

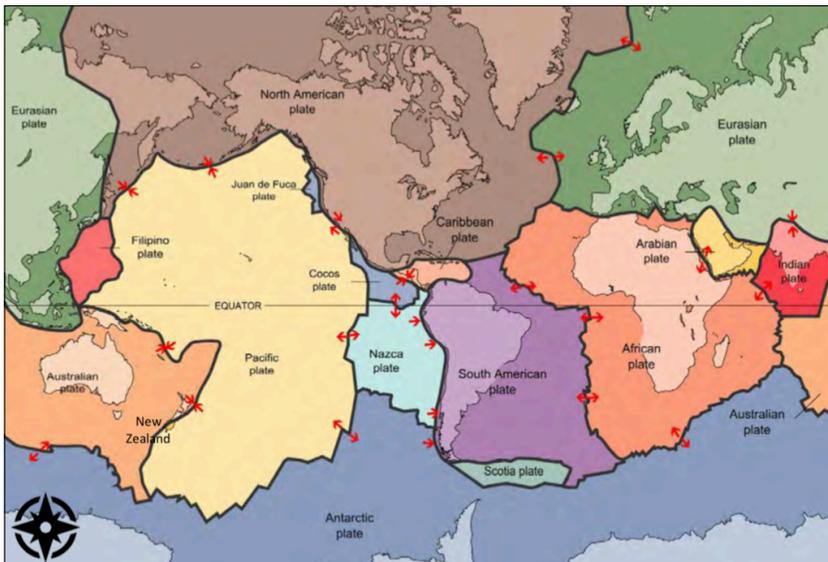
Year 4 Geography Knowledge Organiser - Earthquakes

Why do earthquakes happen?

1. Earth's crust is made up of **tectonic plates** (there are 7 major plates).
2. Molten rock in the mantle moves the tectonic plates - they can slide underneath each other.
3. Pressure builds up (creating **friction**) and the plates slip.
4. When they slip the pressure is released but the shockwaves from this produce an earthquake.
5. Earthquakes can occur on land (the continental crust) or under water (the oceanic crust).

The San Andreas Fault

1. Earthquakes occur at a **plate boundary** (where the tectonic plates meet) - this is called a **fault line**.
2. The **San Andreas Fault** is where the North American Plate meets the Pacific Plate.
3. At this fault line in California, USA the two plates slide past each other in opposite directions: the North American Plate is moving in a south easterly direction and the Pacific Plate is moving in a north-westerly direction.
4. In 1989 an earthquake along a section of this fault line caused a motorway to be destroyed and some people were killed.



Christchurch, New Zealand

1. In September 2010 Christchurch experienced a 7.1 **magnitude** earthquake.
2. The earthquake only lasted 40 seconds but was powerful enough to destroy buildings, electricity, gas and water supplies.
3. 20 aftershocks happened that day.
4. Over the next three years there were more than 14,000 aftershocks. Some of these were responsible for destroying the cathedral.

Measuring earthquakes

1. The place where an earthquake starts is in the Earth's crust - this is the **focus** and is the point underground where the plates move and cause **friction**.
2. On the surface of the earth above the focus is the **epicentre**.
3. **Seismic waves** are waves of energy that are released from the epicentre.
4. These waves are measured using a **seismograph**.
5. It's **magnitude** (power) is then given a number from the **Richter scale** (a scale of 1-10 developed by Charles Richter).
6. Earthquakes that measure 7 or higher on the Richter Scale don't happen very often, yet when they do they cause lots of destruction.

The effects of earthquakes

Immediate:

1. Buildings shaking or collapsing
2. Things in buildings moving and smashing
3. No electricity
4. Burst water pipes
5. Damage to roads, bridges and railways
6. Tsunamis
7. Pollution of water supplies
8. Injuries or death

Soon after:

1. Fires
2. Flooding
3. Landslides
4. Subsidence
5. Buildings sinking

Long term:

1. Infrastructure can take years to repair
2. Changes to the shape of the land
3. Changes to coastline
4. Location of tectonic plates can change

Living with earthquakes

Humans can adapt the way they live to make the effect of earthquakes less damaging. This has been done in countries where earthquakes are common (for example in Japan).

1. Buildings built to absorb the shock of an earthquake by having rubber foundations.
2. Buildings built with steel frames so they sway instead of collapsing during an earthquake.
3. Buildings made to a smaller height so less damaging if it collapses.
4. Plastic is used for windows instead of glass.
5. School children are taught what to do if an earthquake happens and have earthquake drills.
6. Emergency services and residents also have earthquake drills.

Vocabulary

1. Earthquake	A sudden, violent shaking of the ground as a result of movements in the earth's crust or volcanic activity.
2. Tremors	A small movement of the earth's crust before an earthquake.
3. Aftershocks	Tremors after an earthquake.
4. Visible	Able to be seen.
5. Tectonic plates	Different, very large sections of rock that make up the earth's crust.
6. Plate Boundary	Where two tectonic plates meet.
7. Fault line	Where earthquakes are formed along a plate boundary.
8. Major plates	There are seven major tectonic plates.
9. Friction	The force between two surfaces that are sliding, or trying to slide, across each other.
10. Epicentre	Area on land directly above where the earthquake started underground.
11. Focus	Point underground where the earthquake began.
12. Seismic waves	Waves of energy released from the epicentre.
13. Seismograph	A machine that measures the seismic waves and produces a seismogram.
14. Magnitude	The power of an earthquake.
15. Richter scale	A scale from 1 to 10 used to grade an earthquake's magnitude.
16. Landslide	The collapse of a mass of earth or rock from a mountain or cliff.
17. Subsidence	The effect of the land moving and becoming uneven.
18. Tsunami	A long, high sea wave caused by an underwater earthquake.

Did you know... the largest earthquake ever recorded by a seismograph was in 1960 in Chile in South America. This earthquake measured 9.5 on the Richter scale!