

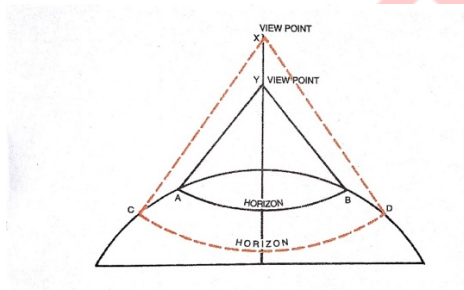
9. The Shape of the Earth

- Earth is spherical in shape. However, research shows that the earth is not the perfect sphere.
- Its polar diameter is shorter than its equatorial diameter. The earth is a little flattened at both ends (poles).
- This shape is termed as “Geoid”
- The spherical shape of the earth is also masked by the intervening highlands and mountains.

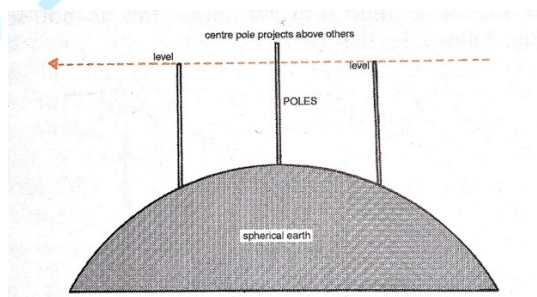
Evidence of Earth’s Sphericity

There are many observations which prove that earth is spherical.

- **Circum-navigation of the earth:** Voyages during the period of renaissance proved beyond doubt that the earth is spherical. No traveller going around the world by land or sea has ever encountered an abrupt edge, over which he would fall.
- **The Circular Horizon:** The distant horizon viewed from the deck of a ship at sea, or from the cliff on land always and everywhere circular in shape. This is only possible on a spherical body.



- **Ship’s Visibility:** It is often observed that when a ship leaves the harbour, its disappearance is gradual. Whereas when it appears over the horizon, its top is seen first.
- **Sunrise and Sunset:** Time of sunrise and sunset are different at different places of the earth. As the earth rotates from west to east, places in the east see the sun earlier than those in the west. If the earth were flat, the whole world would have sunrise and sunset at the same time. But this is not the case.
- **The Lunar eclipse:** The shadow cast by the earth on the moon during a lunar eclipse is always circular. It takes the outline of an arc of a circle. Only a sphere can cast such a circular shape.
- **Planetary bodies are Spherical:** Observations made from telescope reveal that the planetary bodies like sun, moon and other stars have circular outlines. Earth, by analogy, cannot be the only exception.
- **Driving Poles on level ground on a curved path:** Experiments show that when driving poles of equal length at regular interval do not give a perfect horizontal level. The centre pole normally projects slightly above the other poles. Refer to the following diagram.



- **Aerial Photographs:** Pictures taken from high altitudes by satellites show clearly the curved edge of the earth. This is perhaps the most convincing proof of the sphericity of the earth.

10. The Earth’s Movement

The earth moves in space in two distinct ways: