As per the latest CISCE Curriculum

My Book Of

Geography

Teacher’s Manual

(V-CONNECT
EDUCATION

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My book of Geography, comprising three books for classes 6, 7 and 8, is based on the latest syllabus developed by the Council for the Indian School Certificate Examinations (CISCE). The series hopes to enhance the various skills of the learner, right from observation, critical thinking and communication to reasoning, understanding, collaboration and citizenship.

A contemporary and thoroughly researched series, the books help learners explore natural and human environment and understand their continuous interaction.

Key features

- **Let’s Explore:** A detailed lesson on the topics as per the syllabus
- **Did You Know?:** A crisp fact file to grab the attention of the learner
- **HOTS:** Short questions that enable the student to think beyond the classroom
- **Words To Know:** End-of-the-lesson glossary to simplify difficult words
- **Quick Recap:** A quick recapitulation of the lesson for easy understanding
- **Activity:** Additional activities at the end of every lesson to ensure application of the concepts learnt
- **Model Test Papers:** Sample test paper at the end of the book to check understanding
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Representation of Geographical Features

LEARNING OBJECTIVES

The student will

- learn the representation of natural features with the help of different colours on Topographical sheets
- understand the use of scales for measurement
- become aware of the conventional signs and symbols on a map

METHODOLOGY

The teaching methodology has been designed to enhance various skills in the learner, from critical thinking and observation to understanding and reasoning. Features like animations, audio-visual slides, classroom discussions and learning through interactive maps will familiarise students with the natural and human environment and the constant interaction between them. These will feature alongside a crisp fact file to grab the learner’s attention, followed by questions based on instructional inputs and the student’s understanding. The purpose of this lesson is to acquaint the students with topographical sheets and the symbols representing natural and man-made features.

LESSON DEVELOPMENT

Resources: A Ramesh and R P Mishra’s Fundamentals of Cartography, A R Dwerryhouse’s Geological and Topographical Maps: Their Interpretation and Use, etc.

ANSWERS

1. To be done by the students.
2. a. A3  
   b. B4  
   c. D5  
   d. F5
3. To be done by the students.
4. a. Topographical maps - used in urban planning  
   b. Direct distance - can be measured with ruler  
   c. Colours and symbols - show man-made and natural features  
   d. Contour lines - show elevations  
   e. Agricultural land - yellow colour

ACTIVITY

Draw an imaginary village using the symbols of huts, lined wells, cart tracks, dense jungle, a perennial stream, some cultivated field and an inspection bungalow. You may give it a name too!
LEARNING OBJECTIVES
The student will
- understand the composition and structure of the atmosphere

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LESSON DEVELOPMENT
Resources: Camille Flammarion, James Glaisher’s *The Atmosphere*, Kshudiram Saha’s *The Earth’s Atmosphere: Its Physics and Dynamics*, etc.

ANSWERS
1. a. F 
   b. F 
   c. T 
   d. T 
   e. T 
2. Diagram 
3. 
   a.

<table>
<thead>
<tr>
<th>Stratosphere</th>
<th>Exosphere</th>
</tr>
</thead>
<tbody>
<tr>
<td>This layer is above the troposphere and extends upto 50 km above the surface of the Earth.</td>
<td>This is the topmost layer of the atmosphere, extending upto 960 km, gradually merges with interplanetary space.</td>
</tr>
<tr>
<td>In this layer, the temperature remains static and does not decrease with altitude.</td>
<td>The temperature range is between 300°C to 1600°C.</td>
</tr>
</tbody>
</table>
b. Aurora Borealis are the Northern lights.
   Aurora Australis are the Southern lights.

c. The solar energy reaches Earth in the form of solar radiation or insolation. The Earth radiates back this energy. This is called terrestrial radiation.

4. a. helps in respiration
   b. 78%
   c. shield to life
   d. condensation nuclei
   e. Aurora Australis

5. a. The atmosphere is multi-layered and each layer is distinct from the other. The layers which are nearer to the Earth are warmer and denser than the upper layers. The different layers of the atmosphere keep the optimum temperature suitable for the sustenance of life. The air circulation, heat and water cycle all occur due to the temperature difference in the atmosphere.

b. Oxygen helps in the respiration of all living beings. Decomposition of organic matter and combustion occur due to this gas. Carbon dioxide is used by plants for photosynthesis. It also traps terrestrial radiation which keeps the lower layers of atmosphere warm.

c. Atmosphere is the layer of air which surrounds the Earth. It supports all life forms. The atmosphere is multi-layered and each layer is distinct from the other. The layers which are nearer to the Earth are warmer and denser than the upper layers. The different layers of the atmosphere keep the optimum temperature suitable for the sustenance of life. The air circulation, heat and water cycle all occur due to the temperature difference in the atmosphere. The atmosphere can be felt but there is no colour, taste or odour in it. One might not feel its presence but it exerts tremendous pressure on us.

d. The Sun is the main source of energy for all living beings on Earth. The solar energy reaches Earth in the form of solar radiation or insolation. Only 45% solar radiation is absorbed by the Earth's surface. The Earth radiates back this energy. This is called terrestrial radiation. Part of this outgoing radiation is absorbed by the atmosphere. Insolation and terrestrial radiation are the sources of atmospheric heat.

e. The particulate matter present in the atmosphere serve as condensation nuclei.

**Activity**
We know that Earth is the only planet which has an atmosphere which supports life. Find out about the evolution of atmosphere on Earth.

**WebLinks:**
LEARNING OBJECTIVES
The student will
- understand the meaning and cause of Green House Effect
- learn about global warming and the necessary steps to reduce it

METHODOLOGY
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LESSON DEVELOPMENT

ANSWERS
1. a. reuse, recycle
   b. Indian Meteorological Department
   c. air conditioners
   d. cement
2. a. organic wastes
   b. artificial heating
   c. contaminates ground water
   d. renewable energy
   e. protection from UV ray
3. To be done by the students.
4. a. To reduce the amount of carbon dioxide emitted by a person as a result of carbon consumption.
b. Because LED bulbs are more efficient, long lasting and do not contain mercury.

c. Because the greenhouse gases get a free lift to reach ozone layer faster in extreme heat. These are the days when we should try not to use those devices which emit greenhouse gases.

5. a. A greenhouse is a glass building in which plants are kept to protect them from cold weather outside. The atmosphere inside is artificially heated up as per the requirement of plants. The glass walls let the sunlight go inside the greenhouse and do not let the trapped heat pass as easily as light, so the heat accumulates, which makes the temperature inside the greenhouse go up.

b. It is better to walk or cycle rather than use a car because burning of fossil fuels is the single largest source of greenhouse gases from human activities. Fossil fuels are used to furnish energy to produce electricity to run automobiles. The gases produced are carbon dioxide, carbon monoxide and nitrous oxide.

c. The glass walls let the sunlight go inside the greenhouse and do not let the trapped heat pass as easily as light, so the heat accumulates, which makes the temperature inside the greenhouse go up. The ability of the gases in the air to trap heat is what causes the greenhouse effect. When the atmosphere surrounding us warms up in a similar manner, it is called greenhouse effect. It has been happening for the last many million years and has a critical role in maintaining overall temperature of the Earth.

d. There used to be a dip in temperature of Arabian Sea after the monsoons but over the last 10 years it has failed to occur because of global warming.

e. Due to global warming, shore lines have become open to wind and wave erosion.

**Activity**

Suppose you read the headlines from a newspaper given below. You are member of school’s ‘Green Brigade’, what efforts you would make to stop such practices.

- Public restaurants turn into pockets of carbon-monoxide as smokers gather there.
- Schools remain closed due to thick smog settled upon the city.
- Aravalli hill-slopes are stripped of forests.

**Web Links:**

http://study.com/academy/lesson/what-is-greenhouse-gas-definition-causes-effects.html
Weather and Climate

**LEARNING OBJECTIVES**
The student will
- understand the elements of weather
- learn the difference between weather and climate
- and become aware of the various weather instruments

**Methodology**
The teaching methodology has been designed to enhance various skills in the learner, from critical thinking and observation to understanding and reasoning. Features like animations, audio-visual slides, classroom discussions and learning through interactive maps will familiarise students with the natural and human environment and the constant interaction between them. These will feature alongside a crisp fact file to grab the learner’s attention, followed by questions based on instructional inputs and the student’s understanding. The aim of this lesson is to enable the students to differentiate between climate and weather, and familiarise them with the instruments used to measure the various elements of weather.

**Lesson Development**
**Resources:** McIlveen's *Fundamentals of Weather and Climate*, Toni Albert's *Weather and Climate*, etc.

**Answers**
1. a. Anemometer  
   b. Wind vane  
   c. Barometer  
   d. Hygrometer
2. 1. Stevenson’s Screen  
   2. Gauge  
   3. Six’s thermometer  
   4. OKTA  
   5. Barometer  
   6. Beaufort  
   7. Rose
8. Nimbus
9. Gale
10. Rain

3. a. In a Fahrenheit thermometer, the freezing point of water is 32 degree F and the boiling point of water is 212 degree F.
   In a Celsius thermometer, the freezing point of water is 0 degree C and the boiling point of water is 100 degree C.

b. Weather is a general term used for the conditions prevailing in the atmosphere, for a shorter period of time.
   Climate is a term used for the conditions prevailing in the atmosphere over relatively long periods of time.

c. Absolute humidity is the actual amount of water vapour present in the air. It is measured in grams per cubic metre.
   Relative humidity is the ratio between the actual amount of water vapour present in the air and the total amount of water vapour the air can hold at a given temperature. It is measured in percentage.

4. a. It is part of an instrument called rain gauge, used to measured precipitation on Earth in the form of rainfall, snow, hail and sleet.

b. These are high clouds which are approximately 6,100 m. to 12,200 m. high. They are feathery in form.

c. Low clouds or stratus clouds are generally below 2,100 m. They are uniformly dull and greyish in colour and spread like a sheet.

d. On a map, the places having equal average temperatures are joined by lines called isotherms.

5. a.  

<table>
<thead>
<tr>
<th>Thermometer</th>
<th>Hygrometer</th>
</tr>
</thead>
<tbody>
<tr>
<td>A thermometer is used to measure temperature.</td>
<td>A hygrometer is used to measure the humidity of atmosphere.</td>
</tr>
</tbody>
</table>

b. Sunrise- 5 a.m.  
   Sunset- 6 p.m.
   (12 noon – sunrise time) + Sunset time
   (12-5) + 6
   Length of the day = 13 hours.

c. Clouds are classified as follows on the basis of its form, height and appearance.
   **High Clouds**: These are cirrus clouds which are approximately 6,100 m. to 12,200 m. high. They are feathery in form.
   **Medium Clouds**: They are cumulus clouds which are approximately 2,100 m. to 6,000 m. high. They have a fibrous structure and are dense with a watery appearance.
**Low Clouds:** These are stratus clouds which are generally below 2,100 m. They are uniformly dull and greyish in colour. They spread like a sheet.

**Clouds with Great Vertical Extent:** They are heap clouds with no definite height. These nimbus clouds are real rain clouds. They are thick and dark. They spread out in layers, bringing rain or snow. OKTA is the unit to measure cloud cover.

d. i. Hottest month- July
   Coldest month- January

   ii. Annual range of temperature= Average temperature of the hottest month- average temperature of the coldest month 29-5= 24 degree C

   iii. Minimum rainfall- December
   Maximum rainfall- October

**Activity**
Every day for a week, go outside and look up at sky at the same time. Observe the clouds. Record what kind of clouds do you see and the type of weather in general. At the end of the week, check your weather record and try to form a weather pattern.

**Weblinks:**
https://www.youtube.com/watch?v=ySSyT44nma4
Weathering and Soil Formation

LEARNING OBJECTIVES
The student will
- learn about the different types of rock formations
- understand the meaning of weathering
- know more about soil formation and realise the necessity and methods of soil conservation

Methodology
The teaching methodology has been designed to enhance various skills in the learner, from critical thinking and observation to understanding and reasoning. Features like animations, audio-visual slides, classroom discussions and learning through interactive maps will familiarise students with the natural and human environment and the constant interaction between them. These will feature alongside a crisp fact file to grab the learner’s attention, followed by questions based on instructional inputs and the student’s understanding. The aim of this lesson is to acquaint the students with the different types of rocks, and introduce them to the process of weathering and soil formation.

Lesson Development
Resources: Clive Gifford’s Weathering and Erosion, D Zachar’s Soil Erosion, Arthur J Fournier’s Soil Erosion: Causes, Processes and Effects, etc.

Answers
1. a. limestone
   b. exfoliation
   c. hydration and oxidation
   d. overgrazing
   e. earthworms, nematodes and micro organisms
2. a. Weathering is the breaking down of compact and solid land masses due to mechanical, chemical and biological processes, induced and modified by climate, water and wind.
   Soil Erosion is the displacement of the upper layer of soil. Unmindful cutting of trees, overgrazing, farming practices like shifting cultivation and extensive mining activities all lead to soil erosion.
b. Oxygen which is present in the air is absorbed by certain minerals. This results in the formation of a new chemical compound which makes the rocks erode away. This process is known as oxidation.

Some rocks absorb water. When calcium sulphate combines with water, it expands and weakens the rock. This is called hydration.

c. Soil Erosion is the displacement of the upper layer of soil. Unmindful cutting of trees, overgrazing, farming practices like shifting cultivation and extensive mining activities all lead to soil erosion.

Soil conservation is the prevention of soil loss from erosion or reduced fertility caused by over usage or soil contamination.

d. Mechanical weathering is common in cold climates. Altitudes and slopes greatly influence weathering. If a slope is gentle, weathered material may accumulate where it has broken and thus it can prevent further movement.

Mineral compositions have an important impact on chemical weathering, for example, limestone disintegrate in rainwater.

e. Magma may solidify below the Earth’s surface to form intrusive igneous rock bodies or, it may reach the surface and emerge as lava and solidify forming extrusive igneous rock. Granite and basalt are examples of intrusive and extrusive rocks respectively. Most of the igneous rocks are hard and resistant to erosion.

Metamorphic rocks are the rocks which are formed due to changes under great heat and pressure. Changes in rocks due to high temperature is called thermal metamorphism. Similarly, changes due to high pressure is called dynamic metamorphism. They are more compact and harder than original rocks.

3. The given diagram depicts the process of biological weathering, in which the roots of large trees get into cracks and break down rocks.

4. a. plutonic b. sedimentary
   c. sedimentary d. rock salt, gypsum
   e. diamond

5. a. i. Weathering is the breaking down of compact and solid land masses due to mechanical, chemical and biological processes, induced and modified by climate, water and wind.

   ii. Physical or mechanical weathering, chemical weathering and biological or organic weathering.

   iii. When the temperature falls below freezing point, the water present in the cracks of the rocks freezes and expands. As a result of this, cracks widen and deepen. When the weather warms up the ice thaws. The freeze-thaw action results in wide and deep cracks in the rocks. Such weakened rocks break down into pieces over a period of time.

b. Sometimes due to the reaction of some chemicals, the composition of a rock mineral gets altered. These chemicals can be found in water, oxygen and carbon dioxide. It may eventually lead to decomposition of the rock.
The various processes of chemical weathering are as follows:

**Hydration:** Some rocks absorb water. When calcium sulphate combines with water, it expands and weakens the rock. Hydration can sometime lead to exfoliation.

**Oxidation:** Oxygen which is present in the air is absorbed by certain minerals. This results in the formation of a new chemical compound which makes the rocks erode away.

**Carbonation:** The carbon dioxide present in the atmosphere gets dissolved in rainwater. This rainwater reacts with calcium carbonate found in limestone. The carbonic acid eats away limestone.

**Solution:** Some rocks dissolve completely when exposed to rainwater. Rock salt and silica are two such examples.

c. On the basis of the formation, sedimentary rocks can be divided into three categories:
   - Mechanically formed sedimentary rocks are formed when other rock material gets eroded and get cemented together, for example, conglomerate, sandstone, shale and clay.
   - Organically formed sedimentary rocks are formed when the remains of living organisms turn into hard-layered rocks over a period of time, for example, limestone, peat, lignite, coal, etc.
   - Chemically formed sedimentary rocks are formed when water gets evaporated leaving behind salts which get hardened and form a rock, for example, rock salt, gypsum, dolomite, etc.

d. **Methods of soil conservation:**
   - **Afforestation:** Planting trees on the slopes of the hills and uncultivated land protects the top soil from erosion. The roots of trees bind the soil.
   - **Restricted grazing of soil:** Rotation of pasture lands helps the cattle and retains the grass cover also.
   - **Terracing:** Terracing and bunding of hill slopes stop the soil from getting washed away.
   - **Contour Ploughing:** The ploughed edges of the fields collect the eroded soil and do not let it get washed away.
   - **Shelter belts:** Tall trees planted around the fields reduce the speed of strong winds. The layers of soil do not get blown away.

e. The process of the rock cycle is happening constantly. Old rocks are transformed into new ones. The process may happen in days or it may take millions of years. Volcanoes erupt in minutes and magma may transform the whole rock pattern. For sedimentary rocks, it may take millions of years to form.

**Activity**
List out five amazing rock formations. They should be naturally formed, accompanying pictures or drawings would make it more lively.

**Weblinks:**
Industries

LEARNING OBJECTIVES

The student will
- understand the need for industries and learn about the types of industries
- know about the important industries of the world
- become aware of the pollution caused by industries and the need for adoption of preventive measures

Methodology

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Lesson Development

Resources: Nancy J Sell's Industrial Pollution Control: Issues and Techniques, etc.

Answers

1. a. making yarn, cloth and clothing
   b. availability of labour
   c. marine based, forest based
   d. revert pollution
   e. to extract metal

2. a. T  b. F  c. T
d. F  e. F

3. To be done by the students.

4. a. culturing - fishing industry
   b. Uttar Pradesh - Sugarcane production
c. Silicon Valley - Santa Clara  
d. Hardware - printers  
e. Salem - Tamil Nadu

5. a. The geographical or physical factors which affect the location of an industry are:
   - **Availability of raw material**: Nearness to raw material is one of the most important factors for setting up an industrial unit.  
   - **Power-energy**: Sufficient power supply is essential for machines to work. Uninterrupted power supply is ideal for a factory.  
   - Flat Land and good transportation network are helpful in setting up an industry. Sites generally away from the city are better. Though commuting poses a problem but the city is saved from pollution and the industry also gets land for expansion in future.

b. The human and economic factors that affect the location of an industry are labour, capital, market, transport, government policies and insurance.

c. Internet, telecommunication network, cloud data network, etc., are the main segments of infrastructure of Information Technology.

d. The major causes of industrial pollution are:
   - Unplanned industrial growth and no feasible plan for the release of greenhouse gases and untreated water.
   - Old traditional technologies to produce high end products are still in use. These are known for producing bulks of waste.
   - Many small scale industries are set up without proper inspection and they release toxic gases in congested regions.
   - Untreated disposable water which contains extracts of heavy metal, harmful chemicals, radioactive waste and even organic waste is dumped either into a river or in open seas.

e. Industrial pollution can be reduced by
   - Reducing consumption of the polluting products. Minimum use of lead batteries.
   - Treatment of the waste, discharges and disposals of pollutants. To control pollution, the ‘point’ source should be known, which is, pipes discharging in rivulets and rivers, open ditches filled with filth, etc.
   - Use of sustainable chemistry or green chemistry which replaces the use and production of hazardous substances.

f. For an industrial firm to be profitable and to stay in business the value of outputs should be more than the inputs. Any expansion of trade depends on industrial growth.

**Activity**

Trace the journey of a car from raw material to finished product.

**Weblinks:**

https://www.youtube.com/watch?v=izqCLU_y6VQ
Energy and Power Resources

LEARNING OBJECTIVES
The student will
- be introduced to the different sources of energy
- understand the need for the conservation of energy and power resources

Methodology
The teaching methodology has been designed to enhance various skills in the learner, from critical thinking and observation to understanding and reasoning. Features like animations, audio-visual slides, classroom discussions and learning through interactive maps will familiarise students with the natural and human environment and the constant interaction between them. These will feature alongside a crisp fact file to grab the learner’s attention, followed by questions based on instructional inputs and the student’s understanding. The purpose of this lesson is to familiarise the students with the various renewable and non-renewable energy and power resources, and the ways in which we can sustainably use and conserve these valuable resources.

Lesson Development
Resources: John Twidell’s Renewable Energy Resources, Jennifer Lawson’s Conservation of Energy, etc.

Answers
1. a. Carbon
   b. more, renewable
   c. River Krishna, Andhra Pradesh
   d. West Bengal, lower Gondwana, fields.
   e. China, Germany, Japan, United States and Italy.
2. a. Renewable energy - geothermal
   b. Three gorges dam - China
   c. Fossil fuels - sedimentary rocks
   d. Drive less - walk more
   e. Solar energy - Tamil Nadu
3. To be done by the students.

4. a. Resources are the features of environment which are needed and used by the people. The resources which occur in air, water and land are called natural resources. They are further divided into renewable and non-renewable resource.
   
b. Non-renewable energy resources are coal, oil and natural gas.
   
c. Tamil Nadu.
   
d. A wind turbine converts the kinetic energy in the wind into mechanical power. It is the most cost effective source of energy with fastest payback period.
   
e. Fossil fuels were formed about 300 million years ago when earth had swampy forests and shallow seas. The sedimentary rock layers were formed at the bottom of the seas where dead fossils of plants and sea creatures got buried between them.

**Activity**

Make a pie chart using the following figures of net generation of power by energy sources.

1. Natural Gas: 27%
2. Coal: 39%
3. Nuclear: 19%
4. Hydro: 6%
5. Wind: 4%
6. Biomass: 2%
7. Oil: 1%
8. Solar: 1%
9. Geothermal: 1%

**WebLinks:**

http://study.com/academy/lesson/energy-resources-definition-uses.html
Europe (Location, Political and Physical Divisions)

LEARNING OBJECTIVES
The student will
- understand the location, boundaries, political divisions and physical features of the continent of Europe

METHODOLOGY
The teaching methodology has been designed to enhance various skills in the learner, from critical thinking and observation to understanding and reasoning. Features like animations, audio-visual slides, classroom discussions and learning through interactive maps will familiarise students with the natural and human environment and the constant interaction between them. These will feature alongside a crisp fact file to grab the learner’s attention, followed by questions based on instructional inputs and the student’s understanding. The aim of this lesson is to familiarise the students with the location and physical features of the continent of Europe.

LESSON DEVELOPMENT
/Resources: John Davies’ *Glance at the European Continent.*

ANSWERS
1. a. The Volga - The Caspian Sea
   b. Iceland - The Scandinavian Highlands
   c. Mount Elbrus - The Caucasus
   d. The Ural Mountains - Eastern part of Europe
   e. The Pyrenees - between France and Spain
2. a. the Caspian Sea
   b. Mount Blanc
   c. 187,888
   d. River Rhine
   e. Wales
3. a. The Alps are Europe’s major mountain chain. They were formed about 65 million years ago. The Alps are like the Mid-world Mountain Belt which stretches from the Pyrenees in Spain to the Pamir Knot in Central Asia.
The Southern Plateaus and Highlands are large areas, south of the Central plains. They are made up of old rocks.

b. The Seine River of France drains into the English Channel.
   The Thames of England flows towards the east.

c. Arctic Ocean is the northern boundary of Europe.
   Mediterranean Sea forms the southern boundary of Europe.

d. Ural Mountains form the eastern boundary of Europe.
   The Alps are Europe’s major mountain chain.

e. Rolling topography is the region where land has become undulated due to constant erosion by various natural forces.
   Fjords were formed by glaciers. They are a distinct feature of the Norwegian coastline. Over millions of years, they had cut deep narrow valleys along the coast which got filled with sea water.

4. a. A long indented coastline makes Europeans great sea farers. Their location and geography were the main factors which helped them to have immense influence on the sea routes.

b. The Alps are Europe’s major mountain chain. They are like mid-world Mountain Belt which stretches from the Pyrenees in Spain to the Pamir Knot in Central Asia.

c. Fjords were formed by glaciers. Over millions of years, they had cut deep narrow valleys along the coast which got filled with sea water. Fjords are a distinct feature of the Norwegian coastline.

d. The Apennines run southward into Italy. They appear to be the backbone of the country.

e. The Mesta of Spain, the Central Massif of France, the highlands of Bohemia, the Vosges and Jura of France, the Black Forest and Harz Mountains of Germany, etc.

5. To be done by the students.

**Activity**
Find out about the European Union or EU. Name its member countries.

**Weblinks:**
Australia—The Island Continent

LEARNING OBJECTIVES
The student will
- understand the location, boundaries, political divisions and physical features of the Australian continent

METHODODOLOGY
The teaching methodology has been designed to enhance various skills in the learner, from critical thinking and observation to understanding and reasoning. Features like animations, audio-visual slides, classroom discussions and learning through interactive maps will familiarise students with the natural and human environment and the constant interaction between them. These will feature alongside a crisp fact file to grab the learner’s attention, followed by questions based on instructional inputs and the student’s understanding. The aim of this lesson is to familiarise the students with the location and physical features of the continent of Australia.

LESSON DEVELOPMENT
Resources: David Johnson’s The Geology of Australia, Harmut Roder’s Australia: The Red Continent, etc.

ANSWERS
1. a. Mt Kosciusko - the highest peak
   b. Tasmania - Hobart
   c. The Great Barrier Reef - corals
   d. Artesian well - acquifer
   e. Between Australia and New Zealand - Tasman Sea
2. a. The word Australia means southern or ‘land down under’. It is the only continent which is an island, hence it is also known as an island continent.
   b. The Eastern Highlands are known as the Great Dividing Range because they act as watershed or water divide between the east-flowing rivers and the west-flowing rivers.
   c. Lake Eyre Basin is also called an area of inland drainage because most of the rivers flowing in this region do not reach the sea. They either dry up or drain in the lakes.
   d. Western Plateau has low relief because it is a very old plateau and the landform has been eroding for many years, making it more or less flat.
e. The Murray Darling is the most important river system of Australia. These rivers rise in the Eastern Highlands. They carry huge amounts of silt and have therefore built a flat lowland.

3. a. An ordinary well is a well that is dug or drilled below the water table and water is pumped to the surface.

   When water is dug in an aquifer, the water gushes out of it under pressure. This kind of well is called an artesian well.

b. The Murray Darling is the most important river system of Australia. The Murray is the main river and Darling is its tributary.

c. Spencer Gulf is a part of the Rift Valley.

   The Great Artesian Basin is found in the lowlands of Carpentaria.

d. The Eastern Highlands extend from Cape York Peninsula in the north to the island of Tasmania in the south. The mountains are low in the north but become higher towards the south. These highlands are also called the Great Dividing Range.

   The Great Barrier Reef is the world’s largest coral reef system.

e. Musgrave Range is the important highland located on the flat Western Plateau.

   In between the MacDonnell Range and Musgrave Range lies the monolith of the world, the Ayers Rock or Uluru.

4. a. 23 ¾ degree S

   b. Great Barrier Reef

   c. Lake Eyre Basin

   d. porous rock

   e. Southern or ‘land down under’

5. a. Australia, an island continent, lies entirely in the Southern Hemisphere. It is the sixth-largest country in the world but it is the smallest continent. It is also the lowest, flattest and apart from Antarctica, the driest continent.

   b. Lake Eyre Basin is found in the central part of the central lowlands. Most of the rivers flowing in this region do not reach the sea. They either dry up or drain in the lakes. This region is called an area of inland drainage. Lake Eyre depends on rainfall for the water.

   c. Australia is the only continent which is an island and also the only continent with one single nation. Being an island, it was cut off from the rest of the world for millions of years. This resulted in the development of a unique flora and fauna in Australia.

   d. The central lowlands lie between the Western Plateau and the Eastern Highlands. They extend from the Gulf of Carpentaria in the north to Encounter Bay in the south. They are made up of three lowlands: Great Carpentaria Lowlands, Lake Eyre Basin and Murray Darling Basin.

   e. Conditions favourable for an artesian well are:

      • saucer-shaped basin
      • porous rock between two impervious rocks
      • adequate rainfall
• layer of porous rock should be exposed to the surface for the rain water to seep into the ground.

**Activity**
Research and write: why does Australia have so many unusual native animals, such as Kangaroos and wombats?

**Web Links:**
https://www.youtube.com/watch?v=q2WhhyUnNcQ
10 Africa (Location, Political and Physical Features)

LEARNING OBJECTIVES
The student will

- understand Africa’s location, boundaries, political divisions and physical features

Methodology
The teaching methodology has been designed to enhance various skills in the learner, from critical thinking and observation to understanding and reasoning. Features like animations, audio-visual slides, classroom discussions and learning through interactive maps will familiarise students with the natural and human environment and the constant interaction between them. These will feature alongside a crisp fact file to grab the learner’s attention, followed by questions based on instructional inputs and the student’s understanding. The aim of this lesson is to familiarise the students with the location and physical features of the second largest continent—Africa.

Lesson Development
Resources: John Lliffe’s Africans: The History of a Continent, John Reader’s Africa: A Biography of the Continent, etc.

Answers
1. a. Ghana
   b. Egypt
   c. Val and Molopo
   d. 18 W to 51 E

2. a. Sahel - Semi-desert
   b. Namib - Dry lands
   c. Jebel Toubkal - Highest peak
   d. Al Kufra Oases - Group of five oases
   e. Lake Albert - Rift Valley

3. a. fish species
   b. Tanzania, Congo, Burundi and Zambia
c. north-eastern Zambia
d. merchants
e. Mediterranean Sea

4. a. Africa was called a Dark Continent as not much was known about the continent’s inhabitants, its fauna and flora. Although it’s northern coasts bordering the Mediterranean Sea was for many centuries well-populated, but any attempt to penetrate inland was blocked by the deserts.

b. The Great Rift Valley cuts through the uplands of East Africa through which flows the river Nile. The stretching of the earth has resulted in vertical cracks extending from Lake Malawi to the Red Sea and then up to the Dead Sea in Jordan.

c. Latitudinally, Africa lies between 37° North to 35° South. The longitudinal extent is from 18° West to 51° East.

d. Based on the topography of the land the African continent can be divided into the following physical divisions:
   • The Atlas Mountains in the north-west
   • The Low Central Plateau
   • The High Plateau of the south
   • The Great Rift Valley of Africa
   • The Coastal Plains
   • The River Basins

e. Game reserve is an area of land that is created in order to protect animal species from hunters and poachers. They are often hunted for food or sport and hence referred to as ‘game’.

**ACTIVITY**

Despite being naturally so well endowed, Africa is still underdeveloped. Find out the reasons and explain citing examples. Also, search about environmental crisis faced by the Atlas mountain region.

**WEBSITE:**
https://www.youtube.com/watch?v=WUIs1gkR3tk
Antarctica (Location, Political and Physical Features)

**LEARNING OBJECTIVES**
The student will
- understand the location, boundaries, political divisions and physical features of Antarctica

**Methodology**
The teaching methodology has been designed to enhance various skills in the learner, from critical thinking and observation to understanding and reasoning. Features like animations, audio-visual slides, classroom discussions and learning through interactive maps will familiarise students with the natural and human environment and the constant interaction between them. These will feature alongside a crisp fact file to grab the learner’s attention, followed by questions based on instructional inputs and the student’s understanding. The aim of this lesson is to familiarise the students with the location and physical features of the coldest continent—Antarctica.

**Lesson Development**
**Reference:** Gabrielle Walker’s *Antarctica: An Intimate Portrait of a Mysterious Continent*, David McGonigals’s *Antarctica: Secrets of the Southern Continent*, etc.

**Answers**
1. a. elephant seal and fur seal
   b. fish
   c. snow petrel
   d. Gold and iron
   e. deterioration of ozone layer
2. a. Skua - Scavenger
   b. Weddell Sea - North of Antarctica
   c. Active volcano - Mt. Erebus
   d. Aurora Australis - Southern Lights
3. a. F
   b. T
   c. T
4. a. Species of the penguin bird found only in Antarctica.
b. Blizzards

c. Dakshin Gangotri, Maitri

5. 1. Antarctica is divided into unequal eastern and western zones by the Transantarctic Mountain chain, which is about 100 million years old. The continent is almost circular in shape. The eastern part is larger in area and is called Greater Antarctica. The smaller western portion is called Lesser Antarctica.

2. Antarctica is situated at the Earth's southern tip. The continent is almost circular in shape. It is surrounded by Indian Ocean, Atlantic Ocean and Pacific Ocean. Antarctica is just slightly larger than Australia.

3. The icy continent of Antarctica can only support the hardest and most specialised forms of life. All the animal inhabitants of Antarctica depend upon the sea for food. The most familiar birds are penguins of which 17 species inhabit this region. The three species which belong to Antarctica only are the Adelie, the Emperor and the Chinstrap.

One of the most graceful and majestic birds in Antarctica is the snow petrel, which resembles a white dove. The skua are scavengers who feed on chicks and other birds. Other birds found are albatross, gulls, cormorants and prions.

There are six species of seals that breed in Antarctica. The elephant seal and fur seal are protected species.

4. Antarctica is the coldest and the windiest of all the continents. The lowest temperature ever recorded anywhere in the world was -89.2° C. The windiest area is the coast of Antarctica located facing the south of Australia, where blizzards blow at a speed of 160 km per hour.

The Polar Desert has summer months from November to February. During this time the Sun never sets, so there is continuous light. Even during summer, the temperature remains at freezing point.

5. The term Antarctica has been derived from 'Anti-Arctic' which literally means opposite to the Arctic. Ice and snow cover 98% of the land.

**Activity**

The names of some major features of Antarctica are given below. Plot them on this map using suitable colours/symbols: You may refer to your atlas.

1. Amundsen Sea
2. Alexander Island
3. Bellingshausen Sea
4. Ross Sea
5. Ronne Ice Shelf
6. Ross Ice Shelf
7. Weddell Sea

**Weblinks:**