Year 10 Science: Plate tectonics: plates, boundaries, earthquakes and volcanoes

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. A plate moves 5 cm a year. How far does it move in 2 million years? Give your answer in km.

2. What type of boundary is the Alpine Fault mainly, and what mountain range has formed along it?

3. Why are there active volcanoes in the central North Island but not along the Alpine Fault?

4. Give the main reason most scientists rejected Wegener's continental drift at first, and what later evidence changed their minds.

5. A map shows a long line of earthquakes in the middle of the Atlantic Ocean, mostly shallow, with some volcanoes. What type of boundary is this, and why?

Fix the mistake

6. Correct this statement: "The plates float on a layer of liquid magma."

7. Correct this statement: "The Alpine Fault is a subduction zone, like the one under the North Island."

8. Correct this statement: "Volcanoes and earthquakes happen at every type of boundary."

9. Correct this statement: "480 km is 480 000 cm."

Answer key (for parents and tutors)

1. A plate moves 5 cm a year. How far does it move in 2 million years? Give your answer in km.
   5 × 2 000 000 = 10 000 000 cm = 100 000 m = 100 km.
2. What type of boundary is the Alpine Fault mainly, and what mountain range has formed along it?
   Transform (with some pushing together); the Southern Alps.
3. Why are there active volcanoes in the central North Island but not along the Alpine Fault?
   Under the central North Island the Pacific Plate is subducting, and water from it helps the mantle melt to make magma; the Alpine Fault is mostly plates sliding past each other with no plate sinking beneath, so little magma forms.
4. Give the main reason most scientists rejected Wegener's continental drift at first, and what later evidence changed their minds.
   He could not explain what force moved the continents; seafloor mapping, mirror-image magnetic stripes and young rock at mid-ocean ridges showed seafloor spreading, giving a mechanism.
5. A map shows a long line of earthquakes in the middle of the Atlantic Ocean, mostly shallow, with some volcanoes. What type of boundary is this, and why?
   Divergent (the Mid-Atlantic Ridge): plates are moving apart, magma rises to make new crust, and the quakes are shallow because the lithosphere there is thin and hot.
6. Correct this statement: "The plates float on a layer of liquid magma."
   The mantle under the plates is solid rock that flows very slowly; the only liquid layer is the outer core, far deeper.
7. Correct this statement: "The Alpine Fault is a subduction zone, like the one under the North Island."
   The Alpine Fault is mainly a transform boundary where the plates slide past each other, which is why it has big earthquakes but no volcanoes.
8. Correct this statement: "Volcanoes and earthquakes happen at every type of boundary."
   Earthquakes happen at all three, but volcanoes form where plates collide by subduction or move apart, and hardly ever at transform boundaries.
9. Correct this statement: "480 km is 480 000 cm."
   1 km is 1000 m and 1 m is 100 cm, so 1 km is 100 000 cm and 480 km is 48 000 000 cm.