



12. Tourism



Can you tell?

Dear Students, imagine that you have to go on a vacation with your family. Make a list of 15 favourite places in Maharashtra.

After the list is prepared, put your places in the relevant classification.

- Places near the sea
- Historical places
- National parks and sanctuaries
- Hill stations
- Religious places

Select one place from each group which you would like to visit.

Discuss the reasons of your choice in the class.

Geographical explanation

We undertake short or long journeys for various purposes like festivals, family functions, fairs, sports, wanderings, recreation, etc. We need to carry out some preparations before going anywhere such as selecting the route to go there, choosing the means of transport, packing essential things, etc. When we reach the destination, we visit the exquisite and spectacular sites. Sometimes, we stay there. We make use of the facilities provided over there. We also pay in lieu of those services or goods.

Visiting various places away from our homes for getting joy, entertainment, trading, staying, etc. is called tourism.



Use your brain power!



Planning of a trip

- A trip has to be organised from your home to your favourite tourist destination. Find out the route with the help of various websites. Decide the journey route you will take. Consider factors like duration of the trip, materials required for travel, means of transport, availability of the route, etc.

Get the estimated travel cost per person.

Observe fig. 12.1 and answer the following questions : Use an atlas for reference.

- Out of these, which tourist places do you know? Make a list.
- For what are the selected places famous?
- Make a list of religious and historical sites from the map.

➤ Make a list of hill stations, places having sanctuaries and places along the coasts.

➤ Correlate the physiography and tourist places in India.



Make friends with maps!



Figure 12.1 : Major tourist places of India

Geographical explanation

The places given on the map have become famous due to different reasons. Some special things are the reason behind the place becoming famous. For example, natural beauty, pleasant weather, exquisite scenery, hot springs, sea coasts, historical monuments, religious places, forest areas, etc. are major attractions for **tourists**.

On the basis of political boundaries, tourism can be of two types:

Domestic tourism : Tourism within the limits of a country is called domestic tourism. For example, a person from Maharashtra going to Kanyakumari in Tamil Nadu for tourism, a person from Nagpur visiting Ellora Caves in Aurangabad, etc.

International/foreign tourism : Crossing country's boundaries and visiting some other country for tourism is called international tourism. For example, an Indian going to Switzerland for tourism, an American coming to India for tourism, etc.



Do you know ?

To go to a foreign country, one needs a passport, visa, travel insurance and other documents. We should have currency of the country where we are going. For this, we need to exchange our currency value with that currency.

On the basis of the aim of tourism and specialties of the destination, there can be different types of tourism. Some of these have been explained through photographs.

From the above we infer that tourism is very important for a country. Basic facilities should be developed at places which have to be developed as tourist sites mainly. Domestic tourism should be promoted. It is necessary to preserve the cultural heritage of a country.



Processions



Sanctuary



Wandering in the wild



Sea tourism



Health tourism



Adventure sports



Life below the sea



Do you know ?

GPS for Tourism:

The GPS system in our smartphones or the GPS instrument is largely used for tourism. For that we need special applications like the Google Map. We can know our exact location with the help of the map. Once it is decided where we want to head, then information regarding all the possible routes of travel, distances, time required according to the type of vehicle, amenities on the way like petrol pump, restaurants, lodges, etc becomes available in the app. We can use this for tourism.



Use your brain power !

Some issues related to tourism development are given below. Rewrite the inappropriate ones after correcting them.

- ❖ The income of a country should be substantially high for development of tourism.
- ❖ Domestic tourism should be given a boost.
- ❖ Tourists from other countries should be banned.
- ❖ Tourists should be assured of a safe journey.
- ❖ The cultural heritage of a country should be preserved.
- ❖ We should respect other country's culture.
- ❖ Government subsidies and incentives should be given for tourism businesses.
- ❖ Participation in international sports should be increased.
- ❖ Tourism should be encouraged through advertisements.
- ❖ It is necessary to preserve the tourist places.
- ❖ We should preserve the buildings of famous people who have contributed in various sectors as memorials.
- ❖ Services and amenities should be developed for tourism.
- ❖ Tourist agencies should be banned.
- ❖ There is no ample scope in this field.
- ❖ Tourism is a type of invisible trade.
- ❖ All types of facilities should be developed for tourists.
- ❖ The country's economy does not benefit at all from tourism.
- ❖ The hidden potential of other sites should also be developed.
- ❖ The forts and castles should be developed.

Geographical explanation

Tourism is an important tertiary occupation. Through this occupation, the world gets introduced to a region's natural, social, cultural environment. Besides domestic tourists, foreign tourists also visit various places of interest and therefore, foreign currency increases in our economy. Along with these benefits, development of tourist places, availability of employment opportunities to local people are also other good things that happen to a place.

Considering the importance of tourism, the local residents become aware of conserving the region's natural beauty and culture. Tourism should be promoted through advertisements in various media which will help in its growth.



Can you tell ?

- Which new forms of tourism have developed recently?
- Tell the reasons why new forms of tourism emerge.

Geographical explanation

Various forms of tourism are emerging to give a flip to tourism. One of these is ecotourism. This concept came into light when it was realised that due to increasing population, pollution and urbanisation, environment is degrading, it is an eco-friendly type of tourism. If tourism is developed by considering that while touring a place, the environment should not be degraded, or damaged by tourists, then it is called ecotourism. This includes taking precautions of not throwing litter at tourist sites, avoiding noise pollution, not hurting trees and birds and animals in the forests.

Besides these, recently the concept of 'agro-tourism' has arisen which is a pollution-free location away from the city holding an agricultural activity where the



Do you know ?

Maharashtra Tourism Development Corporation (MTDC) has implemented many programmes. It has provided guest houses, water sports, tourist houses near coastal areas, etc.

"Deccan odyssey" is a train started especially for tourism. This train is operated in coordination with MTDC, Indian Railways and Ministry of Tourism. The train originates at Mumbai and takes tourists to places like Nashik, Ellora, Ajanta, Kolhapur, Goa, and Ratnagiri and back to Mumbai. This train is like a moving palace.



Another type of similar train is called "Palace on Wheels". This train takes the Delhi-Jaipur,-Udaypur,-Bharatpur,-Agra-Delhi route. Many domestic and foreign tourists enjoy travelling in these trains.

The Indian railways have started a new train with coaches having transparent ceiling (vistadome) as a special attraction for tourism. It runs on the Vishakhapatnam-Kirandul route. The passengers can see the panoramic view of the nature-rich region of Araku valley, Anantagiri Ghat section and Borra caves by sitting in a completely air-conditioned coach having glass roof.

tourist is shown a glimpse of agricultural life. Tourists are attracted towards it. This is called agro-tourism. For a change from the urban life, tourists live on the farm and accept the hospitality of the farmers on payment in agro-tourism. In Pune and Kolhapur districts of Maharashtra number of agro-tourism centres have been developed.

Film tourism is a new type of tourism. The locations where films are shot attract a crowd of tourists and hence the concept of film tourism emerged. A number of amenities and facilities are provided to attract tourists to these places where film shooting takes place e.g. Mumbai film city, Ramoji City, etc.

Tarkarli in Konkan is famous for its seabed and the biodiversity found there. Here, the tourists can do 'snorkelling' and 'scuba diving.' MTDC has started a 'scuba diving' training centre of international standards at Tarkarli (Tal. Malwan, Dist. Sindhudurg).

Importance of tourism development in India :

India is diverse in terms of culture and nature. Tourism has lot of potential here. The richness of natural beauty in India, attractive landscapes, high mountains like the Himalayas, exquisite coastal areas attracts tourists. Also, the diversity of Indian culture, festivals, traditions, costumes, variety of dishes made using Indian spices and hospitality of the Indians has resulted in opportunities of tourism in India.



Always remember –

- ❖ Make sure you know the timings of the high tides and low tides when you visit a seaside.
- ❖ Do not go near sea coasts, hilltops, jungles, unknown caves, etc without a local guide.
- ❖ Avoid clicking 'selfies' at sea-cliffs, hill edges or with wild animals.
- ❖ Avoid the temptation to swim in the sea or go into the deep waters.
- ❖ Keep the tourist places clean.

- ❖ Take care of not hurting the animals and birds at the tourist places.
- ❖ Follow the instructions written on the boards placed at the tourist places.

Tourism and economic development :

Tourism development helps the Indian economy in a great way. Restaurants, shops, transportation systems, recreational places, etc develop because of tourism and directly contribute to the economy. Also, basic infrastructure improves and employment is generated which is advantageous to the economy indirectly. Tourism plays an important role in economic development. Therefore, it is said that tourism is an invisible trade.

Tourism and environmental development : Tourism is good for environmental development. To develop natural locations, sanctuaries, national parks, etc. economic investment is made by the government for the sake of tourism industry. Because of eco-friendly tourism concept, tourist places can be developed while caring for the environment. Factors like housing, resorts, traffic routes, etc. are also designed in an eco-friendly manner. In this type of developmental process, electricity, water are used very judiciously. The concept of recycle and reuse is also applied. Natural environment is maintained and tourism is developed too.

Tourism and health : Some tourists visit India to avail the health facilities. Visiting the places of tourist interest and achieving mental peace and physical strength through Indian Ayurveda, Yoga, Pranayam, etc. is the objective behind it.

The medicinal and surgical treatment in Indian hospitals are cost-effective and therefore, many patients from various developing countries come here for treatment. Medical Tourism develops from the facilities required by these tourists.

Tourism and social development : Some specific social programmes can be accomplished through tourism. If facets like rural lifestyle, tribal life and culture are included in tourism, tourism gets a social

dimension and the neglected components of the society can be included in development. The tribal life in Melghat of Maharashtra and visit to model villages like 'Anandwan' project of the social activist Baba Amte, Ralegansiddhi, Hiwre Bazaar, etc. creates social consciousness and gives a flip to development there.

There is a great potential for the development of such a type of tourism in India. In future, tourism will be an important factor in the Indian economy.



Think about it.

We saw the various types of tourism. Just think, can we go into the space for tourism? What will we have to do for that? Where can we go? Present your ideas in the form of pictures or paragraphs, etc.



Exercise



Q 1 Identify the type of tourism from the statement.

- (A) Hemant Kumar went to Mexico to learn about the architectural skills of the Mayan culture.
- (B) Portuguese tourists had come to Goa to participate in the Goa Carnival.
- (C) To seek treatment in a naturopathy centre, John and Amar went to Kerala.
- (D) Pundalikrao accomplished the Char Dham Yatra with his family.
- (E) Rameshwari from Pune went to enjoy Hurda (Roasted Grain) party and learn about modern and traditional methods of agriculture.
- (F) Sayyed family went to Ajmer Durgah.

Q 3 Answer in brief.

- 1) Differentiate between religious and cultural tourism.
- 2) What are the objectives of tourism?
- 3) Explain the environmental effects of tourism.
- 4) What opportunities develop with development of tourism?
- 5) Suggest measures after explaining the problems arising at the tourist places.
- 6) Explain with reason the places of interest that can be developed as tourist centres in your district.
- 7) Local people get employment due to tourism. Give reasons.

Q 4 Make a notice board containing instructions for the tourists at a tourist place.

Q 2 Match the columns identifying the correlation. Make a chain.

Group 'A'

- (1) Tadoba
- (2) Bird Sancturay
- (3) Sanjay Gandhi National Park
- (4) Taj Mahal
- (5) Ramoji Film City
- (6) Radhanagari
- (7) Bhimbetka
- (8) Ancient Caves
- (9) Eaglenest wildlife Sanctuary
- (10) Loktak

Group 'B'

- (1) Madhya Pradesh
- (2) Agra
- (3) Manipur
- (4) Nannaj
- (5) Ellora
- (6) Mumbai
- (7) Hyderabad
- (8) Kolhapur
- (9) Chandrapur
- (10) Arunachal Pradesh

Group 'C'

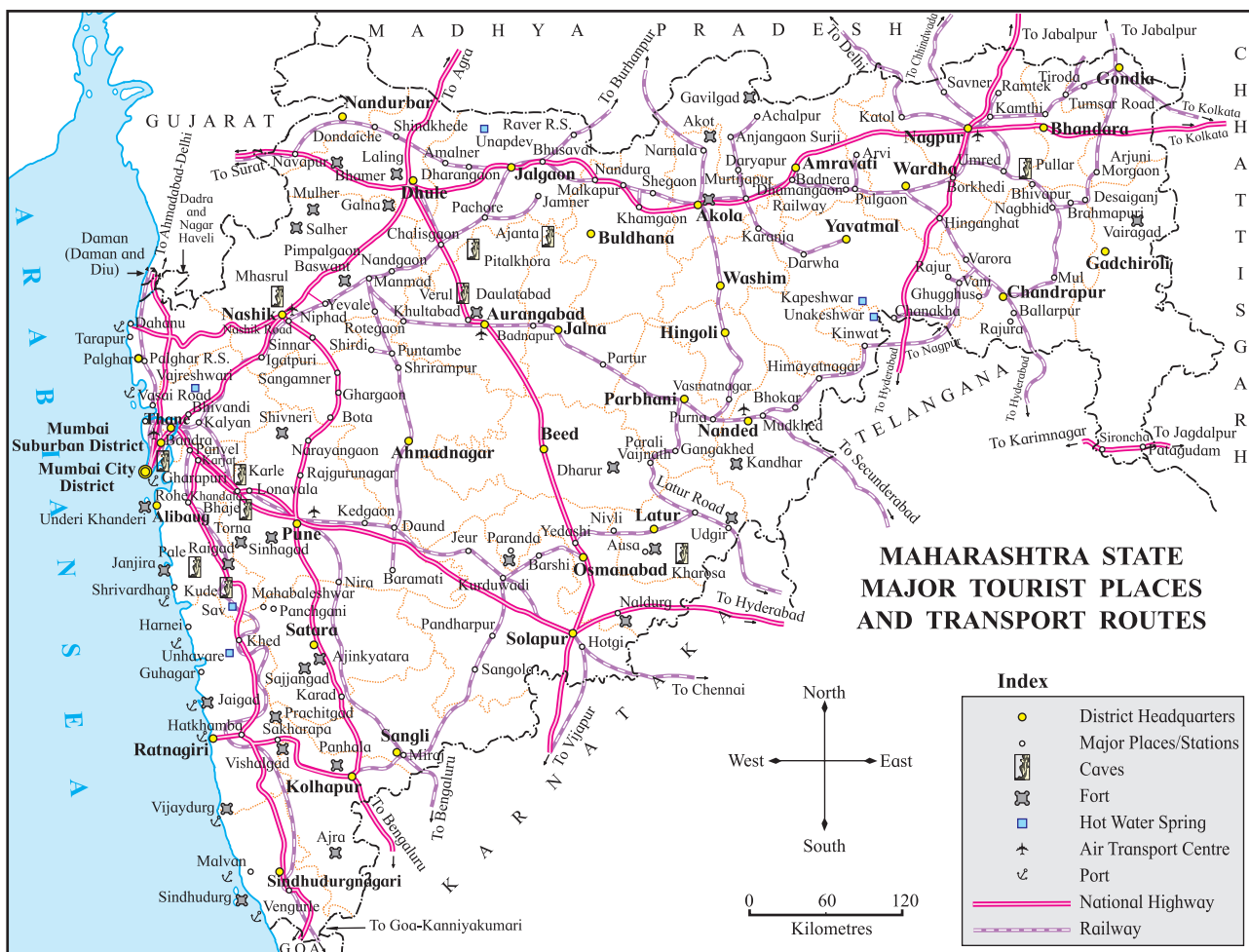
- (1) Lake
- (2) Butterflies
- (3) Kailash caves
- (4) Film city
- (5) World famous wonder
- (6) Ancient cave-paintings
- (7) Great Indian Bustard (Maaldhok)
- (8) Kanheri Caves
- (9) Bison
- (10) Tiger

Q 5 Explain how relevant is the concept of “Atithi Devo Bhava” (Guest is our God) with respect to tourism.

Q 6 The tourism map of Maharashtra is given. Answer the following questions based on the map.

(1) Make a list of places having hot springs. What are the reasons for these being located here ?

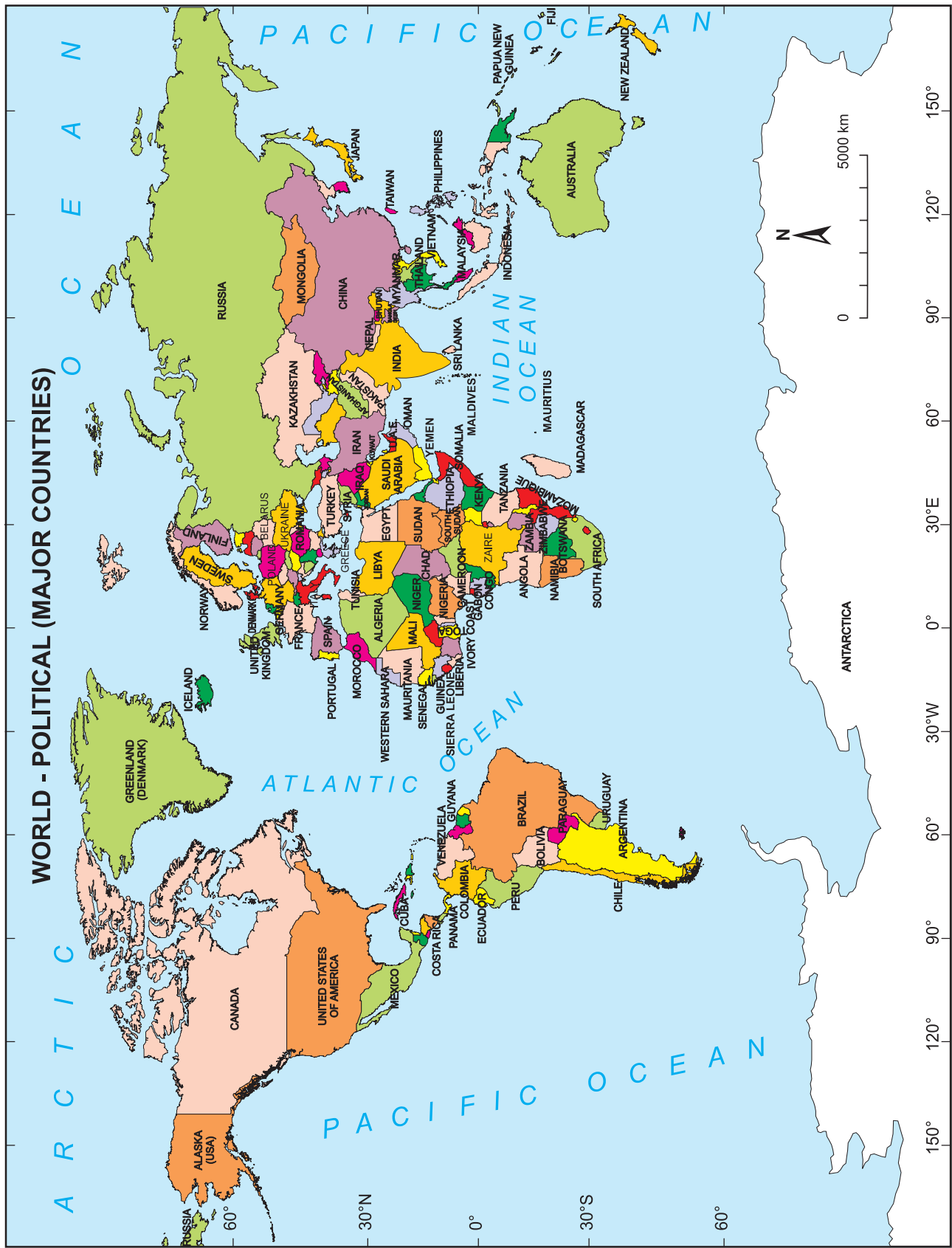
(2) At what places do you find the correlation between transportation routes and development of tourism?



Activity :

Make an advertisement which promotes tourism and present it in the class.





GLOSSARY

Detailed meanings of geographical terms

- **Alluvial fans** : When a river enters the plain area after crossing the mountainous area, its speed reduces drastically and the sediments brought down with it get deposited at the river bed. This deposition looks like a fan and therefore it is called alluvial fans. These alluvial fans can be seen in semi-arid regions. At the foothills of the Himalayas, esp. after crossing the Siwalik ranges, rivers enter the North Indian plains. Such plains are formed here. eg. alluvial fans formed by river Kosi.
- **Arch** : Where headlands extend well into the sea, they get eroded and sea arches are formed. They are found mostly in the regions having soft sedimentary rocks like sandstone or limestone. Waves hit the base of the headland on both the sides. The base part is eroded and with time, sea arch is formed.
- **Barchan** : A crescent shaped sand dune. The convex side of this dune is the windward side, while the concave side is opposite the flow of the wind. The windward convex side has gentle slope while concave side is steep. When the winds carrying sand particles slow down or come across an obstacle, deposition takes place and heaps of sand develop. The flow of the wind diverts at the heap and wind starts blowing from both the sides of the heap. Sand starts moving ahead along the direction of the wind and the heap gets a crescent shape. The windward side of the barchan keeps receiving sand particles and therefore, ripple marks are visible on this slope.
- **Beaches** : Land between two headlands. Because of the headlands, coast is somewhat protected from the onslaught of the waves. Waves coming to the coast undergo refraction continuously. Because of this refraction, waves converge at the headlands. While they diverge between two headlands. Consequently, the energy stored in them also bifurcates, the transporting ability also gets reduced and the sediments get deposited between the two headlands. As the process takes place continuously on a large scale, beaches are formed by deposition of sand. Beaches are generally concave to the sea.
- **Biological weathering** : Weathering caused due to living organisms.
- **Black and white patterns** : Various patterns of black color used to show subdivisions of a region on a map.
- **Block Disintegration** : Weathering happening due to water entering the crevices and joints of rocks. Mainly the joints or crevices broaden and blocks of rocks separate.
- **Buoyancy** : The force of a liquid acting in a vertical direction which opposes sinking of a floating object. With increasing density of the liquid, buoyant force increases.
- **Buyer** : Consumer who pays in exchange of a good or service.
- **Caves** : Open hollow space formed beneath the ground through natural process is called cave. Caves are formed due to chemical weathering of rocks. We find many small and large caves in limestone regions. Stalactites and stalagmites are formed inside these caves. Caves are also formed in regions other than limestone landscapes. Sea caves are formed due to chemical weathering and erosional work of the waves. Caves can be man-made too e.g. the caves of Ajanta and Ellora.
- **Chemical weathering** : Weathering occurring through chemical reactions. This weathering happens in regions of humid climates. Major processes include carbonisation, solution, oxidation, etc. In

equatorial areas, Chemical weathering happens upto considerable depths.

- **Choropleth method** : A method of preparing distributional maps. Area-related (polygonal) statistical information is used in this method. One value is assigned to the whole region (division). Different tints of colors are used for different values and the map is prepared accordingly.

- **Cirque and Horn** : Landforms produced due to erosional work of glaciers. Both the landforms are produced in the areas where the glaciers originate. After snowfall, the snow doesn't start flowing immediately like water, it gets deposited. It deposits more at the base than the slopes. When many layers of snow get deposited, the lower layers face pressure from above and turn into ice. While turning into ice and because of pressure, some ice at the bottom turns into water due to friction. This water starts flowing along the slope. This flow is the starting point of glacier. Ice on the slope also starts moving downwards. Friction causes the slopes of the mountains to become steep. Moving ice gets deposited at the foothills. Weathering by melted water leads to deepening basal portion. Such deepened portions at the base of slopes are called cirques. The cirque and the mountain behind it with steep slope together look like a big 'armchair' and therefore, cirques are often called gigantic armchairs. If cirques develop on all the sides of the mountains slopes, then the summit of the mountain looks like a horn. This is called horn. 'Matterhorn' in the Alps along the borders of Italy and Switzerland in Europe is the world famous example of horn.

- **Class interval** : The difference between the higher boundary and the lower boundary of a class is called class interval. While making choropleth or isopleth maps, 5-7 classes are made considering the maximum and minimum

values of a variable.

- **Colour tints** : Colours are used to show various types of regions on thematic maps. In choropleth or isopleth maps, various tints of the same colour are used. These tints are dependent on values. Regions with lesser values are shown by lighter tints while higher values are represented by darker tints.

- **Concentric layers** : When hills are formed, they move up and down continuously because of upward movement of air currents. As they go to higher attitude, a new layer of ice gets deposited around it. As this happens frequently, many layer get deposited on top of each other. Such layers are called concentric layers.

- **Conglomerate** : The pebbles in the sediments at the bottom of the river consolidate together because of mud and rock gets formed when such material is subjected to pressure. The pebbles in it are easily visible.

- **Convection current** : A flow in which movement occurs in upward, downward and circular directions like the flow in boiling water.

- **Deficit** : Situation arising when supply is less than its demand.

- **Delta** : Landform formed due to the depositional work of rivers at its mouth. In the lower course of the river, the flow of the river is very slow but the volume of water has increased. Sediments brought with the flow get deposited in the river bed itself and the flow of the river gets divided into many channels. These are known as braided channels. Later, where the river meets the sea, the sea waves somewhat oppose the river flow and therefore, a large amount of deposition of sediments occurs. Many channels form out of the main river and meet the sea independently. Such channels are known as distributaries. The

part between two distributaries is made up of sediments. The seaward side is broader while the landward side tapers. This looks like a triangle and therefore it is known as delta.

- **Demand** : The measure of goods/services which consumers are ready to buy at a specific price is called demand. The price of the goods or services can change according to demand.

- **Dot method** : A method used in preparing distributional maps. In this method, data obtained through counting is used e.g. population, cattle count, etc. While preparing such maps, factors which affect the distribution of an element like physiography of a region, transportation routes, river systems, etc. have to be taken into consideration.

- **Downward movement** : Going at a lower level. The movement of a material taking place in a downward direction. Such types of movements occur in the interior of the earth.

- **Drumlin** : Hills formed due to deposition of moraines. They are generally egg-shaped . If there are many hills of this type in a region, then such a region is called egg-basket.

- **Erosion** : Wearing away of rocks by different agents. The rocks are eroded continuously by the wind, rivers, glaciers, the sea waves and groundwater. The wearing takes place mainly because of the kinetic energy generated during the movement of the agents. Kinetic energy is dependent on the mass and the velocity of the moving material.

- **Eskers** : Narrow, long, winding ridges produced through deposition of moraines

- **Exfoliation** : Mechanical weathering taking place →due to the 'peeling' away of outer layers of rock. Rocks get heated due to sun's heat. Granular tension develops in the rock because of alternate contraction and expansion of minerals in the rock. The upper/

outer layer of the rock gets affected the most. So successive layers come out with time.

- **Fault** : Because of interior movements of the earth, rocks undergo tension and develop fractures. Such fractures are called faults. Faults can also develop when due to extreme pressure in folding as the folds break.

- **Flood levees and flood plains** : Landforms formed due to depositional work of rivers. When the level of water in the river channel increases, it overflows and waterspreads to nearby areas. This is called flooding. When the river is flooding, a large amount of sediment comes out with the flow. Heavy sediments are found towards the bottom of the river while suspended particles are scattered all over. Suspended sediments get deposited to the places where the flood waters reach perpendicular to the flow of the river. This region is called flood plain. The coarse sediments carried by the flood water gets deposited at the banks and as continuous process of deposition occurs at the bank, its level increases. Levees parallel to the river flow are formed close to the bank. These are called flood levees.

- **Folding** : Due to the movements occurring in the mantle of the earth, the crust faces pressure and gets folded. This process is called folding.

- **Frost** : Particles of snow formed from sublimation of water vapor at the surface. These are seen on the plant leaves, window panes, etc

- **Frostbite** : Freezing of skin and its upper tissues because of very cold temperatures. Tourists going to snow-covered regions face frostbites many a time. Generally, it affects hands, legs and skin of the face. Severe frostbite can affect skin, tissues and can even reach the bones.

- **Gorge** : Deep and narrow valley. The slopes of gorges are steep and almost vertical .

- **Granular weathering** : Weathering of rock particles by breaking into granules esp in rocks like sandstone, conglomerate when the cementing material weakens and the joined particles become loose and come off.
- **Gravitational force** : An object which has mass attracts other objects having mass. This force of attraction is called gravitational force. The object which has more mass has more force. Gravitational force is dependent upon the masses of the objects and the distance between them.
- **Gross Domestic Product (GDP)** : It is the sum of all productions in all sectors in an economy in one year. The goods and services produced in the primary , secondary and tertiary occupations are considered for the GDP. The value of production of GDP in monetary value is the national income of the country.
- **Hamada** : A landform found in the desert regions. They are mainly in the form of tall, dry, rocky plateaus in desert regions. Because the sand has been carried away in the process of transportation, there is less sand on them and mainly pebbles are found on the plateaus.
- **Hanging valley** : Landform produced due to erosional work of glaciers. The amount of snow in a tributary glacier is less compared to the main glacier. Consequently, erosion happens at a lower scale. In the main glacier, snow is accumulated to full height in its bed. When the main and the tributary glaciers meet, the height of snow is the same rather than the heights of their beds. The bottom of the tributary glacier is at higher level than the bottom of the main glacier. When snow melts, the difference in height of their bases becomes visible. The valley of the tributary glacier is higher and appears like it is hanging over the valley of the main glacier. Therefore, such a valley is called hanging valley.
- **Horizon** : The line where the sky and the land appear to meet. When the celestial bodies like the sun and the moon appear on this line, it is said that they have risen and when they disappear, it is said that they have set.
- **Hydraulic** : Related to liquid. Erosion caused due to pressure of liquid. Such erosion can be seen by the waves in coastal areas. Waves rise up at the rocky coasts. The air in the deeper part gets trapped. When the waves break and hits the rocks, the trapped air is freed in an explosive manner. Tremendous energy is released in this process and this wears away the rock at its base.
- **Internal trade** : Exchange of goods and services within the sub-divisions of a region.
- **International Date Line (IDL)** : An imaginary line which approximately follows 180° meridian. Travelers have to change the date and time while crossing the IDL. While travelling to the east, i.e. going from Asia-Australia to the continents of Americas the last day and date is accepted i.e. the ongoing date is carried forward. But while travelling from the American continents towards Asia-Australia i.e towards the west, travelers need to add one day and take the next day and date. The line goes completely through the ocean.
- **International trade** : Trade between countries. Also known as export-import trade. This can be bilateral or multi-lateral. Goods produced in a country are exported to or imported by another country by paying its cost.
- **Invisible trade** : A trade in which exchange of goods does not occur. Service trade is an example of invisible trade. Tourism is also a type of invisible trade.

- **Isopleth method** : A method of drawing maps. Point-related statistical data is used in this method. This means that statistical data belongs to a place. This method is used for the variables whose distribution is continuous, e.g. rainfall, temperature, etc.
- **Lagoon** : Lagoons are commonly divided into coastal lagoons and atoll lagoons. Both the types of lagoon lakes are shallow and are separated from the main sea. Tides have no influence over them. Waves are also not very high. Coastal lagoons are formed due to deposition of sand. Atolls are separated from the main sea because of coral reefs.
- **Land locked** : Surrounded by land. (1) Seas that are not connected to any ocean. They are called land-locked seas like Aral Caspian. (2) Countries which do not have any coast are also called land-locked countries like Nepal, Bhutan etc.
- **Landslide** : Weathered rocks accumulate on the slopes of hills on a large scale. As this heap is somewhat brittle, water penetrates in it during rainy season. As a result, the mass of the heap increases and it starts moving towards the foothills. The speed of moving material increases and in no time a big rock and heap of soil comes down the hill. Landslides also occur due to earthquakes.
- **Lichen** : One of the primary plants formed out of the coming together of fungus and algae. It generally grows on the rocks, walls and trunks of the trees.
- **Market Committees** : Market Committees have been established to facilitate sale of the products by producers and buying by traders at one place. As farming is done in extensive areas, the marketing of the farm products through market committees becomes feasible.
- **Mechanical weathering** : Wearing away of rocks due to contact with the physical environment is called mechanical weathering. This includes processes mainly thermal tension, crystallization, release of pressure, etc.
- **Moss** : Small flowerless plants, they always grow in moist shaded locations. They can be seen on the trunks of trees in the humid climates.
- **Mushroom rock** : Landform formed due to erosional work of wind.
- **Oxidation** : A type of chemical weathering. When oxygen reacts with iron in the rock, rust is formed. Reaction of any element with oxygen is called oxidation.
- **Per Capita Income** : The ratio between the total population of the country and the total national production is called Per capita income.
- **Plates** : The crust floats on the mantle but the crust is not continuous. It is separated into small and large piece. These pieces float over the mantle and also move independently. These pieces are called plates.
- **Precipitation (in chemistry)** : Solidification of a previously dissolved substance from a solution. Through chemical weathering processes like carbonation and solution, alkalis in the rock get carried away with water in soluble form. When water evaporates, these alkalis accumulate at a place in solid form. When this happens it is said that alkalis have been precipitated. The stalactites and stalagmites formed in limestone landscape are a result of precipitation.
- **Producer** : One who produces. One who obtains products with the help of natural or artificial processes is called producer.
- **Radioactive substances** : In elements with higher atomic numbers, that are invisible, highly penetrating and emitting spontaneously.

high quality radiations. Such substances are called radioactive substances. For example, uranium, thorium, radium, etc.

- **Rain gauge** : Instrument to measure the amount of rainfall. In a simple rain gauge, the collected rain water is measured by a measuring jar. Through a self-recording rain gauge a graph for rainfall the whole day or during a specific period gets drawn.

- **Remote sensing** : Obtaining information regarding any place or an object without actually establishing direct contact with it is called Remote Sensing. In this technique, information regarding the earth's surface is obtained through aerial photography or satellite sensors. Such information is used to study natural resources.

- **Retailers** : The link between wholesale traders and consumers or customers. Retail traders buy goods from wholesale traders and make them available to the consumers.

- **Ripple marks** : When water flows or wind blows over loose sand, the sand towards the bottom is pulled or pushed in the direction of flow, wave like structures of sand are formed on sand perpendicular to the flow. These ripple marks are seen on beaches in coastal areas or towards the windward side of the barchans.

- **Roche Moutonnee** : Landform found in the glacier bed. It is formed due to erosional work of glacier. The passage of glacier ice over underlying rock the up slope side smooth while the down slope side becomes rough because of weathering by melted water. This is called roche moutonnee.

- **Salinity** : The amount of salt in water. The amount of salt in the sea water is expressed in parts per thousand. Generally, the salinity of the sea is 35‰ which means that 1000gm of water contains 35 gm of salt.

- **Salt weathering** : This type of weathering is mainly seen on the rocky coasts. When waves break at the coast, their water droplets hit the sea cliffs. In this saline water, the soluble materials in the rocks get dissolved and small holes are formed in the rocks. This is the effect of solution. Through these holes, saline water enters the rock. After evaporation of water, the salts remain in the rocks itself. When they undergo crystallization, crystals grow and occupy more space. These creates tension in the rock. The holes get enlarged. This gives the cliff an appearance of honeycomb and hence this type of weathering is called honeycomb weathering.

- **Sand bar** : Many landforms are produced due to deposition of sand on the sea coasts. Beach is one of them. The waves carry away the sand on the beaches. But this sand is not carried too far; it starts forming keep usage the an is land parallel to the beach at a distance from the lowest level of low tide. With time, these islands become larger and a series of islands get formed. Such island get connected to each other to form a sand bar. As there bars are parallel to the beach, they may give rise to lagoon lakes.

- **Sandstone** : Rock made up of sand. It is a type of sedimentary rock.

- **Sand dune** : Landform produced due to the deposition work of wind. Such landforms are produced in arid regions or along sea coasts. According to their shape, sand dunes can be divided into two major types : Barchans and seifs.

- **Sea cave** : Caves are formed when sea waves hit the foot of the sea cliffs. Except few examples, these caves are not very deep.

- **Sea cliff** : Landform formed by erosional work of sea waves. Sometimes the hills extend upto the sea coasts; the waves hit its

base continuously. The rocks at the foot of the cliff start eroding. Consequently, the upper rocks fall down as their foundation gets lost suddenly. This leads to formation of sea cliff. Mostly, wave-cut platforms are seen at the base of the sea cliff.

- **Seif** : In Arabic, seif means sword. Such sand dunes are narrow and spread to a long distance. They resemble swords and are therefore named so. They are parallel to the direction of the wind blowing. They taper towards the wind direction. Their slopes are somewhat symmetrical and crests are sharp. In Rub-al-khali desert of Saudi Arabia and deserts in Iran, seifs are visible even up to 200 km.

- **Services** : Type of human occupation. In this, trade or production of goods does not occur. The people engaged in this occupation provide various services to the people like teachers, lawyers, doctors, etc.

- **Shattering** : A type of mechanical weathering. In temperate zones where temperature falls below zero, water in the crevices of the rocks freezes. Frozen water needs more space and this leads to breaking of rocks. Their shattered pieces spread here and there.

- **Sink hole** : A landform produced mainly in limestone region due to erosion. Limestone, contains soluble materials in greater amounts. Such materials dissolve in water and are carried away by water. This process leads to formation of caves in this region. With time, the roof of the cave collapses and only a hole is visible on the ground. Such a hole produced naturally in the ground is called sink hole. The water that flows on the surface meet appears to get lost in there holes.

- **Solifluction** : Mass movement occurring slowly. In peri - glacial areas, where temperatures are below zero degrees for

a period, processes of freezing of water and melting of snow occurs continuously. Solifluction occurs here mainly.

- **Solubility** : The capacity of a liquid to dissolve other materials in itself.

- **Soluble** : A material which can get dissolved.

- **Stalactite and Stalagmites** : Pillars formed from alkaline deposits in the caves in limestone areas. Salts brought by flowing groundwater deposit in the caves when water evaporates. When alkalis deposit, pillars start growing either from the roof down or floor up of the cave. Those which grow from the roof towards the floor are called stalactites while those which grow from the ground towards the roof are called stalagmites. Bora caves in Vishakhapatnam district in Andhra Pradesh are one of the major limestone caves in India.

- **Thematic maps** : Maps drawn to display the geographical distribution of one or more variables.

- **Tourist** : Traveller who visits various places for recreation and stays there for some time.

- **Tourist-places** : Sites which attract tourists. Natural, historical, religious places. Tourists visit such places.

- **Upward movements** : The movement of a material to a higher level in a vertical direction. Such movements occur in the earth's interiors.

- **Universal solvent** : A solvent in which many soluble materials can get dissolved. As water can dissolve number of materials, it is known as a universal solvent.

- **Urban population** : The number of people living in urban areas. Most of them are engaged in secondary or tertiary occupations.

- **V shaped valley** : Landform produced due to erosional work of rivers. A V-shaped river valley is formed near the origin of the river or in its upper course. Vertical erosion

occurs rapidly near the river. Comparatively the headward erosion is lesser. And therefore its elevation is higher. But the riverbed starts deepening. Consequently, it gets the shape of the alphabet 'V'.

- **Visible trade** : The type of trade in which goods are bought and sold or a trade in which the exchanged goods can be seen is known as visible trade.

- **Wave-cut platform** : Landform formed due to hitting of waves at the coast. Such platforms are formed at the base of the sea cliffs generally.

- **Weathering** : The process by which rocks become weak. Three types of weathering are mechanical, chemical and biological.

- **Wholesale market** : The market where producers sell their products to big traders. At these markets, traders or consumers who want to buy in retail do not turn up generally.

- **Yardang** : Landform formed due to the dual work of erosion and transportation by the wind. It is formed due to friction and carrying away of original rock or homogenous sediments. It looks like a toppled boat. The slope of the windward side is steep while the leeward side has a gentle slope. If the region has hard and soft rocks, then the part with soft rocks appears like trough while hard rock appears like a mound.

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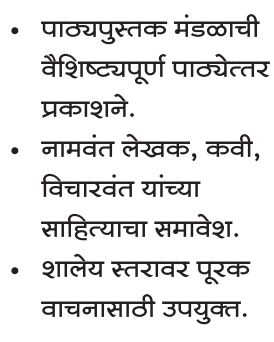
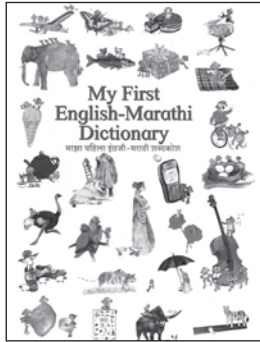
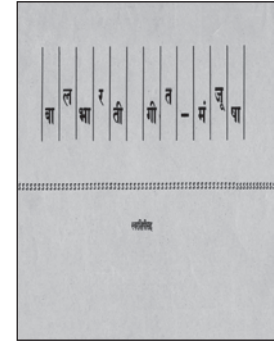
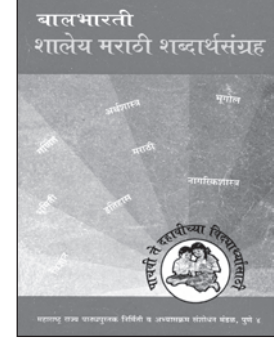
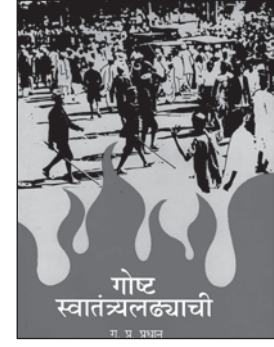
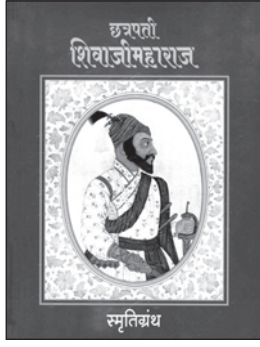
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