

Globe - A Model of the Earth

One evening, Sundar & Kalpana were looking at the moon and Sundar asked, "If I went to the Moon, what would the Earth look like? What can I see from there?" Kalpana told him that they could easily find out answers from the internet. Later, she showed him some pictures of the Earth taken from Moon. This is how it looked:

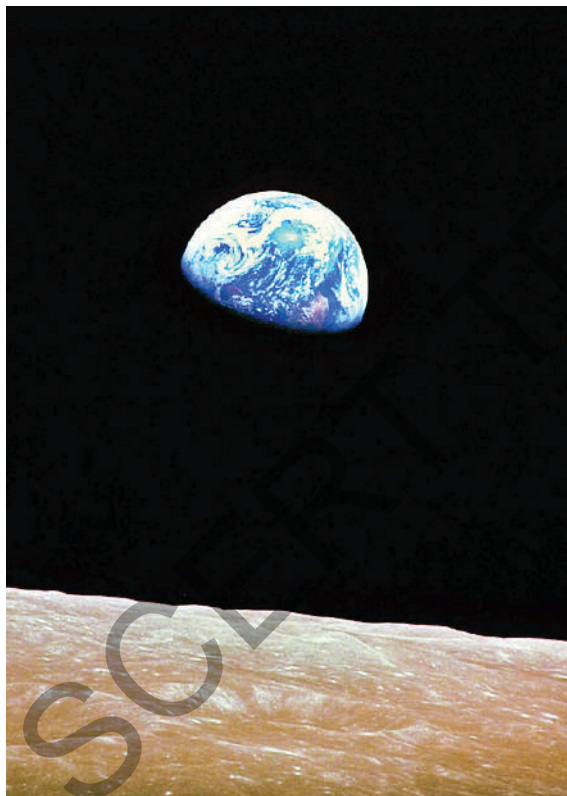


Fig. 2.1: Earth rise on the Moon

Doesn't the Earth look like a blue moon? It looks blue because a large portion of the Earth is covered with oceans. In the above photograph, we can see only one part of the Earth which receives sunshine.

- ♦ Can you explain why half of the Earth is not visible in this photograph?

The Earth is like a ball

In this picture, you can see that the shape of the Earth is like that of the Moon.

Bring some globes to the classroom. Ensure that each group of five to six students has a globe. A globe is a model of the Earth. It shows the shape of the Earth, the land and water, the continents and oceans and the countries of the world.



Fig. 2.2: A Globe

- ◆ Give each student a chance to take the globe in her/ his hand and look at it carefully. See how the Earth rotates.
- ◆ With the help of your teacher, locate the North Pole, the South Pole and the Equator.

You can see that the earth is like a ball – spherical in shape. How do you think people stand on it? Place some standing toy people on different parts of the globe. It may seem that the person at the lower part is standing upside down or that the person in the middle might just fall from the Earth. We never fall off the Earth because the Earth acts like a powerful magnet which pulls us towards it. In fact, we can only fall on Earth but never off the Earth!

Spheroid Shape

Actually, the Earth is not like a perfect sphere – not perfectly round. It is a little pressed at the two poles and bulged slightly in the middle around a line called the Equator. However, this is so slight that most globes and maps do not show it at all.

An interesting thing about the shape of the Earth is that if we keep travelling from one point in one direction without turning back, we come back to the same point. Try this on the globe. Start from any point and keep going in the same line and see if you come back to the starting point.

Scientists in ancient period in India and Europe had figured out that the earth was like a ball or sphere. Therefore, later around 1492 CE, sailors like Columbus, an Italian explorer set out from Europe with the hope of reaching India.

- ◆ Take a globe and run your finger along the path taken by Columbus to reach America and on the imaginary route to reach India.

Oceans and Continents

As you can see on the globe, most of the surface of the Earth consists of water in the form of oceans. If you go to a coastal village, you can observe hills.

- ◆ Describe the sea in a few lines or draw a picture of the sea.
- ◆ State the main difference between the water you drink and the sea water?

Seas and Oceans stretch for hundreds and thousands of kilometers – just endless water! You can travel from one end to the other only with the help of ships and it may take many days or even months to do so.

- ◆ One of the oceans is frozen to ice – find out its name.
 - ◆ Observe the globe and write down the names of the four great oceans.
1.
 2.
 3.
 4.

- ◆ Which of these is the largest ocean? Underline it.

Naturally, we cannot live in these oceans. We live on land. You can see large sheets of land on the globe which are called continents. There are seven continents.

- ◆ Find out the names of the continents and write them down:

1.
2.
3.
4.
5.
6.
7.

- ◆ One of these continents is actually covered with ice – find out its name and location.

Is it not an interesting fact that the North Pole and the South Pole of the Earth are covered with ice! The North Pole has a frozen ocean (Arctic Ocean) and the South Pole has a huge accumulation of ice on it! This is called the Antarctic Shield of ice.

- ◆ Look for India on the Globe – name the continent on which India is located.
- ◆ Similarly, look for the countries you have heard of.

Villages, towns and cities are located on the continents. You will find hills and valleys, agriculture, mines, factories etc. on the land on these continents.

Directions on the globe

You had learnt about the four directions in the earlier chapter. You can locate the North and the South Pole. If you face north, the east is on your right and the west is on your left. The Earth rotates every day from the west to the east. Can you rotate the globe and see how this happens?

You have observed the two poles on the globe. What are the poles? They are the two points on the opposite ends of the Earth. If you draw an imaginary line connecting the two poles passing through the interior of the Earth, it will form the axis or the line around which the Earth rotates.

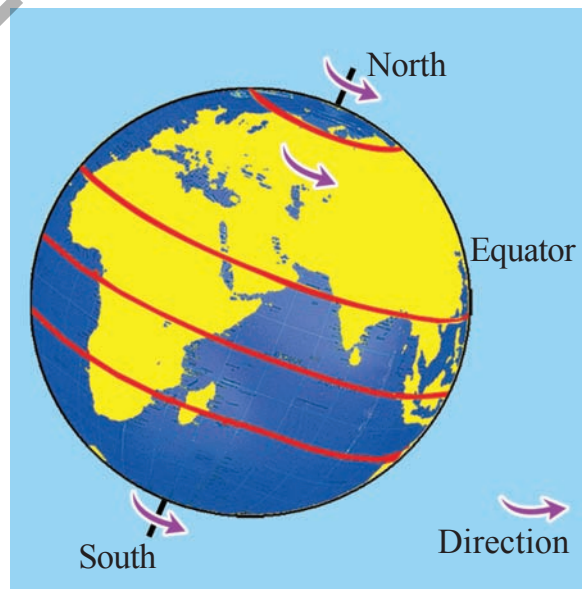


Fig. 2.3: Axis of rotation

To understand this better, put three or four dots on the globe in different colours from the Equator to the poles. Now rotate the globe and observe.

You would notice that if you put a dot on the pole, it will not move at all! What happens to the dot placed on the Equator?

Lines on the globe

You will see many lines across the globe. Some run from the North Pole to the South Pole. The others run around the Earth from west to east. These imaginary lines drawn by map makers help us locate places on the globe and maps. We will see how they are drawn in later classes. Now, we will look at the most important lines.

The concept of lines on the globe called Latitudes and Longitudes along with poles were well known to our Indian ancestors like Aryabhata, who used the terms to explain the places.

Latitudes

These are the imaginary lines that are drawn from west to east. Can you spot these lines? Compare the length of these lines. Do you think they are all of the same length?

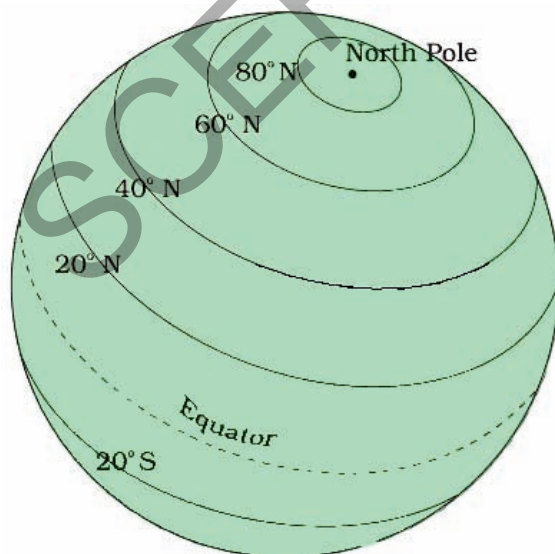


Fig. 2.4: Latitudes on the globe

The longest of these lines is called the Equator. It divides the globe into two equal halves called hemispheres. Identify the Equator on the globe and note down the continents it passes through. Also identify the northern and the southern hemispheres. In which hemisphere is India located? Which hemisphere has more water than land?

Longitudes

These imaginary lines run from one pole to the other. Unlike the latitudes, these lines are of the same length. There are two main longitudes – the Greenwich Line, which is also called the 0 degree longitude, and the International Date Line, which is also called 180° east/west longitude. You will learn more about the importance of these lines in higher classes.

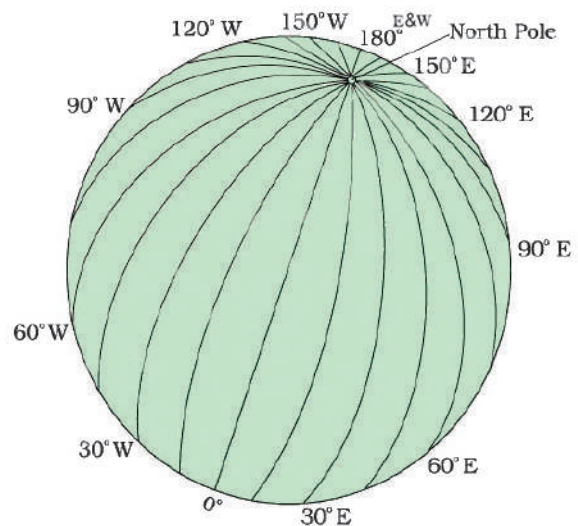


Fig. 2.5: Longitudes on the globe

The latitudes and longitudes create a net that covers the map and helps us to locate places. If you know the latitude and longitude of a place, you can easily locate it on the globe or a map.

Keywords

Latitude

Longitude

International Date Line

Axis

Improve your learning

1. There is an outline map of the world on the next page. Identify and write the names of continents and oceans. Colour the map using appropriate colours. Draw and write the names of the main latitudes.
2. Ramesh says “Earth is flat”. What do you say?
3. Rosy is spinning a bangle like a top. What shape do you see?
4. Collect information about explorers like Columbus.
5. Draw the latitudes and longitudes on the surface of a ball.
6. “The Sun always rises in the east.” Find out the reasons for this.
7. Why do we draw imaginary lines on the globe/ map?
8. What is the effort put by scientists and sailors to know about earth?
9. Observe the following pictures and fill the boxes with the names of the shaded hemispheres.



