

The rock layers of the earth

2a

1 Read the text below about the layers of the earth.

- In the left margin, write the main topic of each paragraph.
- Underline the scientific nouns (ie things, ideas, places) in each sentence of paragraphs 1, 2 and 3.
- Underline the adjectives (ie describing words) in each sentence of paragraphs 4, 5 and 6.

The earth is huge ball made of mainly different types of rock. Its total diameter is about 12 500 km and it has four layers: crust, mantle, outer core and inner core.

The crust is the outside layer. It is made of solid rock. The thickness of the crust ranges from 5 km under the oceans to 60 km under mountains and is 15 km thick on average. The crust's surface temperature is 20°C on average. The crust makes up 2% of the volume of the earth.

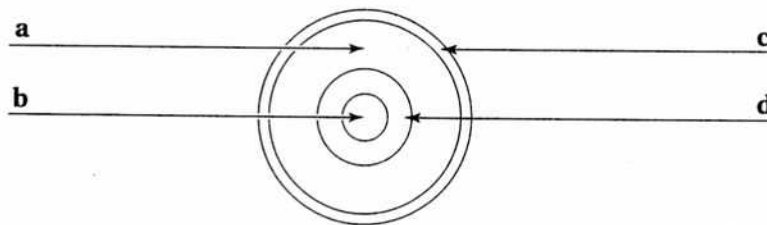
The mantle is the second layer and it is 2800 km thick. Its rocky material is molten and like a thick paste. Its temperature ranges from 800°C near the crust to 2200°C near the outer core. The mantle makes up 81% of the earth by volume.

The outer core is the third layer. It has completely liquid rock material. The outer core is 2000 km thick. Its temperature is 3600°C near the inner core. The outer core is 16% of the earth's volume.

The inner core is the fourth and innermost layer. It contains solid rock material, because the other layers around it compress it with great force. The inner core is 2800 km thick. The temperature at the centre of the earth is 5000°C and is produced by radioactive decay. The inner core makes up 1% of the earth's volume.

The crust and the solid topmost part of the mantle are also called lithosphere and the liquid part of the mantle is then called the asthenosphere.

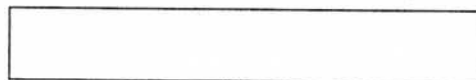
2 Label the diagram with the layers of the earth.



Graphing information

3 The bar below represents the radius of the earth and is 62 mm long (ie 1 mm of the bar is equal to 100 km of the earth).

Mark off the various thicknesses of the layers, starting with the inner core on the left, and then label the graph.

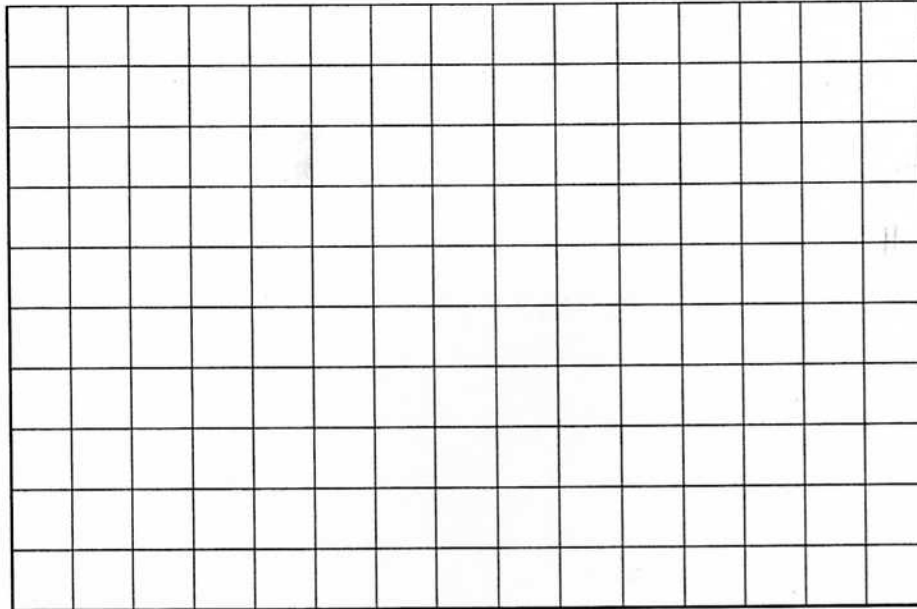


- Below draw a 100 mm long bar which represents 100% of the earth's volume.
- Mark off the various volumes of the layers, given in the information above, starting with the inner core on the left.
- Label the layers.

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2b

- 5 a On the line graph below, label the horizontal axis (–) 'Distance from the centre' and the vertical axis (l) 'Temperature'.
- b Mark off the appropriate numbers and label the axes with the correct unit of measurement.
- c Mark appropriate coordinates from the information above as tiny crosses in the graph and join them with a smooth line.



Tabulating information

- 6 Complete the table by locating relevant information in the text about the rock layers of the earth.

Name	State of matter	Average thickness (km)	Outer temperature (°C)	Volume (%)
centre		—		—

- 7 Answer the following questions.
- a Why is the earth so hot? _____
- b Why is the outer core liquid rock material? _____
- c Why is the crust made of solid rock material? _____
- d Why is the mantle not solid? _____
- e Why is the mantle not a runny liquid but a thick paste? _____
- f Why is the inner core solid? _____