

Master Lesson Plan

For

Major Landforms of the Earth

Board	Standard	Subject	Chapter	Language	Reference Link	Creation date
CBSE	STD VI	Social Science	Major Landforms of the Earth	English	Major Landforms of the Earth	2020-06-15 09:05:24

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Major Landforms of the Earth

1. SSG_06_06_00_Objectives-Major Landforms of the Earth

Objectives-Major Landforms of the Earth

The students will be able to:-

- Explain the forces of nature and how they affect landforms on the earth's surface.
- Distinguish between different landforms, how they are created, and the unique characteristics of each
- Appreciate the value of each landform and the benefits it gives us
- Explain how natural disasters affect life
- Discuss how landforms have shaped part of our history

Time to teach	Asset Type	Theme	SubTheme
2 Minutes	Main Script	Solar system & the earth	Major LandForms , Major LandForms

2. External and internal forces of nature

There is a large variety of natural landforms on the earth's surface, which are formed due to continuous movement taking place on and under the earth's surface.

The two forces that cause this movement are **external forces on the surface of the earth**, and **internal forces within the earth**.

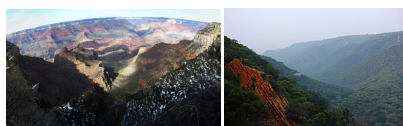


Pics: Plateau & Mountain-volcanic mountain & Plains

External forces

Running water, wind and ice are the external forces that are constantly creating changes in the landforms by wearing away(erosion) or rebuilding (deposition) the land.

- In **erosion**, the land wears away, and material like soil, pebbles, boulders and sand are transported by wind, water or ice to other places, creating landforms like valleys and canyons.
- The spectacular Grand Canyon in USA was carved over a period of 6 million years by the running water of the River Colorado.
- In India, the Aravalli range, which was formed hundreds of millions of years ago, has eroded over the years and only lowered remnants are visible now. Soft rocks are first worn down into sand and only the hard rocks are left standing; these are called residual mountains.



Pic: Grand Canyon & Aravalli Range

- In **deposition**, the land is rebuilt when wind, water or ice carry previously eroded material like soil, rocks, pebbles or sand to other areas, building up layers and adding to, or creating, landforms.
- In the dry, hot deserts of Rajasthan, wind carries sand creating sand dunes. Barchans or crescent-shaped dunes are a good example of deposition.
- Rivers carry eroded material from mountains and deposit them downstream creating fertile plains, such as the Indo-Gangetic Plains.



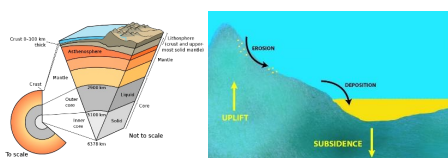
Pics: Desert & Indo-Gangetic Plains map

Internal forces

Landforms are both created and changed by internal forces.

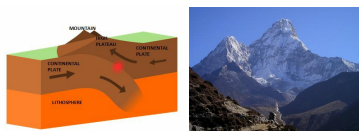
- **Plates**, or large sections of the lithosphere on the earth's surface, are constantly moving and interacting due to movement of the hot liquid magma under it.

- This results in **upliftment** or **subsidence** (sinking), on the surface.
- Earthquakes and volcanic activity are a visible result of this plate movement.



Pics: Earth layers & Upliftment and subsidence

- Plates move very slowly, (perhaps only a few inches a year), but have a great mass, and when they collide, the force of collision is enormous enough to create dramatic landforms such as gigantic mountains.
- These changes in landforms can take place slowly over millions of years, or very quickly, in a matter of minutes.
- Mountain ranges can take thousands of years, but a volcanic eruption can create land in an instant.



Pics: Continental plate boundaries & Himalayas

- The plates move in the following ways:
 - by spreading apart, creating a gap from which the hot liquid magma rises up and, coming in contact with the ocean water, cools to form a land mass;
 - by one plate moving under the other, causing mountains to form;
 - by crashing into each other;
 - and by touching and sliding past each other, causing friction.
- The Himalayas, for example, were raised by the **upliftment** of rock strata when the Indian plate collided with the Eurasian plate. They are continuing to grow in the present times.
- Natural **subsidence or sinking**, can take place after an earthquake, when large chunks of solid earth can drop by several feet. This can happen along fault lines, or when sediment settles and gets compacted after the shaking from an earthquake.
- Subsidence can also be seen when the top of a volcano collapses after it has erupted, and most of its magma has been expelled.



Pics: Earthquake & Volcano

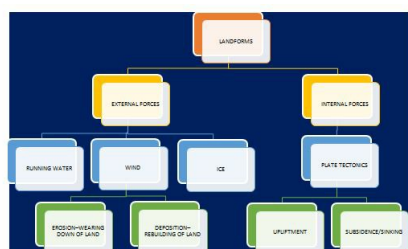


Image sources:

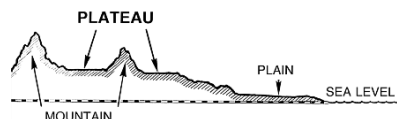
- Plateau – CC <https://pixabay.com/en/nandi-hills-deccan-plateau-karnataka-371584/>
- Volcanic mountain – CC <https://pixabay.com/en/new-zealand-volcano-crater-3018634/>
- Plains – CC <https://pixabay.com/en/savannah-kenya-africa-safari-mara-3002461/>
- Grand Canyon: CC - <https://www.publicdomainpictures.net/en/view-image.php?image=19608&picture=south-rim-grand-canyon-panorama>
- Aravalli Range: CC - https://commons.wikimedia.org/wiki/File:1_Aravalli_Range_in_Rajasthan_India.jpg (Author- Mayank Bhagya)
- Desert – CC - https://commons.wikimedia.org/wiki/File:Thar_desert_Rajasthan_India.jpg (Author- Sushmita Balasubramani)
- Indo-Gangetic Plains – CC - https://commons.wikimedia.org/wiki/File:Indo-Gangetic_Plain.en.png
- Earth layers: CC - https://en.wikipedia.org/wiki/Plate_tectonics#/media/File:Earth-cutaway-schematic-english.svg
- Upliftment and subsidence – OC: mudambisowmya@gmail.com
- Continental plate boundaries: CC - https://commons.wikimedia.org/wiki/File:Continental-continental_destructive_plate_boundary.svg
- Himalayas – CC - <https://pixabay.com/en/himalayas-ama-dablam-mountain-nepal-409/>
- Earthquake: SSSVV gallery
- Volcano : CC - <https://pixabay.com/en/mouth-panorama-panoramic-volcano-18412>

Time to teach	Asset Type	Theme	SubTheme
10 Minutes	Main Script	Solar system & the earth	Major LandForms , Major LandForms

3. Mountains of the world

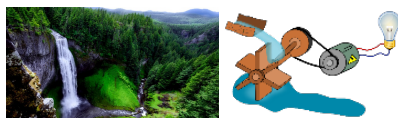
1. How would you determine if an elevated landform is a mountain or a plateau?

(Ans: While both mountains and plateaus are elevated landforms, mountains have a pointed top, while a plateau has a flat top.)



2. How can a waterfall high on a mountain help a child study after sunset, in a city thousands of miles away?

(Ans: A waterfall helps generate hydro-electric power which can light a bulb in a distant city and help a student study after dark.)



3. How do mountains help us in economic development?

(Ans: They give us hydro-electricity to run our industries;

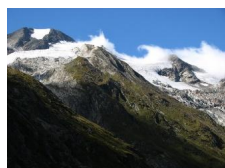
produce which have commercial value, such as products from mountain forests--timber, fuel, honey, medicinal plants, herbs, gum and resin;

and enable tourism activities, such as paragliding, hang gliding, hiking, trekking and skiing.)



4. How does a mountain affect the climate of an adjoining area?

(Ans: Causes rainfall, reduces temperature and blocks cold winds. When winds rise up the windward side of the mountain the air cools, and rain is precipitated. On the opposite leeward side, the air is dry and sinks, so there is less rainfall.)



5. Explain how an uninhabitable frozen glacier can create a far-off fertile plain with perfect living and farming conditions.

(Ans: Most rivers originate in the glaciers. As the rivers flow down the mountains, they carry eroded material of stones, sand and silt. These are then deposited along the banks and especially in the lower valley. This forms fertile plains that create perfect living conditions).



Fertile plain

Glacier

Image sources:

- Plateau: [https://commons.wikimedia.org/wiki/File:Plateau_\(PSF\).png](https://commons.wikimedia.org/wiki/File:Plateau_(PSF).png)
- Waterfall: <https://pixabay.com/photos/salt-creek-falls-waterfall-landmark-2315471/>
- Power plant: <https://pixabay.com/vectors/water-hydroelectric-energy-hydro-4391341/>
- Hydro-electricity: <https://pixabay.com/photos/hover-dam-nevada-arizona-energy-1683109/>
- Apple orchard: <https://pixabay.com/photos/orchard-apple-apples-fruit-green-1872997/>
- Skiing – CC - <https://pixabay.com/en/alpine-ski-clipart-vector-boy-2010465/>
- Mountain – CC - <https://pxhere.com/en/photo/962120>

Time to teach	Asset Type	Theme	SubTheme
5 Minutes	Inquisitive Questions	Solar system & the earth	Major LandForms , Major LandForms

4. Types of mountains

Mountains can be grouped in 3 ways, based on their formation:

- Fold mountains
- Block mountains
- Volcanic mountains or accumulated mountains

1. **Fold mountains**

Fold mountains are formed when sedimentary rocks are uplifted and folded due to pressure on the tectonic plate from two sides.

This happens when two tectonic plates collide, causing the edges of the plates to fold, creating crests and depressions. The elevated parts form the mountains and the depressions form the valleys.



Pics: Himalayas & Andes & Alps

Among the young fold mountains, created during the most recent mountain-building period, are the Himalayas in Asia, the Andes in South America, and the Alps in Europe. They are characterized by uneven relief and high tapering peaks. Since they are young they have some of the highest peaks in the world.

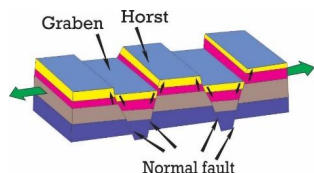


Pics: Appalachian & Aravalli ranges

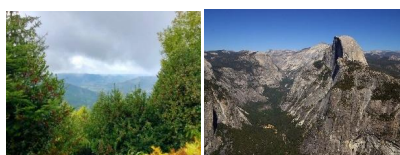
Old fold mountains have rounded features and have a much lower elevation, because of erosion over time. These features can be seen in the Appalachian mountains in North America and the Ural mountains in Russia, which are very old fold mountains. The Aravalli range in India is one of the oldest fold mountains in the world, and has worn away greatly due to erosion over time.

2. **Block Mountains**

Block mountains are formed when large areas of plates are broken up and displaced vertically. This normally happens when the block is forced upward between 2 parallel faults lines in the bedrock. The vertical displacement of a block of the earth's crust causes long, steep sides which are characteristic of block mountains. The uplifted block mountains are called horsts, and the lowered blocks or rift valleys in between are called graben.



Among the better known block mountains are the Rhine Valley and the Vosges mountains in Europe, and the Sierra Nevada in North America.



Pics: Vosges & Sierra Nevada

3. **Volcanic Mountains**



Volcanic mountains are formed due to volcanic activity. Deep within the earth the temperatures are extremely high and the rocks are turned into molten magma. A volcano is an opening on the surface of the earth; during a volcanic eruption the hot liquid magma, ash and associated gases are ejected through the crater at the top of the volcano. The volcanic material is deposited and solidifies around the vent. It accumulates creating Volcanic mountains, also called Accumulated mountains. Mt.Kilimanjaro in Africa, Mount Mauna Loa in Hawaii, and Mt.Fujiyama in Japan, are examples of such mountains.



Pics: Mt Fujiyama & Mt St. Helens

Image sources:

- Himalayas – CC - <https://pixabay.com/en/himalayas-ama-dablam-mountain-nepal-409/>
- Andes-Machu Picchu – CC - <https://pixabay.com/en/machu-picchu-incas-peru-temple-67585/>
- Alps-Matterhorn – CC - <https://pixabay.com/en/matterhorn-alpine-zermatt-mountains-1516733/>
- Appalachian – CC - <https://pixabay.com/en/appalachian-mountains-dahlonaga-2680476/>
- Aravalli – CC - https://commons.wikimedia.org/wiki/File:Aravli_Alwar_Rajasthan.jpg
- Block mountains - OC - swarnamurali@yahoo.co.in
- Vosges mountains – CC - <https://pixabay.com/en/vosges-mountains-hulst-3796134/>
- Yosemite (Sierra Nevada) – CC - <https://pixabay.com/en/yosemite-valley-half-dome-usa-3775/>
- Volcano – CC - <https://pixabay.com/en/the-volcano-avachinsky-kamchatka-2787374/>
- Lava – CC - https://wpclipart.com/geography/volcano/Volcano_lava.png.html
- Mt Fujiyama – CC - <https://pixabay.com/en/mountain-mount-landscape-japanese-1862084/>
- Mount St. Helens – CC - <https://pixabay.com/en/mount-st-helens-volcanic-eruption-164848/>

Time to teach	Asset Type	Theme	SubTheme
15 Minutes	Main Script	Solar system & the earth	Major LandForms , Major LandForms

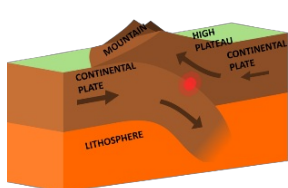
5. Increasing height of Himalayas



Pic: The Himalayan-range

Himalayas –created by plate movement

- The Himalayas rank among the most dramatic landforms on the planet.
- This 2900 km range is a result of the internal forces at play under the surface of the earth.
- Since landmass plates are floating on the underlying molten layer, they are in constant movement, colliding or converging with each other.

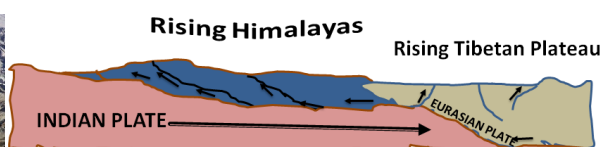


Pics:Continental plates collide to create mountains & Himalayas

- More than 40 to 50 million years ago the Indian plate moved northwards, collided with the Eurasian plate and created the Himalayas.
- The force of the collision slowly thrust the land masses vertically upward creating the rugged Himalayan peaks.
- Today, the Indian plate is still pushing north, but gradually diving under the Eurasian plate causing immense stored strain along the faultlines.

Teacher can play the uploaded video on Formation of mountains here--SSG_06_06_Final_formation_of_mountains_mp4.mp4.

- This pushing movement, which started about 50 million years ago, continues to cause upliftment of the geologically young Himalayas at a rate of about 2.5 inches every year.
- The stresses built up during this process are enormous, and the stored energy is released from time to time through earthquakes.



Pics: Himalayan range & Rising Himalayas

- The continuing growth of the Himalayas indicates that plate activity is continuing and that it is a very unstable region prone to earthquakes.
- The destructive effects of earthquakes, especially in the densely-populated Himalayan region, have been seen many times in history.
- The earliest recorded Himalayan earthquake dates to 1255 when a large part of Nepal is said to have perished.
- Since then there have been several with varying magnitudes and destruction; including the 1950 Assam earthquake—the largest recorded in the Himalayan region,

and more recently, the Nepal/Gorkha earthquake in 2015, which killed nearly 9000 people and rendered millions homeless in Nepal.



Pics: Nepal/Gorkha Earthquake destruction

People living in this earthquake-prone region are always at risk.

Image sources:

- Himalayan range--SSSVV Gallery - search keywords "Himalayan range"
- Continental plate boundaries: CC - https://commons.wikimedia.org/wiki/File:Continental-continental_destructive_plate_boundary.svg
- Himalayas – CC - <https://pixabay.com/en/himalayas-ama-dablam-mountain-nepal-409/>
- Image and video source: OC - mudambisowmya@gmail.com
- Himalayan range - CC - https://en.wikipedia.org/wiki/Mountain_range#/media/File:Himalayas.jpg
- Rising Himalayas: OC-- kpriyar@gmail.com
- Nepal Earthquake – CC - [https://commons.wikimedia.org/wiki/File:2015_Nepal_depremi_\(7\).jpg](https://commons.wikimedia.org/wiki/File:2015_Nepal_depremi_(7).jpg)
- Nepal Earthquake – CC - https://commons.wikimedia.org/wiki/File:2015_Nepal_depremi.jpg

Time to teach	Asset Type	Theme	SubTheme
5 Minutes	Day-to-day Relevance	Solar system & the earth	Major LandForms , Lithosphere, Major LandForms , Lithosphere

6. Uses of mountains

Aim:

To list how beneficial mountains are to man.

Setting for the Activity:

Indoor

Material required:

Each group will require:

- Chart (one no.)
- Scissors
- Scale/ruler
- Eraser
- Glue
- Pen, pencil, colour pencils or felt pens
- Pictures on how the mountains benefit us



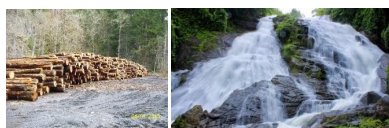
Type of Activity:

Project

Procedure:

Children need to create an attractive and colourful chart in class showing the uses of a mountain, under the following themes:

1. Water from water sources originating in the mountains; including rivers, glaciers, waterfalls, rapids and cascades.

2. Forest products**3. Influence on climate (of adjoining areas)****4. Tourism****5. Rocks and minerals****Observation:**

The students will be able to demonstrate a detailed understanding of the different ways in which mountains exert a positive influence on our lives.

Conclusion:

The activity will help the students understand the benefits of mountains.

Teacher's notes

1. **On a day well before the activity day**, the teacher can introduce the project by explaining how each land form has a clear and unique role to play on our earth, how mountains are beneficial to man, and why we consider them as a 'gift of nature'.

On this day:

a) The teacher can divide the class into small groups e.g. 4- 5 students in each group, depending on class strength. The themes can be distributed among the groups. The themes or sub-themes can be increased if there are more groups.

- b) The students should be asked to collect pictures and deposit them with teacher a day before the planned activity. They will be distributed in class on the appropriate day.

c) Each theme should be discussed in detail, and the teacher can guide the students on the type of pictures to be collected.

d) The benefits under each theme should be discussed with the students and a list of pictures to be collected can be given by the teacher:

- Water---reservoirs, irrigation, hydro-electricity, creation of fertile plains, tourism
- Forest products---timber, resin, honey, fuel, gum, medicinal plants, herbs
- Influence on climate—on temperature and rainfall of adjoining areas; the children can be made aware of how air cools and rain is precipitated when winds rise up the windward side of the mountain. Similarly, on the opposite leeward side, the air is dry and sinks, so there is less rainfall.
- Tourism---sports such as skiing, hang-gliding, para-gliding, river-rafting etc
- Rocks and minerals—iron ore, mica, gold; gemstones like diamonds

2. On the activity day, the students should sit in the groups as formed earlier, and prepare the charts, clearly labeling the pictures, and making it as attractive as possible.

At the end of the activity, one member of each group should be asked to briefly explain the chart so that all the students can benefit from each others' work.

Image sources:

- Chart papers – CC- <https://pixabay.com/en/paper-sheets-colours-red-green-305095/>

Pens – CC- <https://pixabay.com/en/ballpoint-pen-pens-black-writing-41163/>

Pencil – CC- <https://pixabay.com/en/pencil-green-eraser-write-school-308560/>

Coloured Pencils – CC- <https://pixabay.com/en/colored-pencils-pens-colour-pencils-3141510/>

Eraser- CC- <https://pixabay.com/en/eraser-office-supplies-office-795771/>

Scale- CC- <https://pixabay.com/en/the-ruler-wooden-ruler-setsquare-1970655/>

Glue – CC- <https://pixabay.com/en/school-back-to-school-education-2596090/>

Scissors – CC- <https://pixabay.com/en/a-pair-of-scissors-red-office-paper-3314438/>

- Cascading waterfalls – CC - <https://www.goodfreephotos.com/iceland/other-iceland/cascading-waterfalls-in-iceland.jpg.php>
- Mountains landscape – CC - <https://www.goodfreephotos.com/india/other/indus-valley-landscape-with-mountains.jpg.php>
- Forest products – CC - https://commons.wikimedia.org/wiki/File:Forest_products_-_US_Forest_Service_-_October_2017_03.jpg
- Waterfalls – CC - <https://pxhere.com/en/photo/1419105>
- Blue Agate – CC - <https://pxhere.com/en/photo/970797>
- Photographer – CC - <https://pixabay.com/en/man-photographer-explorer-person-37500/>

Time to teach	Asset Type	Theme	SubTheme
20 Minutes	Suggested Activity	Solar system & the earth	Major LandForms , Major LandForms

7. SSG_06_06_13_MS_Plains

Plains



Pic: Plains

- Plains are vast flat, or gently sloping, landforms.
- They do not change much in height.
- They are low-lying, and normally not more than 200 m above sea level.

How plains are formed



Pic: Mountain river

- Rivers play an important role in the formation of most plains.
- When rivers originate in the mountains, they flow down, eroding the slopes and surroundings.
- The river carries this eroded material of soil, silt, stones and sand, and deposits it on the flat land before joining the sea.
- Rivers also continuously deposit sediment when they overflow their banks.
- Over a long period of time, this continuously deposited layers of sediment form the plain.

Some important plains



Pics: Indo-Gangetic Plains, India; Serengeti Plains, Africa; Mekong Delta, Vietnam.



Pics: Great Plains, North America; West Siberian Plains, Russia

- In Asia and North America we can find some of the largest plains made by rivers.

Eg. Indo-Gangetic plains, India; Mekong Delta, Vietnam; Mississippi Alluvial Plain, USA.

- There are large plains in other continents too, including Africa and Australia.

Advantages of plains



Pics: Agriculture, Industries, Transportation, Settlements

Agriculture:

- Plains generally have a highly fertile soil.
- This, along with the flat, level terrain makes the plains ideal for agriculture.

Industries:

- Since agriculture is widely practiced in plains, several agro-based and other industries flourish.

E.g Sugar, cotton textiles, food processing and jute industries.

- Plains are densely populated regions, so labour is cheap and easily available.

Transportation:

- Level land makes it easy to build transportation infrastructure such as roads, railways and airports.

Settlements:

- Due to the advantages plains have, and due to the ease with which houses can be constructed, plains have the highest concentration of human settlements.

Image sources:

- Plains: <https://pixabay.com/photos/montana-northern-plains-plains-4660241/>
- Water falls: <https://pixabay.com/photos/waters-waterfall-river-nature-moss-3022515/>
- Sunset river: CC - <https://pixabay.com/en/sunset-river-mountains-sky-nature-2976428/>
- Rice fields: <https://pixabay.com/photos/rice-rice-field-rice-farm-3620861/>
- Giraffe: <https://pixabay.com/photos/africa-tanzania-national-park-2042811/>
- Rice fields: <https://pixabay.com/photos/mekong-delta-rice-field-countryside-4193220/>
- Bison, Great Plains: <https://pixabay.com/photos/bison-yellowstone-wyoming-usa-1630310/>
- Siberian Dog: <https://pixabay.com/photos/dog-siberian-husky-field-frost-2541708/>
- Plains: CC - <https://pxhere.com/en/photo/1009510>
- Industries: CC - <https://pixabay.com/en/industry-chimney-manufacturing-156675/>
- Transportation: CC - <https://pixabay.com/en/highway-truck-transport-road-370655/>
- Settlements: <https://pixabay.com/photos/height-city-buildings-air-plane-489703/>

Time to teach	Asset Type	Theme	SubTheme
5 Minutes	Main Script	Resources	Land as a Resource, Land as a Resource

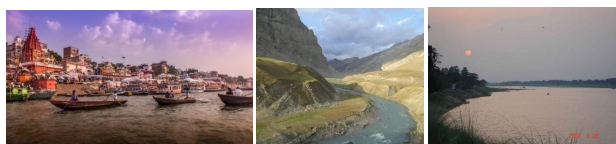
8. Glaciers of the Himalayas

- The Himalayan glaciers are the largest fresh water reserves in the world, excepting the polar regions.
- It is often referred to as the “third Pole” with 30% of the world's glaciers situated in this region.



Pic: Glacial lakes in Nepal

- As the glacier melts, the run-off feeds the Himalayan rivers making them perennial, providing water in the summer months.
- Water from these glaciers support seven major rivers in Asia, including the Indus, Ganges, Brahmaputra, Mekong, Thanlwin, Yangtze and Yellow rivers.
- These sustain millions of people in India, Pakistan, Bangladesh and China.

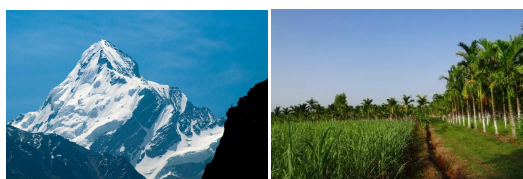


Pics: Ganges, Indus, Brahmaputra



Pics: Mekong, Yangtze river, Yellow river

- The rivers originating from the Himalayan glaciers descend down the mountains, and in the second leg of the rivers' journey reaches the plains depositing the rich alluvial soil that enables farming and settlements.
- This was how the highly fertile Indo-Gangetic plains were created.



Pics: Gangotri Glacier & Fertile plains

- The Indo-Gangetic Plains, also known as the “Granary of India” and feeds most of the country, depends on the run-off from these Himalayan

glaciers, especially the Gangotri glacier, which is the source of the river Ganges.

- The Tehri Dam in Uttarakhand and the Bhakra-Nangal Dam in Himachal Pradesh are two of the better-known large hydroelectric power projects using the glacier water to provide electricity for agricultural, industrial and domestic consumption.



Pics: Bhakra-Nangal dam & Tehri dam

Remote glaciers in the high reaches of the Himalayas thus sustain and support life far away in a large region spanning several countries.



Pics: Indian woman farmer, Harvesting in Pakistan, Paddy fields in Bangladesh



Pics: Fishing in Mekong river, Rice harvest in China

Image sources:

- Glacial lakes in Nepal – CC - <https://www.goodfreephotos.com/nepal/other/landscape-of-gokyo-lakes-in-nepal.jpg.php>
- Ganges: - CC - <https://pxhere.com/en/photo/382499>
- Indus – CC - <https://pixabay.com/en/kashmir-indus-river-himalaya-731978/>
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Time to teach	Asset Type	Theme	SubTheme
5 Minutes	Day-to-day Relevance	Solar system & the earth	Major LandForms , Major LandForms

9. Disasters on plains

The most common disasters in the plains include floods, tropical cyclones, severe convective storms, hailstorms, tornadoes, droughts, earthquakes, and heat wave or cold wave. Natural disasters cause more devastation in the plains due to the high density of population and habitation, resulting in greater loss to human life and property.

Pics: Flood, earthquake, drought, cyclone aftermath

Earthquakes

Damage caused by earthquakes in the plains depends not only on its magnitude but also on other factors such as population density, soil structure and building techniques.

If the ground is mostly soft, the shaking can be more severe or the land can liquefy, causing subsidence and greater damage than in a rocky place.

Multi-storied buildings are more prone to damage than single-storied structures.

E.g. Latur earthquake in Gujarat, in 2010 in Haiti....and the 2004 Sumatra, Indian Ocean earthquake

Pics: Earthquakes

Tsunami

A tsunami, is a series of extremely large and powerful waves, caused by an earthquake on the ocean floor; or if a large amount of material, such as a landslide, is displaced into the sea; or due to volcanic activity.

It can travel several hundreds of miles over the sea, and very far inland destroying everything in its way, causing great loss to those living in coastal plains.

Rural coastal communities, such as fishing villages are vulnerable, and often hardest hit.

E.g the tsunami in 1958 in Alaska caused by a landslide, or more recently, on Dec 26, 2004 due to an earthquake in Sumatra, Indonesia which caused serious devastation along the coastal plains in many countries, claiming more than 200,000 lives.

Pic: 2004 Tsunami

Floods

One of the most common natural disasters in the plains, floods occur from excessive rainfall or melting snow, or also due to an obstruction, natural or otherwise, blocking the riverbanks.

Floods can take days to develop, or flashfloods can occur quickly, turning a thin stream into a powerfully destructive force sweeping along everything in its path.

It can cause large scale loss in life and property to individuals and communities.

Agricultural land can suffer tremendous loss in crops, soil health, livestock and fencing, leading to deadly famines.

Floods can cause damage to infrastructure such as road and rail networks, causing disruption to business and industry.

E.g. in 1931 the Yellow River flooded causing one of the worst floods in history; low-lying Bangladesh and Eastern India are repeatedly plagued by floods.

Pics: Flood disaster in street & Farm flooding

Cyclones

Cyclones, sometimes called hurricanes, are normally violent storms with winds spiraling around a centre of low pressure, bringing strong wind and rain, and tornadoes.

In India, cyclones are particularly common around the Bay of Bengal area, causing widespread damage to humans and property, with heavy rains, storm surges, and powerful winds, in the adjoining plains.

E.g. Odisha cyclone, 1999

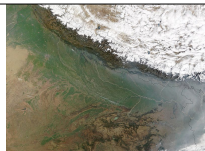
Pics: Storm damage, Hurricane Katrina & Odisha cyclone

Image sources:

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Time to teach	Asset Type	Theme	SubTheme
5 Minutes	Interesting Asides	Solar system & the earth	Major LandForms , Major LandForms

10. Indo-Gangetic plain



Pic: Indo-Gangetic Plain

1. Will the Indo-Gangetic Plains area be as fertile if the Indus, Brahmaputra and Ganges rivers drain into the Arabian Sea?

Ans: No, because the fertile alluvial silt would then be deposited on the narrow western coast.



Pics: Indo- Gangetic Plains map & River silt

2. How do both the internal and external processes come together to create the Indo-Gangetic Plains?

Ans: **Internal forces caused plate movement** which resulted in the upliftment of the Himalayas.

Using the **external forces of erosion and deposition**, rivers originating in the mountains carry eroded mountain material to create the plains.



Pics:Himalayas & Erosion

3. How does the Indo-Gangetic Plains play an important role in India's economic health?

Ans:

- **Very fertile agricultural region** supplying rice, wheat and other produce to the rest of the country.
- **Flat topography** makes it easier to build industries and homes nearby.

Transportation of people and materials is more efficient.



Pics: Nature & Transportation

4. Why do you think the Indo-Gangetic Plains land is so productive that it supplies most of India's rice and wheat?

Ans:

- The extremely **fertile alluvial soil** makes the land very productive and high-yielding.
- Perennial rivers and high groundwater tables provide **sufficient water** for farming.
- The **flat treeless land** makes it easy to irrigate through canals, where necessary.



Pics: Landscape & Rice

Image sources:

- Indo-Gangetic Plain: -CC - https://hi.m.wikipedia.org/wiki/%E0%A4%9A%E0%A4%BF%E0%A4%A4%E0%A5%8D%E0%A4%B0:Indo-Gangetic_Plain.jpg
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Time to teach	Asset Type	Theme	SubTheme
5 Minutes	Inquisitive Questions	Solar system & the earth	Major LandForms , Major LandForms

11. Uses of Plains

Aim

The students will understand the many benefits of the plains, which have attracted human settlements from ancient to modern times.

Materials required:

Each group will require:

- **Suitable pictures** of ancient civilization and of modern times, in agriculture, roads and habitation of the river civilization as allotted to the group.
- **Chart paper-1 no.**
- **Glue**
- **Scissors**
- **Scale/ruler**
- **Felt pens**



Collected pictures, and all other material, should be deposited with the teacher one day before the planned activity. These will be distributed to the groups in class on the activity day.

Setting for the activity:

Indoors



Type of activity:

Project

Procedure:

1. On a day before the activity, small groups of students of a suitable number, will be formed. **Any one** of the three river civilizations—**Indus valley civilization (River Indus)**, **Egyptian (River Nile)** or **Mesopotamian (Tigris and Euphrates Rivers)** should be allotted to each group.
2. On the day of activity each group **will create an attractive and colourful chart in class on the “Uses of plains”** by comparing the allotted ancient river valley civilization with a modern plains settlement in the same plains area.

The comparison should be done under the topics of agriculture, roads and habitation.



The pictures and all other material (whether provided by teacher or brought by students) should be deposited with the teacher a day or two before the activity.

Observation

The charts should clearly illustrate that the reasons for preferring plains for human settlement have not changed down the centuries.

Conclusion:

This activity will help the students understand the benefits that plains give us.

Teacher's notes:

Before the activity day the teacher should divide the class into small groups e.g., 4 each, depending on class strength. If there are more than 3 groups, the river civilizations can be repeated while allotting them.

- Teacher should discuss the ancient civilizations and the modern settlements in the same geographical region.

The teacher must also discuss with examples, what pictures they can collect for each river civilization .

e.g., The group which is allotted the theme of Indus civilization:

- Should collect under Agriculture, pictures of ancient cultivation methods which can be shown alongside modern mechanized farming in the same plains (*Benefit of plains: cultivation in the riverine plains continues because of the nutrient-rich silt brought by the rivers from the mountains and deposited in the plains*).
- Similarly, under Roads, the ancient road network can be shown with modern road and rail networks (*Benefit of plains: because the flat level land of the plains makes it easier to build roads and transport men and materials on them*).
- Under Habitation the ancient single-storey dwellings can be compared with modern multi-storey structures (*Benefit of plains: it is easier to build structures on the flat terrain of the plains*).

On the activity day, the teacher can make students sit in the groups, as formed earlier, and distribute the materials.

After the activity, a short explanation of the completed chart, comparing the ancient and modern scenarios while highlighting the importance of plains, can be given by one student from each group.

Precautions:

While doing the project the groups must ensure that the focus of the chart should remain on uses of plains and not on the river valley civilizations.

Troubleshooting:

- If pictures related to ancient river civilizations are difficult to obtain, drawings of the same can be done.

Teacher can ensure at least one student with good drawing skills is assigned to each group.

Or, the riverine settlement of Indian subcontinent alone can be given to all the groups, since these pictures are more easily available.

Image sources:

- Chart papers – CC- <https://pixabay.com/en/paper-sheets-colours-red-green-305095/>

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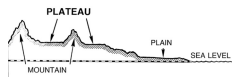
Maharaja express – CC - https://commons.wikimedia.org/wiki/File:Maharajas%27_Express_Train.jpg

Time to teach	Asset Type	Theme	SubTheme
20 Minutes	Suggested Activity	Solar system & the earth	Major LandForms , Major LandForms

12. SSG_06_06_14_MS_Plateaus

Plateaus

Features of a plateau



- **Flat top**

A raised area of land with a nearly level surface is called a plateau.

- **Elevated from surroundings**

It rises above the adjoining land and is flat on the top.

Because of the flat top, a plateau is sometimes called 'table land'.

- **Steep side**

At least one side of the elevated land is a steep slope.

- **Height**

A plateau stands higher than its surrounding areas.

But plateaus can be of different heights.

Some are only a few hundreds of metres high, others can rise to thousands of metres, like the Tibetan Plateau which is about 5000 m above sea level.

- **Age**

Plateaus can be young like the Tibetan plateau, or old such as the Deccan plateau, or the East African plateau.

Some important plateaus



- **Tibetan plateau**, in central Asia

Also known as "roof of the world"

Highest and largest plateau in the world.

It stretches across 3 countries, Tibet, China and India.



- **Deccan plateau**, India

One of the oldest plateaus in the world, and the largest in India

It is a lava plateau, located between the Western and Eastern Ghats



- **Colorado Plateau**, Southwestern USA;
- **Kimberley Plateau**, Australia
- **East African and Southern African Plateaus**, Africa
- **Mexican Plateau**, Mexico
- **Patagonian Plateau**, Argentina

Importance of plateaus



Pics: Mining, Energy, Agriculture, Tourism

- **Mining**—

Plateaus have abundant mineral deposits.

E.g. the Chottanagpur region of the Deccan plateau is rich in iron ore, coal, manganese and mica.

- **Energy**—

The waterfalls are a source of hydroelectric energy.

E.g. one of the biggest waterfalls in the world, the Victoria Falls on the Southern African Plateau is associated with the downstream Victoria Falls Power Station.

- **Agriculture**—

Lava plateaus are rich in fertile black soil.

E.g. Due to high yields, land is widely cultivated in lava plateaus, such as the Deccan Plateau, India, and the Columbia Plateau, USA.

- **Tourism**—

Beautiful and scenic views attract many tourists.

E.g. One of India's highest waterfalls, the Jog Falls on the Deccan Plateau; and the world's highest uninterrupted waterfall, the Angel Falls of the Auyan-Tepui Plateau in Venezuela in South America; are popular tourist destinations.

Image sources:

- Plateau: Plateau – CC - [https://commons.wikimedia.org/wiki/File:Plateau_\(PSF\).png](https://commons.wikimedia.org/wiki/File:Plateau_(PSF).png)
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- Iron ore mining: SSSVV gallery - keyword-Mining
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Time to teach	Asset Type	Theme	SubTheme
5 Minutes	Main Script	Resources	Land as a Resource, Land as a Resource

13. IA_The Deccan Plateau of India

Deccan Plateau of India

- The Deccan Plateau is one of the oldest plateaus.
- The roughly triangular landform covers most of central and southern regions of India, extending across 8 states.
- The name Deccan originates from the Sanskrit word "dakshin" meaning South, as the plateau is located in the southern part of the sub-continent.



Pic: Deccan plateau

• This high tableland is bound on the east by the Eastern Ghats and on the west by the Western Ghats, running almost parallel to the Arabian Sea.

- At its northern end are the Vindhya and Satpura ranges; these two separate the plateau from the Gangetic riverine plains in the north.
- The plateau slopes largely towards the east; this is why its main rivers, the Godavari, Cauvery and Krishna, flow along the eastward slope

and create deltas where they join the Bay of Bengal.

• The west-flowing Narmada and Tapi rivers however form estuaries; because the Western Ghats are higher, the river flows a short distance, at great speed, to drain itself into the Arabian Sea. Since the rivers flow through the hard rocks of a rift valley, it carries very little silt which is required to create a delta.



Pic: Rivers of the Deccan Plateau

• The steep side of the plateau enable several waterfalls which are both tourist attractions and are sources of hydroelectric power, such as the Jog Falls on the Sharavathi River in Karnataka, which is the highest waterfall in India.



Pics: Jog Falls & Hydroelectric project

The Deccan Traps

- In the north-western part of the plateau are the unique Deccan Traps, ('traps' means steps in Dutch language).
- This step-like formation of hills, were created over millions of years when lava oozed out, cooled and solidified into layers of basaltic rocks,

which also gives us the rich black soil of the region.

- When the volcanic activity ceased, they left behind high land masses with large stretches of flat land to form the plateau.
- It is considered one of the largest volcanic features on the earth.



Pics: Granite Rock & Ajanta caves

The Deccan Plateau history

The extensive wealth of the region—its minerals and precious stones and metals, and also the nutrient-rich, black soil-- was like a magnet that attracted the attention of some of the major dynasties that influenced Indian history, including the Pallavas, Chalukyas, Vijayanagara, Marathas, and the Mauryas, Guptas and the Muslim Sultanates.

This led to many clashes that shaped the political history not only of the region, but of India itself.



Pics: Chalukya architecture, Ibrahim Adil Shah of Bijapur empire, Chhatrapathi Shivaji of the Marathas

Image sources:

- Deccan plateau: OC: kpriyar@gmail.com
- Plateau map: https://www.srisathyaivaividyaiahini.org/alfresco/d/direct/workspace/SpacesStore/06a389c8-65f8-4916-b90e-7cb4a7b82221/india-map-8554?ticket=TICKET_9d0273576b62dd530545d7e14163e3cccd0313d0
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- Granite Rock: CC - <https://www.maxpixel.net/Rock-Karnataka-Granite-Deccan-Plateau-Hillock-370651>
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- Ibrahim Adil Shah of Bijapur empire: CC - https://en.wikipedia.org/wiki/File:Indischer_Maler_um_1595_001.jpg

Time to teach	Asset Type	Theme	SubTheme
5 Minutes	Interesting Asides	Solar system & the earth	Major LandForms , Major LandForms

14. Plains and Plateaus**A. Choose from the given answers**

1.

Plains are fertile because of their

1. Elevation
2. Topsoil
3. Rainfall pattern
4. Uneven terrain

(Ans: 2. Topsoil)

2.

Generally, natural disasters have the most destructive effect in

1. Plateaus
2. Plains
3. Volcanic mountain tops
4. Mountain slopes

(Ans: 2. Plains)

3.

A plateau is a

1. A flat and extended land
2. A flat and escalated land
3. A flat and elevated land

(Ans: 3. A flat and elevated land)

4.

Which of these will be the closest to the level of the Pacific Ocean

1. Indo-Gangetic plains in India
2. Ural mountains in Russia
3. Mt Kilimanjaro in Africa
4. Tibet in China

(Ans: 1. Indo-Gangetic plains in India)

5.

Which of these industries is most likely to start work in plateaus?

1. Sea salt extraction
2. Iron ore mining

3. Road building

4. Wheat flour/atta

(Ans: 2. Iron ore mining)

B. Fill in the blanks

1. Plains are large, unbroken stretches ofland (Ans: flat)

2.plateaus have fertile black soil. (Ans: lava)

3. One or more sides of a plateau are.....(Ans: steep)

4. Two waterfalls in India's plateaus are..... and..... (Ans: the Hundru falls in Chhotanagpur and Jog falls in Karnataka.)

C. Short answer questions

1. Name 3 ancient civilizations that flourished next to rivers.

(Ans: 1. Egyptian near River Nile, 2. Mesopotamian near the Tigris & Euphrates rivers, 3. Indus Valley on the Indus, 4. Ancient Chinese on the Yellow River, also called Huang He)

2. Name one plateau within, and one outside, India.

(Ans: 1. Chottanagpur plateau & Deccan plateau. 2. Tibetan plateau, East African plateau, Western plateau of Australia.)

D. Analytical questions.

1. The plains are mostly formed by rivers and their tributaries. Explain.

(Ans: When a river flows down a mountain, the water erodes it, and carries the eroded material with it as it goes down the slopes. This material which consists of sand, stones and silt, is then deposited along the banks of the river and in the valleys creating plains.)

2. The Indo-Gangetic Plains in India is among the most densely populated regions of the world. What do you think are the advantages of settling there?

(Ans:

- Plains are very fertile, and cultivation is easy on flat land
- Construction of rail and road network is faster on a flat terrain.
- It is easiest to build houses on level land
- Easier to set up industries causing increase in job opportunities

E. Crossword

Answers:

ACROSS

2. Table-land (PLATEAU)

5. Plains are usually formed by these (RIVERS)

6. One of the oldest plateaus in the world (DECCAN)

DOWN

1. Normally natural calamities make the most damage on this landform (PLAINS)

3. The process by which a mountain is worn down to make a plain (EROSION)

4. the highest plateau (TIBET)

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- Waterfall – CC - <https://pixabay.com/en/waterfall-water-nature-landscape-310140/>
- Egyptian – CC - <https://pixabay.com/en/egyptian-egypt-ancient-historic-311457/>
- Sunset river – CC - <https://pixabay.com/en/sunset-river-mountains-sky-nature-2976428/>
- Plains – CC - <https://pixabay.com/en/industry-chimney-manufacturing-156675/>
- Industries – CC - <https://pxhere.com/en/photo/1009510>

Time to teach	Asset Type	Theme	SubTheme
10 Minutes	Assessments	Solar system & the earth	Major LandForms , Major LandForms

15. SSG_06_06_09_VC_Choose your friends wisely**Choose your friends wisely***Pic:Reasons for land degradation*

1.The degradation of the land surface and soil is primarily due to deforestation, soil erosion, unplanned expansion of cities and towns, poor agricultural practices and improper solid waste management.

*Pic:Character erosion like soil erosion*

Land or Soil can be likened to our 'character'.

Our true nature is good character.

We are all born with it. But the erosion takes place slowly without our noticing it.

Like wind that carries the soil and erode it, so too with the strong 'winds' of bad company our character gets eroded.

By choosing whom we take on as friends we are charting our own destiny.

2.Let us look at this Panchatantra story that tells you the importance of choosing your friend wisely.

*Pics: Dharmabuddhi and Papabuddhi, buries money in forest, Papabuddhi accuses innocent Dharmabuddhi of theft*

Two friends, Dharmabuddhi (right, virtuous mind) and Papabuddhi (wrong, wicked mind) lived in a village.

Papabuddhi, who was wicked, decided to use the skills of the virtuous Dharmabuddhi to make money.

He convinced his friend to travel the world together and earn a lot of money.

Once they earned enough money, Papabuddhi convinced his friend that they should bury the money in a forest for safety.

He then stole all the money one night and went back to the village.

When the friends went back to the forest to get the money, Papabuddhi feigned ignorance, accused Dharmabuddhi of stealing the money and took the matter to the village elders, who agreed that they should ask the tree spirit in the forest about Dharmabuddhi's guilt.

Papabuddhi asked his father to hide in a hollow space in a tree trunk, and speak like the tree spirit to confirm the innocent man's guilt.



Pics: Papabuddhi speaks to tree spirit, father answers, runs when fire starts, Papabuddhi punished

Papabuddhi asked in a loud voice, "O spirit of the tree. Please tell us who the thief is, as we have a confrontation, and the village elders have come to seek the truth."

Immediately, Papabuddhi's father replied from inside the hollow of the tree, "Listen all who seek the truth. Dharmabuddhi is the thief, who has stolen all the money."

The village elders were wonderstruck. They could not deny that the spirit of the tree had indeed revealed the truth.

They immediately started discussing amongst themselves how they should punish Dharmabuddhi for his crime.

Sensing something wrong, Dharmabuddhi set dry leaves and twigs on fire inside the hollow of the tree.

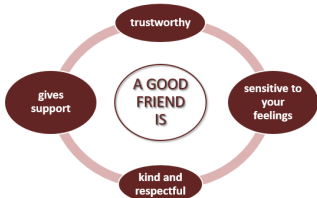
When the fire started flaring up, Papabuddhi's father could not bear the heat and the smoke inside the hollow any longer.

He came out, with burns in his body, crying for pity.

Papabuddhi's father confessed to his son's misdeed and the village elders punished him for it.

Moral: Avoid association of the wicked or you may end up paying for their misdeeds.

3.Children, how would you differentiate if one is a good friend or not?



Suggested answers:

Some common signs of a good friend include the following:

- their unconditional support
- trustworthiness,
- sensitivity about our feelings,
- kindness and respect,
- someone who love us out of choice not out of compulsion,
- someone who tells us the truth even when it is difficult to do so

Friends may come and go in your life, but more important than how long a friendship lasts, is to choose your friends who are dependable and honest.

Image sources:

1. Deforestation - <https://pixabay.com/photos/deforestation-forest-tree-stump-62486/>
2. Dumping waste - <https://pixabay.com/photos/scrap-dirty-trash-dump-dumping-166495/>
3. Soil erosion - https://en.wikipedia.org/wiki/Soil_erosion#/media/File:NegevWadi2009.JPG
4. City - <https://pixabay.com/photos/town-buildings-urban-architecture-2430571/>
5. Character erosion & Soil Erosion: - SSSVV Gallery – soil erosion
6. Friends - https://www.srisathyaivaividyaiahini.org/alfresco/direct/workspace/SpacesStore/1a7b8900-6716-45fa-8fcd-a157ebbd5bc8/farmer-story-8516?ticket=TICKET_5f8b6863792deea23a3e9ce0717b5ba6aa6b34e4
7. Trees - <https://pixabay.com/vectors/forest-trees-plants-ecology-148727/>
8. Walking man - <https://www.srisathyaivaividyaiahini.org/alfresco/direct/workspace/SpacesStore/b2548ac3-4533-4477-a896->

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10. Trees- <https://pixabay.com/vectors/forest-trees-plants-ecology-148727/>
11. Villagers- <https://pixabay.com/illustrations/gender-class-training-trainer-1459661/>
12. Man behind tree- OC- Radhika.bala@gmail.com
13. Boy pointing finger- https://www.srisathyasaividyavahini.org/alfresco/d/direct/workspace/SpacesStore/4d971f13-c10c-4ce2-a65d-5504343d2103/picture-frame-for-dad-4932?ticket=TICKET_5f8b6863792deea23a3e9ce0717b5ba6aa6b34e4
14. Fire- <https://pixabay.com/vectors/koster-flame-fire-1898042/>
15. Man running - <https://pixabay.com/vectors/stealing-robber-robbery-steal-294489/>
16. Man under tree- <https://pixabay.com/illustrations/guy-tree-beetle-sitting-ladybug-3049755/>

Time to teach	Value Type	Value Sub Type	Value Attribute
7 Minutes	Right Action		Stories

16. SSG_06_06_15_Summary- Major Landforms of the Earth

Summary - Major Landforms of the Earth



In this lesson we have discussed -

- how internal and external forces continuously create and change landforms
- the 3 different landforms of mountains, plains and plateaus, how they are formed and their distinguishing characteristics
- the different types of mountains
- how mountains, plateaus and plains benefit man, and why human settlements are mostly found in the plains
- how natural disasters in the plains, and instability in young, growing mountains can affect life
- how land is a valuable resource

Image source:

Deccan Plateau: <https://pixabay.com/photos/nandi-hills-deccan-plateau-karnataka-371584/>

Time to teach	Asset Type	Theme	SubTheme
2 Minutes	Main Script	Solar system & the earth	Major LandForms , Major LandForms