

Earthquakes: The Shifting Earth

Learning objective: To understand the physical processes that cause earthquakes and their impact on the Earth's crust.

Read the passage below carefully. Use your geographical knowledge to answer the questions, ensuring you provide full sentences where necessary.

Deep beneath our feet, the Earth's outer shell—the crust—is not one solid piece. Instead, it is broken into massive, jigsaw-like sections known as tectonic plates. These plates are constantly moving, albeit at a very slow pace. They drift, grind against one another, and sometimes collide. When these plates become stuck due to friction, immense pressure builds up over long periods. Suddenly, the rock fractures and the plates slip forward, releasing a massive surge of energy in the form of seismic waves. This sudden release is what we experience as an earthquake. The point inside the Earth where the movement begins is called the focus, while the location directly above it on the surface is known as the epicentre. While some earthquakes are minor tremors that pass unnoticed, others can cause significant changes to the landscape. Finn the dolphin, our world-exploring friend, reminds us that the Earth is a dynamic, ever-changing planet. By studying seismology, scientists aim to predict these events to help keep communities safe from the destructive power of a shifting crust.

Word bank: tectonic plates · seismology · crust · epicentre · magnitude · tremor · fault line

1. Identify the two specific terms used to describe the location where an earthquake begins and the location directly above it on the surface. (2 marks) (2 marks)

2. According to the text, what is the primary reason that tectonic plates become stuck? (2 marks) (2 marks)

3. Explain why the Earth's crust is compared to a 'jigsaw' in the text. (2 marks) (2 marks)

4. What might happen if the movement of tectonic plates was suddenly stopped forever? Justify your reasoning. (3 marks) (3 marks)

5. Do you believe it is more important for scientists to focus on predicting earthquakes or on building stronger infrastructure to withstand them? Justify your answer. (3 marks) (3 marks)

Draw: Draw a cross-section of the Earth, clearly labelling the tectonic plates, the fault line, the focus, and the epicentre.



Extension challenge: Research the 'Ring of Fire'. Write a short paragraph explaining why this specific area of the world experiences more seismic activity than others. Compare this to a region with very low earthquake activity and explain the difference in their geological settings.