

Progression in Mastery

Year 5 How do we know the Earth is spherical?

Get ready to
explore Earth!



Know the Science

The sun is a star at the centre of our solar system. It is the most important source of heat and light energy for life on Earth.

What shape is the sun? How do you know?



Know the Science

The moon is an astronomical object which is made mostly of rock. It has lots of craters which have formed from meteorites crashing into it.

What shape is the moon? How do you know?



Know the Science

Earth is the planet we live on, and it is the only known astronomical object which sustains life.

What shape is the Earth? How do you know?



Know the Science

Over 2,000 years ago, the Greek philosopher Aristotle discovered evidence that the Earth was spherical.



Before this time, many people had believed that the Earth was flat.

Talk like a Scientist

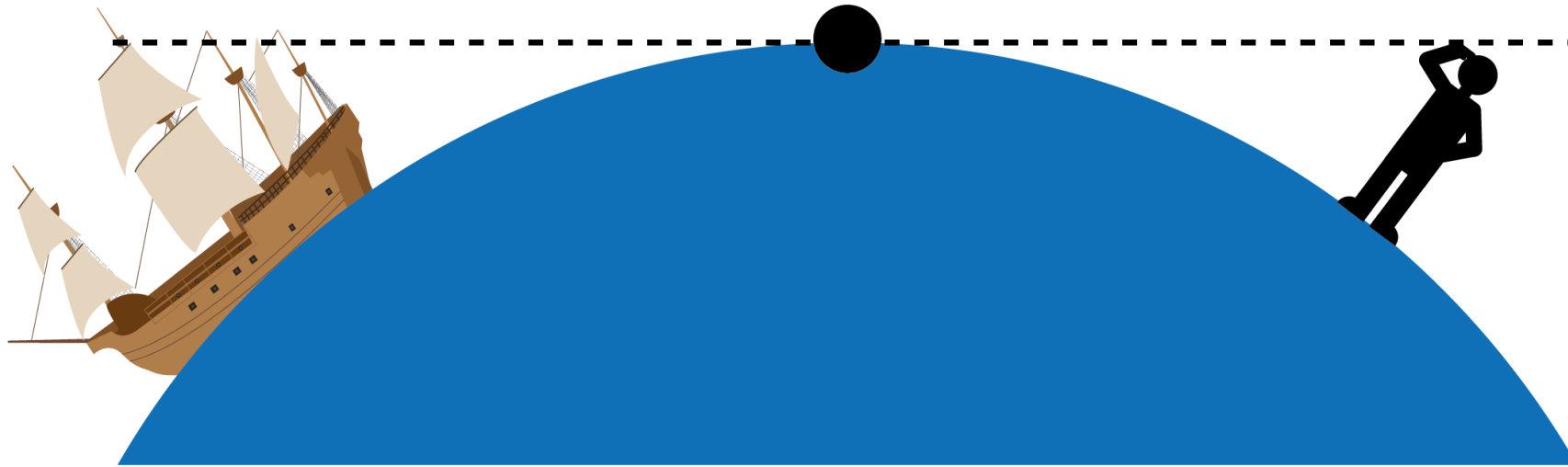
Discuss Darcey's question with your partner.

Why do you think people believed that the Earth was flat?



Know the Science

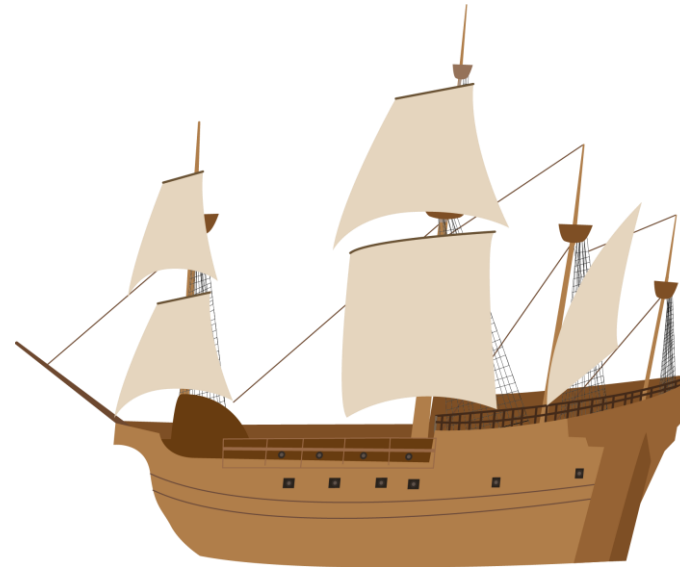
When ships travel away into the distance, they get smaller and smaller until disappearing from sight when they reach the horizon.



Aristotle observed that the bottom of ships seem to disappear before the rest of the vessel which could only happen on a curved surface.

Act like a Scientist

Using a ball to represent the Earth, and a pencil sharpener or rubber to represent a ship, can you model what Aristotle observed?



Compare this to moving the ‘ship’ along a flat surface like your table.

Know the Science

Aristotle observed that different stars and constellations appeared in the night sky in northern and southern regions.



If the Earth was flat, people in the north and south would be able to see the same stars.

Act like a Scientist

Let's see the evidence for ourselves!

First, we need eight volunteers...

Stand in a row facing forwards to represent a flat Earth.

Next, the rest of the class, who will be representing the stars, must stand in a row facing 'Earth'.

Earthlings... are you able to see all of the stars from your position?

Act like a Scientist

NOW... could our eight volunteers make a spherical shape with everyone facing outwards?

Stars, position yourselves in a circle around the Earth.

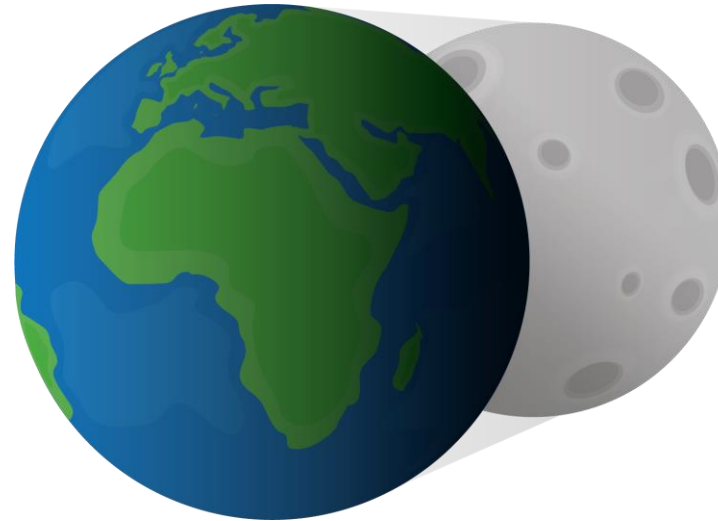
Earthlings... can you see all the stars now from your position?



Know the Science

Between two and five times a year, a lunar eclipse occurs.

This is when the Earth blocks the sun's rays from the moon and the shadow of the Earth can be seen on the moon's surface.



Aristotle observed this shadow carefully and found that it was curved.

Talk like a Scientist

Discuss Darcey's question with your partner.

What would the shadow look like if the Earth was flat?



Talk like a Scientist

Take a look at these objects...



bead



pea



marble



tennis ball



football



beach ball

Thinking about size, which do you think best represents the sun, Earth and moon?

Know the Science

The Earth is approximately 6 times bigger than the moon.

Moon



Earth



Sun



Know the Science

The sun is over a million times bigger than the Earth!

Moon



Earth

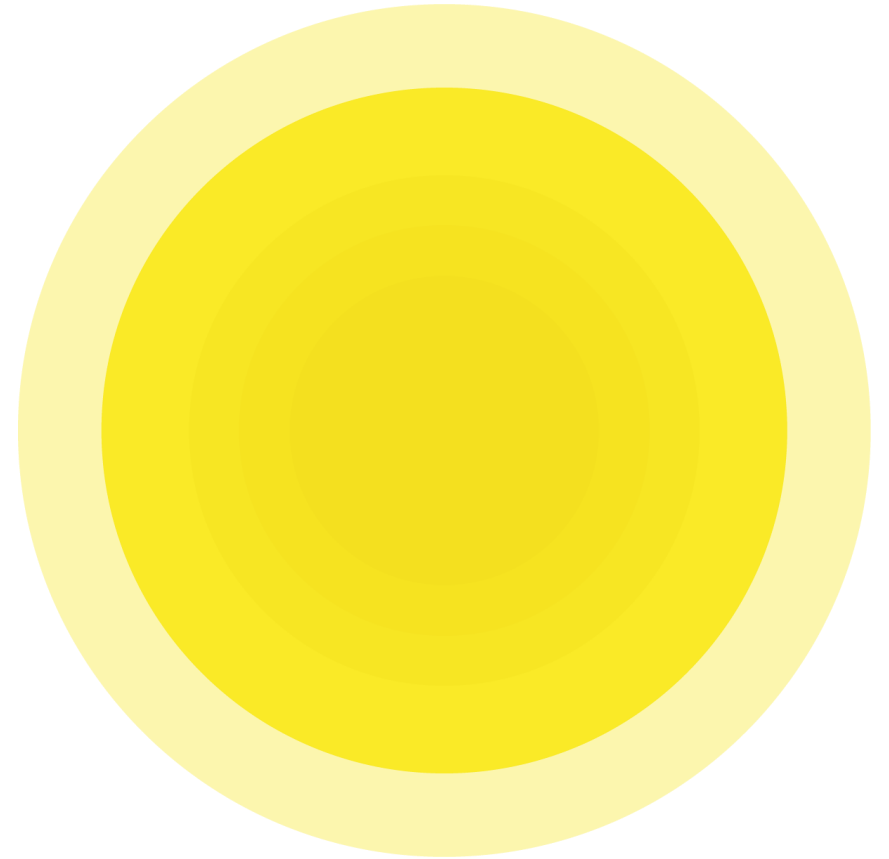


Sun



Think like a Scientist

What is the same and what is different?




Independent Task

Become a Scientist

How do we know the Earth is spherical?

Draw a diagram to represent one piece of evidence proving the Earth is spherical.
Then, write an explanation of the evidence to support your diagram.

Become a Scientist

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Exit task – Checking the tricky bits

Let's try answering Darcey's question again...

What shape is the Earth? How do you know?

