Earth's Shaking Ground: Earthquakes and Volcanoes Explained

KS4 GEOGRAPHY Ages 11-14 ⏰ 3 min read

What's Inside Our Planet?

Imagine Earth like a hard-boiled egg. The shell is the crust — the thin, rocky layer we live on. Underneath is the mantle, a super-hot layer of rock that moves very slowly, like treacle flowing in slow motion. At the centre is the even hotter core.

The crust isn't one solid piece. It's cracked into about **20 massive sections called tectonic plates**. These plates float on top of the mantle and are constantly moving — sometimes just a few centimetres per year.

Think of it like a jigsaw puzzle where the pieces are slowly shifting around, bumping into each other and grinding against the edges.

What Causes Earthquakes?

Earthquakes happen when two tectonic plates collide, slide past each other, or pull apart. The rocks get stuck at the edges of the plates as they try to move. Pressure builds up over many years, like a spring being compressed tighter and tighter. Eventually, the pressure becomes so great that the rocks suddenly snap and slip, releasing all that built-up energy at once. This violent movement sends **shock waves racing through the ground**, which is what we feel as an earthquake.

The place where the plates meet is called a **fault line**. Japan, New Zealand, and California sit on very active fault lines, so earthquakes happen there frequently.

What About Volcanoes?

Volcanoes are created where tectonic plates meet in a different way. When two plates collide, one plate gets pushed down beneath the other in a process called **subduction**. As the plate sinks deeper into Earth, the extreme heat melts the rock, creating hot, liquid rock called **magma**.

Think of it like heating butter in a pan — as it gets hotter, it turns from solid to liquid and wants to rise upwards.

Because magma is lighter than solid rock, it rises through cracks in the crust. When it reaches the surface, it erupts as a volcano. The magma flows out as **lava**, and ash explodes into the air. Volcanoes also form at places where the mantle is extra hot, called **hotspots**. Hawaii was created by a volcanic hotspot in the middle of the Pacific Ocean.

Why Should We Care?

Both earthquakes and volcanoes can be dangerous, but they also shape our planet. Volcanic soil is incredibly fertile, making excellent farmland. Mountains created by plate collisions give us stunning landscapes. Understanding what causes these events helps scientists predict them and keep people safe.