



Auckland College Knowledge Organiser – Volcanoes



Composite Volcanoes

These types of volcanoes have steep slopes and thick, sticky lava. They look like regular mountains.

Because their lava is so sticky, the lava will clog the passageways out of the volcano.

Pressure builds up and eventually the volcano will explode violently. However, because their lava is so sticky, it does not flow very quickly or very far.

They erupt far less frequently than other types of volcanoes.

Volcanoes are mountains made from rock and ash. It has a hole at the top of the mountain that opens downwards to a pool of molten lava.

Magma builds up beneath the surface of the Earth. Pressure builds until it escapes by shooting up through the volcano and erupts!

Why do Volcanoes Erupt?

We know that the Earth's crust is made up of huge slabs called tectonic plates. These fit together like a jigsaw puzzle and they sometimes move.

The movement causes **friction** which causes earthquakes and volcanic eruptions near the edges of the plates. The theory that explains this process is called “**plate tectonics**” – this means the plates are moving in different directions and at different speeds. Sometimes they collide or brush past each other and cause these earthquakes and volcanic eruptions.





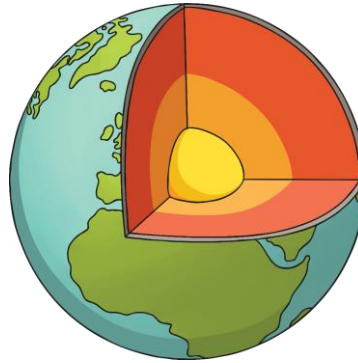
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What is our Earth made of?

Deep in the Earth, it is extremely hot. It is so hot, in fact, that rocks actually melt and form **magma**, which makes up the mantle of the Earth.

The **mantle** is approximately 1,802 miles thick and is made of a solid, rocky substance called molten rock or magma. This is what escapes when a volcano erupts.



The Mantle

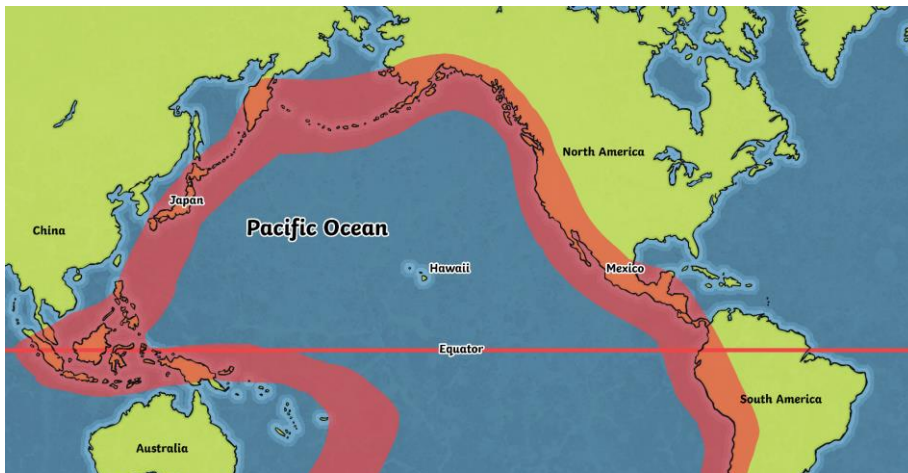
The upper mantle mixes and moves, which creates pressure underneath the crust. This pressure can sometimes cause the mantle to leak out onto the surface of the earth – **this is a volcano!**

Over time, as this magma leaks out, the volcano will get bigger and bigger.

Where are most Volcanoes located?

The “Ring of Fire” is an area of the Pacific Ocean that is shaped like a horseshoe. It is home to 90% of the world's earthquakes and 75% of the world's volcanoes.

It contains a string of 452 volcanoes, which stretches from the southern tip of South America, up along the coast of North America, down through Japan, and into New Zealand.



The Three Stages of Volcanoes

Scientists have placed volcanoes in to three different categories:

- **Active**
- **Dormant**
- **Extinct**

Active

An active volcano is one that has erupted recently, and there is the possibility that it may erupt again.

Dormant

A dormant volcano is one that has not erupted for a long time, however, it may still erupt in the future.

Extinct

An extinct volcano is one which has erupted thousands of years ago, but it will probably never erupt again.



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Volcanoes can cause huge amounts of damage to communities living near the volcano.

On a summer morning in 79 B.C.E Mount Vesuvius erupted near the Roman city of **Pompeii**.

Many of the citizens living in Pompeii were buried beneath tons of the volcanic ash and debris that fell from the sky from the volcanic eruption.

The site was not rediscovered until the mid 1800's when archaeologists excavated, or cleared the site of debris.

Scientists and historians have studied Pompeii and its demise for hundreds of years now.

Mount Vesuvius is considered a dormant volcano today.

Mount St. Helens is located in the Cascade Range in western Washington state.

In 1980, it erupted. It was the largest volcanic eruption in the continental U.S. since 1915. The blast from the volcano blew everything away in its path, with winds over 300 miles per hour. Over 200 square miles of forest near the volcano were destroyed!

It is still an active volcano and is expected to erupt again in the future.

Parts of the Volcanoes

- **Vent** - An opening in the surface of the Earth through which volcanic materials, such as magma, can escape
- **Crater** - The mouth of a volcano. It surrounds the vent
- **Throat** - The entrance of a volcano. It ejects lava and volcanic ash during a volcanic explosion
- **Ash cloud** - A cloud of ash and smoke. It is formed by volcanic explosions
- **Magma reservoir** - A large underground pool of liquid rock found beneath the surface of the Earth. This liquid rock is called magma
- **Conduit** - An underground passage which magma travels through.

What types of Volcanoes exist?

Cinder Cones

These types of volcanoes are made up of a bunch of cinders called **scoria**. These volcanoes differ from composite volcanoes in that they have a bowl-shape hole, or **crater**, at the top. The magma underneath the volcano contains gas bubbles, which causes pressure to build up within the volcano. Eventually, the volcano erupts and lava will fly into the air. The lava that is ejected from the volcano accumulates around the volcano and eventually contributes to the body of it. They are the most common type of volcano.

Shield

These types of volcanoes have very fluid lava that easily run down the hill of the volcano and travel long distances before cooling. They do not have very steep sides because the lava that erupts cannot pile up along the sides of the volcano. This lava forms long, gentle slopes that look like a warrior's shield, which is how they got their name. These volcanoes do not often explode.