

The surface of the Earth is not the same everywhere. Its different parts has different heights. Some parts may be rugged or raised, some flat and some depressed. Different varieties of the shapes and of heights of different land parts are called different **landforms** or reliefs. A flat piece of land is called a **plain**. A **hill** is a land surface that rises higher than the surrounding area. Generally, a steep hill with an elevation of more than 600 metres is termed as a **mountain**. Its height may be several thousand metres. An area of fairly high table-land, broad like plain is called **plateau**. Because of their shape like a table, plateaus are also called as **table-land**. Plateaus rise fairly high above the surrounding area. The height may range from few hundred to several thousand metres.

These landforms are a result of two process—one operates inside the Earth known as internal process and the other operates on the surface of the Earth called external process. **Internal process** is the continuous movement taking place within the Earth. Even the ground you are standing on is very slowly moving. This internal process results in the upliftment or sinking of the Earth's surface at several places. Generally mountains of different types are made by the internal process. Continuous wearing down and rebuilding of the land surface by running water and moving air is called the **external process**. The wearing away of the Earth's surface is called **erosion**. To leave a layer of a substance on the surface of something gradually is called **deposition**. The running water, glaciers and wind do the work of erosion at one place and deposition at another place.

Depending on elevation and slope all kinds of area can be grouped into three major landforms—mountains, plateaus and plains.





Fact File

We cannot see some mountains as they are under the sea. Mauna Kea (Hawaii) in the Pacific Ocean is an undersea mountain. It is 10,205 metres high. Mount Everest is 8848 metres high.

Mountains

A mountain is considerably higher natural elevation of a part of the Earth's surface than the surrounding area. Mountains are high hills, which rise to height above 600 metres from the ground below. Mountains are of different heights and shapes. Some mountains are even higher than the clouds.

As you go higher, the climate becomes colder. In some high mountains, there are permanently frozen rivers of ice called **glaciers**.



Mountains of the World

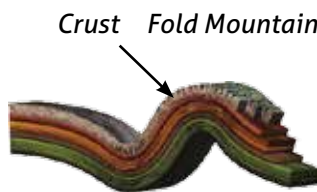
A group of mountains usually in a line is known as **range**. Many mountain systems consist of a series of parallel ranges extending over hundreds of kilometres. The Himalayas, the Alps, the Rockies and the Andes are mountain ranges of Asia, Europe, North America and South America respectively.

Most mountains have uppermost parts conical (projecting above the surrounding area) called **peaks**. For example, Mount Everest is the world's highest peak in the Himalayas.

How Mountains are Created : The crust or the outermost layer of the Earth is composed largely of rocks. The thick slabs of rocks are known as **plates**. These plates, holding the ocean floor and the continents float on the lower molten part/liquid mass of rocks below. They sometimes collide or go past each other that may compress or break parts of two or more plates. This compression may cause uplift and folding of the rocks. The process takes millions of years. Thus, all mountains are made by internal movements of the Earth.

There are three types of mountains :

- Fold mountains
- Block mountains
- Volcanic mountains



Fold Mountain (Himalayas)

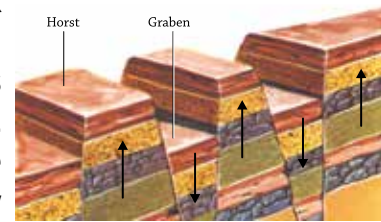


Fold Mountains : The Himalayas in Asia, Alps in Europe, Rockies in North America and the Andes in South America have been made through uplift and folding of the rock plates of the Earth's crust. They are relatively of 'recent' origin (about 50 million years to 2 million years ago!) hence called young. They have not been yet much worn out by external

processes. So they are called **Young fold mountains**. They have rugged relief (heights) and high conical peaks. The Aravali range in India, Ural mountains in Russia (European part) and the Appalachians in North America are **Old fold** mountains. They have been considerably worn down by the external processes of erosion over millions of years. They have low elevation and their peaks have rounded features.

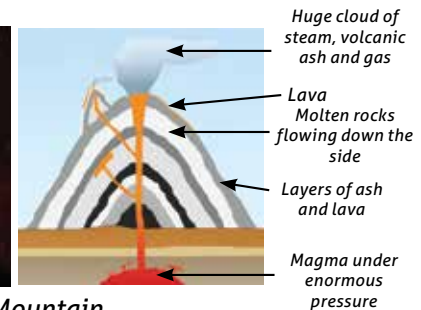
Activity : Take a pile of same size paper sheets. Put the papers on a table. Push the papers from both sides by your hands. The pile of sheet will be folded and rise (uplift). You have made a model of folded mountain.

Block Mountains : Block mountains are formed when large areas of rock plates called blocks are broken and displaced vertically. The uplifted blocks are termed as Horsts and the lowered or depressed blocks as Graben. Therefore, the block mountains are also called Horst mountains. The Black Forest mountains and the Vosges mountains in Europe are examples of block mountains. River Rhine of Europe flows in a rift valley (with very steep sides) between the two block mountains. The river Narmada and Tapi flow through rift valleys whose sides are also uplifted. The Western Ghats in India has many features of block mountains.



A block Mountain

Volcanic Mountains : When magma (molten rocks under the crust plates of the Earth) makes its way out (volcanic activity) on the surface of Earth, the molten rocks called **lava** solidifies layer upon layer over thousands of years and form mountains with high peaks. Mount Kilimanjaro in Africa and Mount Fujiyama in Japan are formed due to volcanic activity.



Volcanic Mountain

Benefits of Mountains : Because of harsh climate, less people live in the mountain areas. Since the slopes are steep, less land is available for farming. Even then mountains are very useful.

- (i) Mountains are reservoirs of water. Many fresh water lakes and springs are found in the mountains. Many rivers have their source in the glaciers in the mountains. These rivers have water in them flowing throughout the year.
- (ii) Reservoirs (Dams) are made on the mountains for rain water which is used for irrigation, drinking water supply and generation of hydro electricity.
- (iii) River valleys and terraces made on slopes of mountains are used for cultivation of crops.
- (iv) Mountains have rich variety of flora and fauna (plants and animals).
- (v) The forests are mostly found on the slopes of mountains. The forests provide fuel, fodder, timber, gum, resins, fruits, etc. They provide shelter for animals.

Mountains also attract the tourists for their scenic beauty. Gulmarg and Pahalgaoon in Kashmir, Shimla in Himachal Pradesh and Darjeeling in West Bengal are famous tourist spots of the Himalayas. Ooty in South India is also tourist centre. Several spots like skiing on ice, river rafting, paragliding, hang-gliding; horse riding are popular in the mountains. Pahalgaoon is famous for horse riding and Gulmarg for skiing and hang-gliding.



Plateaus

A plateau is an elevated, more or less flat, broad rocky land. It is table-land rising above the surrounding area. The height of plateaus often varies from few hundred metres to several thousand metres. The Tibet Plateau is the highest plateau in the world with a height of 4000 to 6000 metres above the mean sea level. Plateaus, like mountains, may be young or old. The Deccan Plateau in India is one of the oldest plateaus. The Western Plateau of Australia and the East African Plateau in Kenya, Tanzania and Uganda are also very old.

Benefits of Plateau : Because of harsh life on the plateaus, most plateaus are moderately populated. Plateaus are useful because :

- (i) Plateaus have rich mineral deposits. Much iron, manganese and coal are mined in the Chhotanagpur Plateau in India. Gold and diamond are mined in the African Plateau.
- (ii) The plateaus made of lava have rich black soil that is fertile and good for cultivation. Some special crops like cotton and groundnut are grown in black soil.

Many scenic spots and waterfalls on the rivers in plateaus are of great tourist attraction. In India, Jog Falls in Karnataka and Hundru Falls in the Chhotanagpur Plateau are famous tourist spots.

Plains

Plains are large stretches of flat land. They are, generally, not more than 200 metres above mean sea level. Some plains near the sea coast are low lying. Some plains are extremely level. Some have very gentle slope. Some are shaped like waves, rising and falling. Most plains are formed by rivers and their tributaries. The rivers flow down the slopes of mountains and erode them. They bring the eroded material consisting of stones, pebbles, sand and clay—coarser to finer—and deposit it along their courses and in their valleys. The material settles as silt and forms plains. The deposits of fine sand and clay are called *alluvium*. The plains formed by this alluvium are known as *alluvial plains*. Plains made by the sedimentation of sea waves near the sea coasts are called *coastal plains*. However, largest plains are found along the river valleys in all the continents. Some of the largest plains made by the rivers are found in Asia and North America. For example, Indo-Gangetic plain in India (Asia), Yangtze plain in China (Asia), Missisipi plain in the United States (North America).

Generally, plains are very fertile. It is easy to construct roads, lines of communication, dig wells and cultivate crops in fertile plains, as more flat land is available. The land is highly productive. As a result most people prefer to live in the plains. The Indo-Gangetic plains in India are the most densely populated regions of the country.

Ways of Life on Different Landforms

It is best to live in the plains as it is easy to grow crops, dig wells for water, build houses and roads than mountains or plateaus. But there

are people who live on mountain slopes, plateaus or in forests. They also live in areas of volcanic eruption and earthquake prone area and deserts. They change and amend their ways of farming, irrigation, building houses, transport and sports.

Creative awareness: Natural calamities like storms, floods, earthquakes, volcanic eruptions cause loss of life and property. Precautions and risk management along with making people aware of the calamities, risk, self help and feeling for the community can minimize the risks. One such precaution is to build houses which are resistant to earthquakes. People often use land and water in a wasteful manner. They throw garbage in the fertile soil or in water making them dirty. In this way, they themselves, their neighbours, whole society and their own future generations will have to face the dirty environment they have created.



Deserts : Sand dunes formed by wind, camel riding



Wetlands : Houses built on stilts



Mountains : Sloped-roof houses on terraces



Mountain slopes : Cultivation of crops in terraced fields



Snake boat racing in Kerala



Mountains : River rafting (adventure sport)

Key Words

- » Landforms : different varieties of the shapes and heights of different land parts.
- » Internal Process : continuous movement (upliftment or sinking) taking place within the Earth.
- » External Process : wearing down and rebuilding of the land by the effect of running water and wind.
- » Erosion : the process of wearing away.
- » Deposition : to leave a layer of substance on the surface of something gradually.
- » Alluvium : pebbles, sand and clay deposited by a river as silt.
- » Mountains : any natural elevation (often 600 metres and more) of the Earth's surface.
- » Range : a group of mountains usually in a line.
- » Fold Mountains : mountains made through uplift and folding of rock plates of the Earth's crust.
- » Block Mountains : mountains created when large areas of rock plates are broken and displaced vertically.
- » Volcanic Mountains : mountains made by the solidification of molten rocks called lava.
- » Glaciers : permanently frozen rivers of ice.
- » Plateaus : an elevated more or less flat land.
- » Plains : large stretches of flat land.
- » Horsts : uplifted blocks.
- » Graben : lowered blocks.



SUMMARY

- ▶ The surface of the Earth is not the same everywhere.
- ▶ Different kinds of landforms are the result of two processes—inside the Earth and upon the Earth surface.
- ▶ All mountains are made by internal movements of the Earth.
- ▶ Young fold mountains have not been yet much worn out by external processes.
- ▶ Old fold mountains have been considerably worn down by the external processes.
- ▶ Because of harsh climate and less land available for farming, less people live in the mountains.
- ▶ Mountains are reservoirs of water in the form of lakes or glaciers. They are rich in flora and fauna. They provide fuel, fodder, timber, gum, resins, etc.
- ▶ Plateaus have rich mineral deposits, like coal, iron, manganese, gold, diamond. The plateaus made of lava have fertile black soil.
- ▶ Plains have been made by the deposition of sand and clay carried by rivers. The plains are fertile and suitable for building houses and roads and dig wells for water. Hence the plains are most densely populated.

Exercise Time

A. Tick (✓) the only correct choice amongst the following :

1. Deccan Plateau is found in :
a. India b. China c. Africa d. South America
2. Sand dunes are formed in :
a. Forests b. Mountains c. Deserts d. Sea coasts
3. Mountains generally rise to a height above _____ from the ground below.
a. 100 m b. 600 m c. 3000 m d. 5000 m
4. Aravali ranges in India are :
a. Young fold mountains b. Old fold mountains
c. Block mountains d. Volcanic mountains
5. Glaciers are found in the :
a. Plains b. Plateaus c. Mountains d. Deserts

B. Fill in the blanks :

1. River Nile flows in the continent of _____.
2. A _____ is a large stretch of flat or low level land.
3. The Himalayas and the Alps are examples of _____ types of mountains.
4. Internal processes lead to _____ and sinking of the Earth's surface.
5. Mount Kilimanjaro and Mount Fujiyama are _____ mountains.

C. Match the following :

- | | |
|-------------------|------------------|
| 1. River Yangtze | a. South America |
| 2. Aravali Range | b. Russia |
| 3. The Andes | c. China |
| 4. Ural Mountains | d. Japan |

5. Mount Fujiyama

e. India

D. Write true (T) or False (F) against the following statements in given brackets :

1. Alps is an important mountain range of Europe.
2. Range is a line of mountains.
3. Mountain areas are most productive for farming
4. Alps and Rockies are fold mountains.
5. Plains are made by internal movement of Earth.

E. Answer in one word or one phrase :

1. Which are the major crops of the black soil ?
2. What are the different types of mountains ?
3. What are known as glaciers ?
4. What are the major landforms ?
5. What is a hill ?

F. Answer these questions briefly :

1. What is a landform ?
2. How are volcanic mountains formed ?
3. Where can you find block mountains in Europe and in India ?
4. Which is the highest plateau in the world ? What is its height ?
5. How are block mountains formed ?
6. How are plains formed ?
7. Why are the river plains thickly populated ?
8. How do people spoil natural landforms ?

G. Answer these questions in detail :

1. How are fold mountains and block mountains created ?
2. How are plateaus and plains useful to man ?
3. How are mountains useful to man ?
4. How do the rivers create the plains ?
5. How do people change their ways of living on different kinds of landforms ?

PROJECT WORK

1. Make clay models of mountains, plateaus and plains.
 - a. Mountain ranges : Himalayas, Alps, Rockies, Andes
 - b. Plateaus : Tibet, Deccan Plateau
2. On an outline map of the world, mark the following :
3. List all the natural landforms in your locality/State. How they are of use to the people ?