**THE STRUCTURE OF THE EARTH**

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| **Layer of the Earth** | **Estimated**  **Thickness**  **(kilometres)** | **State** | **Estimated**  **Temperature**  **(oC)** |
| Crust | 10 to 70 | Solid and rigid | 25 |
| Mantle | 2900 | Solid but plasticine - like | 1000 to 3500 |
| Outer Core | 2300 | Liquid | 4000-6000 |
| Inner Core | 2500 (radius) | Solid | 5000-6000 |

*Refer to the information above to answer the questions.*

1. The crust on which we stand varies in thickness from 8 km to 64 km. Would the crust be thickest under continents (such as Australia and Europe) or under the oceans? Why?

The crust would be thickest underneath the continents. This is because the continents are the land masses that are formed from the crust, making it thicker.

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1. The continents are situated on crustal plates that can move. What feature of the mantle allows movement of the Earth’s crust to occur?

The mantle is composed of molten rock. The heat emanating from the inner core creates convection currents within the magma, allowing movement of the crustal plates that float on top of the mantle.

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1. Compare and contrast the Continental Crust and Oceanic Crust by answering the following

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| Continental crust | Oceanic crust |
| Thickness 35 km | Thickness 6-11 km |
| Dense / Buoyant **(Please circle)** | Dense /Buoyant **(Please circle)** |
| Young /old **(Please circle)** | Young/old **(Please circle)** |

1. What is the mantle composed of? The mantle is composed of molten rock.
2. Name two elements that are found in the outer core. Two elements found in the outer core are iron and nickel. They are molten.

Mine Shaft Temperature at Different Depths

1. The table above shows the depths and temperatures recorded in a mine shaft.

Temperature (°C)

10000

9000

300

200

100

0 2 4 6 8 10 12 14 16 18 20

400

500

600

700

8000

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| **Depth (km)** | **Temperature (oC)** |
| 0 | 20 |
| 1 | 51 |
| 2 | 82 |
| 3 | 112 |
| 4 | 142 |
| 5 | 171 |
| 6 | 201 |
| 7 | 230 |

Depth (km)

(a) (i) Plot the data points on the graph above. Make the x axis (horizontal) depth, going from 0km to 20 km. On the y axis (vertical) start at zero and go to 10000C.

(ii) Draw a **line of best fit** for the data.

(iii) Extrapolate your trend line (continue beyond your data, best guess) all the way out to the 20 km depth.

(b) Use the line of best fit to predict the temperature at: 8 km depth 275 °C\_\_\_\_\_\_\_\_   
 and 20 km depth 650 °C \_\_\_\_\_\_\_\_.

(c) The deepest mine is less than 10 kilometres deep. How do you think geologists estimate the thickness and temperature of the layers of the earth? Have your best guess!

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