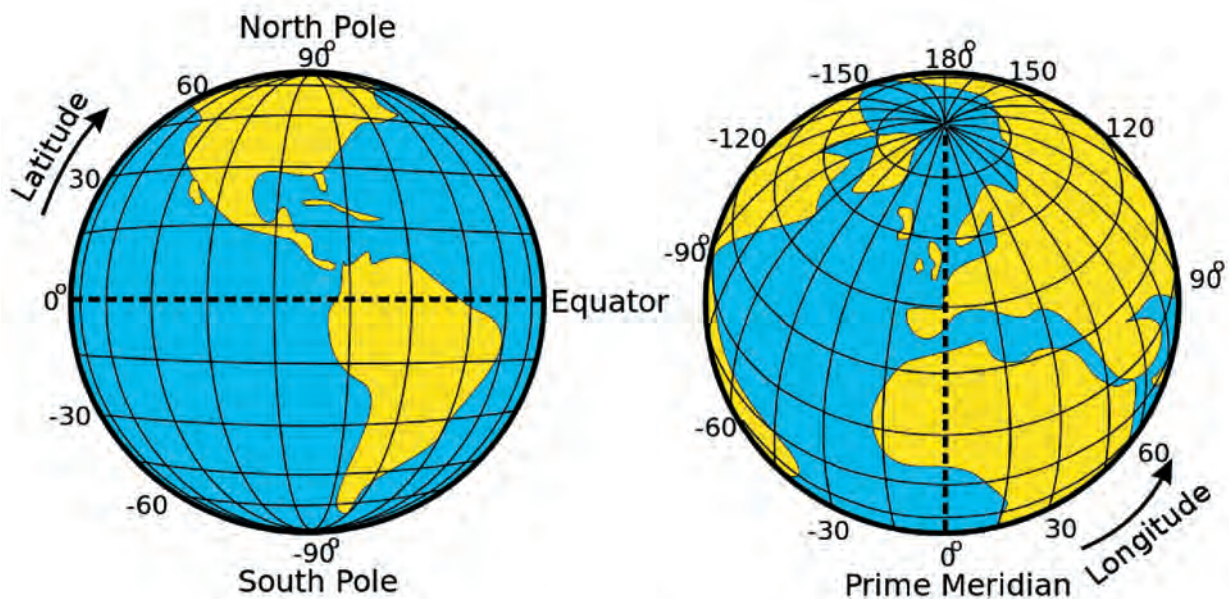
Longitudes: The longitudes are semi-circles running from the North Pole to the South Pole. These lines are of the same length. They meet at the two poles. These are also called **Meridians**. These meridians are 360 in number. 180 of them are on the east and 180 of them are on the west of the chief meridian which is **Greenwich Meridian (0°)**. It is also called the **Main** or **Prime Meridian**. The Prime Meridian divides the earth into Eastern Hemisphere and Western Hemisphere. All the meridians located on the **East** of the Prime meridian are marked **E** and those on its **West** are marked **W**.

Some Facts :

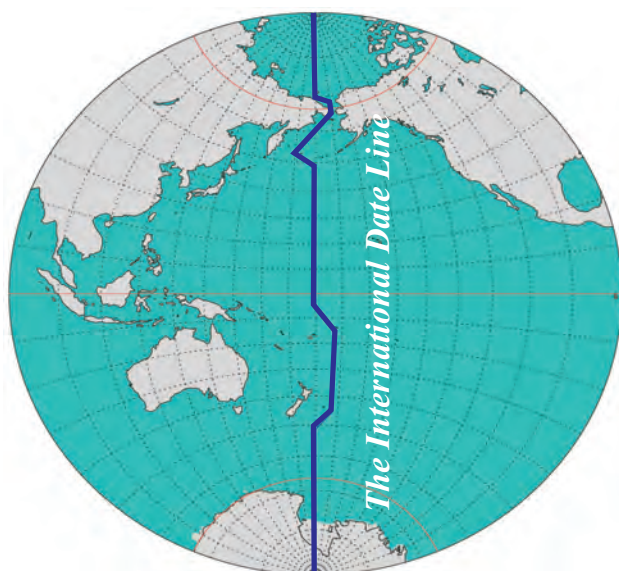
The Prime Meridian is used to calculate the International Standard Time. The Meridian which is opposite to the Prime Meridian, on the other side of the earth (180°) is known as the International Date Line.

Earth Grid : The latitudes and longitudes are imaginary lines which form a network on the globe. Both the lines intersect each other at right angle and form the Grid.

We can locate any place on the earth with the help of this grid. For example, if we know the latitude and the longitude of Mumbai, we can find the location of Mumbai on the map or globe easily. The latitude of Mumbai is 19°N and its longitude is 73°E . The location of Mumbai will be at the point where the parallel of 19°N and the meridian of 73°E intersect each other. Longitudes help us to calculate the time of a particular place. The time interval between two longitudes is 4 minutes.



Latitudes and Longitudes



The International Date Line : In 1884, an International Conference was held in Washington D.C. It was called the International Meridian Conference. It designated the 180^{th} meridian as **The International Date Line**. If we cross this date line from west to east, a day is added. That is if it is Monday on the American side, (which is in the west) it will be Tuesday on the Asiatic side (which is in the east). In the same way, if we cross the date line from east to west, a day is lessened. We have to correct the dates when we cross the International Date Line.



THINGS TO REMEMBER

1. A globe is a man-made model of the earth.
2. The moving of the earth on its axis is called rotation.
3. The moving of the earth around the sun is called revolution.
4. Longitudes and latitudes are two imaginary lines crossing the earth vertically and horizontally.
5. The Equator is the longest latitude. It divides the earth into two Hemispheres-the Northern Hemisphere and the Southern Hemisphere.
6. The lines running parallel to the Equator are called latitudes.
7. The lines running from the North Pole to the South Pole are called longitudes or meridians.
8. The zero degree (0°) longitude is also called the Prime Meridian. It is used to calculate the time.
9. The meridians and latitudes cross each other to form a grid.
10. The grid helps us to locate the position of any place in the world.



EXERCISE

A. Write 'T' for True and 'F' for False :

1. The earth is the only planet which has life. ()
2. Water area of the earth is 29 percent. ()
3. Asia is the smallest continent. ()
4. The lines running parallel to the Equator are called latitudes. ()
5. The grid helps us to locate the position of any place in the world. ()

B. Fill in the blanks :

1. The Equator represents the _____ degree latitude.
2. When latitudes and longitudes intersect each other, the _____ is formed.
3. The two end points of the axis are called the _____
4. The _____ meridian is designated as the International Date Line.
5. The _____ are semi circles, equal in length.
6. The _____ are full circles but not equal in length.

C. Match the following :

- | | | |
|------------------------|-----|-------------------------------|
| 1. Arctic Circle | () | (a) $66\frac{1}{2}^{\circ}$ S |
| 2. Equator | () | (b) $66\frac{1}{2}^{\circ}$ N |
| 3. Tropic of Capricorn | () | (c) $23\frac{1}{2}^{\circ}$ N |
| 4. Antarctic Circle | () | (d) $23\frac{1}{2}^{\circ}$ S |
| 5. Tropic of Cancer | () | (e) 0° |



D. Write the names of the following :

1. The fifth largest planet
2. The biggest ocean
3. The smallest ocean
4. The ocean named after our country
5. The continent known as the white continent
6. The biggest continent
7. The smallest continent

E. Answer the following questions:

1. What is a globe ? How is it useful to us ?
2. What do you understand by the rotation and revolution of the earth ?
3. What are longitudes and latitudes ?
4. Why is the Northern Hemisphere known as the 'Land Hemisphere' ?
5. Why is the Southern Hemisphere known as the 'Water Hemisphere' ?
6. How is the grid useful to us ?

Project / Activity

- F. Take a big ball and mark the Equator, the North Pole, the South Pole, the Tropic of Cancer, the Tropic of Capricorn, the Arctic Circle and the Antarctic Circle on it.**

