Key Vocabulary	Definition
Composite volcanoes	Composite volcanoes are tall, symmetrically shaped, with steep sides.. They are built of alternating layers of lava flows, volcanic ash, and cinders.
Shield volcanoes	A shield volcano is built mainly out of basaltic lava of low viscosity. The lava flows out, cools and hardens, adding to layers of cooled and hardened lava underneath it.
tectonic plates	Tectonic plates are gigantic pieces of the Earth's crust and uppermost mantle. They are made up of oceanic crust and continental crust. Earthquakes occur around mid-ocean ridges and the large faults which mark the edges of the plates
hot spots	A hot spot is an intensely hot area in the mantle below Earth's crust. The heat that fuels the hot spot comes from very deep in the planet
pyroclastic flows	Pyroclastic material is another name for a cloud of ash, lava fragments carried through the air, and vapor.
magma	Magma is molten rock that is found below the earth's surface.
Constructive plate boundaries & destructive plate boundaries	• **Constructive plate boundaries** are where tectonic plates are moving apart, and magma here can gradually rise and form new crust, usually without any violent eruptions. • **Destructive plate boundaries** are where tectonic plate boundaries are colliding or pushing against each other. The intense pressure involved can create new magma which then rises to the surface through volcanic vents in explosive eruptions.

Volcanoes

Knowledge Bank

What are volcanoes?
Volcanoes can look like small mountains or hills.
A volcano is an opening in the Earth's **crust** that allows **magma**, hot ash and gases to escape.

What types of volcano are there?
There are two main types of volcano:

- **Composite volcanoes** are the most common type of volcano. They can have violent eruptions and can grow bigger as layers of thick lava and ash harden on top of each other. Mount Etna in Sicily, Italy, is an example of a composite volcano.
- **Shield volcanoes** do not have such violent eruptions. These volcanoes tend to have gentle slopes and their runnier lava spreads and hardens over a wider area. Mauna Loa in Hawaii is an example of a shield volcano.

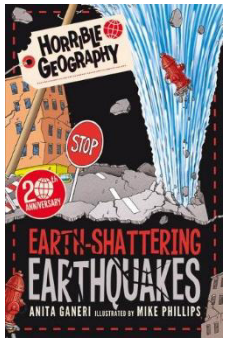
What is a volcanic eruption?
Most volcanic eruptions are caused by pieces of the Earth's crust, called **tectonic plates**, moving towards each other.
Some volcanoes, like Mauna Loa in Hawaii are caused by **hot spots** in the Earth's crust. These do not erupt violently and lava usually flows slowly out of them.
Eruptions from volcanoes can be very dangerous. They can produce:

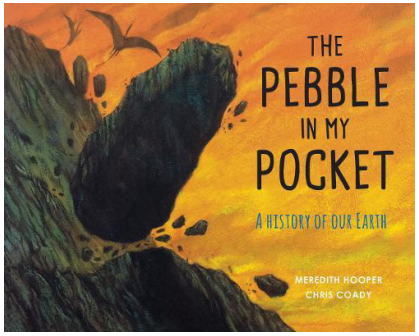
- **pyroclastic flows** - fast moving clouds of hot ash, gas and rock
- **ash clouds** - small pieces of rock and glass that can be carried in the air for many kilometres
- **volcanic bombs** - large bits of very hot rock blown out of a volcano

What happens during a volcanic eruption?
Magma, a mixture of hot, molten rock and gas, builds up deep beneath the surface of the Earth under enormous pressure. The magma rises, looking for weaknesses through rocks in the Earth's crust.
Volcanoes are usually found along the boundaries of tectonic plates.

- **Constructive plate boundaries** are where tectonic plates are moving apart, and magma here can gradually rise and form new crust, usually without any violent eruptions.
- **Destructive plate boundaries** are where tectonic plate boundaries are colliding or pushing against each other. The intense pressure involved can create new magma which then rises to the surface through volcanic vents in explosive eruptions.

When magma erupts from a volcano it is called **lava**. This mixture of lava and gas flows out and down the sides of a volcano, some may cool and erupt as ash.





Key Vocabulary	Definition
core	The Earth's inner core is a huge metal ball, 2,500km wide.
mantle	The mantle is the mostly solid bulk of Earth's interior. The mantle lies between Earth's dense, super-heated core and its thin outer layer, the crust.
crust	The crust is the Earth's outermost layer, meaning it's the layer closest to the surface. We live on top of Earth's crust, and it stretches under both the land and the oceans
Plate boundary	Areas where the plates meet are called boundaries.
Fault line	Fault lines are usually the edge of the tectonic plates and occur when different plates grind against each other.
tsunami	A tsunami is a large ocean wave usually caused by an underwater earthquake or a volcanic explosion.
Richter Scale	The Richter scale uses a numerical system to measure the magnitude of an earthquake. The earthquakes are measured to the nearest tenth (for example, 5.7). Most earthquakes are small with a measurement of less than three.

Earthquakes

Knowledge Bank

The structure of the Earth

The Earth is made up of different layers:

- the **core** at the centre, which is mainly metal
- the **mantle**, which is mainly rock
- the **crust**, which is the part we can see

The crust (together with the upper layer of the mantle) is made up of different pieces, called **tectonic plates**. These plates fit together like a jigsaw and are **moving** at a rate of a few centimetres a year, in different directions and at different speeds.
Some plates slide past each other, others move away from each other and some bump into each other.
Sometimes these plates lock together when they meet. This is called a **plate boundary** or a **fault line**.

What happens during an earthquake?

- As plates move in different directions over long periods of time, **friction** causes **energy** to build up.
- It becomes so great that the energy is **released**, which creates a shock wave - an **earthquake**.
- If an earthquake is beneath the ocean it can create a series of huge waves, called a **tsunami**.
- There are thousands of earthquakes across the world each day.

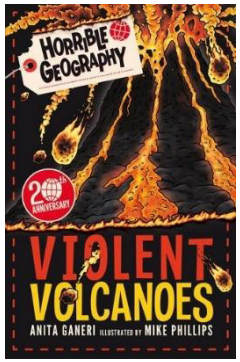
Earthquake scale and impacts

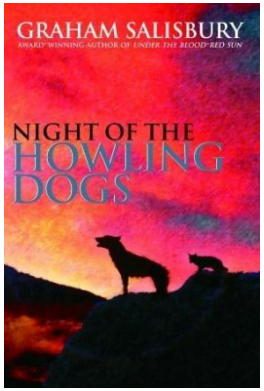
- Some earthquakes are so small that they can only be detected by **specialist equipment**. Others can be so intense that they can **destroy towns and cities**.
- The **Richter magnitude scale** is used to measure the size of earthquakes. The higher the number, the more powerful the earthquake and the higher the chance that it will cause real damage.
- The largest earthquake recorded in the UK happened in 1931, in the North Sea, and measured 6.1 on the Richter scale.

A seismograph measures the strength of earthquakes

Number on Richter scale	How many happen in the world per year?	What does it mean?
2.5 or less	Millions each year	Usually not felt, but some can be recorded by scientists
2.5 to 5.4	500,000 per year	Often felt, but only causes minor damage
5.5 to 6.0	1,000 per year	Can cause slight damage to buildings and other structures
6.1 to 6.9	100 per year	May cause a lot of damage in very populated areas
7.0 to 7.9	10-15 per year	Major earthquake and serious damage caused
8.0 or greater	Once every year or two	This is a very large earthquake which can totally destroy large areas

Source: USGHS/Modified Mercalli Intensity





- Many earthquakes occur around the **Pacific Ocean**. People who live there, in countries such as Japan, are used to earthquakes happening and build **earthquake-resistant buildings** that sway with the shock waves rather than fall down.
- Although there are earthquakes in the UK, they are rare and so small that most people do not feel them.