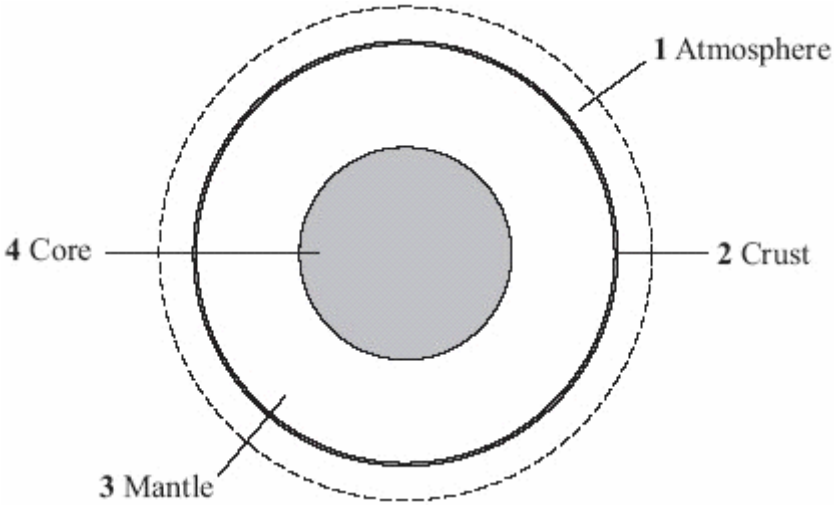
The Earth's crust

1. This question is about the structure of the Earth.

The diagram below shows the layers in and around the Earth.



The Earth's magnetism is thought to be due to the presence of metallic iron and nickel in the centre of the Earth.

Match statements, **A**, **B**, **C** and **D**, with the numbers **1–4** in the diagram.

A where the plates drift apart

B where convection currents occur, creating plate movements

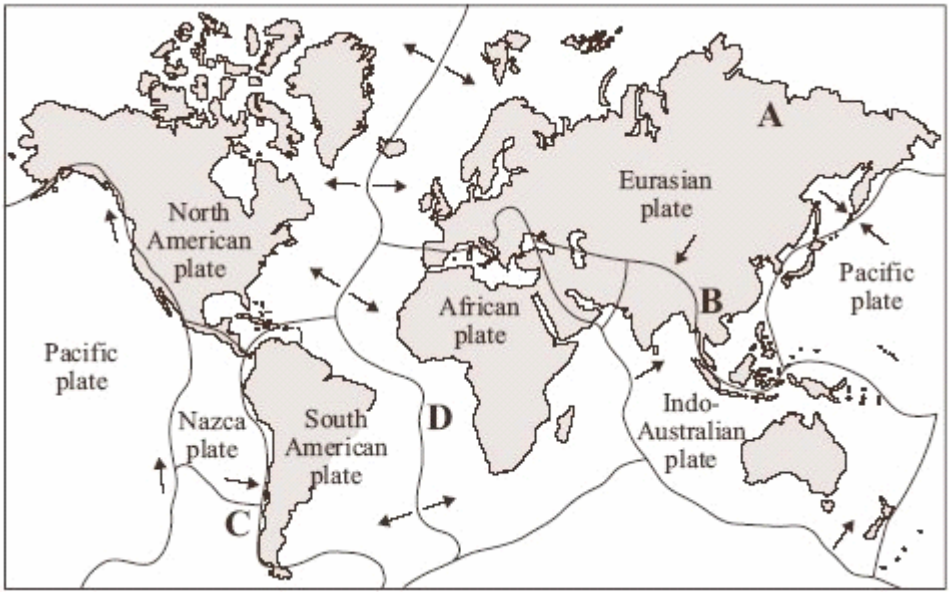
C where global warming occurs

D where iron and nickel are found as metals

2. The world map shows the location of the main tectonic plates on Earth.

The arrows show the directions in which the tectonic plates move.

Earthquakes often occur at places where tectonic plates come together.



Match locations, **A**, **B**, **C** and **D**, on the map, with the numbers **1**–**4** in the table.

1	the location which is least likely to suffer an earthquake
2	the location where an earthquake could take place due to movement of the Eurasian plate
3	the location that could be affected by the movement of three tectonic plates
4	the location where two plates are moving away from each other

3. Scientists used to believe that the Earth's core is cooling. They thought that this made the Earth shrink. In 1915, Alfred Wegener suggested that the continents had once been joined together. Later, the continents split up and moved apart. At first, scientists did not believe Wegener's theory. They only began to accept his theory with the discovery of new evidence.

(a) How did the scientists who believed that the Earth's core is cooling explain the formation of mountains?

1 Mountains were formed by volcanic eruptions.

2 Large wrinkles in the Earth's crust formed the mountains.

3 Mountains were formed by huge tidal waves.

4 The least dense parts of the Earth's crust rose up above parts that were more dense.

(b) Scientists now believe that . . .

1 the core is heated by global warming.

2 the core is heated by volcanic eruptions.

3 radioactive processes keep the core heated.

4 burning fossil fuels keeps the core heated.

(c) What was the new evidence that persuaded many scientists to accept Wegener's theory?

1 The Earth's crust is cracked into a number of plates.

2 The Earth is almost spherical not square.

3 The Earth is made up of three layers.

4 The Earth's crust is much less dense than the mantle.

(d) Scientists now believe that mountain ranges are formed . . .

1 by earthquakes.

2 by rising liquid material from the core.

3 by magma pushing up the Earth's crust where it is very thin.

4 by large-scale movements of the Earth's crust.

4. Movements in the Earth's crust can cause dramatic events such as volcanic eruptions.

(a) Which of the following does **not** happen at plate boundaries?

1 Volcanoes form and lava is released.

2 Heat is produced by radioactive processes.

3 Subduction occurs and rocks melt.

4 Sea-floor spreading occurs and ridges form.

(b) Scientists can predict with reasonable accuracy . . .

1 the areas in which volcanoes are likely to occur from data about previous eruptions.

2 the position of a volcanic eruption from movements of convection currents in the mantle.

3 the size of a volcanic eruption from the frequency of previous eruptions in the area.

4 the number of volcanic eruptions from slight movements of the Earth's crust.

Scientists measure the temperature of the gases coming out of a volcano. Raised temperatures are an indication of increased volcanic activity.

(c) Which row in the table shows:

- the most appropriate method to present the data
- the expected trend which might predict an eruption?

	Method of presenting the data	Expected trend
1	line graph	direct proportionality
2	scattergram	positive correlation
3	bar chart	increasing volume of bars
4	pie chart	increase in the area of the sectors representing higher temperatures

(d) The temperatures recorded by the scientists were found to be reproducible but consistently lower than the accurate value.

This was probably due to . . .

1 their readings being invalid.

2 their readings being taken with thermometers that were **not** sensitive enough.

3 their readings being averages that included anomalous results.

4 their thermometers being incorrectly calibrated.