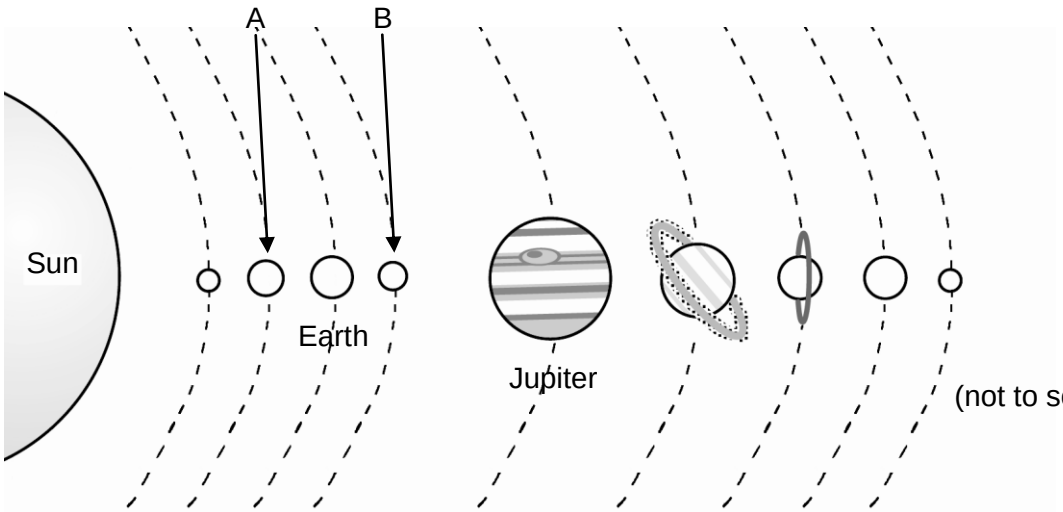
2011 Geology

Intermediate 1

Finalised Marking Instructions

	Marks

1. Look at the diagram below.



(a) Name planets A and B.

A **Venus** B **Mars** **2**

(b) What is the name given to the sun and all its planets?

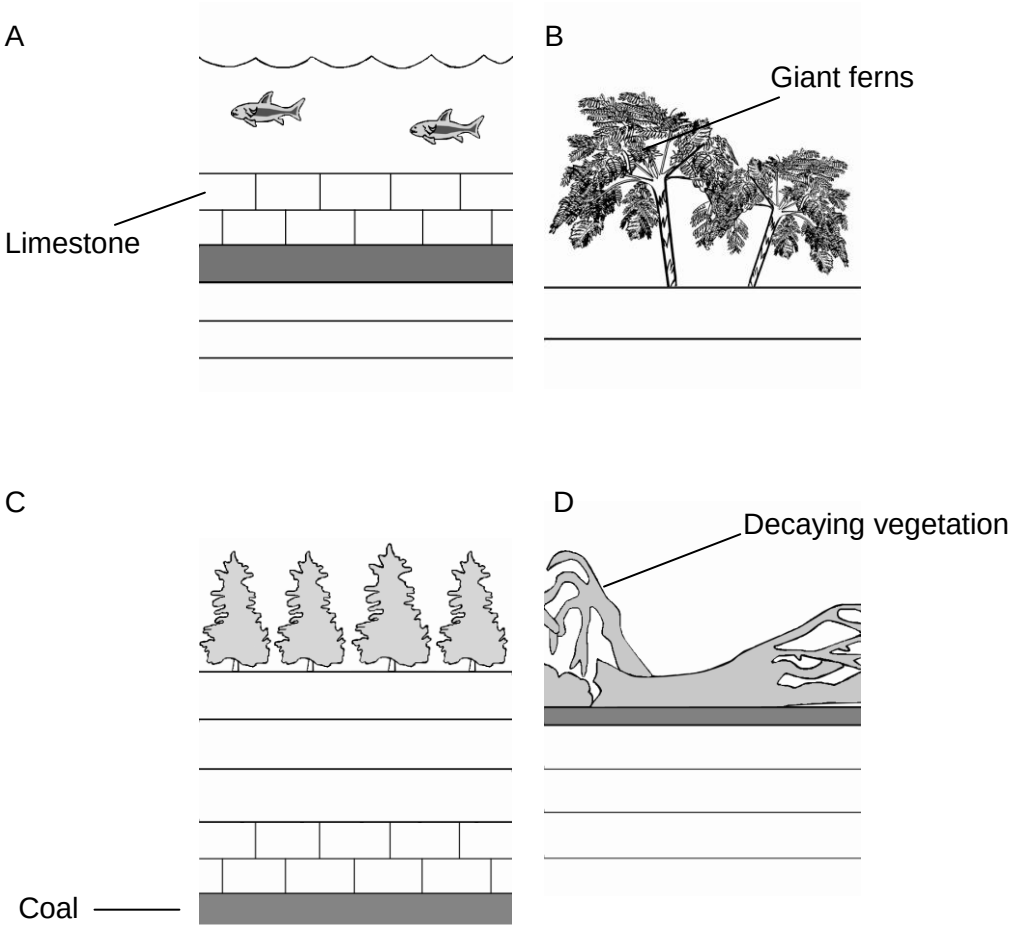
The Solar System **1**

(c) Jupiter is 318 times bigger than the Earth and the Sun is 1000 times bigger than Jupiter.
How many times bigger is the Sun than the Earth?

318 × 1000 (calculation)
318,000 **2**

	Marks

2. Look at the diagram below showing the stages in the formation of coal.



(a) Place the stages of coal formation in order from oldest to youngest.

Give only the letters: **B** → **D** → **A** → **C** **2**

oldest youngest

(b) Describe what the climate would have been like at stage B.

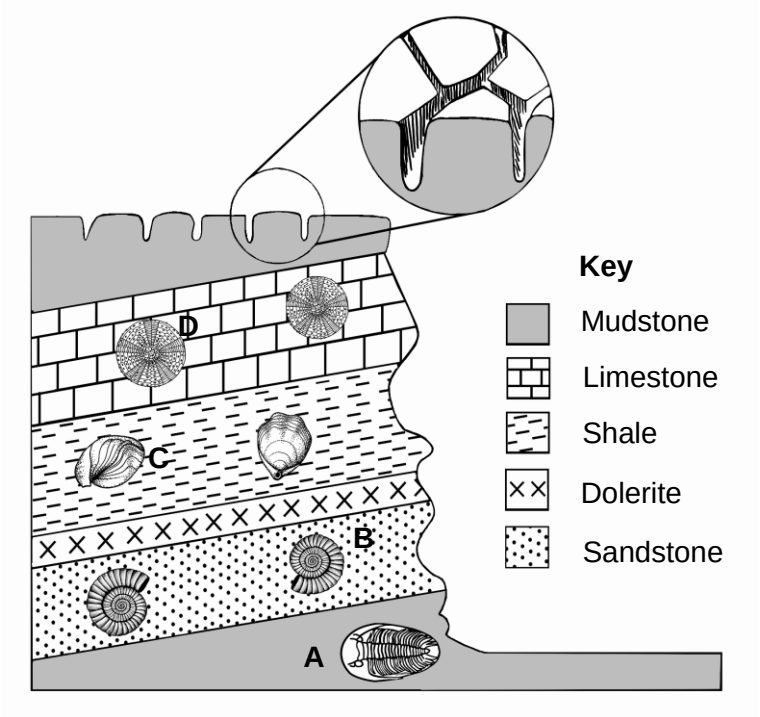
Warm or hot (1 mark) and wet (1 mark) Tropical (1 mark) Hot (1 mark) **2**

(c) What does the limestone above the coal tell us about the changing conditions during the formation of coal?

Flooded by the sea/warm shallow sea/submerged; sea creatures die and fall to the bottom of the sea. (1 mark each point) **2**

Marks

3. Look at the diagram below.



(a) Complete the table by naming the fossils.

Fossil	*Name*
A	**Trilobite**
B	**Ammonite**
C	**Brachiopod**
D	**Echinoid/sea urchin**

(1 mark each) **4**

(b) Which fossil was preserved first?

Give only the letter: **A** **1**

(c) Explain why there are no fossils in the dolerite.

Igneous rock/molten rock **1**

(d) How were the mud cracks at the top of the cliff formed?

Mudstone laid down
Mud dries
Mud shrinks

Accept any two correct **2**

	Marks

4. Look at the diagram below.

Diagram A

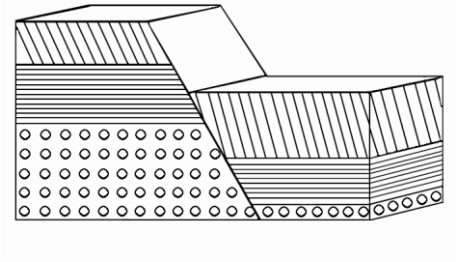
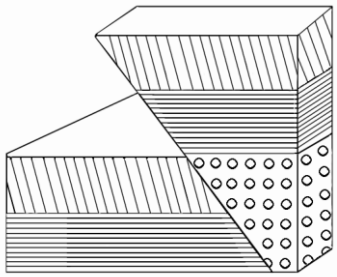


Diagram B



Key

Rock X

Rock Y

Rock Z

(a) What forces have caused the type of fault in diagram A and diagram B?

A **Pulling** B **Pushing** **2**

(b) Name the type of fault in diagram A.

Normal **1**

(c) Scree is produced by weathering. Use labelled diagrams to describe the process by which scree is formed.

Water in cracks – freezes/expands – rocks shattered – fall to bottom of slope

Accept any two correct. Credit naming of processes. **2**

Marks
4

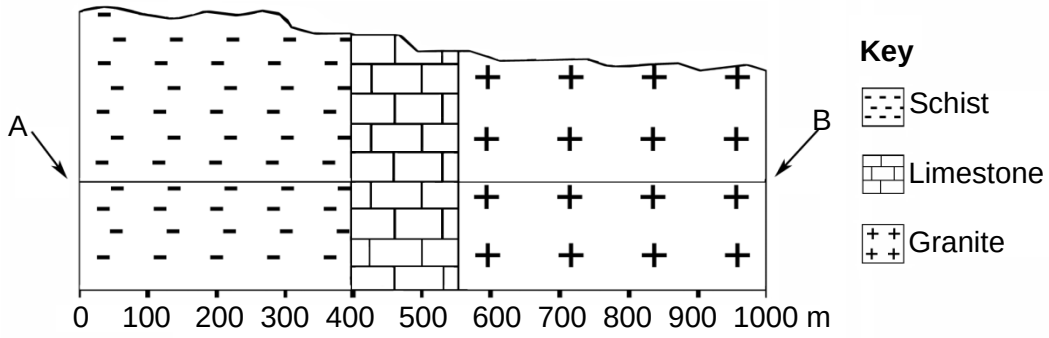
5. Look at the diagram below.
Use the word box to complete the table to show the correct pairing of ore mineral and metal.

Haematite	Bauxite	Copper	Lead
Zinc	Cassiterite	Galena	Iron

Ore mineral	*Metal*
Chalcopyrite	**Copper**
Cassiterite	Tin
Bauxite	Aluminium
Sphalerite	**Zinc**

	Marks

6. Look at the diagram below and the table showing the cost of tunnelling through rocks.



Cost per 100 m	*Rock type*
£3000	Granite
£1000	Limestone
£5000	Schist

(a) Calculate the cost of constructing a rail tunnel from A to B.

Granite 4.5 × 3000 = 13500

Limestone 1.5 × 1000 = 1500

Schist 4 × 5000 = 20000

Total £35,000

No double penalty on total if one calculation is wrong. **4**

(b) Each train is to be charged £500 to use the tunnel. How many trains will need to use the tunnel to equal the construction costs?

$\frac{\mathbf{35000}}{\mathbf{500}}$ **Calculation checked if total different from part a**

Answer **70** trains **2**

(c) In the first year, 95 trains used the tunnel. Calculate the profit made by the construction company in the first year.

500 × 95 = 47,500 **Accept candidate calculation using answer from above**

47,500 – 35,000 = 12,500 **2**

		Marks
(d)	Rockfall in the tunnel may be a problem. Give **two** ways engineers could prevent this from happening. **Concrete lining (spraying)** **Rock bolts** **Steel lining** **Grout** **Struts/pillars in expanded answer** **Accept any two correct**	**2**

	Marks

7. Look at the photograph below showing a coastline.

(a) Name feature A **A Stack** **1**

(b) Using labelled diagrams, show how feature A was formed.

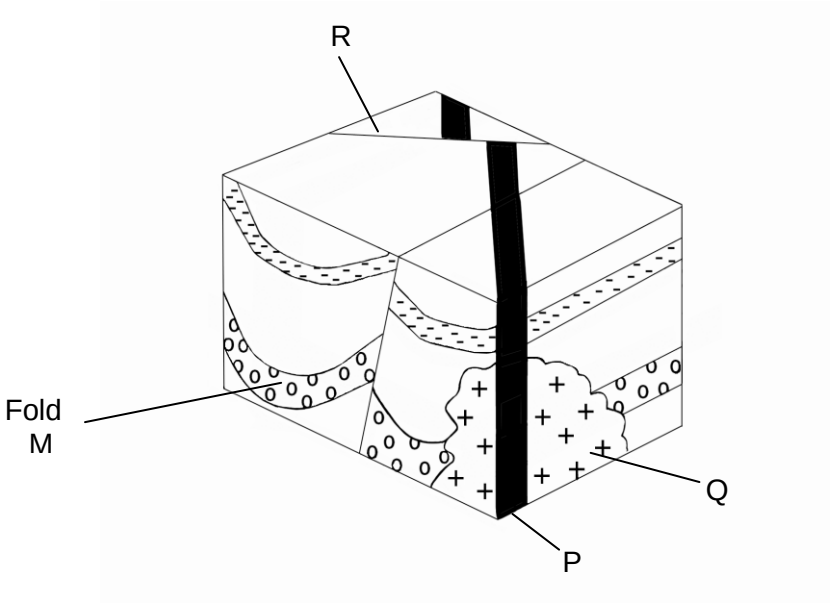
Erosion by sea – cliff – cave – arch collapses Labels only – mark out of 2 (Diagrams must be used) **3**

(c) Draw a labelled diagram to show how the coastline might look in the future.

Diagram should show a stump (1) and one other feature developing eg undercutting, cave, arch or new stack (1) **2**

	Marks

8. Look at the diagram below.



(a) What type of fold is shown on the diagram?

Syncline **1**

(b) Name structure P. **Dyke** **1**

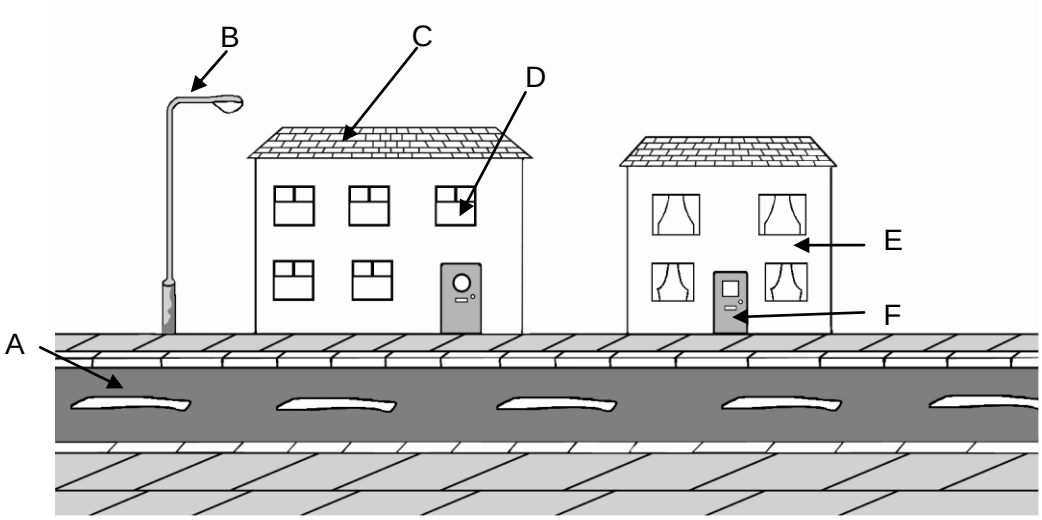
(c) Put the following in the correct order from oldest to youngest.

Intrusion of Rock Q
Formation of Fold M
Formation of Structure R
Formation of Structure P

Give only the letters: **M** → **Q** → **P** → **R** **2**
oldest youngest

Marks

9. Look at the diagram below showing a street in a village.



(a) Complete the table by using the correct letter from the diagram to show a use for each of the construction materials.

Construction Material	*Use (use letter only)*
Slate	**C**
Granite	**E**
Aggregate	**A**
Sand	**D**
Copper	**B**
Wood	**F**

6 correct – 3 marks
4/5 correct – 2 marks
2/3 correct – 1 mark
0/1 correct – 0 marks — **3**

(b) From the table above name a renewable resource.

Wood — **1**

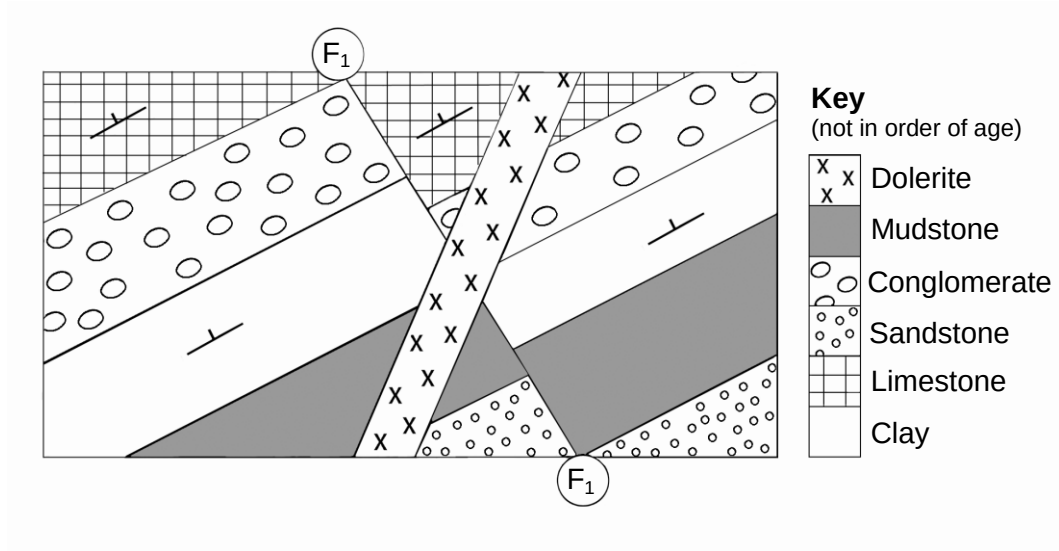
(c) Many construction materials are extracted from quarries. Give **three** ways this can affect the environment.

Visual pollution
Noise
Dust/air pollution
Movement of lorries
Washing debris into streams

Accept any reasonable answer — **3**

	Marks

10. Look at the geological map below.



(a) Place the following events in the correct order from oldest to youngest.

A Intrusion of dyke
B Deposition of mudstone
C Movement on fault
D Tilting of sedimentary rocks

Give only the letters: **B** → **D** → **C** → **A** **2**
oldest youngest

(b) Which rock would be the most difficult to erode?

Dolerite **1**

(c) Describe how this would affect the landscape in the future.

Will be higher/a ridge may form/hills **1**

Marks

11. Look at the table below showing countries and percentage of world oil production.

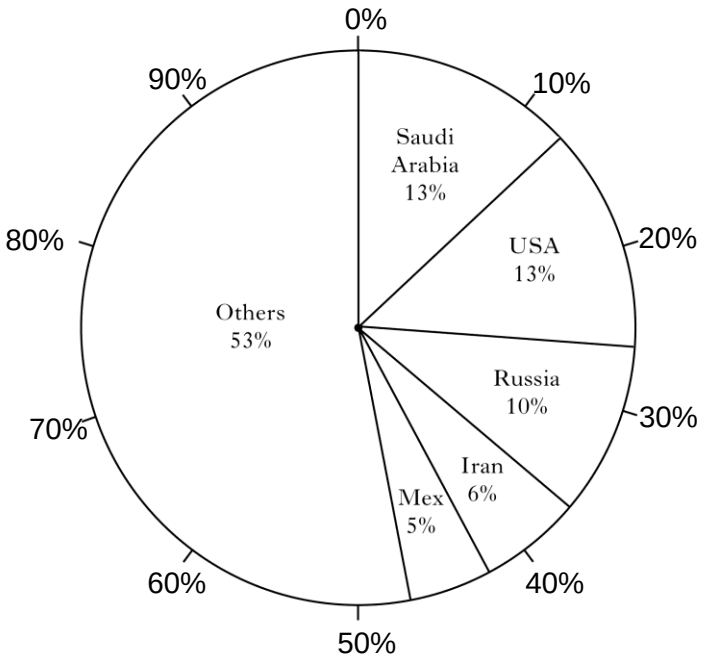
Country	*Percentage of world oil production*
Saudi Arabia	13%
USA	
Russia	10%
Iran	6%
Mexico	5%
Others	53%

(a) Calculate the percentage of world oil production for the USA.

13% **1**

(b) Show the percentages of world oil production on the pie chart below and label the countries.

Correct measurements (2)
Correct labels (1)



Accept reasonable answer with 4/5 correct

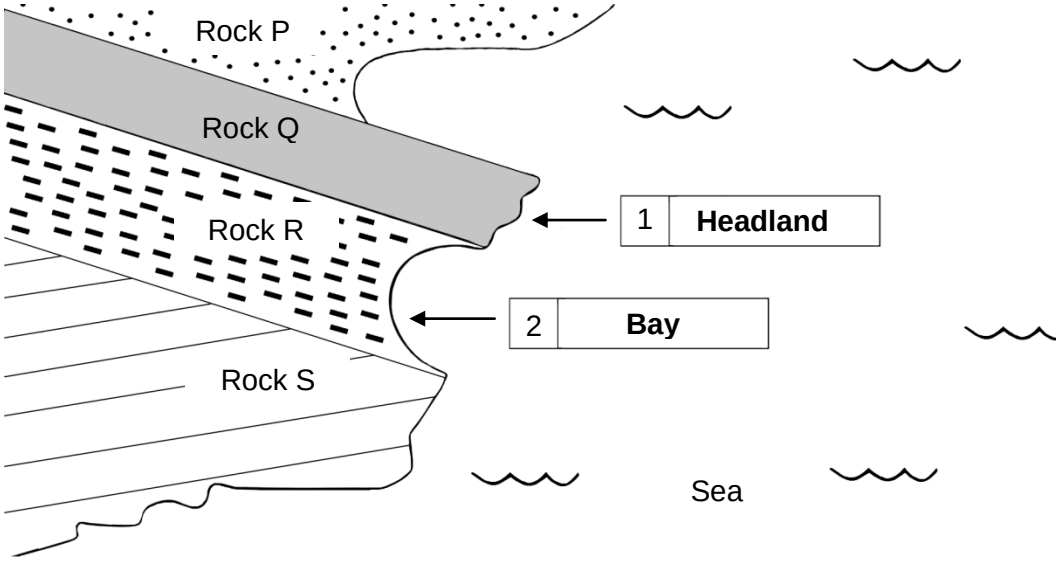
4 sections correct give 1 mark

All 6 labels correct 1 mark **3**

		Marks
(c)	Give **two** ways in which the transport of oil can cause environmental problems.	
	Tankers running aground/colliding **CO_2 emissions** **Leaking pipeline**	
	Accept any reasonable answer relating to transportation of oil	**2**
(d)	Oil is an example of a fossil fuel. Give **two** other examples.	
	Coal and natural gas	**2**

	Marks

12. Look at the map below showing part of a coastline.



(a) Label features **1** and **2** on the map. **2**

(b) Name **one** harder rock shown on the map.

Give only the letter: Rock **Q or S and explanation** **2**

(c) Longshore drift moves material along a beach. Use a labelled diagram to show how this happens.

Wind/wave direction (1)

Arrows showing oblique angle up the beach (1)

Right angle down the beach (1) **3**

Marks

13. Look at the diagram below showing two types of submerged coast.

Diagram A

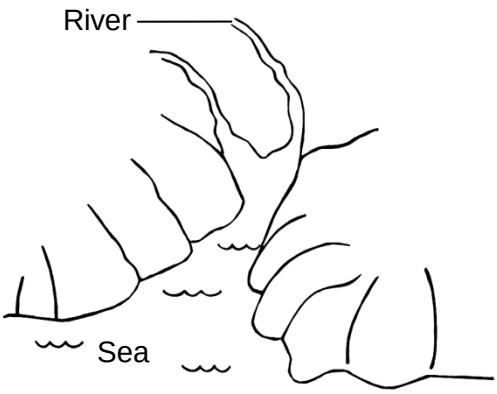
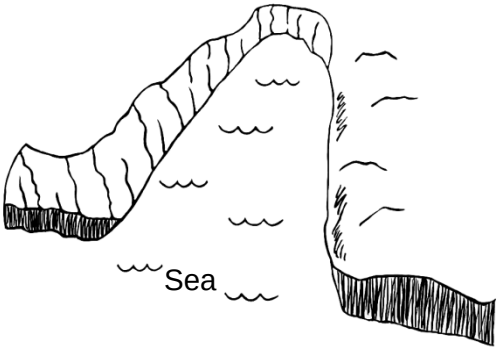


Diagram B



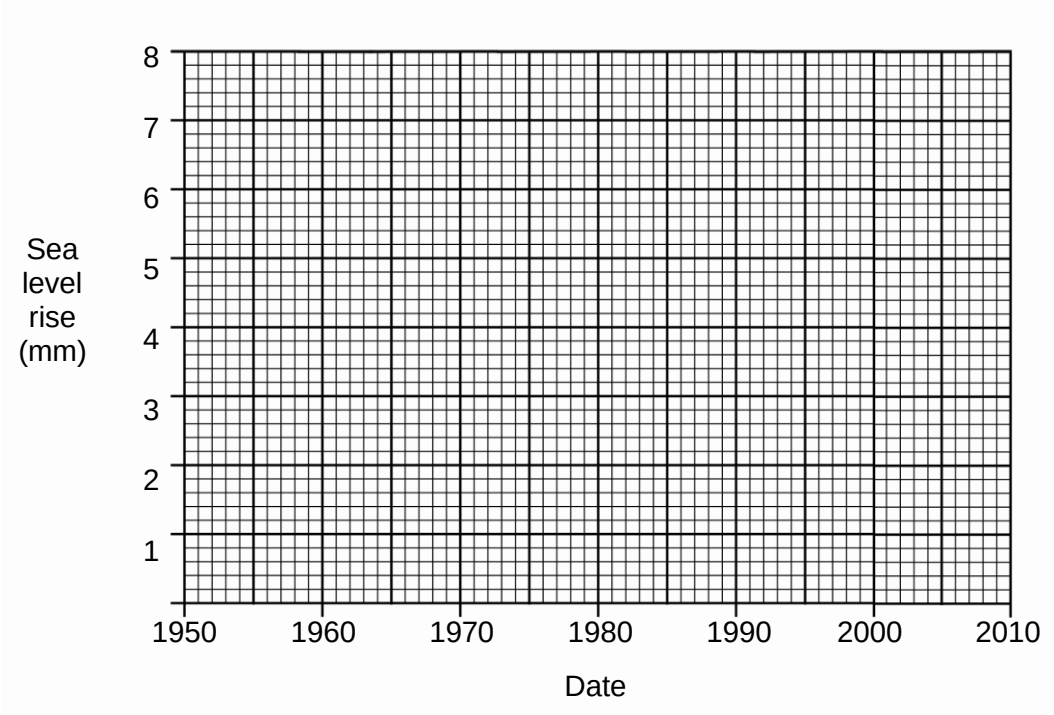
(a) Name the type of coastline in **Diagram A** and **Diagram B**.

A **Ria** B **Fjord** **2**

(b) Look at the table below showing sea level rise in recent years.

Date	*Sea level rise* (mm)
1950	0
1960	0
1970	0·5
1980	1
1990	2
2000	4
2010	6

		Marks
	On the graph paper below draw a line graph to show the rate of sea level change from 1950 to 2010.	



1 mark for line graph
1 mark for accuracy — **2**

(c) Give **two** reasons why sea levels have been rising.

Global warming

Extra greenhouse effect

Burning fossil fuels

Isostatic adjustment or depression

Sea floor movement

Accept any relevant answer eg ice cap melt — **2**

[END OF MARKING INSTRUCTIONS]