Cambridge IGCSE™
Environmental Management 0680

Cambridge Assessment International Education

Content overview

The syllabus is divided into nine topics which have been designed to develop an understanding of both the natural and the human environment:

1. Rocks & Minerals and their exploitation.

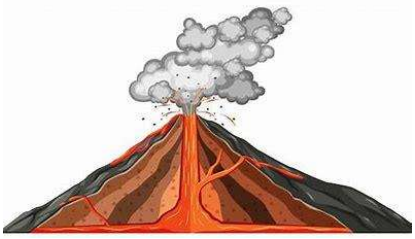
2. Energy and the environment.

3. Agriculture and the environment.

4. Water and its management.

5. Oceans and fisheries

6. Managing natural hazards.



7. Atmosphere and human activities

9. Natural ecosystems and human activity.

8. Human population

Assessment overview

All candidates take two papers. Candidates will be eligible for grades A* to G.

All candidates take:

Paper 1 1 hour 45 minutes
Theory 50%
80 marks
Section A: short and structured questions
- 20 marks

Section B: short-answer and extended response questions based on source material
- 60 marks

Externally assessed

and:

Paper 2 1 hour 45 minutes
Management in context 50%
80 marks
Short, and extended response questions based on source material
Externally assessed

1 Rocks and minerals and their exploitation

1.1 Formation of rocks

Candidates should be able to:	Further guidance and exemplification:
• describe and interpret the rock cycle	
• state and explain the formation and characteristics of named igneous, sedimentary and metamorphic rocks	• igneous: granite and basalt • sedimentary: limestone, sandstone and shale • metamorphic: marble and slate

1.2 Extraction of rocks and minerals from the Earth

Candidates should be able to:	Further guidance and exemplification:
• describe the following methods of extraction of rocks and minerals from the Earth: – surface mining – subsurface mining	• opencast / open-pit / open-cut / strip mining • deep mining / shaft mining
• discuss the factors that affect the decision to extract rocks and minerals	• exploration • geology • accessibility • environmental impact assessment • supply and demand

1.3 Impact of rock and mineral extraction

Candidates should be able to:	Further guidance and exemplification:
• describe and explain the environmental, economic and social impacts of rock and mineral extraction	• loss of habitat • noise, water, land, air, visual pollution • management of waste • employment opportunities • improvements in local / national economy • improvements in facilities and infrastructure

1.4 Managing the impact of rock and mineral extraction

Candidates should be able to:	Further guidance and exemplification:
• describe and evaluate strategies for restoring landscapes damaged by rock and mineral extraction	• safe disposal of mining waste • land restoration: soil improvement, bioremediation, tree planting • making lakes and nature reserves • using as landfill sites

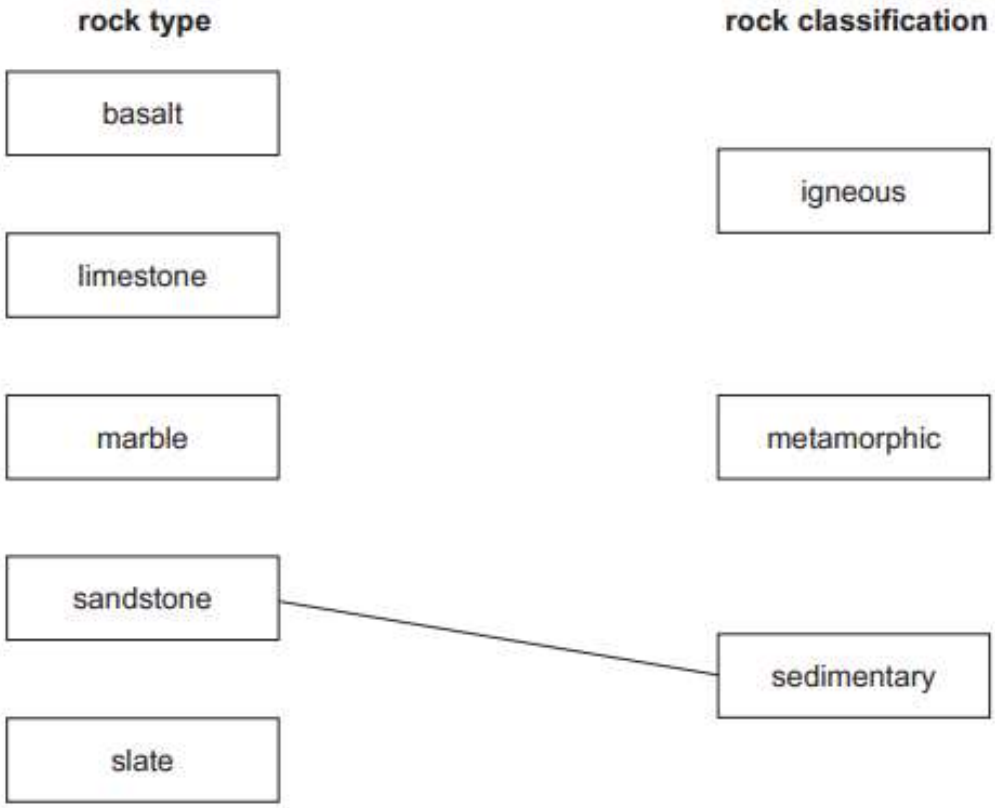
1.5 Sustainable use of rocks and minerals

Candidates should be able to:	Further guidance and exemplification:
• define sustainable resource and sustainable development	
• describe and evaluate strategies for the sustainable use of rocks and minerals	• increased efficiency of the extraction of rocks and minerals • increased efficiency of the use of rocks and minerals • the need to recycle rocks and minerals • legislation

February/March 2022

1 **(a)** Draw **one** line from each rock type to the correct rock classification.

One rock type has been done for you.



[4]

(b) Suggest why sedimentary rocks can contain fossils.

.....

..... [1]

(c) Give reasons why the geology of an area affects the decision to extract rocks from the ground.

.....

.....

.....

..... [2]

(d) Strip mining is an example of surface mining.

State **one** other example of surface mining.

..... [1]

[Total: 8]

4 **(a)** Complete the description of the formation of sedimentary rocks using words from the list.

Each word may be used once, more than once or not at all.

crystallisation	**deposition**	**erosion**
sedimentation	**transportation**	**weathering**

Water in streams and rivers carries small particles of rock and sand. This process is called ..... .

Eventually, the particles reach a lake or the sea, and they sink to the bottom. This process is called ..... .

Over time, the particles build up in layers. The bottom layers are compressed, and the particles stick together to form rock. This process is called ..... .

[3]

(b) State the name of **one** sedimentary rock.

..... [1]

(c) State **one** characteristic of a sedimentary rock.

..... [1]

[Total: 5]

Cambridge Assessment International Education

0680/12
May/June 2022

1 Rocks and minerals needed for building can be extracted from the ground by open-pit mining.

(a) State **one** environmental impact of open-pit mining.

..... [1]

(b) Describe how rock and mineral extraction can benefit the local community.

.....

.....

.....

..... [2]

(c) The photograph shows an area of land that was used for open-pit mining.

The land has been restored.

Use the photograph to describe how this land has been restored.

.....

.....

.....

..... [2]

[Total: 5]

0680/12
February/March 2019

6 In 2015, a new tungsten mine was opened in the United Kingdom. Tungsten is a metal used in many industries.

Before the mine opened, the United Kingdom imported the majority of its tungsten from overseas. The new mine will be the fourth-biggest tungsten mine in the world. The tungsten is found very close to the surface.

There is an increased world demand for tungsten.

The new mine created approximately 200 jobs in the local area.

The photograph shows this type of mining.

(a) (i) State the type of mining shown in the photograph.

.....[1]

(ii) Explain why this type of mining is suitable for the new tungsten mine.

.....

.....[1]

(b) Describe **three** impacts of this mine on the local area.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

(c) Recycling is one strategy for the sustainable use of rocks and minerals.

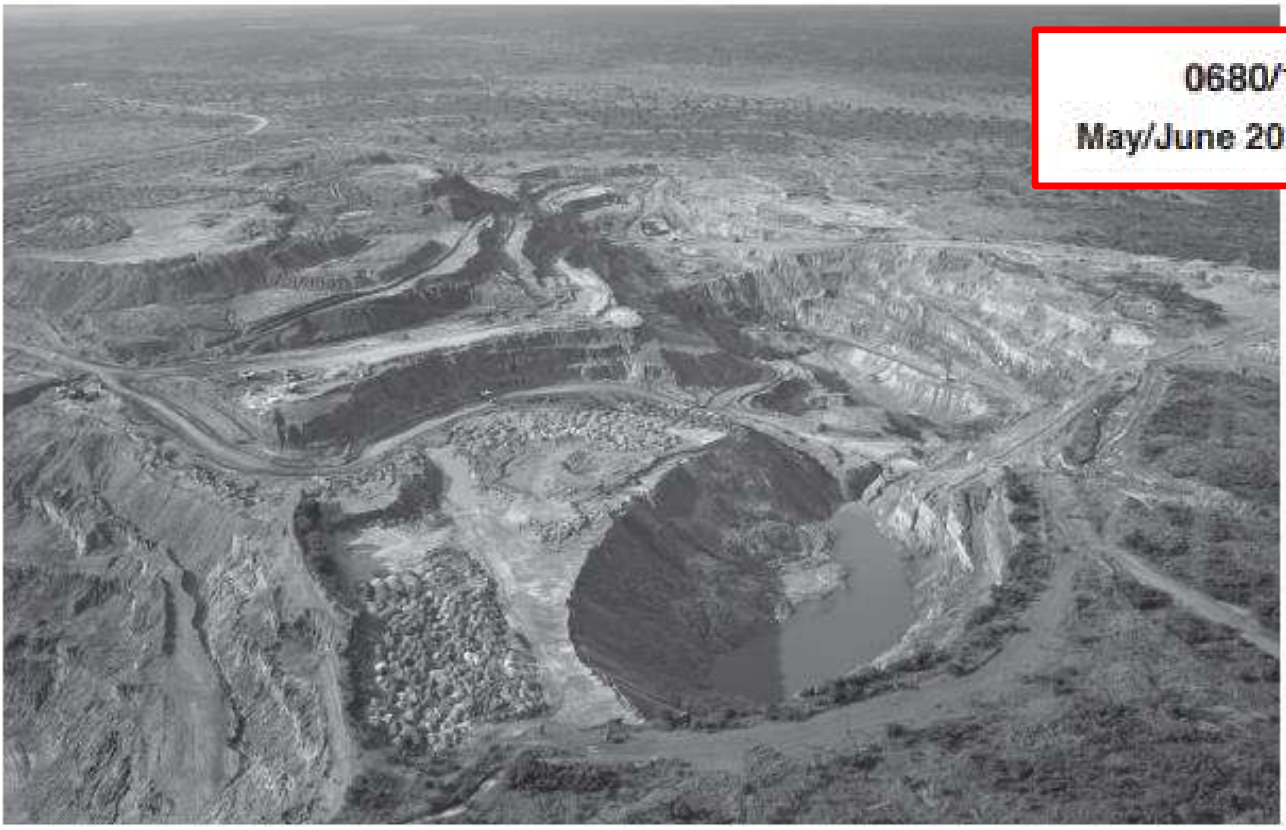
Describe another way rocks and minerals can be used sustainably.

.....

.....[1]

0680/13
May/June 2019

2 The photograph shows an opencast mine, used to extract copper ore, in Zambia.



(a) Describe how the copper ore has been mined.

.....

.....

.....

.....

.....

..... [3]

(b) Describe the environmental impacts of this mine.

.....

.....

.....

.....

.....

..... [3]

[Total: 6]

1 Many minerals are in short supply and new mineral deposits need to be found.

(a) One method of exploration for finding new mineral deposits is using photographs taken from the air.

Suggest how photographs taken from the air might help to locate mineral deposits.

.....

.....

.....

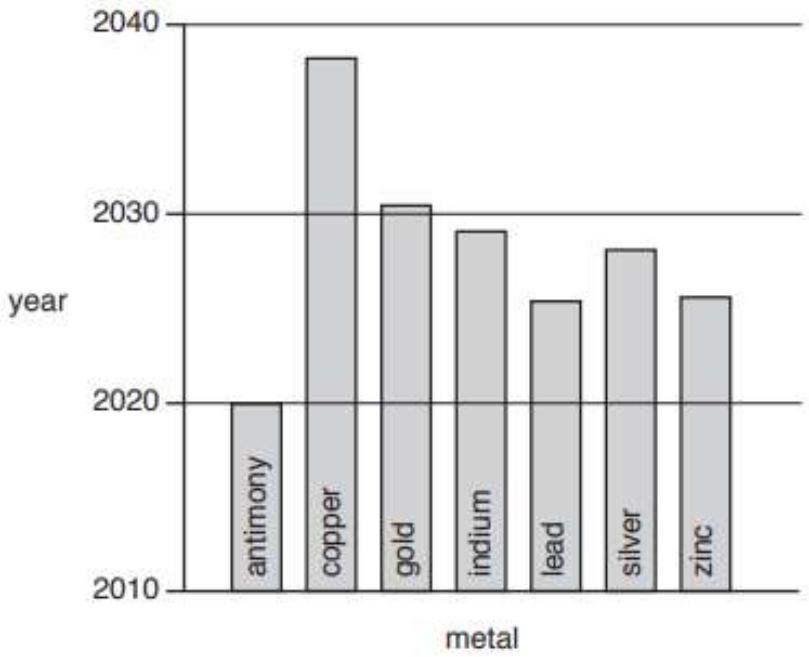
..... [2]

(b) Describe **one** other method of exploration for finding new mineral deposits.

.....

..... [1]

(c) The bar chart shows estimates of when some metals are predicted to run out. The estimates were made in 2010.



(i) Identify which metal is predicted to run out first.

..... [1]

(ii) Identify the metal(s) that are predicted to still be available after 2030.

..... [1]

[Total: 5]

0680/12
October/November 2019

9 The photograph shows an example of surface mining.

(a) State **two** advantages and **two** disadvantages of surface mining compared with subsurface mining.

advantage 1 .....

.....

advantage 2 .....

.....

disadvantage 1 .....

.....

disadvantage 2 .....

.....

[4]

0680/13
October/November 2019

2 The photograph shows a location where marble is being extracted.

(a) Name the method of extraction shown in the photograph.

..... [1]

(b) Some rocks and minerals are in short supply.

State **two** strategies for the sustainable use of rocks and minerals.

1 .....

.....

2 .....

.....

[2]

(c) Suggest **three** benefits of mineral extraction for the economy of a country.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

[Total: 6]

Specimen 2019 Qu 2

2 Limestone is a rock extracted from the Earth.

The photograph shows limestone being extracted from the Earth.

(a) Name the method of rock extraction shown in the photograph.

..... [1]

(b) Suggest **one** positive effect and **one** negative effect of this method of rock extraction.

positive effect .....

.....

negative effect .....

.....

[2]

(c) Describe **two** strategies for the sustainable use of rocks.

1 .....

.....

2 .....

..... [2]

(ii) State the meaning of the terms:

igneous rock

.....

.....

metamorphic rock

.....

.....

sedimentary rock

.....

.....

[3]

(b) Most rocks are mined using opencast (open-pit) methods.

Describe **four** impacts of opencast mining on the environment.

1 .....

.....

2 .....

.....

3 .....

.....

4 .....

.....

[4]

1 Rocks and minerals and their exploitation

1.6 Paper 2 Questions

February/March 2022

4 Mining is an important industry in Guinea.

(a) The photograph shows an open-pit diamond mine in Guinea.

(i) Suggest reasons why there is less risk of injury and death working in an open-pit mine compared with working in a shaft mine.

.....

.....

.....

..... [2]

(ii) Suggest reasons why local people want diamond mining to continue in the area.

.....

.....

.....

..... [2]

(iii) Explain why an environmental impact assessment must be completed before a mining licence can be issued.

.....

.....

.....

.....

.....

..... [3]

(iv) Describe ways the landscape shown in the photograph can be restored after all the mining is finished.

.....

.....

.....

.....

.....

.....

.....

..... [4]

(b) There is a large global demand for rocks and minerals.

Describe strategies for the sustainable use of rocks and minerals.

.....

.....

.....

.....

.....

.....

.....

..... [4]

[Total: 15]

1 Rocks and minerals and their exploitation

1.6 Paper 2 Questions

6 In 2015, a new tungsten mine was opened in the United Kingdom. Tungsten is a many industries.

February/March 2022

Before the mine opened, the United Kingdom imported the majority of its tungsten from overseas. The new mine will be the fourth-biggest tungsten mine in the world. The tungsten is found very close to the surface.

There is an increased world demand for tungsten.

The new mine created approximately 200 jobs in the local area.

The photograph shows this type of mining.

(a) (i) State the type of mining shown in the photograph.

.....

[1]

(ii) Explain why this type of mining is suitable for the new tungsten mine.

.....

.....

[1]

(b) Describe **three** impacts of this mine on the local area.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

1 Rocks and minerals and their exploitation

1.6 Paper 2 Questions

0680/21
May/June 2019

(h) (i) Bauxite, the ore from which aluminium is obtained, is imported into Iceland. Bauxite is extracted by surface mining. Surface mines often cover a large area of land.

State **two** impacts of surface mining.

1 .....

.....

2 .....

.....

[2]

(ii) Other than environmental impacts, suggest why bauxite might **not** be extracted from an area, even if there is a large deposit of accessible ore available.

.....

.....

.....

..... [2]

(iii) Describe how the landscape can be restored after a surface mine closes.

.....

.....

.....

.....

.....

..... [3]

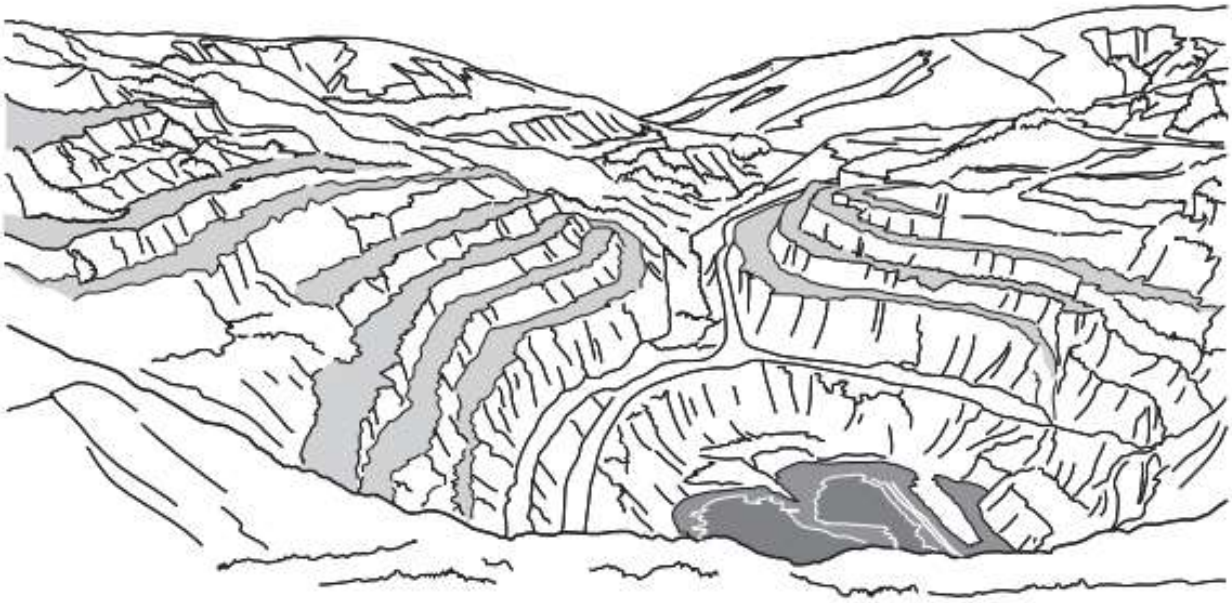
[Total: 41]

1 Rocks and minerals and their exploitation

1.6 Paper 2 Questions

0680/22
October/November 2019

2 **(a)** The drawing shows a disused chromite mine near the port of Toamasina.



The disused chromite mine was reopened in 2009.

(i) Identify the type of mine shown in the drawing.

..... [1]

(ii) Suggest **two** benefits of mining in this way.

1 .....

.....

2 .....

.....

[2]

(iii) The chromite is being mined from igneous rock.

Explain how igneous rock is formed.

.....

.....

.....

..... [2]

(iv) The ore is processed at the mine to increase the concentration of chromite in the crushed ore. The crushed ore is taken to the port of Toamasina for export.

Suggest **one** reason why the ore is processed at the mine.

.....

..... [1]

(v) A mining company has a permit to explore and then mine an area of 2000 km^2.

Describe the environmental impacts of starting a new mine.

.....

.....

.....

.....

.....

..... [3]

(vi) Describe **two** economic impacts of mining.

1 .....

.....

2 .....

.....

[2]

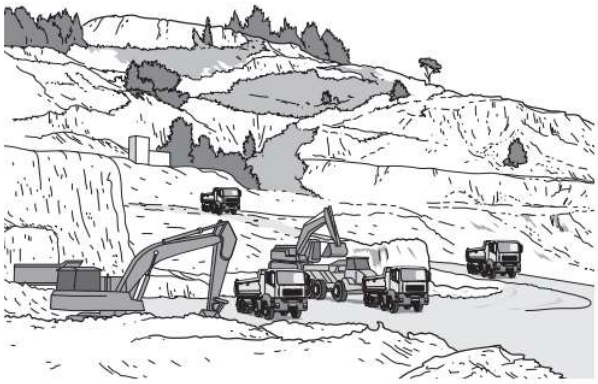
1 Rocks and minerals and their exploitation

1.6 Paper 2 Questions

May/June 2021

Qu 2

The Dominican Republic has one of the world's largest surface gold mines. The drawing shows part of this surface mine.



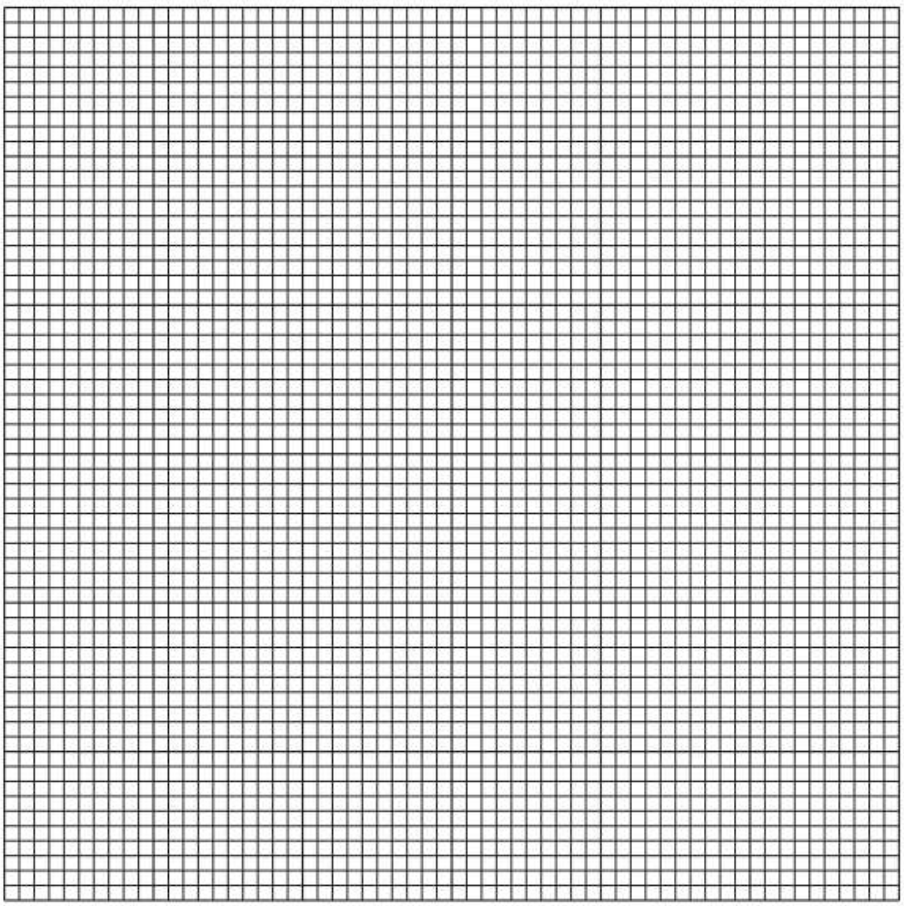
In 2018, the government was asked to give a licence for the first subsurface (underground) gold mine in the Dominican Republic.

The subsurface mine is expected to work for seven years. The cost of developing this mine is expected to be paid back in three years.

(a) The world gold price between 2012 and 2019 is shown in the table.

year	2012	2013	2014	2015	2016	2017	2018	2019
world gold price /1000 USD per kg	50	53	38	38	34	36	40	40

(i) On the grid, plot a graph of world gold price against year.



[4]

(ii) Suggest why the mining company thinks that the cost of developing the subsurface mine can be paid back in three years.

Use the data to support your answer.

.....

.....

.....

..... [2]

(b) **(i)** Suggest reasons why a subsurface mine is expected to cause **less** damage to the environment than the surface mine shown in the drawing.

.....

.....

.....

.....

.....

..... [3]

(ii) Suggest **two** benefits of the proposed subsurface mine to local people.

.....

.....

.....

..... [2]

(iii) A mining licence is only given if the mining company agrees to be responsible for the site for several years after the mine has closed.

Suggest reasons why.

.....

.....

.....

..... [2]