* 0000800000001 *

Cambridge Assessment International Education

Cambridge O Level

CANDIDATE NAME	

CENTRE NUMBER						CANDIDATE NUMBER				

* 4 2 9 9 2 5 5 7 6 7 *

ENVIRONMENTAL MANAGEMENT **5014/12**

Paper 1 Theory **October/November 2024**

1 hour 45 minutes

You must answer on the question paper.

No additional materials are needed.

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You may use a calculator.
- You should show all your working and use appropriate units.

INFORMATION

- The total mark for this paper is 80.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **24** pages. Any blank pages are indicated.

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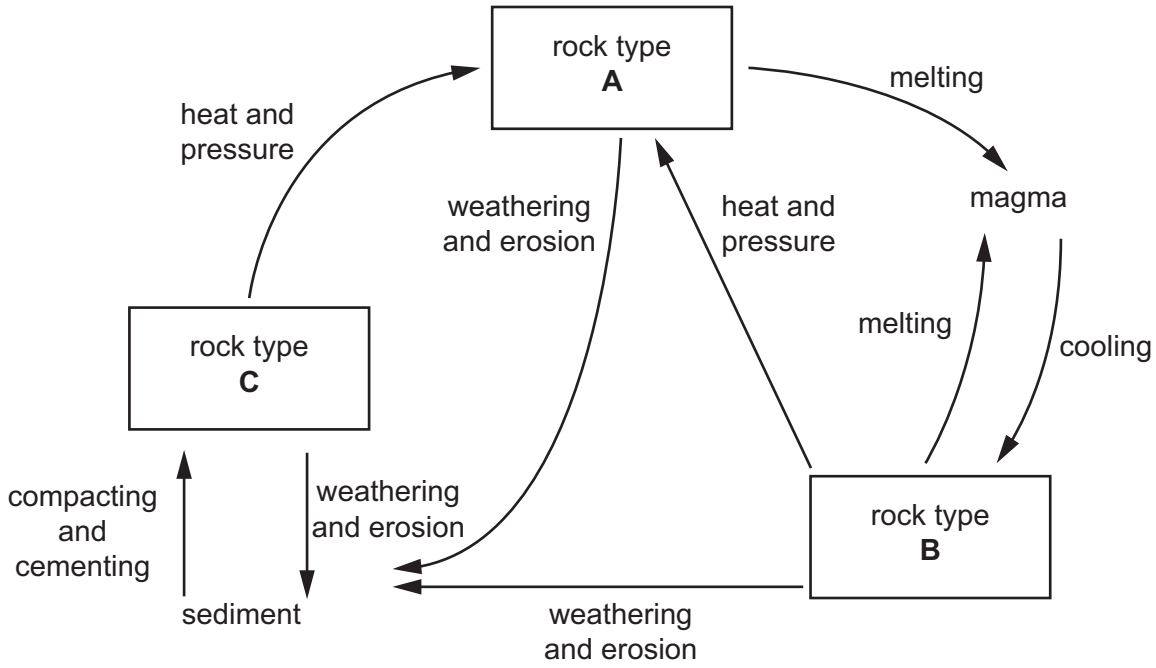
Section A

1 **(a)** The diagram shows the rock cycle.



Identify each type of rock.

A .....

B .....

C .....

[3]

(b) Complete the sentence.

Marble is an example of ..... rock. [1]

DO NOT WRITE IN THIS MARGIN

(c) Marble is a valuable rock used for buildings.

The photograph shows extraction of marble in Italy.

(i) Name the type of rock extraction shown in the photograph.

..... [1]

(ii) State **three** factors that affect the decision to extract rocks such as marble.

1 .....

2 .....

3 .....
[3]

[Total: 8]

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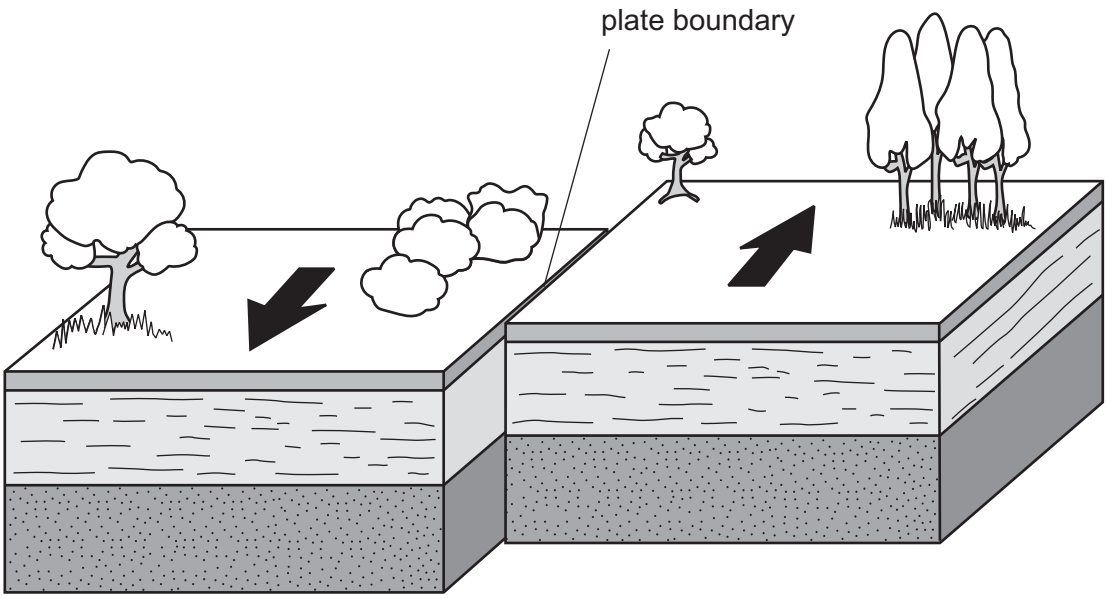
2 The diagram shows the movement of two tectonic plates.



(a) Circle the type of plate boundary shown in the diagram.

conservative **constructive** **destructive** [1]

(b) Explain why volcanoes do **not** form at the type of plate boundary shown in the diagram.

.....

.....

.....

..... [2]

(c) State why some people do **not** want houses built within 50 km of this type of plate boundary.

..... [1]

[Total: 4]

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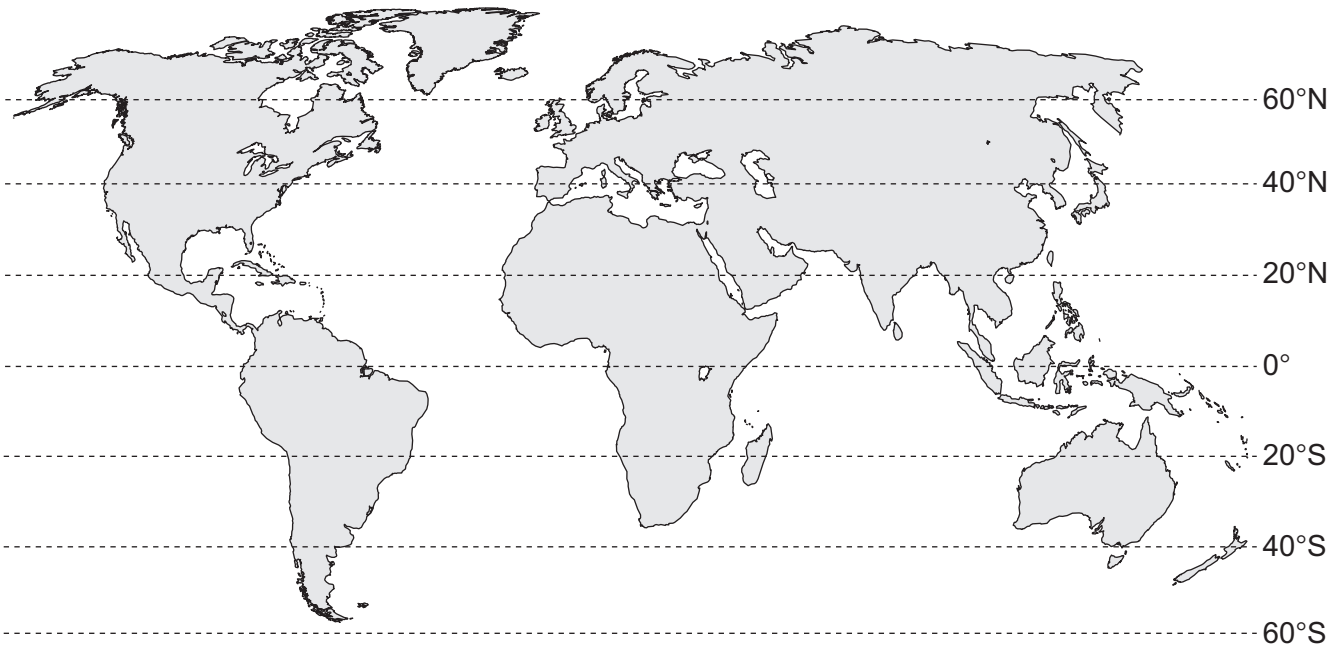
3 In 2021, there were 94 tropical cyclones.

(a) Draw an **X** on the map to show a location where a tropical cyclone can form.



[2]

(b) Explain how tropical cyclones increase water-related diseases.

.....

.....

.....

.....

.....

..... [3]

(c) One strategy for managing the impact of a tropical cyclone is having a disaster preparation plan.

State **two** parts of a successful disaster preparation plan.

1 .....

2 .....

[2]

(d) State why monitoring the path of a tropical cyclone can help people manage the impact of this natural hazard.

.....

..... [1]

[Total: 8]

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Section B

4 Light pollution from artificial lights affects ecosystems.

(a) The night-time activity of fresh water organisms in a lake decreases as artificial light increases. This reduces the number of algae eaten from the surface of the water.

Algae are producers.

Explain how a reduction in the number of algae eaten changes the oxygen concentration in the lake during the day and at night.

day .....

.....

.....

.....

night .....

.....

.....

.....
[4]

(b) Many frogs are nocturnal. This means they are most active at night.

(i) Suggest **one** reason why frogs are more likely to hide when artificial light increases at night.

.....

..... [1]

(ii) Suggest why the growth rate of frogs decreases when there is an increase in artificial light at night.

.....

..... [1]

(c) Suggest how urbanisation affects artificial light.

Give **one** reason for your answer.

effect .....

reason .....

.....

.....
[2]

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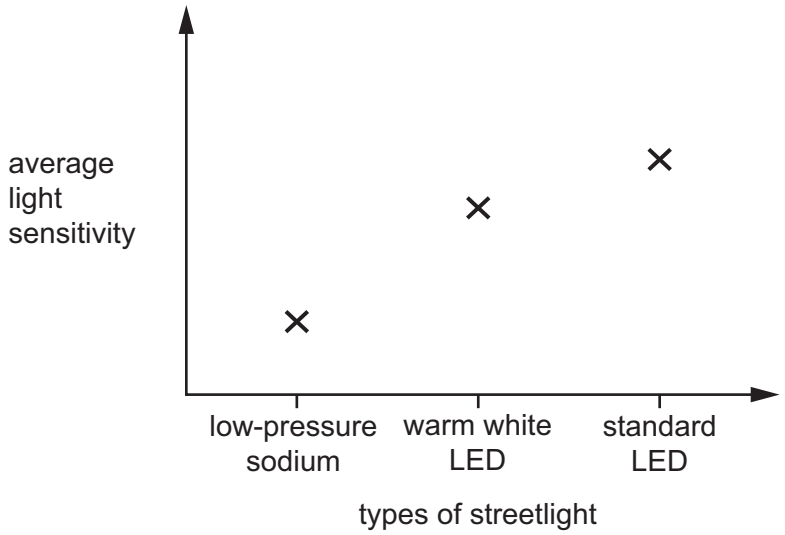
(d) Light sensitivity is when the light level in the environment is too bright.
Light sensitivity changes the behaviour of organisms.

The graph shows the average light sensitivity of organisms for three different types of streetlight.



Determine which streetlight has the least effect on organisms.

..... [1]

[Total: 9]

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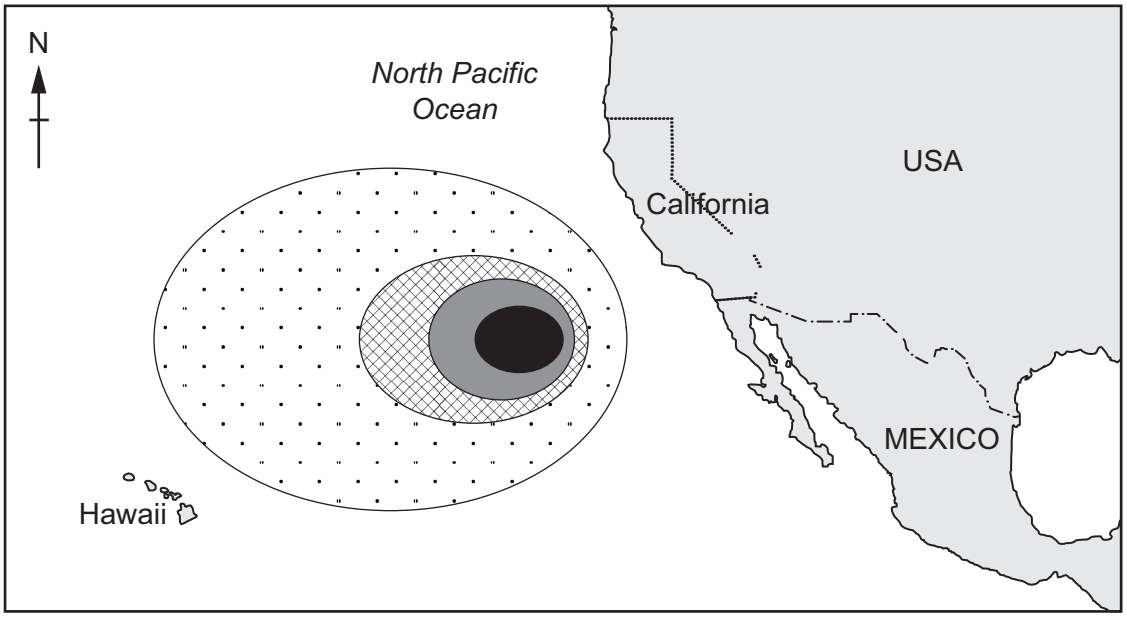
5 The Great Pacific Garbage Patch is a part of the Pacific Ocean between Hawaii and California.

This is the largest zone of plastic waste in the world's oceans and contains approximately 80 000 tonnes of plastic waste.

(a) The diagram shows the mass of plastic waste per km^2 in the zone.

Key
mass of plastic waste in kg / km^2

- greater than 100
- 10–100
- 1–9
- less than 1



Describe the distribution of plastic waste shown on the map.

.....

.....

.....

.....

.....

..... [3]

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(b) The table shows the percentage of different lengths of plastic waste in the zone.

length of plastic waste / cm	percentage of plastic waste
< 0.5	8
0.5–4.9	13
5.0–50.0	26
> 50.0	53

(i) Plot the data as a bar chart.

[4]

(ii) Calculate the total percentage of plastic waste that is less than 5.0 cm in length.

..... [1]

(iii) Scientists estimate there are 1.8 trillion pieces of plastic waste in this zone.

Use this estimate to calculate the number of pieces of plastic waste that are less than 0.5 cm.

..... trillion [1]

DO NOT WRITE IN THIS MARGIN

(c) Suggest the impacts of this zone of plastic waste on:

marine animals .....

.....

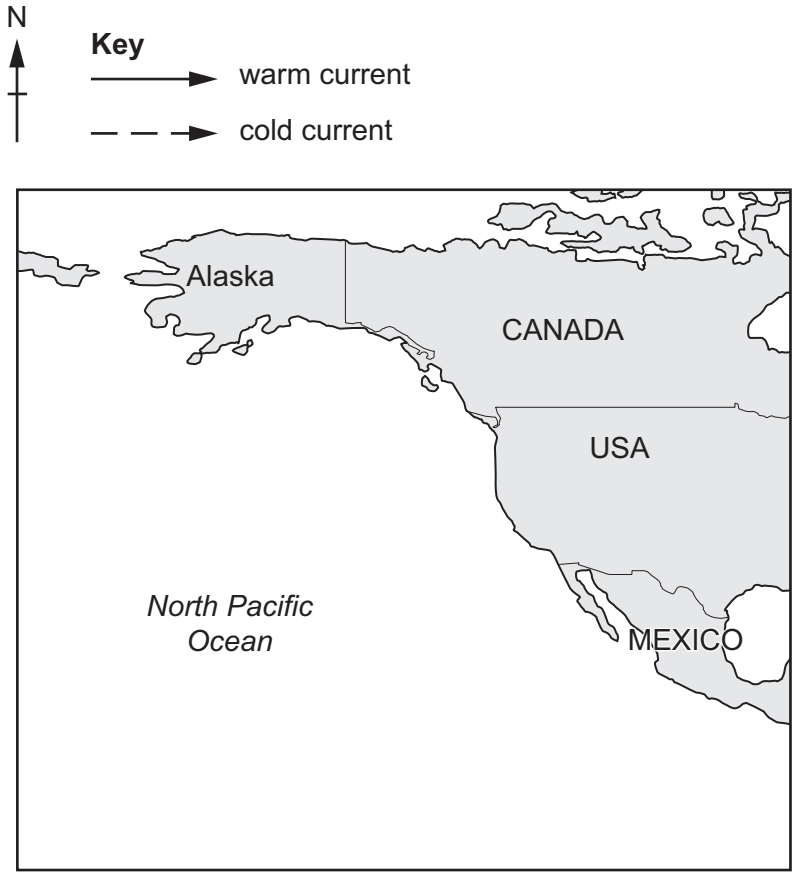
the fishing industry. .....

.....

[2]

(d) The diagram shows the North Pacific Ocean.

Complete the diagram by drawing an arrow for a warm current and an arrow for a cold current. Use the key.



[2]

[Total: 13]

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6 The photograph shows a large, ploughed field.

(a) Growing crops on this field reduces soil erosion.

State **two** other ways soil erosion can be reduced in this field.

1 .....

.....

2 .....

.....

[2]

(b) The field is divided into three sections, **A**, **B** and **C**.

The table shows a crop planting strategy used in the field in three years.

section	crop in year 1	crop in year 2	crop in year 3
A	swede	peas	onion
B	onion	swede	peas
C	peas	onion	swede

(i) Name this crop planting strategy.

..... [1]

DO NOT WRITE IN THIS MARGIN

(ii) Explain the benefits of this crop planting strategy.

.....

.....

.....

.....

.....

..... [3]

(c) The field is irrigated using a pivot irrigation machine.

The irrigation machine automatically moves in a circular path around the whole field.

The photograph shows pivot irrigation.

Suggest benefits and limitations of this method of irrigation.

benefits .....

.....

.....

limitations .....

.....

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[3]

[Total: 9]

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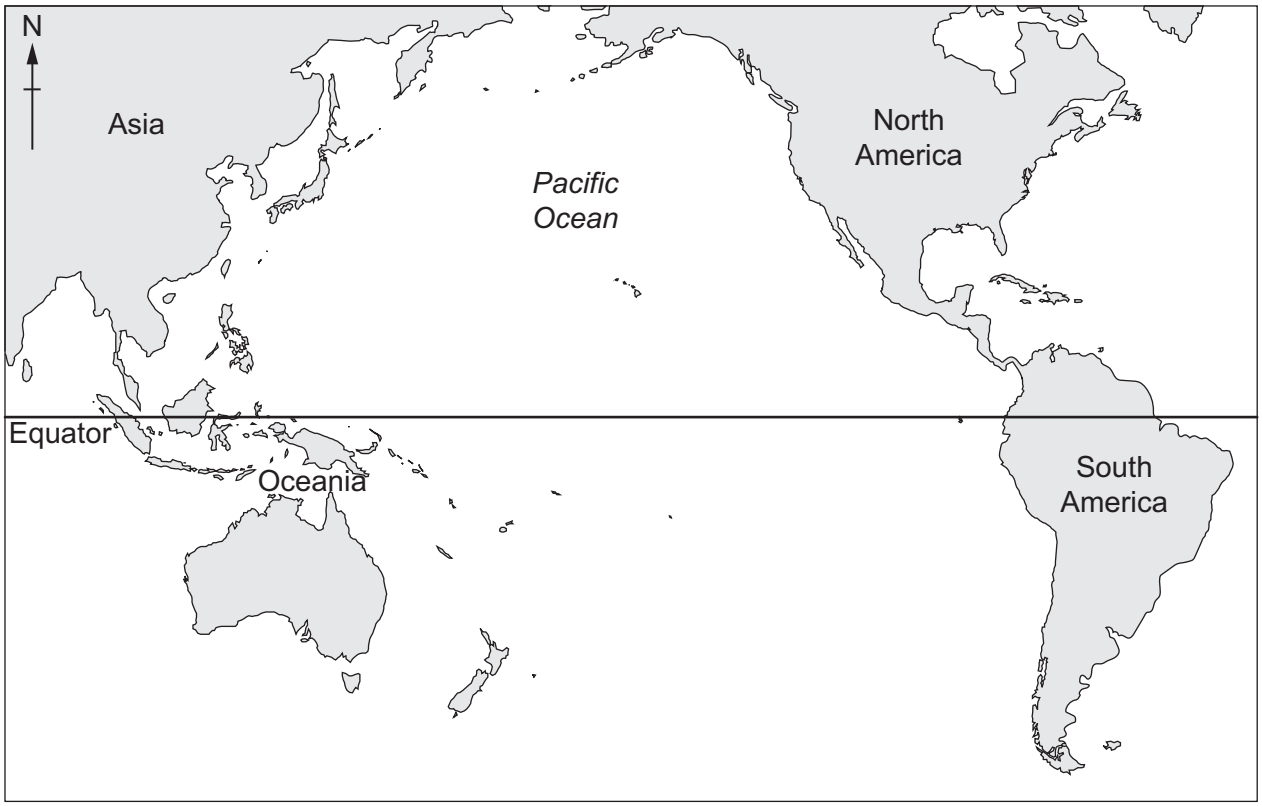
7 The map shows the Pacific Ocean.



El Niño and La Niña describe changes in ocean currents in the Pacific Ocean. These changes can affect weather patterns worldwide.

(a) Complete the sentences using words or phrases in the box to describe what happens during an El Niño year.

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

decreased	**east**	**increased**	**north**	**nutrients**
precipitation	**south**	**temperature**	**the same**	**west**

In the Pacific Ocean, warm water is pushed ..... .

Along the coast of South America, upwelling is ..... .

Along the coast of South America, at the surface of the ocean there is a decrease

in ..... .

Average global evaporation rates are ..... .

[4]

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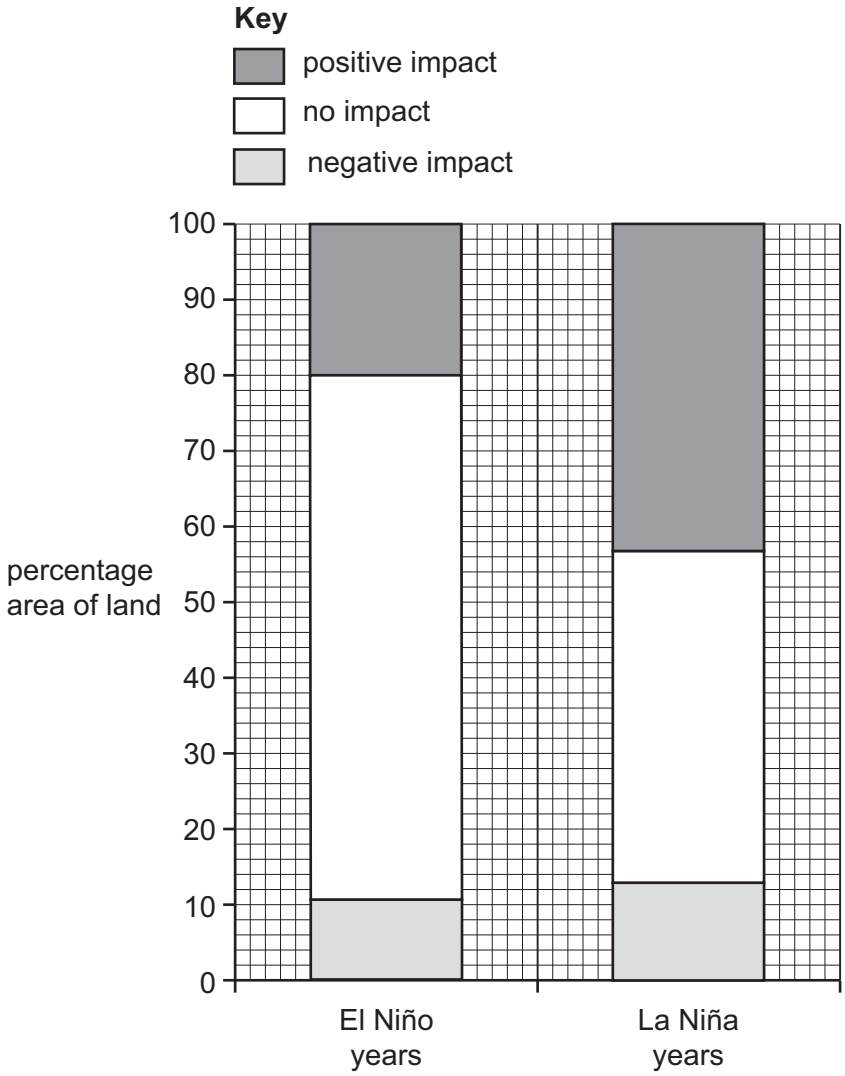
(b) Land used for growing crops is positively and negatively impacted in El Niño and La Niña years in China.

The divided bar chart shows the percentage area of land used for growing crops in China which was impacted in El Niño and La Niña years.



Determine whether an El Niño year or a La Niña year has the greatest impact on land used for growing crops.
Use the data to explain your choice.

.....

.....

.....

..... [2]

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(c) Drought is an impact of a change in climate patterns.

Describe the impacts of drought.

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..... [5]

[Total: 11]

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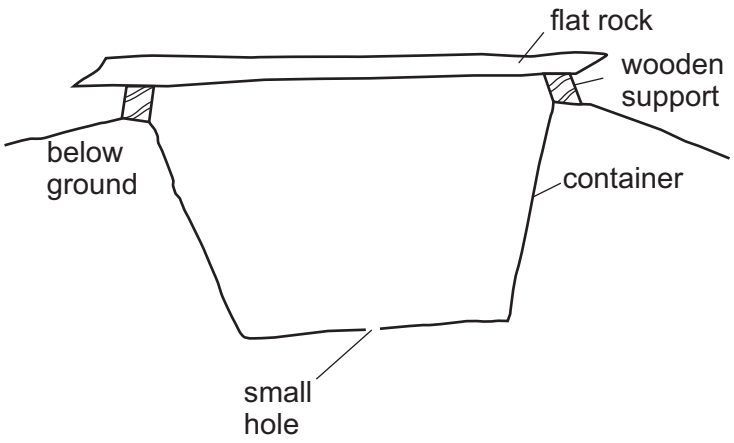
8 **(a)** The diagram shows a pitfall trap.



(i) Suggest why the ground either side of the pitfall trap should slope away from the container.

.....

..... [1]

(ii) Suggest why there is a small hole in the base of the container.

.....

..... [1]

(iii) Suggest why pitfall traps should be regularly checked.

.....

..... [1]

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(b) A scientist investigated whether the type of cover used over a pitfall trap affects the number of organisms collected.

The table shows the results.

		type of cover		
		wire grid	**flat rock on wooden supports**	**no cover**
number of organisms	day 1	33	49	46
	day 2	48	31	34
	mean	41	40	

(i) Calculate the mean number of organisms collected with no cover.

..... [1]

(ii) Write a suitable conclusion to the investigation.

.....

..... [1]

(c) State **one** other method of collecting small organisms.

..... [1]

[Total: 6]

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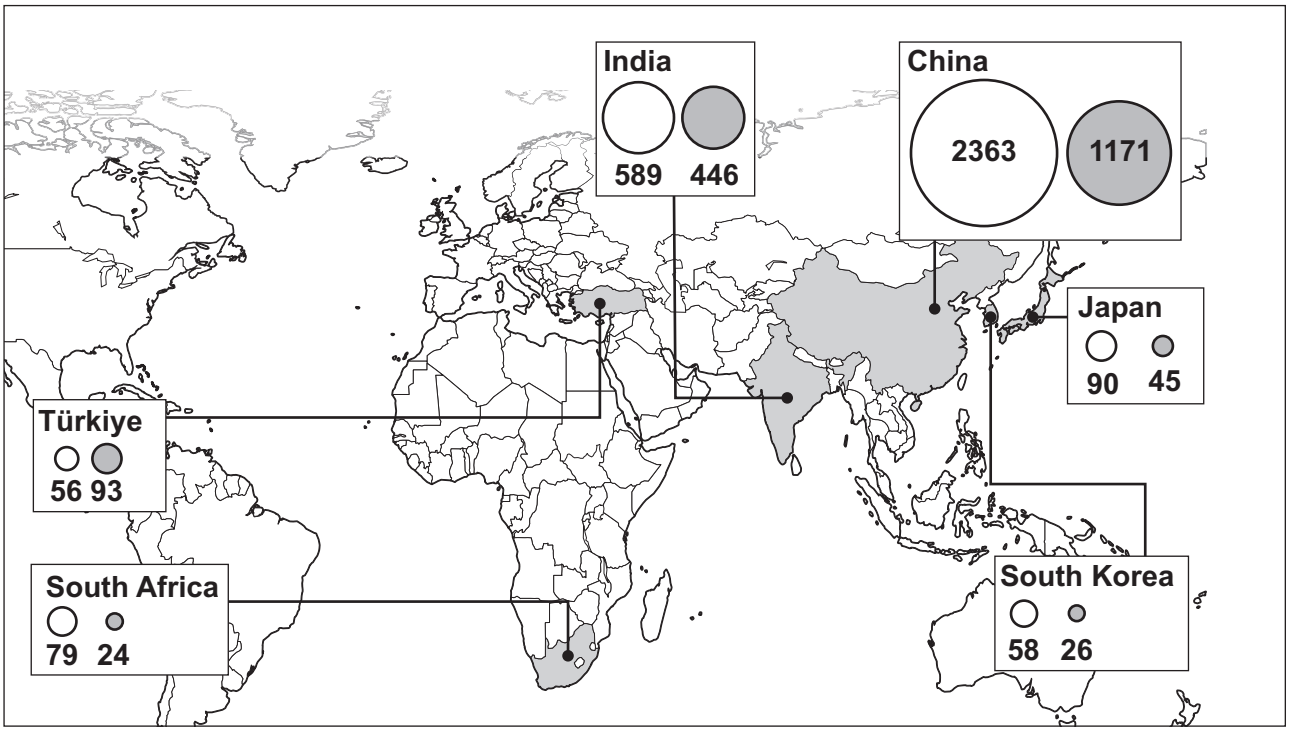
9 **(a)** The diagram shows existing and planned coal-fired power stations in six countries in 2022.

Key
existing
planned



(i) State which country has the most **existing** coal-fired power stations.

..... [1]

(ii) State which country has the most **planned** coal-fired power stations.

..... [1]

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(b) The number of existing and planned coal-fired power stations in the European Union and the Philippines is shown in the table.

	number of coal-fired power stations	
location	**existing in 2022**	**planned**
European Union	468	27
Philippines	19	60

(i) Calculate the percentage increase in coal-fired power stations for the European Union if all the planned power stations are built.

..... [2]

(ii) Suggest **two** reasons why there is a difference between the number of planned coal-fired power stations in the European Union and the Philippines.

1 .....

.....

2 .....

.....
[2]

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(c)

Generating electricity using fossil fuels should be banned in every country.

To what extent do you agree with this statement? Give reasons for your answer.

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..... [6]

[Total: 12]

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