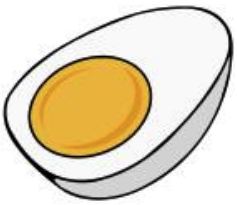
Earth Egg Model – Student Activity

Ancient Cretans tried to explain earthquakes and volcanic activity by saying that a massive bull lay underground and the land shook when it became angry. Romans thought that the Earth moved because people had sinned. Modern Japanese people fear and revere the volcanoes and earthquakes that build and destroy parts of their country.

Earth scientists use information from rocks and seismic evidence to suggest models of what might cause geological changes at its surface. These are then tested.

Half a boiled egg can be used to demonstrate the approximate proportions of the layers of our planet and suggest the processes behind some geological changes we observe at the surface.

Part 1 - The Layers of the Earth



Materials

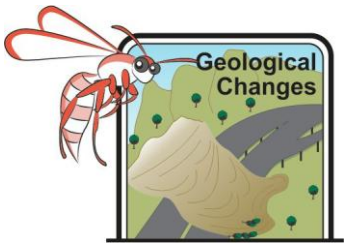
- Half one cold hardboiled egg
- Newspaper to cover the desk and collect bits of egg and shell
- A ruler

Method

1. Draw your egg to scale in the space provided below.
2. Label the layers of the egg in your diagram. The outermost layer represents the crust of the Earth, the middle layer represents the mantle and the innermost layer represents the core.
3. Measure the radius of the layers of the egg and enter this in the table provided.
4. Calculate the percentage of the whole for each layer and enter this in the table provided.

Observations

Diagram of the layers of the egg Earth (to scale 1: _____)



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Calculations

Earth			Egg		
	Thickness	**Percentage**		**Thickness**	**Percentage**
Radius	6370km	100%	Radius		
Crust	25-90km	0.4 to 1.4%	Shell (crust)		
Mantle	2,900km	45.53%	White (mantle		
Core	3,380km	53.07%	Yolk (core)		

*Don't forget the radius will be half the thickness of the Yolk (core)

Is the egg a reasonably good model for the layers of the Earth? Explain your answer. _____

_____

In what way is the egg a poor model for the layers of the Earth? _____

_____

Part 2 - Tectonic Plates of the Crust

Method

1. With your fingernails press the eggshell to break it into about four pieces. These represent the tectonic plates of the Earth's crust.
2. With your fingers gently push two plates together. Describe what happens.
3. With your fingers gently pull two plates apart. Describe what happens.
4. With your fingers gently try to slip one plate along the edge of another. Describe what happens.

Observations

What happens when two eggshell plates are pushed together? _____

_____

What do you think would happen if two hard crustal plates were pushed together? _____

_____

The Himalayan Mountain Range was pushed up when India pushed into Asia.

What do you think would happen to a plate if it were forced down into the Earth? _____

_____

The volcano Mt Fujiyama is created where the Pacific Plate is forced under the Eurasian Plate

What happens when two tectonic plates are pulled apart? _____

_____

The Indian Ocean formed when the Australian plate pulled apart from the African plate.

What happens when two plates are slipped past each other? _____

_____

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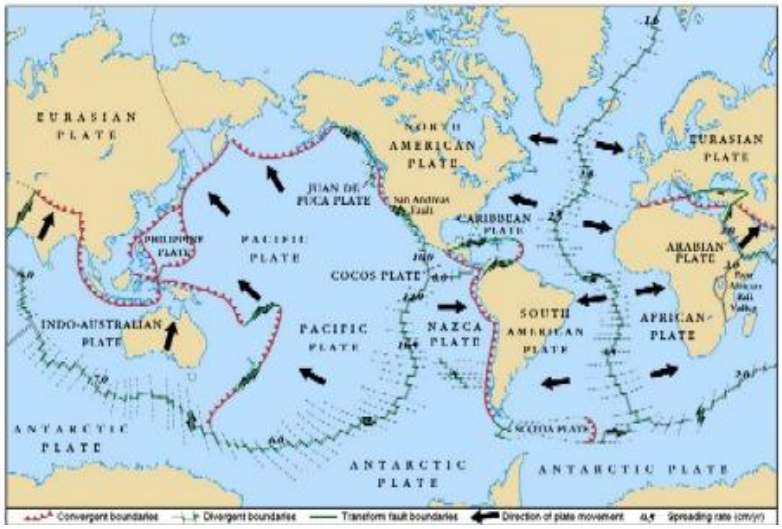


Look at the position of Australia within a "tectonic plate" in the map above. How does its position explain why we do not have many earthquakes and recent active volcanic activity?

_____

_____

Topic - Sudden geologic events can shape the surface of the Earth

What have we learned today?
(Use your best scientific words or a diagram)

Name the layers of the Earth from outside to inside.

1. _____

2. _____

3. _____

(3 marks)

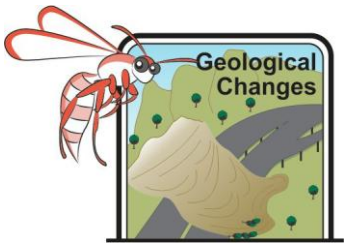
The hard crust is broken into? _____

(1 mark)

What happens if two of these tectonic plates move towards each other? _____

_____

(2 marks)



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What happens if two of these tectonic plates are moved apart? _____

_____

(2 marks)

What happens if one plate grates alongside of another?

_____

_____

(1 mark)

Score _____

Vocabulary	Core, crust, earthquakes, mantle, tectonic plates, volcanoes, earthquakes