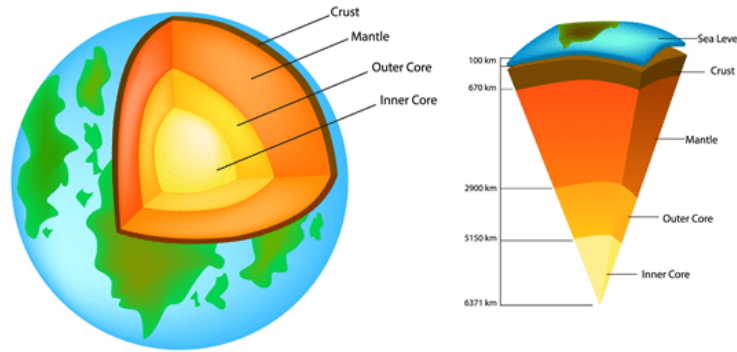


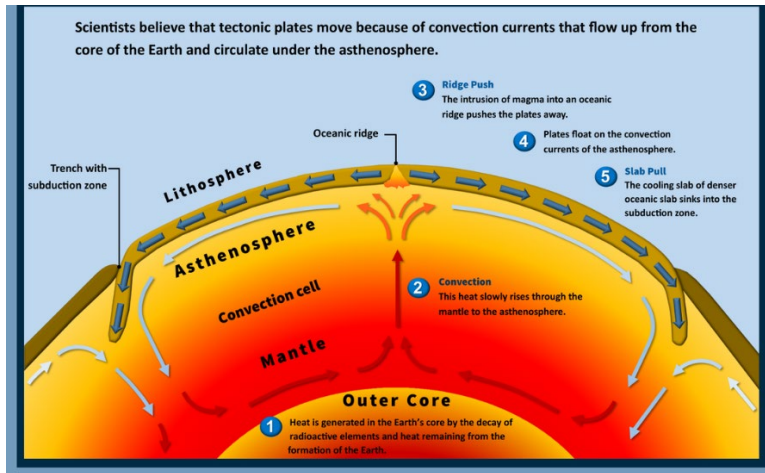
Enquiry question for this unit. Should people build new settlements near volcanoes?

Key Words	Definitions
Crust	The outside layer of the Earth's crust, generally divided into older, thicker continental crust and younger, denser oceanic crust.
Mantle	The mantle lies between Earth's dense, superheated core and its thin outer layer, the crust.
Outer core	The layer surrounding the inner core of the earth. It is a liquid layer, also made up of iron and nickel.
Inner core	It is a hot, dense ball made up of mostly iron. It has a radius of about 1,220 kilometres (758 miles). Temperature in the inner core is about 5,200° Celsius
Alfred Wegener	Put forward the idea of Pangaea in 1912
Pangaea	A supercontinent which existed millions of years ago when all the land masses were joined together.
Tectonic plates	The Earth's crust and upper part of the mantle are broken into large pieces called tectonic plates. These are constantly moving at a few centimetres each year. Although this doesn't sound like very much, over millions of years the movement allows whole continents to shift thousands of kilometres apart.
Convection currents	Convection currents are the result of differential heating. Lighter (less dense), warm magma rises while heavier (more dense) cool magma sinks. It is this movement that creates circulation patterns known as convection currents in the mantle of Earth.
Constructive plate boundary	Where tectonic plates move away from each other creating volcanoes.
Destructive plate boundary	Where continental and oceanic plates are moving towards each other. The denser oceanic plate is subducted under the continental plate creating earthquakes and volcanoes.
Conservative plate boundary	Where tectonic plates move alongside each other creating earthquakes.
Collision plate boundary	Where two continental plates move towards each other creating fold mountains.
Volcano	A volcano is defined as an opening in the Earth's crust through which lava, ash, and gases erupt.
LIC	Low Income Country – a poorer country.
HIC	High Income Country – a richer country.
Cause	Why an event happens.
Effect	The impact of an event. A primary effect happens as a result of the initial event whereas a secondary effects are the indirect effects causes by the primary effects, after the main event - in the coming hours, days and weeks.
Response	How humans react to an event. This can be immediate (as soon as the event happens and in the hours and days after the event) or long term (in the months and years after an event)
Settlement	A place where people live.

**The Structure of the Earth**

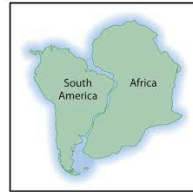


**Convection currents**



**Plate tectonic theory**

In 1912 Alfred Wegener noticed that the coastlines of the east coast of South America and the west coast of Africa appeared to fit together like jigsaw pieces.



Further examination of the globe revealed that all of the Earth's continents fit together somehow and Wegener proposed an idea that all of the continents had at one time been connected in a single supercontinent called Pangaea.

He believed that the continents gradually began to drift apart around 300 million years ago. This was his theory that became known as continental drift.

**CONTINENTAL DRIFT**

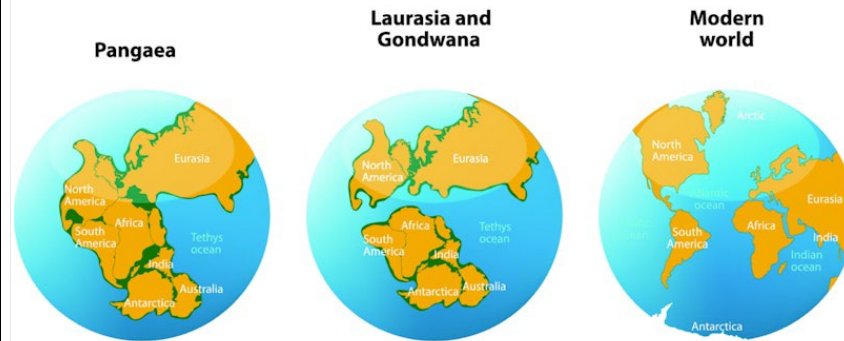
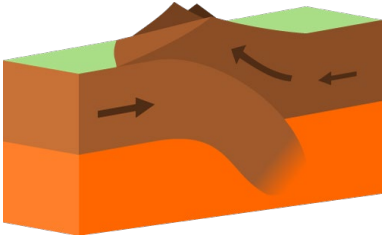
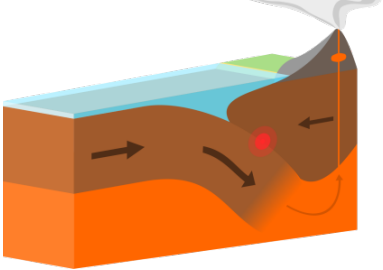
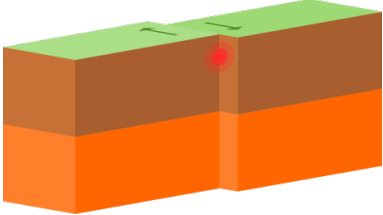
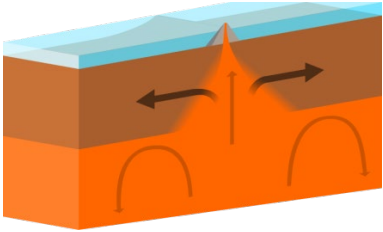


Diagram	Description of main features	Explanation of processes
	<ul style="list-style-type: none"> <li>Continental and continental plates.</li> <li>Earthquakes</li> <li>NO volcanoes</li> <li>Fold mountains</li> <li>E.g. Eurasian and Indo-Australian Plates (creating The Himalayas)</li> </ul>	<p>The two plates meet head on but are both the same density. This means no crust can be destroyed through subduction, so there are no volcanoes, and instead the plates are pushed upwards.</p>
	<ul style="list-style-type: none"> <li>Oceanic and continental plates</li> <li>Volcanoes AND earthquakes</li> <li>Ocean trenches</li> <li>Fold mountains</li> <li>E.g. Nazca and South American Plates (creating The Andes)</li> </ul>	<p>The denser oceanic plate is pulled down (subducted) into the mantle and destroyed. The melting plate is less dense than the surrounding mantle so rises to the surface to form volcanoes. A deep ocean trench is formed at the point of subduction.</p>
	<ul style="list-style-type: none"> <li>Two tectonic plates</li> <li>Earthquakes</li> <li>No volcanoes</li> <li>E.g. North American and Pacific Plates</li> </ul>	<p>Two plates can move past each other either in different directions, or in the same direction but at different speeds. Crust isn't created or destroyed, so there are no volcanoes. Two plates can move past each other either in different directions, or in the same direction but at different speeds. Crust isn't created or destroyed, so there are no volcanoes.</p>
	<ul style="list-style-type: none"> <li>Two oceanic plates (usually)</li> <li>Volcanoes</li> <li>Very small earthquakes</li> <li>Ocean ridges</li> <li>E.g. Eurasian and North American Plates (creating the Mid-Atlantic Ridge)</li> </ul>	<p>As the two plates move apart, due to convection currents in the mantle, new magma rises from the mantle to fill the gap between them. It cools to create new crust and volcanoes.</p>

HIC volcanic eruption – White Island, New Zealand, 2019	LIC volcanic eruption - Mount Merapi, Indonesia 2010
<p><b>Causes</b></p> <ul style="list-style-type: none"> <li>-White Islands is off the east coast of the North Island of New Zealand and is near the subduction zone of the Pacific and Indo-Australian plate boundary.</li> <li>- The eruption was caused by steam and not magma, a phreatic eruption.</li> </ul> <p><b>Effects</b></p> <ul style="list-style-type: none"> <li>-22 people died</li> <li>-26 people were seriously injured, many with widespread burns</li> <li>-ash plume 4km high</li> <li>-tourism was disrupted which had an economic effect</li> <li>-plankton blooms affect the surrounding sea</li> </ul> <p><b>Responses</b></p> <ul style="list-style-type: none"> <li>-23 people rescued</li> <li>-the military used drones to check the island for survivors</li> <li>Australia sent medical support</li> <li>-26 mile no fly zone was created by the New Zealand Government</li> </ul>	<p><b>Causes</b></p> <ul style="list-style-type: none"> <li>-Located on the subduction zone of the Indo-Australian and Eurasian plate boundary which is a destructive plate boundary.</li> <li>-smoke can be seen from the volcano for around 300 days a year</li> </ul> <p><b>Effects</b></p> <ul style="list-style-type: none"> <li>-353 people died</li> <li>-350,000 people evacuated</li> <li>-pyroclastic flow reached speeds of 100km/h</li> <li>-tourists cancelled visits</li> <li>-farmers lost their land and income</li> </ul> <p><b>Responses</b></p> <ul style="list-style-type: none"> <li>-The Indonesian Red Cross provided meals for displaced people</li> <li>-10km evacuation zone set up</li> <li>The Australian Government provide \$1 million in aid</li> </ul>

People choose to live in volcanic areas despite the risks of an eruption. Volcanoes can provide people with many benefits such as:

- volcanic rock and ash provide **fertile land** which results in a higher crop yield for farmers
- **tourists** are attracted to the volcano, which increases money to the local economy
- geothermal energy can be harnessed, which provides cheaper electricity for locals
- minerals are contained in lava, e.g. diamonds - these can be mined to make money
- in some countries people may not realise the dangers of living near volcanoes or they may not have the financial stability to move away