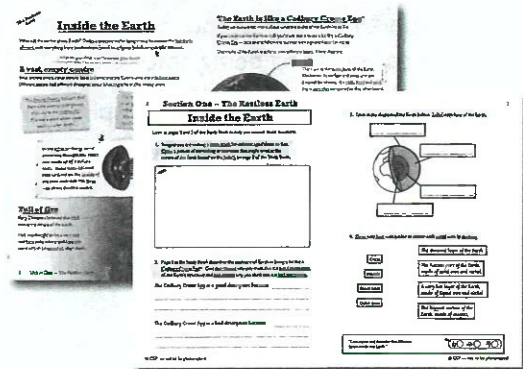


# Inside the Earth

## Study Book (pages 2-3)



## Activity Book (pages 2-3)

## National Curriculum Aims

Describe and understand volcanoes and earthquakes, including being able to:

- describe key aspects of the Earth's structure,
- understand that scientific methods help us to answer questions.

## Introduction

At different times and in different cultures, there have been many myths about what's at the centre of the Earth. Besides the myths described in the Study Book, another belief in Native American cultures was that the Earth is a great island resting on the back of a giant turtle. Before teaching this topic, it may be helpful to get the pupils to think about what they believe could be at the centre of the Earth and why they think this is.

We know more about what is at the Earth's centre now because of earthquakes. When tectonic plates move, they create seismic waves that travel throughout the Earth's layers. The speed of these waves changes depending on what type of material they're travelling through, so scientists can record them and trace their journeys to determine the structure of the Earth's centre.

## Answers to Activity Book Questions

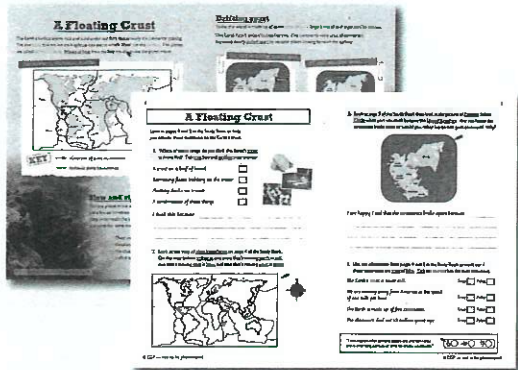
1. Any appropriate drawing based on one of the beliefs given on page 2 of the Study Book.
2. E.g. *The Cadbury Creme Egg® is a good description because the Earth has a solid outside layer and a liquid middle.*  
E.g. *The Cadbury Creme Egg is a bad description because a Cadbury Creme Egg isn't spherical / the middle bit isn't hot / the very centre isn't solid.*
3. *From top to bottom: Crust, Mantle, Outer Core, Inner Core*
4. Crust — The thinnest layer of the Earth.  
Mantle — The biggest section of the Earth, made of magma.  
Inner Core — The hottest part of the Earth, made of solid iron and nickel.  
Outer Core — A very hot layer of the Earth, made of liquid iron and nickel.

## Extra Activities

- Ask pupils if they think it would be possible to dig through the centre of the Earth and come out the other side. Ask them to write down their answer and justify it using information from p.2-3 of the Study Book.
- Pupils could use the information on page 3 of the Study Book to write a letter to someone who lived a long time ago to explain the Earth's structure. For example, they could write to someone from Ancient Greece, such as Aristotle — he was interested in the shape of the Earth and wanted to use maths and science to prove it was spherical.
- Pupils could create their own scale model of the Earth's layers in 3D with modelling clay. Using different colours for the different layers, roll a ball for the inner core, then wrap this in another colour to represent the outer core. Do the same for the mantle and crust, keeping the layers roughly the right thickness for the scale. Cover this in blue modelling clay and add some green pieces as land masses. Finally, slice through the sphere to show all the layers. If modelling clay isn't available, pupils could make a 2D version from card.

# A Floating Crust

## Study Book (pages 4-5)



## Activity Book (pages 4-5)

## National Curriculum Aims

Describe and understand volcanoes and earthquakes, including being able to:

- understand that the Earth's crust is split into tectonic plates that are able to move,
- understand that continents are shaped by plate tectonics.

## Introduction

The meteorologist Alfred Wegener first proposed the idea of continental drift and the existence of a previous 'supercontinent' in 1912. His evidence came from such things as the layout of today's land masses, which seem to 'fit together', and geological records showing matching layers in rocks on different continents. Further evidence came from the fossils of similar extinct plants and animals being found on separate continents.

As a part of teaching this topic, it may be helpful to show pupils an online video that illustrates how the supercontinent of Pangaea broke apart and moved around to create the seven continents we have today: Asia, Africa, North America, South America, Europe, Australia/Oceania and Antarctica.

## Answers to Activity Book Questions

1. Any ticked box with an appropriate explanation. E.g. *A crust on a loaf of bread. I think this because the crust is thin and goes all the way around the Earth like the crust on a loaf of bread. / Swimming floats bobbing on the water. I think this because the Earth's tectonic plates float on the mantle like floats on water. / Floating ducks on a river. I think this because the Earth's crust is floating and moving about on the mantle like ducks on water.*
2. Pupils should have shaded one plate moving north in red, one plate moving east in blue and one plate moving west in green, based on the direction of the arrows shown in the Study Book.
3. Pupils should have drawn a circle around the correct part of Eurasia — the small peninsular sticking up out of the western end of Eurasia (just below the larger area that would become Norway and Sweden). Any appropriate answer for why they might be happy or sad that the continents broke apart, e.g. *I am sad that the continents broke apart because if they had stayed together I could visit other parts of the world more easily and cheaply, without having to get on an aeroplane or a boat.*
4. True — False — False — True

## Extra Activities

- Give each pair of pupils a map of the world and ask them to shade the sea in blue and the land in green. Then get them to label the seven continents, the UK and the Pacific and Atlantic Oceans.
- North America moves away from Europe at a rate of roughly 0.1 mm a day. In small groups, pupils could work out how long it takes for North America to move one millimetre, one centimetre, one metre and one kilometre away from Europe.
- Provide pupils with a printed map of the world. Get them to cut out the continents and stick them together to create a supercontinent similar to Pangaea. You could either ask them to recreate the shape of Pangaea shown on page 5 of the Study Book, or to create and name their own supercontinent.