

How do we know the earth is round?

Reading/discussion

We all know the earth is round, don't we? Today we can look at pictures taken from space which show us that the earth looks like a big ball. But did you know that learned people have known that the earth is a sphere for over two thousand years? Long before there were any space photos! Aristotle, a Greek philosopher who lived from 384 to 322 BC based his knowledge on two pieces of evidence:



1. When there is a lunar eclipse the earth's shadow on the moon is curved; and
2. If the earth was flat you would be able to see the same stars wherever you stood on the earth's surface, but if you live in the North and travel to the South you will see a lot of stars you haven't seen before.

Eratosthenes, a Greek scientific writer who lived from 276BC to 194BC actually worked out the circumference of the earth. Despite this as late as 1956 there were still people who believed that the earth was flat and if you look for it on the internet you will find that the Flat Earth Society still exists!

Sometimes, when we are at the beach, or in the desert, or on the prairies, where there are no trees or mountains in the way, it does look as if the earth is flat. However, if it was we would be able to see much further than we can. The horizon we see is only about 3 miles away, depending on how tall you are. If you are standing on the seashore, watching a ship sailing over the horizon, it will slowly start disappearing from the bottom up in exactly the same way as it would if it was going over the top of a hill. Once it has completely disappeared, if you climb a nearby sand dune you will be able to see the ship again over the curve of the earth. This is a classic way to show that the earth is round.

However, although today most educated people know that the earth isn't flat, scientists have proven that it isn't completely round either! Because the earth is not solid and it spins on its axis, this affects the pull of gravity at the equator where it bulges a little, making it more oval than spherical!

Name _____

Date _____

Activities:

A. Explain how we know the earth is round.

Get into pairs. One person in each pair will be a member of the Flat Earth Society. Start a debate in which one person argues that the earth must be flat and the other explains why it can't be. Then change around.

B. Write a story.

The author, Terry Pratchett, wrote a number of books about a place which he called Discworld which was a flat world balanced on the backs of four elephants, which are standing on the back of a giant turtle, which is flying through space! Make up your own flat earth story. In your story describe what your world looks like and explain how living on a flat world is different than living on a globe.

Name _____

Date _____

Answer Sheet

Activity A

The children should use the evidence given in the discussion in their argument for a round earth:

- In a lunar eclipse the earth's shadow is curved
- Different stars are visible from the different hemispheres
- The horizon is too close
- A ship which has disappeared over the horizon can be seen again if viewed from a higher level
- Photo's taken from space show the earth is shaped like a ball.

Activity B

This is a creative activity and, as such, there are no right or wrong answers.