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**3 The Earth’s Surface**

**LET’S GET STARTED**

1

* *Do you know that our Earth is actually round like this ball? But it is slightly flattened at the two poles.*
* *But we live on flat land. How can we live on a round surface? Wouldn’t we fall off?*

2

* *Well, long ago people believed that the Earth was flat. But some explorers who went around the Earth proved that it is indeed round in shape.*
* *In fact, the shape of the Earth is spherical.*

**Learning Outcomes**  
At the end of this lesson, learners will be able to:

* **examine** the shape of the Earth.
* **locate** the continents and oceans of the world on a map.
* **compare and contrast** some salient features of each continent and ocean.

**Let’s Talk**  
If you have to prove to a friend that the shape of the Earth is spherical, how would you do that?

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**We Shall Learn**

**The Earth**

* spherical in shape
* continents: Asia, Africa, North America, South America, Antarctica, Europe, Australia
* oceans: Pacific, Atlantic, Indian, Southern, Arctic

**THE EARTH**

Earth is the third planet from the Sun. It is the only planet known to have an atmosphere that contains oxygen.

Earlier, it was believed that the Earth was flat. In the year 1519, **Ferdinand Magellan**, a sailor from Portugal, sailed his ship towards the west. After three years, some members of the ship’s crew reached the same port from where they had begun their voyage. This expedition proved that the Earth was round and not flat.

**Zoom In**

Several million years after the formation of the Earth, the first land mass that emerged was a supercontinent. This supercontinent was called **Pangaea**. Pangaea was surrounded by a single ocean. About 200 million years ago, the Pangaea broke into two parts — **Gondwanaland** and **Laurasia**. In due course of time, Gondwanaland and Laurasia also broke up into different parts, and the present-day continents and oceans were formed.

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**CONTINENTS AND OCEANS**

You have already studied that big land masses on the Earth’s surface are called **continents**, and the large continuous masses of saltwater are called **oceans**. Seas, gulfs and bays are the smaller parts of these oceans.

**Continents**

There are seven continents in the world. These are — Asia, Africa, North America, South America, Antarctica, Europe and Australia (in the order of the largest to the smallest).

**GEOGRAPHY SKILLBUILDER:**  
In your notebook, provide a colour-coded key or legend to go with the map.

**Words to Know**  
*gulf*: a large area of sea that is almost surrounded by land  
*bay*: a part of the sea, or of a large lake, that curves into a coastline

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**Asia**

Asia is the largest continent and occupies about one-third of the world’s total land area.

* This continent is surrounded by oceans on three sides. To the north lies the Arctic Ocean, to the east lies the Pacific Ocean and to the south is the Indian Ocean.
* **India** and **China**, the two most populous countries in the world, are located in this continent.

**Africa**

Africa is the second largest continent in the world.

* To its north lies the Mediterranean Sea, to the east lies the Indian Ocean and to the west, the Atlantic Ocean.
* Africa has diversity in landforms. It is home to the **Sahara Desert**, the largest hot desert in the world; the **Nile River**, the longest river in the world; and **Mt Kilimanjaro**, which is the highest mountain in Africa.

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**North America**

North America is the third largest continent in the world.

* It is bordered by the Arctic Ocean in the north, the Atlantic Ocean in the east and the Pacific Ocean in the west.
* It has high mountains such as the **Rockies** and large lakes such as the **Great Lakes**, which is a group of five freshwater lakes.
* This continent is home to developed countries of the world such as the United States of America and Canada.

**South America**

South America is the fourth largest continent in the world.

* Both the Americas are joined by the **Isthmus of Panama**.
* The famous **Amazon rainforests** are located here.

**Words to Know**  
*developed*: economically and socially advanced  
*isthmus*: a narrow piece of land that joins two larger land areas and has water on both sides  
*rainforest*: a dense forest found in regions receiving heavy rainfall and has a rich variety of plant and animal life

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A long stretch of mountains, called the **Andes**, run parallel to the Pacific coast in the western part of South America.

**Antarctica**

Antarctica is the coldest and the fifth largest continent in the world.

* It is also called the **White Continent** as it is always covered by a thick carpet of ice and snow.
* It is the world’s only continent which has no permanent human habitation due to the extreme cold climate.

**Zoom In**

Antarctica is the largest cold desert in the world. It has some research stations run by different countries. India also has three research base stations — Dakshin Gangotri, Maitri and Bharati in Antarctica, of which the last two are operational.

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**Europe**

Europe is the sixth largest continent in the world.

* Europe and Asia are together called **Eurasia** and form the longest stretch of land on the Earth.
* Europe is bordered by the Mediterranean Sea in the south, Asia to the east and the Atlantic Ocean in the west.
* Technologically developed countries with high standard of living such as the United Kingdom and France are part of Europe.

**Australia**

Australia is the smallest continent in the world. It is the only continent which is also a country.

* It is an island and is surrounded by water on all sides.
* Australia is famous for its **Great Australian Desert** and the **Great Barrier Reef**.

**Words to Know**  
*coral reef*: a hard natural structure under the sea that is formed from skeletons of marine organisms called coral polyps

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**Engage and Explore**

While reading about the continents, you came across some terms, such as seas, bays, gulfs and isthmus. Research about the meaning of these terms, along with some examples. Collect pictures to go with the examples and prepare a chart.

**Check Your Understanding**

* Name the continents in the order of the smallest to the largest.
* State two differences between North America and South America.

**Oceans**

There are five oceans — the **Pacific Ocean**, the **Atlantic Ocean**, the **Indian Ocean**, the **Southern Ocean** and the **Arctic Ocean** (in the order of the largest to the smallest). A rich variety of plants and animals are found in these oceans. Together, they are called **marine life**.

**Pacific Ocean**

The Pacific Ocean is the largest and deepest ocean in the world.

* It covers about 30 per cent of the Earth’s surface.
* It separates the two Americas from Asia and Australia.
* Some of the world’s most active and **dormant** volcanoes are found in the basin of the Pacific Ocean.

**Words to Know**  
*trench*: long, deep and narrow channels in the ocean floor  
*dormant*: not erupted for several years but may erupt in future

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**Atlantic Ocean**

The Atlantic Ocean is the world’s second largest ocean.

* It separates Europe and Africa from North America and South America.
* There is an underwater mountain range on its ocean floor, known as the **Mid-Atlantic Ridge**. Although this ridge is mostly underwater, a portion of it is elevated enough to extend above sea level.

**Indian Ocean**

The Indian Ocean is the third largest ocean in the world.

* It lies to the south of Asia and is named after India, which lies just above it.
* It separates Africa from Australia.
* It is warmer than the Pacific, Atlantic and Arctic oceans.

**Words to Know**  
*ridge*: (here) a mountain range underneath the ocean

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**Southern Ocean**

The Southern Ocean is the fourth largest ocean in the world.

* It is located around the South Pole, near Antarctica.
* The southern portions of the Pacific Ocean, the Atlantic Ocean and the Indian Ocean combine to form the Southern Ocean.

**Arctic Ocean**

The Arctic Ocean is the smallest ocean in the world.

* It is located around the North Pole.
* It is frozen during the winter season.
* During summer, the ice melts to form large icebergs and floating islands.

**Check Your Understanding**

List the oceans bordering the following continents:

* North America
* Africa
* Australia
* Europe

**Chapter Checklist**

**Tick (✓) the concepts you have understood.**

☐ The journey of Ferdinand Magellan proved that the Earth is round.  
☐ Big land masses on the Earth’s surface are called continents.  
☐ Large continuous masses of saltwater are called oceans.  
☐ The seven continents on the Earth’s surface are Asia, Africa, North America, South America, Antarctica, Europe and Australia.  
☐ The five oceans on the Earth’s surface are the Pacific Ocean, the Atlantic Ocean, the Indian Ocean, the Southern Ocean and the Arctic Ocean.

**Words to Know**  
*iceberg*: an extremely large mass of ice floating in the sea

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**EXERCISES**

**I. Choose the correct option.**

1. Which of the following is the largest waterbody?  
   a. sea ☐ b. bay ☐ c. gulf ☐ d. ocean ☐
2. Which of the following is the smallest continent?  
   a. Asia ☐ b. Africa ☐ c. Antarctica ☐ d. Australia ☐
3. Which of the following oceans do not border Asia?  
   a. Arctic Ocean ☐ b. Indian Ocean ☐  
   c. Pacific Ocean ☐ d. Atlantic Ocean ☐
4. Which of the following landforms connects the two Americas?  
   a. Rockies ☐ b. Mid-Atlantic Ridge ☐  
   c. Mariana Trench ☐ d. Isthmus of Panama ☐
5. Which of the following oceans is the warmest?  
   a. Arctic Ocean ☐ b. Indian Ocean ☐  
   c. Pacific Ocean ☐ d. Atlantic Ocean ☐

**II. Fill in the blanks.**

1. The journey of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ proved that the Earth is round.
2. Big land masses on the Earth’s surface are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. North America and South America are joined by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. Europe and Asia are together called \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ are two of the important rivers of Europe.

**III. Write ‘T’ for true and ‘F’ for false.**

1. Asia occupies one-third of the total land area in the world.
2. Africa is home to the Sahara Desert — the largest hot desert in the world.
3. North America is known as the White Continent.
4. Europe is famous for its Great Barrier Reef.
5. The Arctic Ocean is the largest ocean in the world.

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**IV. Answer the following questions.**

1. Name the seven continents and five oceans, in order from the largest to the smallest.
2. Which continent is located in the southernmost part of the world? Why does this continent have no permanent human habitation?
3. If you were in South Africa and you decided to travel west, which continent would you get to first? Write any two important features of this continent.
4. Which ocean borders the United States on the east coast? What is the Mid-Atlantic Ridge?
5. Name the ocean that lies on the northern border of Antarctica? Write a brief note on it.

**V. Think It Over! (HOTS)**  
Imagine Pangaea to be still a single landmass. Write a story on how different our life might have been then.

**ACTIVITY CORNER**

**Compare and Contrast**  
You have read about the seven continents of the world. Now, research and learn about the similarities and dissimilarities of these continents, in terms of landforms and people who live there. Prepare a presentation to share your findings with the class.

**Coral Reef Diorama**  
For the diorama, you will need:

* a shoebox and some construction papers
* crayons and a blue acrylic paint
* white glue and craft scissors
* pencils and paintbrushes
* sand, rocks and seashells

**Step 1:** Paint the inside of the shoebox blue.

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**Step 2:** You can either draw and colour or cut out different kinds of sea animals from old magazines or take printouts.

**Step 3:** Stand the box up. Paint or paste some animals onto the blue background.

**Step 4:** Add real rocks and other objects to the box floor.

**Step 5:** After all the animals have been pasted, apply glue on the entire bottom surface of the box and add sand.

**Step 6:** Add corals, paper starfish and seashells on the sand.

**Map Work**

Imagine you are going on a voyage from Visakhapatnam in India to Brazil.

(a) Consult an atlas to trace two suitable routes:

* mostly over seas and oceans.
* mostly over land.

(b) Look at the following map of the world. Name the continents and oceans you will cross. Provide a colour-coded key or legend to go with the map.