Brain Ticklers



From INNER EARTH to OUTER SPACE

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Nelson Literacy Directions

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For teachers' Inspection Only

1 Brain Tickler 1
What Affects Earth from Deep Down?

Volcanoes from Deep Down!

TEXT TYPE
Description

A volcano is a weak place in Earth's crust, where molten rock, gas and ash burst up from deep below the surface.

Volcanoes can form mountains or large volcanic fields. They can also erupt under the sea.

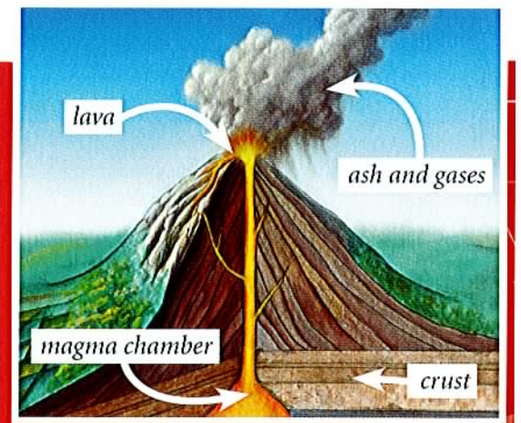
What is a Volcanic Eruption?

Under each volcano is a chamber of magma (hot molten rock). A volcano erupts when the magma from the magma chamber is forced out onto Earth's surface. Once magma reaches the surface, it is called lava.

Eruptions can also force rocks, ash, gases and other materials high into the air.

LAVA

Lava is molten rock or rock that has melted from extreme heat. Lava pours from volcanoes as they erupt.

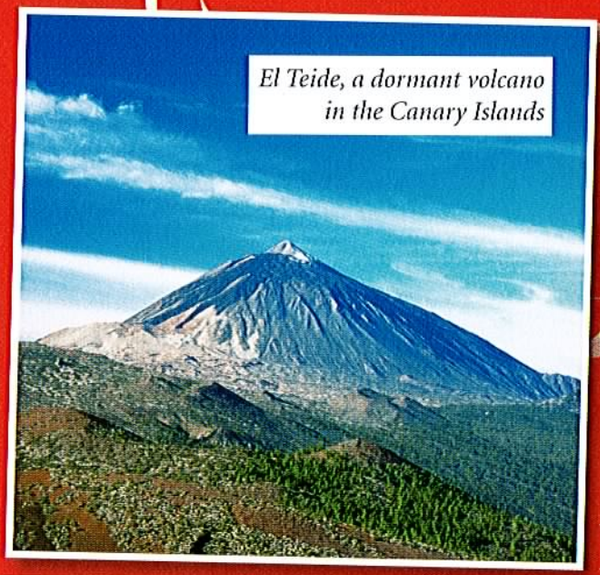


a cross-section of a volcano


an erupting volcano

What Happens After a Volcanic Eruption?

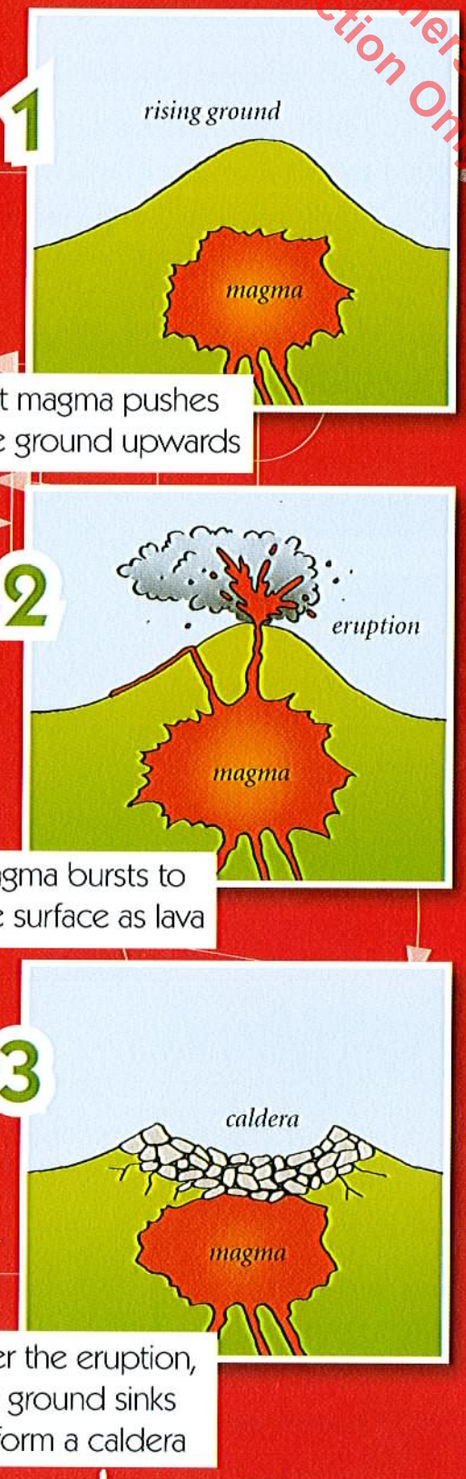
Once the magma chamber empties, the ground can sink and a large, deep pit is left. This pit is called a "caldera". Some calderas are very large and deep.


El Teide, a dormant volcano in the Canary Islands

DORMANT VOLCANOES

A dormant volcano is one that has not erupted for hundreds or thousands of years, but may still erupt in the future.

Volcanic Eruption to Caldera



Where Are Big and Deep Calderas?

One of the biggest volcanic calderas is Lake Taupo, in New Zealand. This caldera filled with water after its last volcanic eruption about 1800 years ago. The volcano is now dormant but not extinct.

One of the deepest volcanic calderas is Crater Lake in Oregon, USA. This caldera is almost 600 metres deep.



an aerial image of Lake Taupo, New Zealand



Crater Lake, Oregon, USA



Mount Etna erupting

Ø 0.671"

Physical Science

Who Was Vulcan?

The word "volcano" comes from "Vulcan", the Roman god of fire. The Romans imagined Vulcan was a blacksmith. They thought Vulcan's workshop was under Mount Etna, a famous volcano in Italy.

0.056"

BLACKSMITH

A blacksmith is a person who works with iron, often making horseshoes.



Mount St Helens

0.142"

0.099"

What Are Extreme Volcanoes?

Stratovolcanoes are extreme volcanoes with extreme eruptions. Mount St Helens, in Washington, USA, is a stratovolcano. These volcanoes have thick, sticky lava that makes them steep and cone-shaped.

Where Are the World's Highest Volcanoes?

Ten of the world's highest volcanoes are in the same area. They form part of the Andes Mountains in South America. The highest is Ojos del Salado. It is 6893 metres above sea level and crosses two countries: Chile and Argentina.



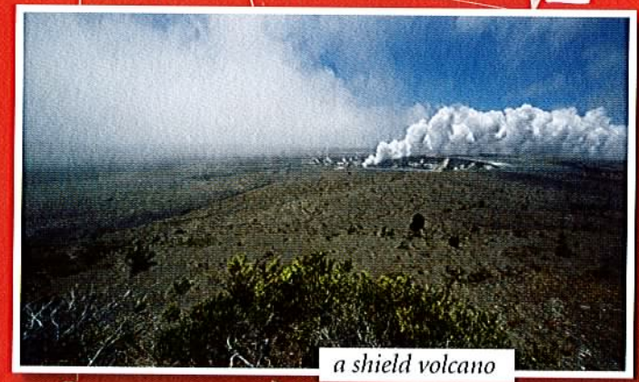
Ojos del Salado

Which Is the World's Biggest Volcano?

The world's biggest volcano is called Mauna Loa, located in Hawaii. It rises 4170 metres above sea level. But it measures 17 kilometres from its base, deep under the ocean, to its tip. This is much higher than Ojos del Salado. Mauna Loa is a shield volcano.

SHIELD VOLCANOES

Shield volcanoes can be very big. They rarely have steep sides. Their lava is less thick and sticky, which makes their eruptions smaller than the eruptions of stratovolcanoes.



a shield volcano

0.099"

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Can a Volcano Cause an Earthquake?

A volcanic eruption can cause an earthquake, but it is not common. In 1883, the volcano Krakatoa, in Indonesia, erupted and caused an earthquake and a series of tsunamis.



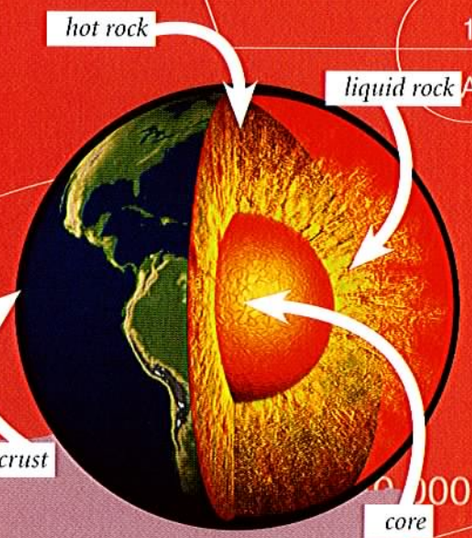
Krakatoa

Physical Science

Record Breakers

The eruption of Krakatoa was the most destructive eruption in the world. In 1883, over 36 400 people died from the tsunamis it caused when it erupted.

The deadliest earthquake recorded was in the 1500s, in Shaanxi, China. Over 800 000 people died.



Lessons for the Future

Deep below Earth's surface, magma and molten metals are always moving. Scientists, such as seismologists and geologists, have learnt a lot about what happens below Earth's surface. By learning more about volcanic activity they can provide better warning systems in the future.

Some people live near volcanoes. Others live in places where there are earthquakes. Systems that warn them of unusual activity help keep them safer.



geologists in protective clothing observe a volcanic eruption

2 Brain Tickler 2
Where is Earth's Middle?

The **Equator**

The equator is an imaginary line around the middle of Earth. It divides Earth into the Northern and the Southern Hemispheres. It is halfway between the North and South Poles.

How Long is the Equator?

If you were to travel around the world following the equator, your journey would be a distance of 40 074 kilometres.

Which Countries Are on the Equator?

The countries that lie on the equator are:

- Colombia, Ecuador, Brazil
- Gabon, the Republic of the Congo, Uganda, Kenya, Somalia, Maldives
- Indonesia
- the Republic of Kiribati.

EQUATOR SEASONS

On the equator, there are two seasons – wet and dry. The Sun's rays warm it all year round.

