

# The Crust

## How does the crust move?

### Introduction

#### Discuss with the aid of a world map

Have the Earth's land areas always looked the same?

Can you show any evidence if you think the position of continents has changed?

Some continents look like they fit together like a jigsaw puzzle eg the east coast of South America and the west coast of Africa.

What forces might cause continents to change position?

Something underneath the Earth's surface must be able to carry huge parts of the Earth's crust. What do you already know about the interior of the Earth? It's hot and parts of the mantle can flow very slowly.

### Activities

#### 1. To show that the crust 'floats' on the denser, heavier layers underneath:

- **Float** a mandarin in water.  
The mandarin represents the Earth and should float low in the water.
- **Peel** the mandarin so that the skin is in one piece if possible.
- **Predict** which parts will float now.
- The skin represents the crust of the Earth and the flesh represents the core and mantle.
- **Test** your predictions

The skin (crust) will float because it is lighter than the same volume of water. The flesh will sink.

Point out to students that the skin is lighter and floats even though it looks more solid when compared with the flesh which is mainly liquid.

#### 2. To show that the crust is broken into plates which can move over the softer layer underneath.

- **Break** the mandarin skin into 3 or 4 large pieces. These represent the crust of the Earth broken into plates.
  - The Earth's crust is broken into a number of massive, rigid slabs called tectonic plates. They move very slowly over the hot mantle below. Different plates move at different speeds and in different directions. The average speed is about as fast as your fingernails grow, 3-4 cm per year or 3-4 m per century.
- By holding 2 pieces of mandarin skin against the peeled mandarin work out how the plates could behave as they move around on the Earth's surface.

Students should work out that the plates (sections of mandarin peel) can interact in at least 5 ways:

- push into one another, resulting in both plates being forced up and crumpled.
- push into one another, resulting in one plate being pushed under the other. (You may need to force this one to happen )
- slide past one another, resulting in the edge of both pieces being rubbed.
- move away from one another so that they are no longer touching.
- rotate like a wheel so that one grinds into the other.

### Learning Intentions

- See that the Earth's crust is broken up into huge plates.
- Explore ways in which the plates could move around the Earth.

### Success Criteria

Students can

- Explain what plates are
- Explain why they can move
- Explain some possible results when plates interact.

### Resources

- World map
- Mandarins
- Water containers

### Vocabulary

tectonic plate,  
push, slide, grind, rub, crumple,  
interact, rigid