Volcanoes

What is a volcano?
A volcano is an opening in the Earth's crust where molten rock, gases and ash can escape. Beneath the surface, this molten rock is called **magma**. When it reaches the surface, it is called **lava**.
Volcanoes are often found where tectonic plates meet. When pressure builds underground, an eruption can occur. Some eruptions are small and gentle, while others are violent and dangerous.

How are volcanoes formed?
Volcanoes usually form in places where the Earth's plates move.

- At some plate boundaries, plates move apart and magma rises through the gap.
- At other boundaries, one plate is forced below another, causing rock to melt.
- The melted rock collects in a magma chamber.
- Over time, pressure increases and magma may escape through a vent.

This process can continue for thousands or even millions of years.

What happens during an eruption?
During an eruption, a volcano can release many different materials. The type of eruption depends on the shape of the volcano and the thickness of the magma.

A volcano might produce:

- hot lava
- ash clouds
- rocks and cinders
- poisonous gases
- fast-moving flows of ash and gas

These eruptions can affect the local **environment** and cause serious **disastrous** damage to homes, roads and farmland.

Parts of a volcano
Most volcanoes have similar features.

- **Magma chamber**: a large underground pool of molten rock
- **Main vent**: the channel through which magma rises
- **Crater**: the bowl-shaped opening at the top
- **Lava flow**: molten rock that spreads across the ground
- **Ash cloud**: tiny pieces of rock and dust thrown into the air
-

Each part has a specific **function** and helps us understand how volcanoes work.
Are all volcanoes the same?

Volcanoes are not all alike. They vary in shape, size and behaviour.
There are three main ways to describe a volcano:

- **Active**: it is erupting now or has erupted recently
- **Dormant**: it is resting but may erupt again
- **Extinct**: it is not expected to erupt again

Some volcanoes are steep and explosive. Others are broad and have gentler eruptions. Scientists use careful **observation** and research to study these differences.

How do volcanoes affect people?
Volcanoes can be extremely dangerous, but they can also be useful.

Dangers
- lava can destroy buildings
- ash can make it difficult to breathe
- roads and airports may close
- crops can be ruined
- people may have to leave the area

Benefits
- volcanic soil is often rich and good for farming
- geothermal energy can be used to produce electricity
- volcanoes can create new land
- many volcanic areas attract tourists

This shows that volcanoes can have both positive and negative **consequences**.
Famous volcanoes

There are many well-known volcanoes around the world.

- **Mount Vesuvius** in Italy destroyed Pompeii in AD 79
- **Mount St Helens** in the USA erupted powerfully in 1980
- **Eyjafjallajökull** in Iceland erupted in 2010 and caused major travel disruption
- **Mauna Loa** in Hawaii is one of the largest volcanoes on Earth

Each example helps scientists and historians build a better **understanding** of volcanic activity.
Why is it important to study volcanoes?

Studying volcanoes helps us prepare for future eruptions and protect communities. Scientists monitor volcanoes by measuring earthquakes, gases and changes in the ground. Although they cannot always predict the exact moment of an eruption, their work is very important.

Volcanoes are powerful natural features that remind us the Earth is always changing. Their beauty and danger make them fascinating to study.