2009 Geology

Intermediate 1

Finalised Marking Instructions

Marks

1. **(a)** Use the word box to complete the table below showing information about the solar system.

Word Box

Meteorite	Satellite	Planet	Star

Feature	*Description*
Sun	**Star**
Moon	**Satellite**
Rock	**Meteorite**

Any three correct 1 mark each **3**

(b) Give **one** difference between the Earth and the Moon.

- **Earth is a planet**
- **Moon is a satellite**
- **Moon is dead**
- **Earth has life**
- **Earth is bigger than the moon**
- **Earth has an atmosphere**

Any one correct **1**

2. Read the statements below and put them in the correct order from oldest to youngest on the time line.

Write only the letters in the circles.

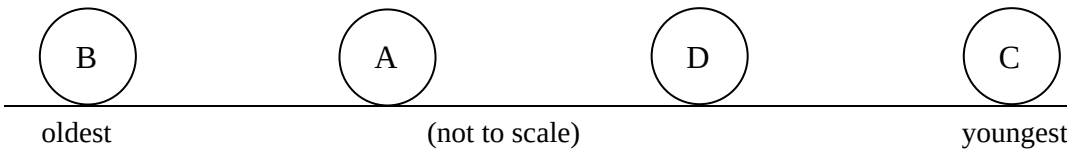
A Molten Earth forms

B The Big Bang – formation of the Solar System

C Dense tropical forests grow in Britain

D Continents beginning to form

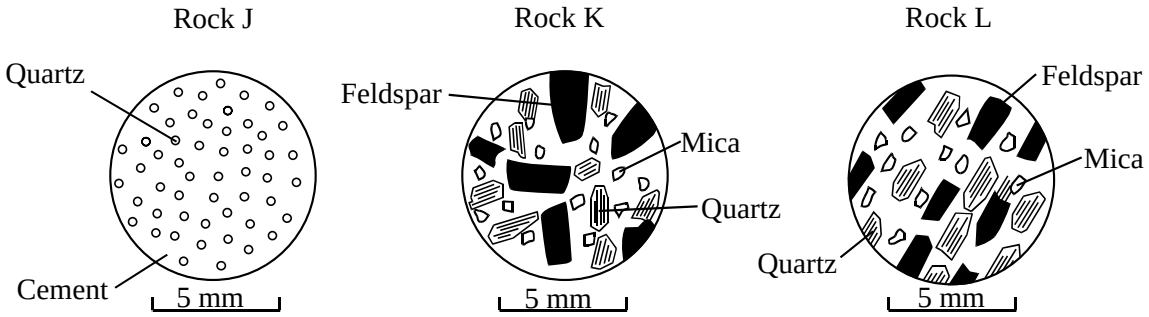
Time line



4 correct – 2 marks
2 correct – 1 mark **2**

Marks

3. Look at the diagrams below showing views of three rocks seen under a microscope.



Use the word box to name the type of rock and give a reason for your answer.

Word Box

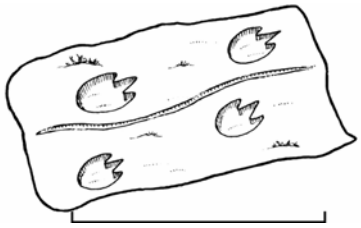
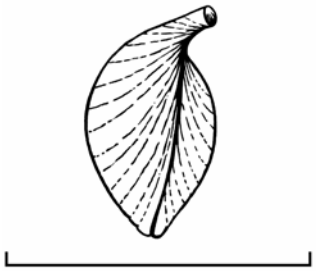
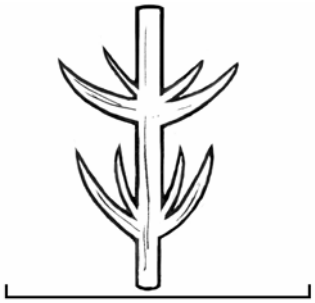
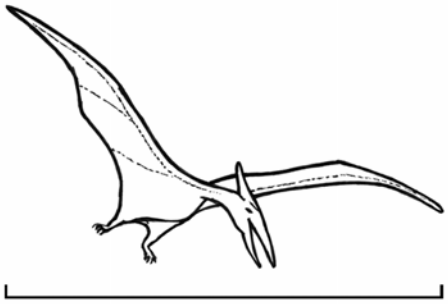
Igneous	Sedimentary	Metamorphic

Rock J	**Sedimentary**
Reason	**Grains cemented together, no crystals, same particle size**
Rock K	**Igneous**
Reason	**Large <u>crystals</u>/slow cooling not 'grains'**
Rock L	**Metamorphic**
Reason	**Crystals lined up/foliated/lying in same direction/layered/foliation** **Same particle size** **Mosaic of <u>crystals</u>** **Cement is present but NOT made of cement**

Any correct answer 1 mark each **6**

Marks

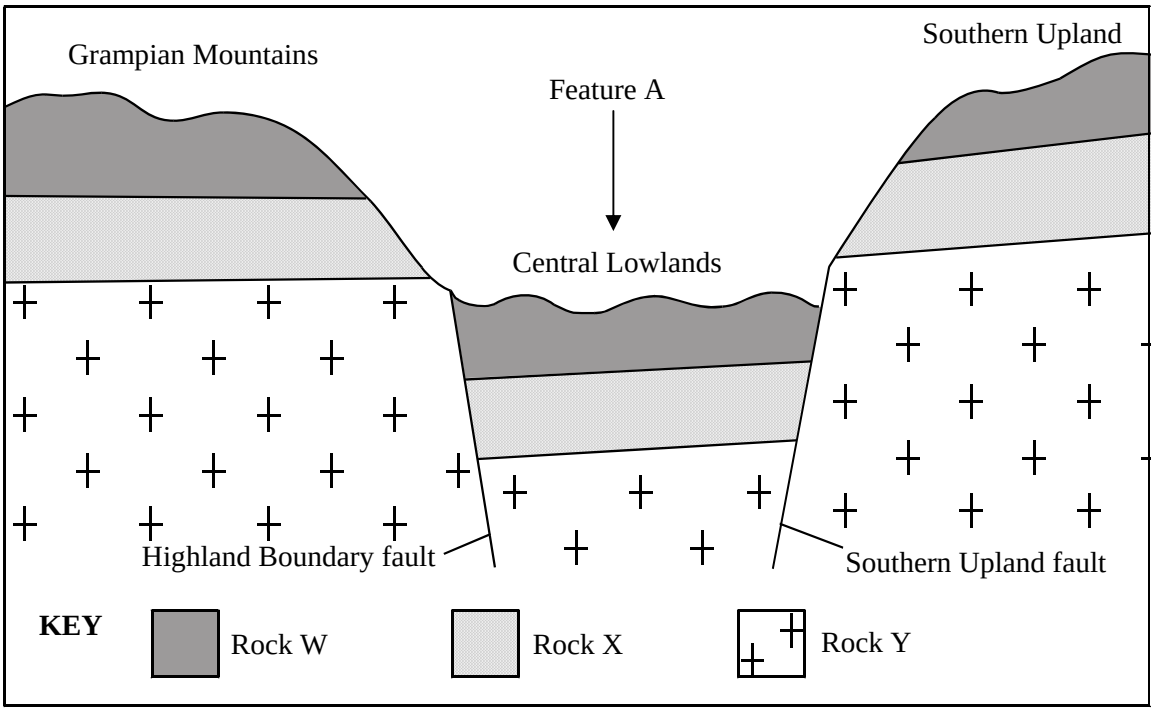
4. Complete the table below by naming the fossil and saying where the organism lived.

Fossil	*Name of Fossil*	*Where organism lived*
 4 m	**Footprint or trace fossil/dinosaur with tail** **Not trail**	**Land**
 4 cm	**Brachiopod**	**Sea**
 6 cm	**Horse tail/Plant** **Accept stem – leaves**	**Land**
 8 m	**Pterosaur/flying reptile** **Accept Teradactyl** **<u>Not</u> Dinosaur**	**Land/Air**

No half marks – 4, 3, 2 or 1 | **4**

	Marks

5. Look at the diagram below showing a cross-section of part of Scotland.



(a) Name Feature A which has formed the Central Lowlands.

Feature A **<u>Rift</u> valley** **1**

(b) Explain how this Feature was formed.

- **Answer may include description of rocks/faults formed/movement along faults/central section <u>moves down</u>/side sections <u>move up</u>/crust <u>pulled apart</u>.**
- **Land has sunk (1)**
- **Caused land to fall down (1)**

Each correct point 1 mark **3**

Marks

6. Look at the photograph below.

(a) Name structure A shown on the photograph.

- **Columnar jointing**
- **Hexagonal column**
- **Hexagonal rocks**
- **Giant's Causeway**
- **Fingal's Cave**
- **Basalt columns**
- **Lava flow**

Accept any one correct. **1**

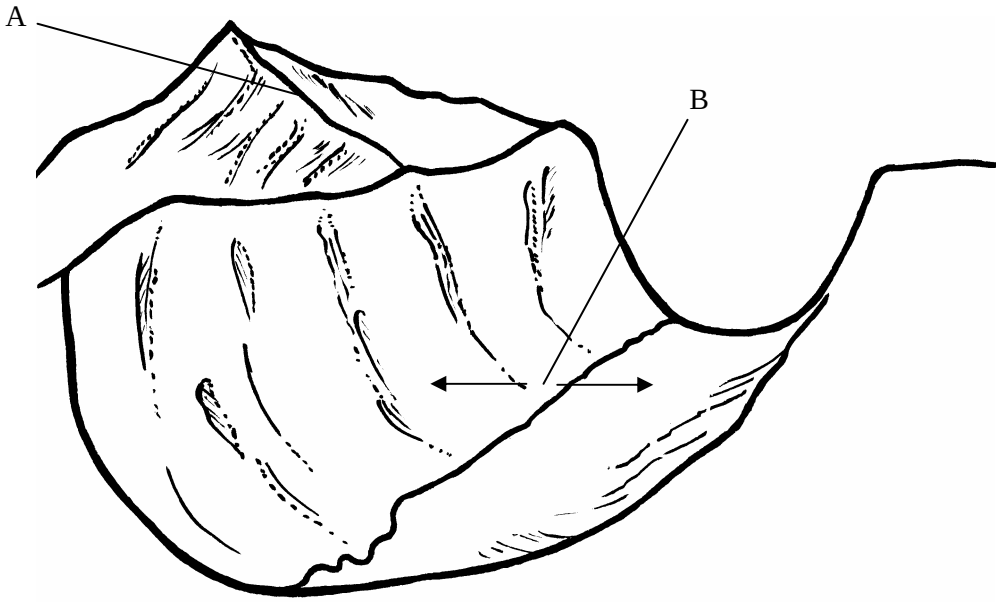
(b) Using a diagram with labels, describe how structure A was formed.

- **Lava cooled**
- **Contraction**
- **Shrinkage**
- **Pulling forces**
- **Cracks forming**
- **Hexagonal columns**

Any 3 correct – diagram must be included for full marks. **3**

	Marks

7. Look at the diagram below.



(a) Identify features A and B.

A **Arete (1)**

B **U-shaped valley (1)** **2**

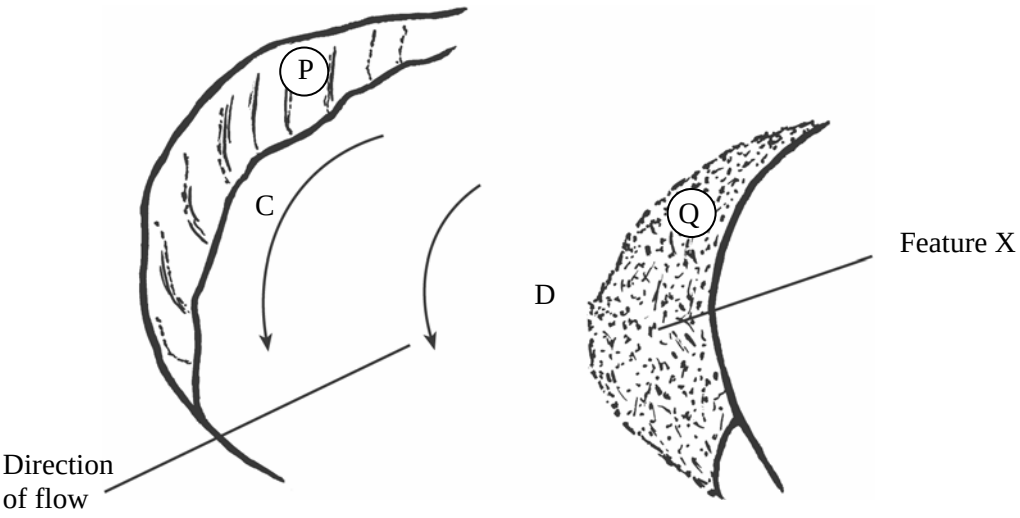
(b) Explain how feature B was formed. (*Diagrams may be used*)

- **Originally V shaped valley**
- **Eroded by glacier**
- **Deepening/widening valley**
- **<u>Ice moves</u> down valley**

Any 3 correct – 1 mark each or correct diagrams **3**

Marks

8. Look at the diagram below showing a cross-section of a river.



Using the Word Box, complete the table.

Word Box

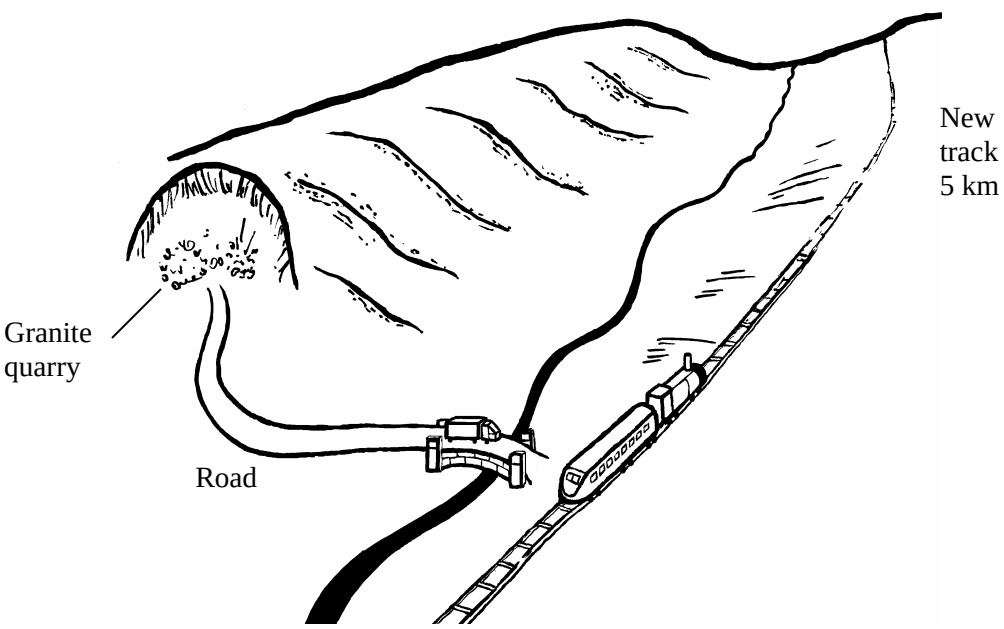
slower	erosion	point bar	faster	deposition	delta

Feature X	**Point Bar**
Current C	**Fast(er)**
Current D	**Slower**
Process P	**Erosion**
Process Q	**Deposition**

1 mark each correct answer **5**

Marks

9. Look at the diagram below.



The Happy Train Company requires 15 000 tonnes of granite chips to extend the railway by 5 km. A local quarry is to provide the granite chips.

Costs

Costs of quarrying	£8 per tonne
Total transport cost by road	£5 per tonne
Rail cost of spreading granite per km	£3 per tonne

(a) Calculate the total cost of extending the railway.

Show your working

Quarrying cost **£8 × 15,000T = £120,000 (1)**

Road transport **£5 × 15,000T = £75,000 (1)**

Rail transport **£3 × 15,000T × 5 = £225,000 (1) (if haven't × by 5 – lose only 1 mark)**

Total cost **£420,000 (1)**

No double penalty for mistake **4**

	Marks

(b) The railway company expects to make £80 000 a year.

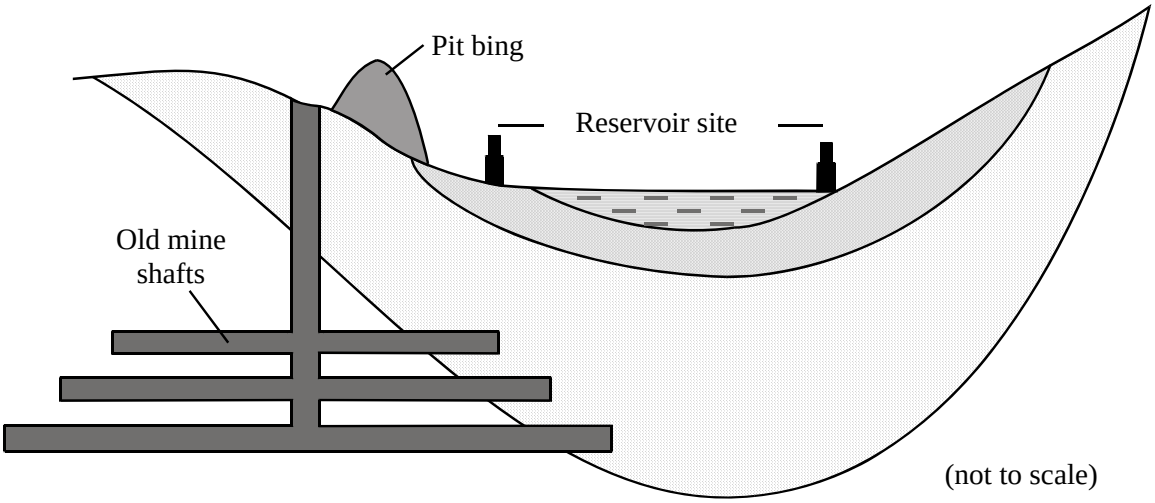
Calculate how many years it will take the company to pay for the cost of the new track.

Show your working

$\frac{\mathbf{420000}}{\mathbf{80000}}$	**(1)**	**Accept as correct if previous figure incorrect but calculations thereafter are correct**	
5.25 years	**(1)**		**2**

	Marks

10. Look at the diagram below showing the possible site for a new reservoir.



KEY

Clay

Gravel

Sandstone

Give **three** problems with building the reservoir at this site.

- **Bing collapses, polluting reservoir**
- **Water might drain through gravel**
- **Subsidence/collapse of oil mine workings (need reason)**

Accept any correct – 1 mark each **3**

	Marks

11 **(a)** Use the Word Box below to complete the table of minerals, metals and their uses.

Word Box

tin, a good conductor of electricity, galena,
very light and suitable for building aircraft, iron,
malachite, used as fishing weights, zinc

Ore mineral	*Metal*	*Uses of the metal*
Haematite	**Iron**	Used for building ships, railway lines and engines
Galena	Lead	Used in roofing and batteries
Bauxite	Aluminium	**Very light and suitable for building aircraft**
Malachite	Copper	**A good conductor of electricity**
Cassiterite	**Tin**	Used for coating food cans

1 mark each correct answer **6**

(b) Explain what is meant by gangue minerals.

- **<u>Waste material</u> (1) (near the minerals) (1) removed along with mineral**

OR

- **Unwanted materials extracted with the minerals**

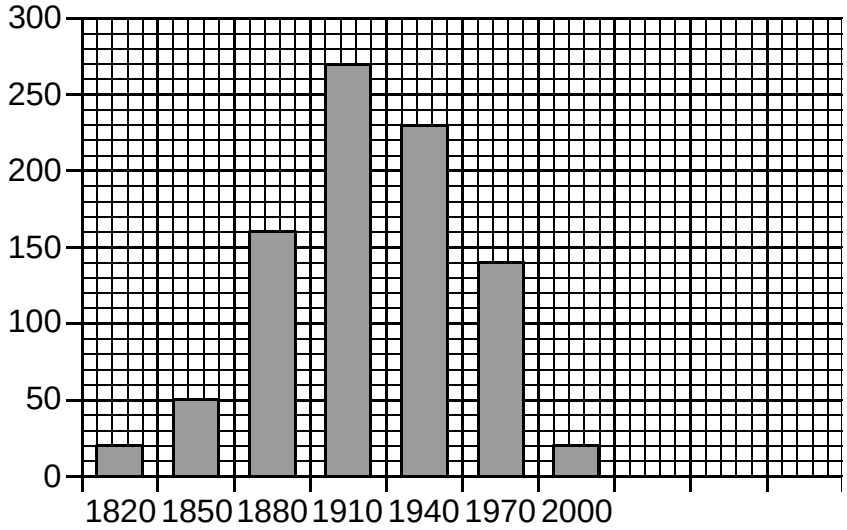
Or any correct answer **2**

Marks

12. Look at the table below showing coal production in the UK from 1820 – 2000.

Year	*Coal Production (million tonnes)*
1820	20
1850	50
1880	160
1910	270
1940	230
1970	140
2000	20

(a) Using the figures in the table, draw a bar graph on the graph paper below.



For bar graph

Correct scale for coal production (1)

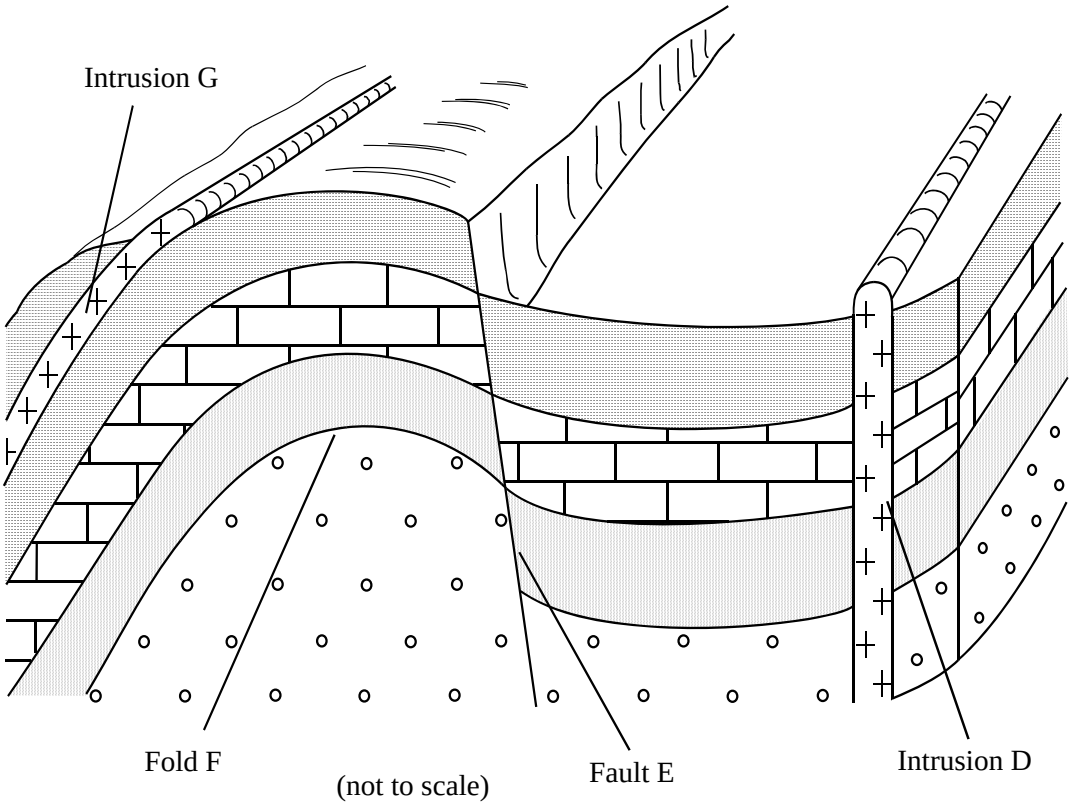
Correct scale for years (X axis) (1)

Exact value of bars (1) **3**

		Marks
(b)	Give **three** reasons for the change in production from 1970-2000. • **Mines closed** • **Coal seams worked out** • **New oil fields discovered** • **More people using electricity** • **Less coal being used** • **Cost of coal has increased** Accept any correct answer – 1 mark each	**3**
(c)	Using the figures in the table, give the lowest coal production as a percentage of the highest coal production. *Show your working* $\frac{\mathbf{20}}{\mathbf{270}}$ **(1)** **= 7.4% (1)** **unit not required**	**2**
(d)	Give a reason why coal production may change by 2030. **Upward change – oil running out/more demand** **Downward change – more renewable energy** **Coal running out** Accept any correct answer	**1**

Marks

13. Look at the diagram below.



(a) Complete the table by naming the features in the diagram.

Feature	*Name*
Intrusion D	**Dyke**
Fault E	**Normal/pulling forces**
Fold F	**Anticline**
Intrusion G	**Sill**

4

(b) Describe the effect on the scenery of intrusions D and G.

- **Land is higher/upland areas**

1

Marks

14. Look at the information below.

Description or formation of ores

A Formed by deposition in rivers and on beaches.

B Formed by chemical weathering.

C Deposit formed by evaporation of sea water.

D Deposited by hot watery fluids.

Complete the table showing how the ore deposits were formed.

Use only the letters

Ore deposit	*Letter*
Hydrothermal	**D**
Residual	**B**
Placer	**A**
Chemical precipitate	**C**

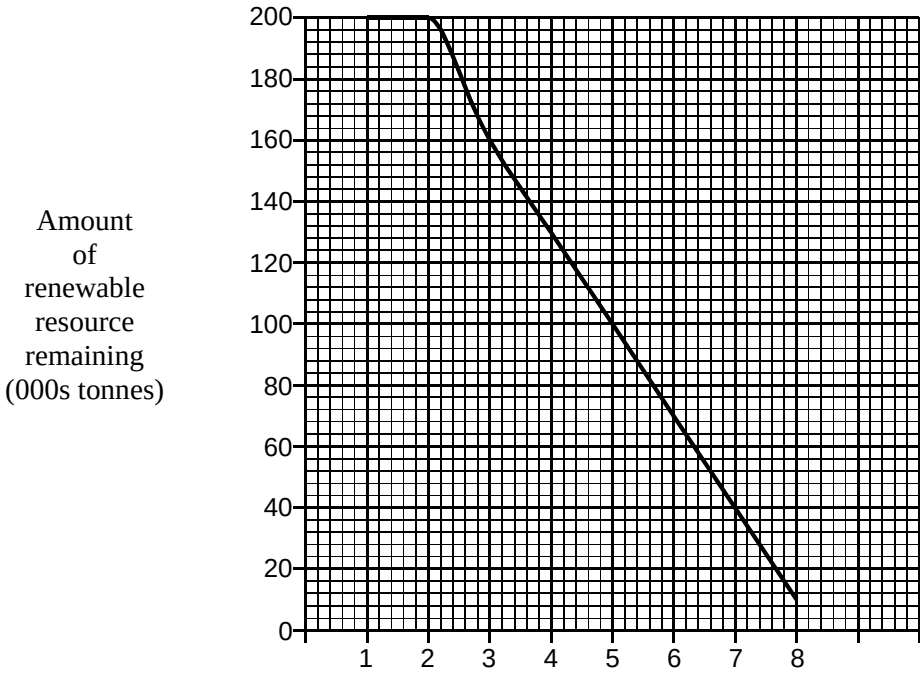
4

Marks

15. Look at the table below showing the amount remaining of a renewable resource.

Year	*Amount of renewable resource remaining (000s tonnes)*
1	200
2	200
3	160
4	130
5	100
6	70
7	40
8	10

(a) Using the information from the table draw a line graph below.



<u>Line graph</u> – correct scale for values on Y axis (1) **If scatter graph, lose 1 mark**
Correct scale on X axis (1)
Correct plotting (1) **3**

(b) Mark on the graph the point where over use started.

Correctly identifying year **1**

	Marks

(c) Predict what would happen if over use was stopped after year 10.

(Tick (✓) one box.)

☐ Goes up

☐ Goes down

Give a reason for your answer.

Reason

Correct reason for up or down **1**

16. Using the Word Box below, give **three** renewable resources.

Word Box

coal	wool	fish	iron ore
leather	gas	copper	oil

1 **Wool not Wood**

2 **Fish**

3 **Leather**

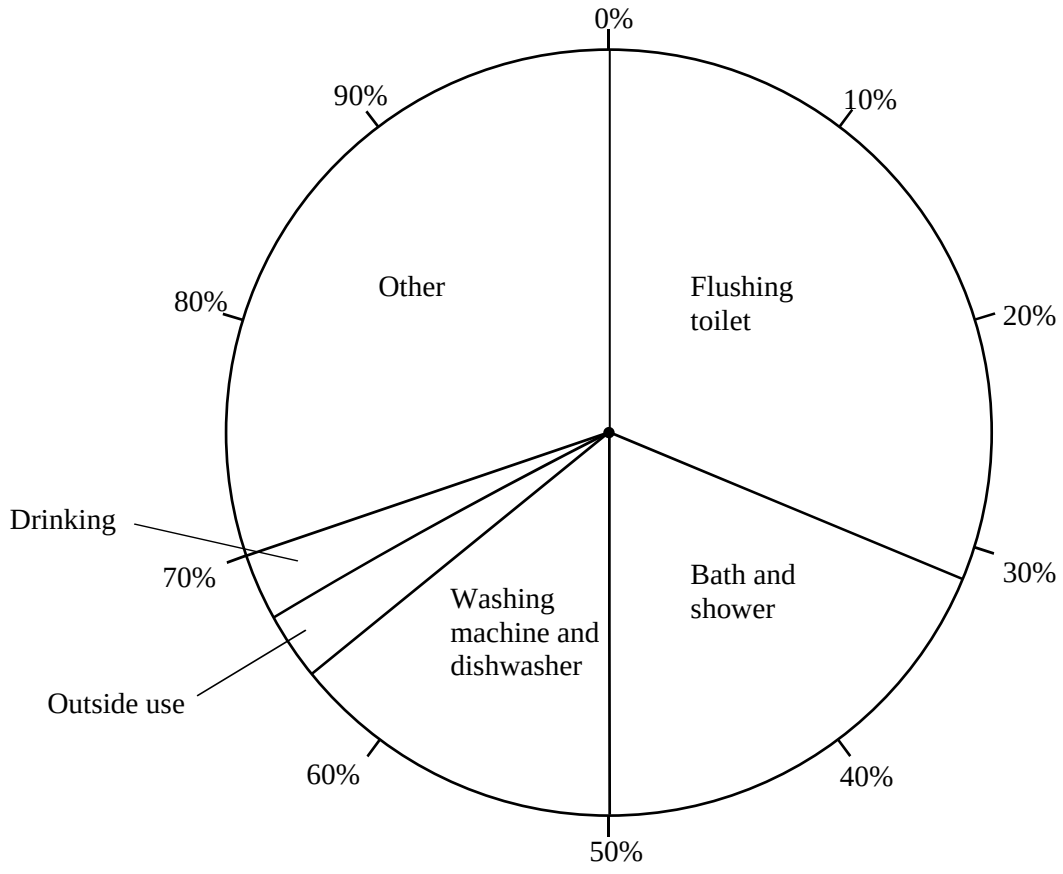
1 mark each – any order **3**

Marks

17. Look at the table below showing domestic use of water.

Use	*Amount used*
Flushing toilet	32%
Bath and shower	18%
Washing machine and dishwasher	14%
Outside use	3%
Drinking	3%
Other	30%

Show the percentages of domestic use of water on the pie chart below. Label the amounts.



Correct measurements (2)

Correct labels (1) **3**

[END OF MARKING INSTRUCTIONS]