Class 6 – Geography

# The Earth and the Solar System

**Celestial Bodies** - anything present in the universe

**Nebula** - Cloud of dust and gases between two galaxies, where new stars can be born and may join one of the nearing galaxies.

**CONSTELLATIONS** - group of stars forming an imaginary shape

**URSA** Major / Big Bear

* Part of it is called 'Small Bear' or 'Big Dipper'
* Also called **Saptarishi**
* Pole Star/North Star/Polaris always points towards north

**Cosmic Year** - Time taken by the solar system to complete one orbit around the Milky Way (about 26000 years)

|  |  |  |  |
| --- | --- | --- | --- |
| **Planet** | **Orbit Time around Sun** | **Spin Time around Axis** | **Number of Moons** |
| Mercury | 58 days | 59 days |  |
| Venus | 255 days | 243 days |  |
| Earth | 365 days | 1 day | 1 |
| Mars | 687 days | 1 day | 2 |
| Jupiter | 11 years, 11 months | 9 hours | 16 |
| Saturn | 29 years | 10 hours 40 minutes | 18 |
| Uranus | 84 years | 17 hours 14 minutes | 17 |
| Neptune | 164 years | 16 hours 7 minutes | 8 |

**Shape of Earth** - GEOID (earth like shaped)

**MOON**

* Diameter is about quarter of the earth
* 384000 distance
* Orbit time around earth 27 days, exactly same time to complete axial spin

# LATITUDES AND LONGITUDES

* All circles parallel to the equator going from equator to the poles are called Parallels of Latitudes.
  + 90° north latitude marks North Pole and 90° south latitude marks South Pole.
  + All parallels north of the equator called north latitudes and that south of the equator called south latitudes. Generally denoted by letters 'N' or 'S'.

## Important Parallels

1. Tropic of Cancer – 23° North
2. Tropic of Capricorn – 23° South
3. Arctic circle – 66° North
4. Antarctic circle – 66° South

## Heat Zones

1. **Torrid Zone** – Latitudes between tropic of cancer and tropic of cancer; because mid-day sun is exactly overhead at least once a year on all of these latitudes.
2. **Temperate Zones** – Latitudes between tropic of cancer and arctic circle in northern hemisphere and tropic of Capricorn and Antarctic circle in southern hemisphere; because mid-day sun never shines overhead in these regions. They have moderate temperatures.
3. **Frigid Zones** – Latitudes between arctic and Antarctic circles towards poles; they are very cold

* All lines going from one pole to the another – called meridians of longitude
  + All of them are equal in length
  + Distance between them is measured in degrees of longitude.
  + Meridian passing from Greenwich (British Royal Observatory), is called Prime Meridian, 0° longitude.
  + 0° and 180° Meridians divide Earth into two equal halves namely eastern and western hemisphere.

82°30 E meridian is Indian Standard Time.

# MOTIONS OF THE EARTH

**Rotation** – Earth’s motion around its axis

**Revolution** – Earth’s motion around the Sun in orbit

Angle between Axis and Orbital Plane – 66°

**Circle of Illumination** – Circle dividing the day (half of earth facing Sun) from night (other half of earth)

**Summer Solstice**

* 21st June
* Sunrays direct hit Tropic of Cancer
* Longest day and shortest night in northern hemisphere
* Shortest day and longest night in southern hemisphere

**Winter Solstice**

* 22nd December
* Sunrays direct hit Tropic of Capricorn
* Longest day and shortest night in southern hemisphere
* Shortest day and longest night in northern hemisphere

**Equinox**

* 21st March and 23rd September
* Sunrays direct hit Equator
* Equal days and nights all over the earth

# MAJOR DOMAINS OF THE EARTH

* **Lithosphere** – Solid part of the earth
* **Atmosphere** – Gaseous layers surrounding the earth
* **Hydrosphere** – Water bodies on the earth including all the forms of the water that is ice, water and vapor.

# Lithosphere

Rocks of the earth’s crust, thin layers of soil where nutrient elements are present to sustain organisms. 2 Division – Large land masses are **continents** and large water bodies are **ocean basins**. Seawater level is considered zero and is uniform across the globe.

Highest Mount Everest – 8848 m above sea level Lowest Mariana Trench – 11022 m below sea level

## Continents

* **Asia**
  + Largest: 1/3rd of total land mass
  + Eastern Hemisphere
  + Tropic of cancer passes through
* **Europe**
  + West of Asia
  + Arctic circle passes through
* **Africa**
  + Second largest
  + Equator almost at the center
  + Tropic of cancer, equator and tropic of Capricorn pass through
  + World’s largest hot dessert Sahara, world’s longest river Nile
* **North America**
  + Third largest
  + North-west hemisphere
* **South America**
  + Mostly in southern hemisphere
  + World’s longest mountain range Andes runs from north to south
  + World’s largest river Amazon
* **Australia**
  + Smallest
  + Fully covered by water: island continent
  + Southern hemisphere
* **Antarctica**
  + Completely in southern hemisphere: South pole is almost center
  + Permanently covered by ice-sheets
  + Only scientific research facilities: India’s Maitri and Dakshin Gangotri

North and South America continents are connected by very narrow land strip called Isthmus of Panama.

Europe and Asia are connected by Ural Mountains.

## Hydrosphere

71% is water. Running water in oceans and rivers and lakes, ice in glaciers, underground water and water vapor in atmosphere. 97% of water is in ocean. Large proportion of rest of water is in ice-sheets and glaciers and underground. So very less fresh water is available for human use.

## Oceans

* Always moving
* Three main movements – Waves, tides, ocean currents
* Five oceans – Pacific Ocean, Atlantic Ocean, Indian Ocean, Southern Ocean, Arctic Ocean

**Pacific Ocean**

* Largest: 1/3rd of Earth is covered
* Mariana Trench.
* Almost circular in shape
* Asia, Australia, North and South America surround this ocean.

**Atlantic Ocean**

* S shaped
* North and South America on west side and Europe and Africa on east side
* Highly indented and irregular coastline: ideal location for natural harbors and ports. So commercially busiest ocean.

**Indian Ocean**

* Only ocean named after a country India.
* Triangular Shape
* North by Asia, West by Africa and East by Australia

**Southern Ocean**

* Encircles the Antarctica continent
* Extends towards 60°south latitude.

**Arctic Ocean**

* Located within Arctic circle
* Surrounds North Pole
* Connected with Pacific Ocean by a narrow stretch of shallow water known as Berring Strait.
* Bound by northern coasts of North America and Eurasia.

## Atmosphere

Height: 1600 km. Divided in layers starting from Troposphere, Stratosphere, Mesosphere, Thermosphere, Exosphere.

Nitrogen 78%, Oxygen 21%, other gases 1%. Oxygen is breath of life. Nitrogen helps in the growth of living organisms. Carbon Dioxide absorbs heat radiated by earth, thereby keeping the planet warm. It also helps in the growth of plants.

Temperature and Density of air decreases from sea level towards the sky. Air pressure varies from place to place.

## Biosphere – Domain of Life

Narrow zone of contact between the land, water and air. Divided in Plant Kingdom and Animal Kingdom.

# MAJOR LANDFORMS OF THE EARTH

2 processes for making landforms: Within the earth, a continuous movement is taking place.

The first, or the **internal process** leads to the upliftment and sinking of the earth’s surface at several places.

The second, or the **external process** is the continuous wearing down and rebuilding of the land surface. Wearing away if called **erosion** and rebuilding is called **deposition**. Running water, ice and wind are responsible for this process.

Group different landforms depending on elevation and slope as mountains, plateaus and plains.

## Mountains

* Any natural elevation of earth’s surface
* Arranged in line called Mountain Range: Asia – Himalaya, Europe – Alps, South America – Andes.
* 3 types of Mountains
  + **Fold Mountains**
    - Himalayan mountains, Alps are young fold mountains with rugged relief and high conical peaks.
    - Aravali range in India is one of the oldest fold mountains which has considerably worn down due to erosion.
    - Appalachians in North America and Ural in Russia have rounded features and low elevation. Very old fold mountains.
  + **Block Mountains**
    - When large areas are broken and displaced vertically. One block of broken area is pushed onto another.
    - Uplifted blocks are **Horsts** and lowered blocks are **Graben**.
    - Rhine valley and Vosges Mountain in Europe.
  + **Volcanic Mountains**
    - Formed due to volcanic eruption.
    - Mount Kilimanjaro in Africa and Mount Fujiyama in Japan.
* Storehouse of water. Many rivers have sources in mountain glaciers.

## Plateaus

* Elevated flat land. Flat topped table land standing above the surrounding area. Has one or more sides with steep slopes.
* Height varies from few hundred meters to several thousand meters.
* Deccan Plateau (India) is among the oldest. East African Plateau (Kenya, Tanzania, Uganda). Western Plateau (Australia).
* Tibet Plateau highest with height of 4000 to 6000 meters.
* Rich in mineral deposits, hence many mining areas.
  + African plateau – gold and diamond mining
  + Chhotanagpur plateau – has huge reserve of iron, coal, manganese.
* Many waterfalls – since river falls from grate height.
  + India – Hundru falls – Chhotanagpur plateau on the river Subarnarekha
  + India – Jog Falls – Karnataka
* Lava plateaus are rich in black soil, hence fertile.

## Plains

* Large stretches of flat land. Not more than 200 meters above sea level.
* Some are extremely leveled, some may be slightly rolling and undulating.
* Formed by rivers and their tributaries. Rivers flow down the slopes of mountains and erode them. They carry forward the eroded material consisting of stones, sand and silt. Then it is deposited in the valleys.
* Very fertile. Transport network easy. Very thickly populated.
* Large plains by rivers in Asia and North America
  + Ganga and Brahmaputra river plains in India.
  + Yangtze river plains in China.