

# Adult Guidance

## Spherical Bodies

### Flat Earth

From the earliest of times to around the time of the Ancient Greek philosophers, the idea of a flat Earth prevailed:

- Observations of the Earth by humans as it looked to them on the ground. We simply do not have the capacity to see the curvature of the Earth.
- As we move we perceive the Earth as flat a result of the evidence of our senses (i.e. at no point do we have to change our movements due to the curvature of the Earth).
- Theories and ideas are based on our imagination and evidence we perceive. The evidence that we have affects our ability to imagine and create theories.
- Ideas and information were shared by people who travelled however to accumulate this evidence and create a theory based on it was a much slower process than it would be today. This also accounts for why – for example, the Chinese (who chose to isolate themselves from outside influences up until the 17th Century) did not change their ideas about the shape of the Earth until much later than other parts of the world.

The important point that children need to understand is that it was lack of evidence not lack of intelligence on the part of humans thousands of years ago that led to this idea. While it seems silly to us now, our ideas are based on evidence accumulated for over two thousand years.

### Evidence of a Spherical Earth

The evidence to support the idea of a spherical Earth cannot be attributed to one theorist or time period. This is a difficult idea to pinpoint due to the lack of recorded evidence at times. In addition, some of the evidence would have been in the form of oral stories, the passing on of which would have been subject to chance interactions at times.

It is clear that the advent of Greek philosophical thinking (around 6 BC) supported theorising in many fields and this included questioning ideas about the shape of the Earth. It is from this point onward that evidence was considered in a more systematic way and used to support a shift towards the idea of a spherical Earth.

### Key Ancient Greek Thinkers (include):

**Pythagoras:** (He of the triangles!!) Alluded to the idea of a Spherical Earth but the idea can't be reliably attributed to him as there was a practice of ascribing discoveries to wise men of the time. However, it was clear that from then on the Earth was at least considered round.

**Plato:** Argued that the world was a sphere but did not offer any real evidence of this.

**Aristotle:** Student of Plato did support the idea of a spherical Earth with evidence including the fact that stars seen in Egypt and Cyprus were different to those in the more northern parts of the world that were known of. The shadow of the Earth on the Moon during a lunar eclipse was also considered proof. He also watched ships sailing from and into ports. He realised that only the curvature of the Earth could explain why you could see the mast but not the main body (if the Earth was indeed flat – the ship would be small but whole in the distance). Observations like these could only occur after the advent of ships designed to travel further distances which required tall masts. Shorter masts or ships without masts would not create

the same effect and therefore did not lead to questioning of the shape of the Earth in the same way.

**Eratosthenes:** Used evidence from his own experience and accounts that of the shadows cast during the summer solstice. This suggested the Sun was not directly overhead all of the land on Earth at the same time.

## **Adoption of Spherical Earth idea**

Greek astronomical thought about a spherical Earth spread slowly across the globe and ultimately became the accepted view of astronomers. This adoption of this idea in the Roman Empire, and later by Islamic Scholars who studied and translated Ancient Greek texts. By medieval times, there is no evidence that (apart from China) the idea that the Earth was any shape other than a sphere.

## **Myth Busting**

By the time that Magellan and Elcano circumnavigated the Earth, it was already believed that it was spherical and therefore it was possible to sail around the world. What they did was prove it in reality that it could be done rather than to prove that the Earth was not flat.

## **Sun and Moon**

It is not possible to pinpoint exactly when or why the Sun and Moon were thought to be spheres. Certainly there has been depictions of the Sun as a flat disc in the past therefore there was at least the notion that they were most definitely round which simple observation would suggest was true. Even when the Earth was considered to be flat the idea that the Sun and Moon were spherical was already embedded and there was no recorded disputes over the fact.

## **Flat Earth Society**

There is a Flat Earth Society still in existence today. While scientifically it is not a disputed fact, there are people still who are not totally convinced about the shape of the Earth.