

Dear Parents,

Our next topic is 'Extreme Earth'. Please help your children to prepare for this topic by helping them to learn the key words (in purple) and the facts on this sheet.

There are some homework activities on the back of this sheet. Your child can complete these at any time. Your child's teacher would love to see what they have created, so please send any homework into school so we can display these.

Thank you for your support.

Mrs Wilson

# Extreme Earth

## Year 4 – Geography/History Theme

### Key Vocabulary



<b>bedrock</b>	The solid rock that lies beneath the loose surface of the Earth.
<b>crust</b>	The outer layer of the Earth (it is about 35km thick).
<b>earthquake</b>	An <b>earthquake</b> is the shaking of the surface of the Earth, resulting from the sudden release of energy under- ground that creates seismic waves.
<b>epicentre</b>	A point, directly above the true centre of an <b>earthquake</b> , from which shock waves spread out.
<b>lava</b>	The molten, fluid rock that comes from a <b>volcano</b> . This can be 800°C to 1,200°C
<b>magma</b>	The molten material beneath or within the earth's crust.
<b>Richter scale</b>	A unit of measurement that measures the magnitude (strength) of <b>earthquakes</b> on a scale of 1-10. 10 is the strongest.
<b>seismology</b>	The study of <b>earthquakes</b> .
<b>seismometer</b>	A piece of equipment that measures the strength of <b>earthquakes</b> by recording vibrations in the Earth's crust.
<b>shock wave</b>	A sharp change of pressure travelling through the earth or the air caused by explosions, <b>earthquakes</b> or <b>eruptions</b> .
<b>tectonic plates</b>	The dozen or so plates that make up the surface of the Earth.
<b>tsunami</b>	A series of waves caused by the movement of a large amount of water, generally in an ocean, sea or a very large lake. These are usually caused by underwater <b>earthquakes</b> .
<b>volcanic eruption</b>	The sudden occurrence of a violent discharge of steam and volcanic material (including <b>lava</b> ) from a <b>volcano</b> . A stream of gas and ash is violently ejected to a height of several miles.

### Volcano Facts

The word **volcano** originally comes from the name of the Roman god of fire, Vulcan.

Most **volcanoes** are located near to the edges of tectonic plates. 75% of the world's volcanos are located around the Pacific Plate (the Pacific Ring of Fire). 90% of the world's earthquakes also happen here.

The object with the most volcanic activity in our solar system is Io (one of Jupiter's moons). Venus however has the most volcanos in the solar system - Over 1,600!

**Volcanic eruptions** can send ash 30km (17 miles) above the Earth's surface.

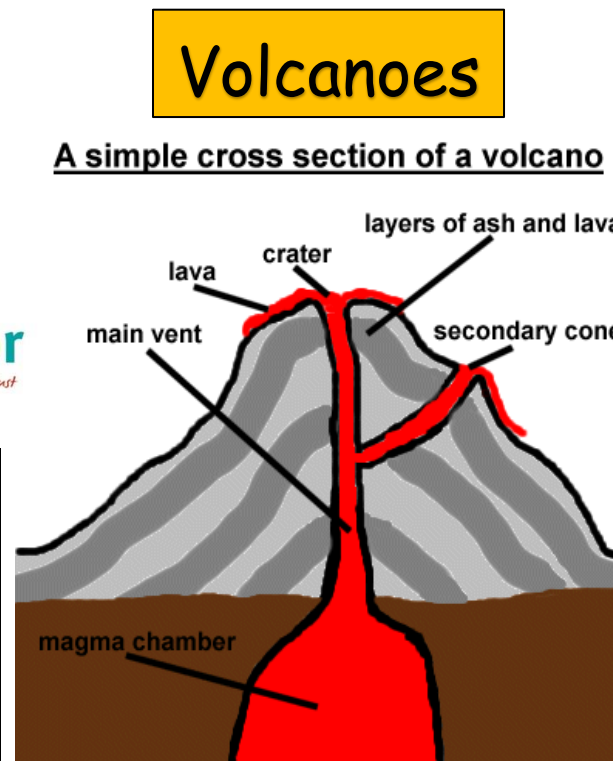
Pumice is a unique volcanic rock (igneous rock - made from lava) that can float on water. It is very light, because of pockets of air trapped inside when the rock forms

The temperature of **lava** can be between 800°C and 1200°C.

Mauna Loa in Hawaii is taller than Mount Everest. This is because most of Mauna Loa is below the ocean's surface.

The biggest **volcano** in the solar system (Olympus Mons) is on Mars. It's 21km (13 miles) high!

Scientists use the term **magma** for molten rock that is underground and **lava** for molten rock that breaks through the Earth's surface. Magma is normally slightly hotter than lava.

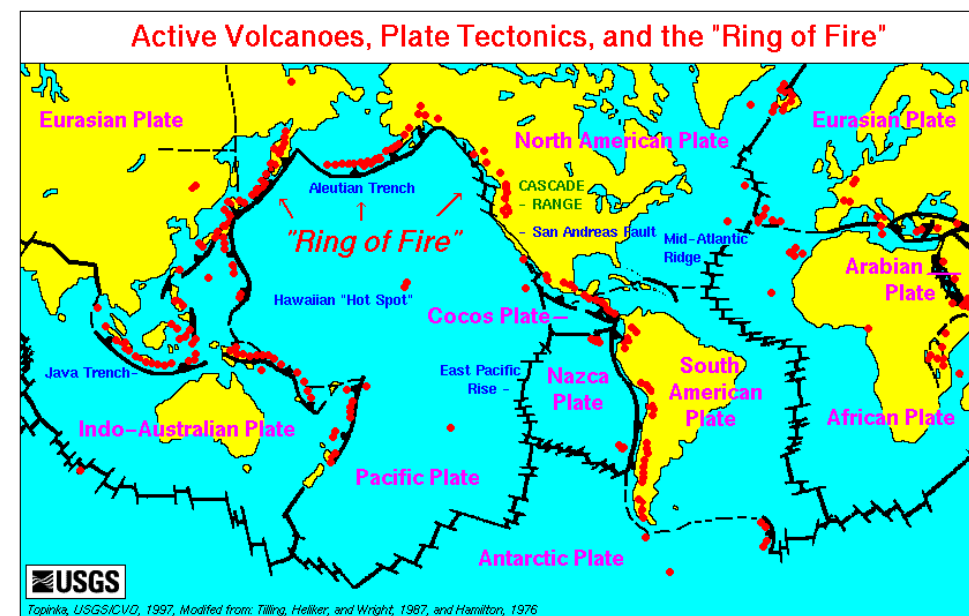


**Volcanoes** are openings in the Earth's surface. **Active volcanoes** erupt often or have erupted recently. **Dormant volcanoes** have not **erupted** for a long time, but can still erupt. **Extinct volcanoes** can no longer **erupt** and have not **erupted** for thousands of years.

### Mount Vesuvius AD79

When Mount Vesuvius (in Italy) **erupted** in AD79, it destroyed the Roman towns of Pompeii and Herculaneum. This **eruption** killed between 10,000 and 16,000 Romans.

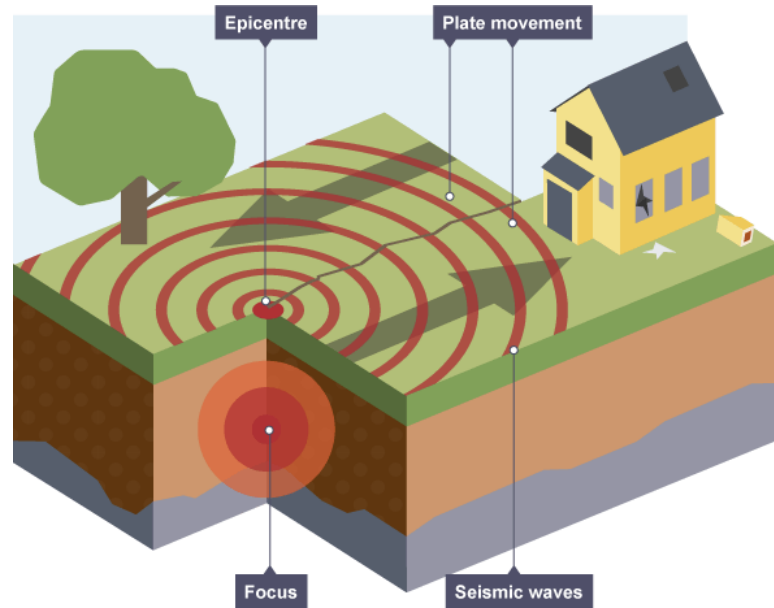
On the map (to the right), the black lines show the edges of the Earth's **tectonic plates** and the red dots show where the Earth's active **volcanoes** are. 75% of the Earth's volcanoes are located in an area known as the Pacific Ring of Fire. Can you find it on the map?



### Where are the world's most active volcanoes?

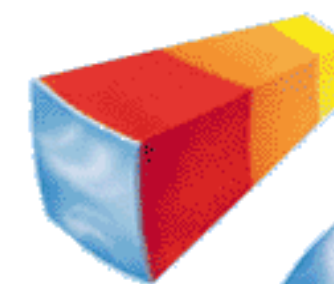
- Mount Vesuvius, near Naples, Italy
- Krakatoa, Indonesia
- Mount St. Helens, Washington, USA
- Mount Tambora, Indonesia
- Mauna Loa, Hawaii
- Eyjafjallajökull, Iceland
- Mount Pelée, Martinique, Caribbean

# Earthquakes



The Earth's surface is moving in different directions. See the map below. We are located on a **tectonic plate** called the Eurasia plate. The **tectonic plates** move between 2-5cm per year. That's about the same speed at which your fingernails grow!

Occasionally **tectonic plates**, as they meet, can get stuck. The pressure builds up until they move suddenly and quickly. This is called an **earthquake**.



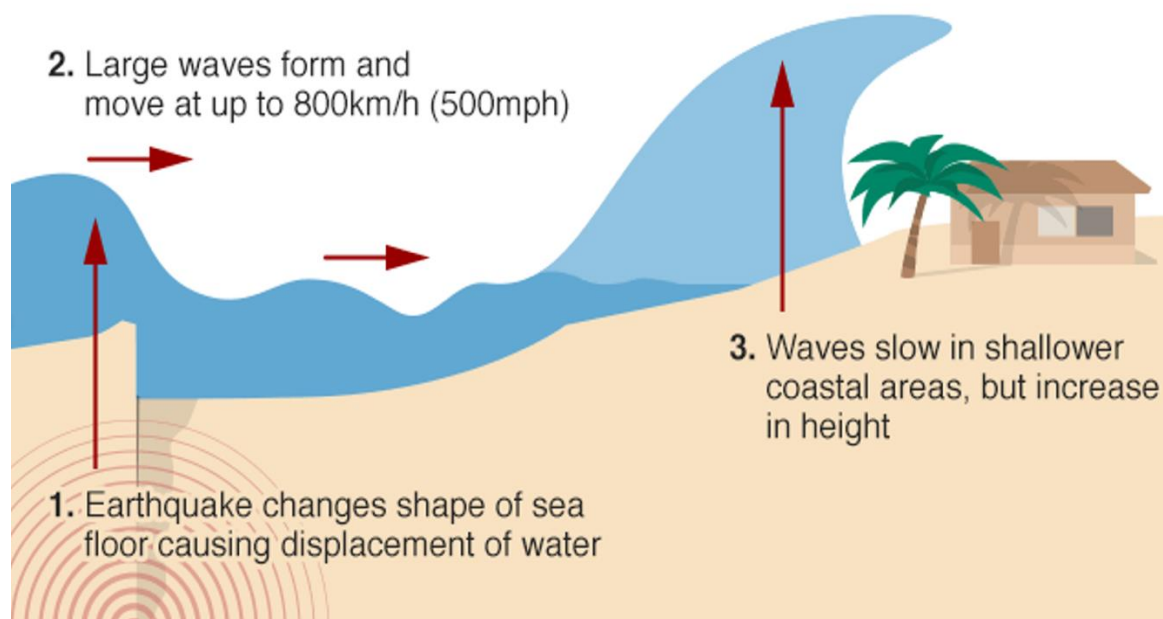
**Crust**  
This is the thin, rocky layer we think of as the Earth's surface. Its thickness changes – from 80 kilometers (50 miles) to 5 kilometers (3 miles).

**Inner Core**  
The center of the Earth is about 6,000 miles below the Earth's surface. It is a solid ball made of mostly just two metals – iron and nickel.

**Outer Core**  
This layer is also made of mostly iron and nickel, but here the metals are melted into a very hot liquid. This hot liquid forms a layer that moves around the inner core.

**Mantle**  
This layer is rock-hard, but it actually flows around the outer core, moving about as slowly as your fingernails grow.

# Tsunamis



**Tsunamis** are caused by an **earthquake** or **volcanic eruption** under or near the ocean floor. They can cause flooding, the destruction of buildings and the loss of life.

**Tsunamis** can also be caused by large asteroids crashing into the ocean, such as when the dinosaurs were made extinct.

## Homework Ideas:

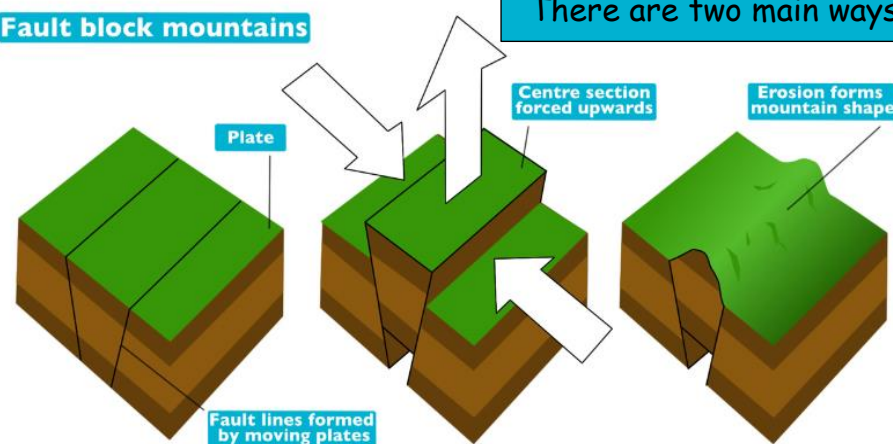
1. Make a working model of an erupting volcano (search for how to do this online).
2. Research the events that happened in AD79 when Mount Vesuvius erupted and present your findings to the class - a poster, a PowerPoint presentation, a model etc.
3. Imagine that you were in an earthquake. Write a newspaper report describing what happened and how people felt.
4. Research about the parts of a volcano. Draw it and label its features.
5. Draw and paint a picture of a volcano erupting.
6. Create a board game about escaping a natural disaster.
7. Create a fact poster for a famous volcano, such as Mauna Loa in Hawaii.



## How mountains are formed

There are two main ways - Fault block mountains and dome mountains.

### Fault block mountains



### Dome mountain

