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# Cambridge International AS Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

**ENVIRONMENTAL MANAGEMENT** **8291/23**

Paper 2 Management in Context **May/June 2025**

**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 **20** pages. Any blank pages are indicated.

**[Turn over**

**1** **(a)** A questionnaire is used to obtain the opinions of people in different regions on the importance of recycling.

Fig. 1.1 shows the results.

**Key**

☐ extremely important
☐ important
■ not important
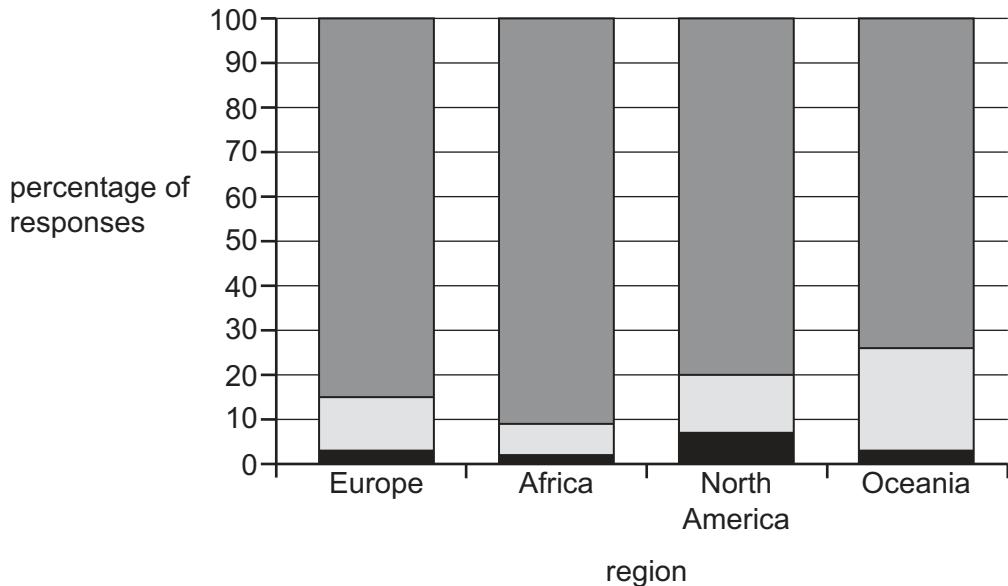


**Fig. 1.1**

Compare the percentage of people in different regions who think recycling is extremely important.

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**(b) (i)** There are three choices in the response area of this questionnaire:

- extremely important
- important
- not important.

Suggest **one** benefit and **one** limitation of this type of response area for a questionnaire.

benefit ...............................................................................................................................

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limitation ...........................................................................................................................

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[2]

**(ii)** A total of 11 500 local business owners and homeowners were used to complete the questionnaire.

Suggest **one** benefit of asking these people to complete the questionnaire.

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................................................................................................................................... [1]

**(c)** Some people do not recycle even though they say that recycling is extremely important.

Suggest **three** reasons why people do **not** recycle.

1 ........................................................................................................................................

2 ........................................................................................................................................

3 ........................................................................................................................................

[3]

**(d)** Plastic waste can end up in the ocean.

    **(i)** Describe the impacts of plastics in oceans on marine life.

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    **(ii)** Some fishing boat owners collect the plastic waste. The plastic waste is converted into plastic fibres.

Cotton is a plant which is harvested for its fibres.

Both plastic fibres and cotton fibres are used to make clothing.

Suggest **two** advantages for the environment of using plastic fibres compared to cotton fibres.

1 ......................................................................................................................................

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2 ......................................................................................................................................

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[2]

DO NOT WRITE IN THIS MARGIN

**(e)** A report states that 25% of plastic waste is incinerated.

Describe the benefits and limitations of incineration as a method of plastic waste disposal.

benefits ..............................................................................................................................

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limitations ...........................................................................................................................

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[4]

[Total: 19]

8291/23/M/J/25   **[Turn over**

**2** Fig. 2.1 shows a ghost swift moth. Moths are flying insects.



←————5 cm————→
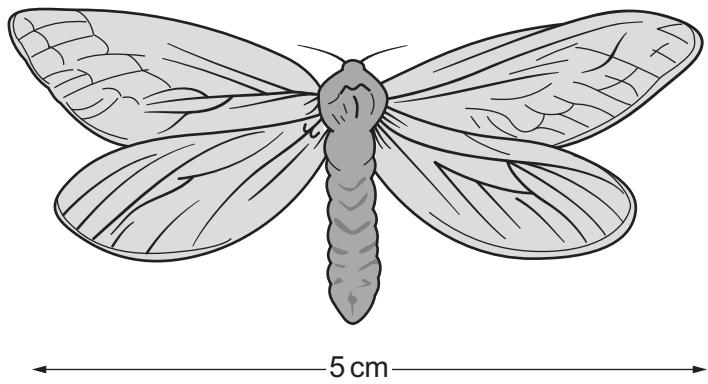
**Fig. 2.1**

**(a)** 'Moth Night' is an initiative for the public to record information about the moths they observe in one evening.

  **(i)** The public can either record the total number of moths they observe or the number of each species of moth they observe.

    Suggest why the public are given these two options.

    .........................................................................................................................................

    ..................................................................................................................................... [1]

  **(ii)** The public report their observations using an online form.

    The online form asks for weather conditions during 'Moth Night'.

    Suggest **one** benefit of including this data.

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    ..................................................................................................................................... [1]

**(b)** A scientist uses the equipment shown in Fig. 2.2 to record data on moth populations.



light source

container
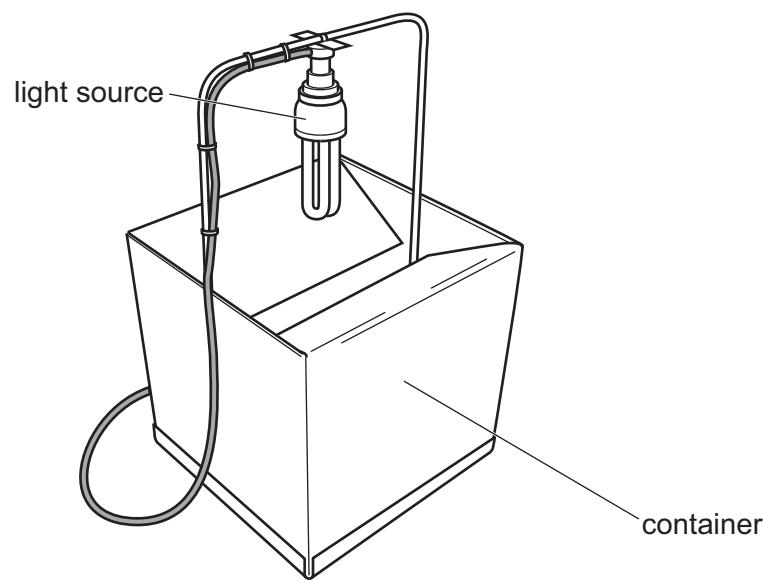
**Fig. 2.2**

**(i)** Explain how the equipment is used to record data on moth populations.

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**(ii)** Suggest why a damp sponge is put into the bottom of the equipment.

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**(iii)** State **two** limitations of this method of recording data on moth populations.

1 .............................................................................................................................................

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2 .............................................................................................................................................

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[2]

**[Turn over**

**(c)** The scientist uses the equipment in **(b)** to record the number of ghost swift moths collected over a 50-year period.

Fig. 2.3 shows the results.

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**Fig. 2.3**

**(i)** State the range for the number of moths collected.

range = ........................................................ [1]

**(ii)** Use Fig. 2.3 to write **two** conclusions about the ghost swift moth population.

1 ............................................................................................................................................

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2 ............................................................................................................................................

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[2]

**(d)** Moths are pollinating insects.

**(i)** Fig. 2.4 shows the effect of introducing pollinating insects (pollinators) to a field of fruit trees.
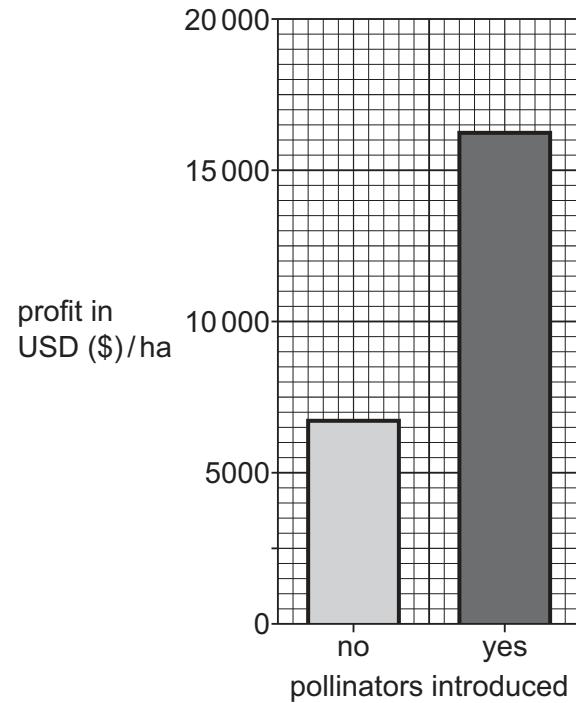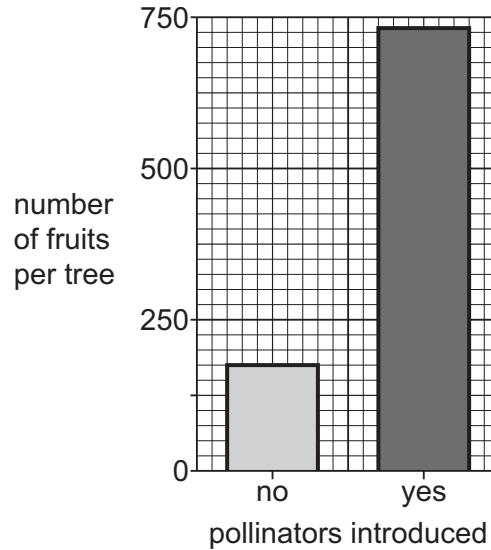


**Fig. 2.4**

Use Fig. 2.4 to explain how pollinators improve food security.

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**(ii)** Fig. 2.5 shows the percentage of crops dependent on pollinators in a world region.

**Key**

percentage of crops dependent on pollinators

▓ ⩾ 50%

░ 25–49%

· 10–24%

╱ 0–9%

☐ no data

N

Tropic of Cancer

Equator

Tropic of Capricorn
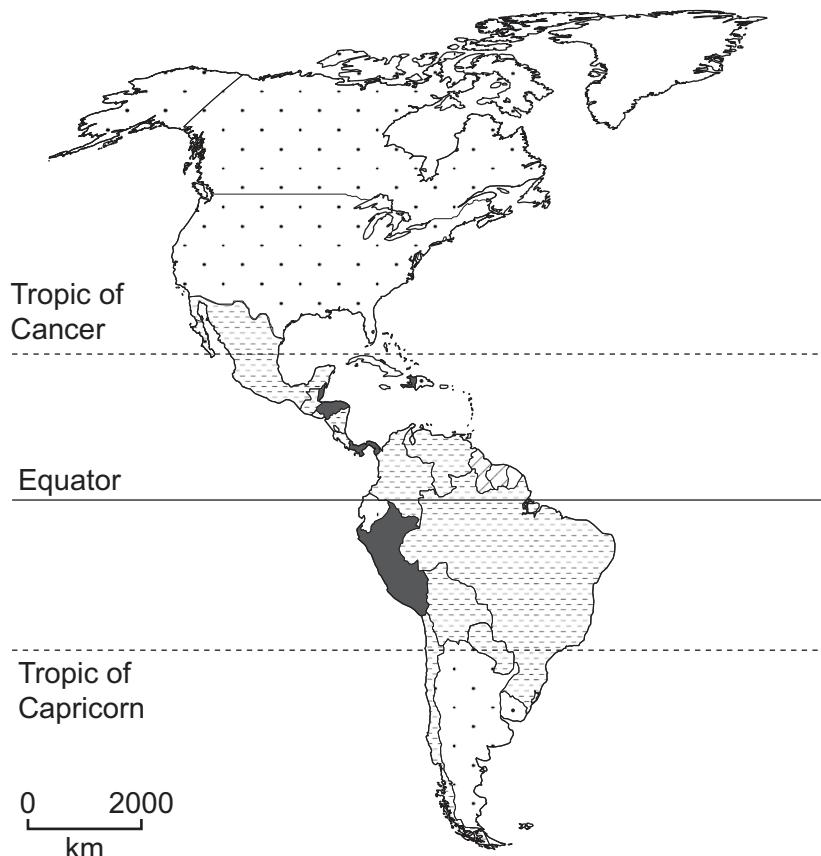
0     2000

km

**Fig. 2.5**

Describe the distribution of crops dependent on pollinators.

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**(e)** Fig. 2.6 shows a food web that includes a moth.
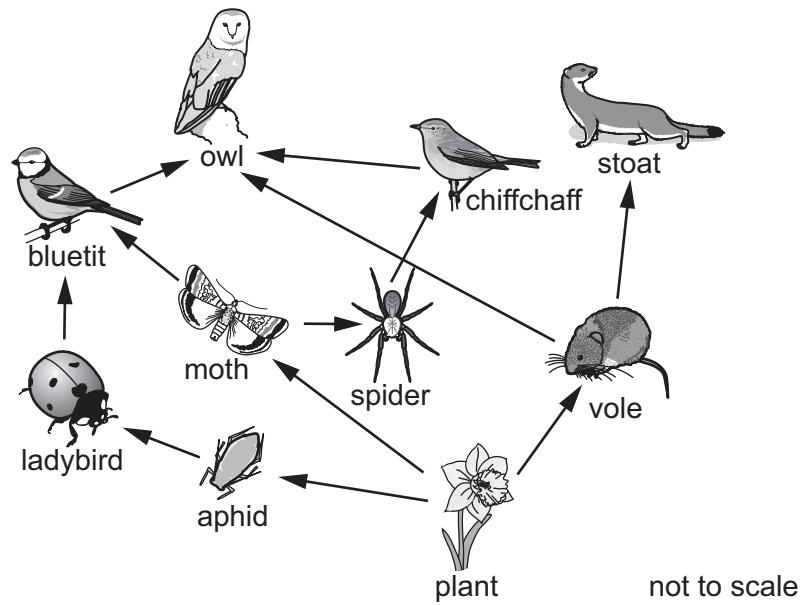


**Fig. 2.6**

Use Fig. 2.6 to write a food chain that includes a producer and has a total of **four** trophic levels.

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**(f)** Fig. 2.7 shows a pyramid of numbers for a food chain.
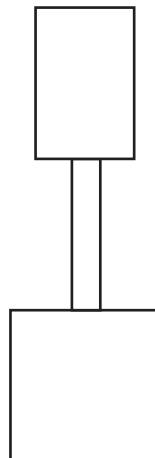


**Fig. 2.7**

Explain why a pyramid of numbers does **not** need to be a pyramid shape.

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[Total: 19]

**3** An increase in wild fires is an impact of climate change.

**(a)** Explain how climate change leads to wild fires.

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**(b)** Table 3.1 shows the number of wild fires recorded in Brazil from 2013 to 2019.

**Table 3.1**

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(i) Plot the data in Table 3.1 as a bar chart.
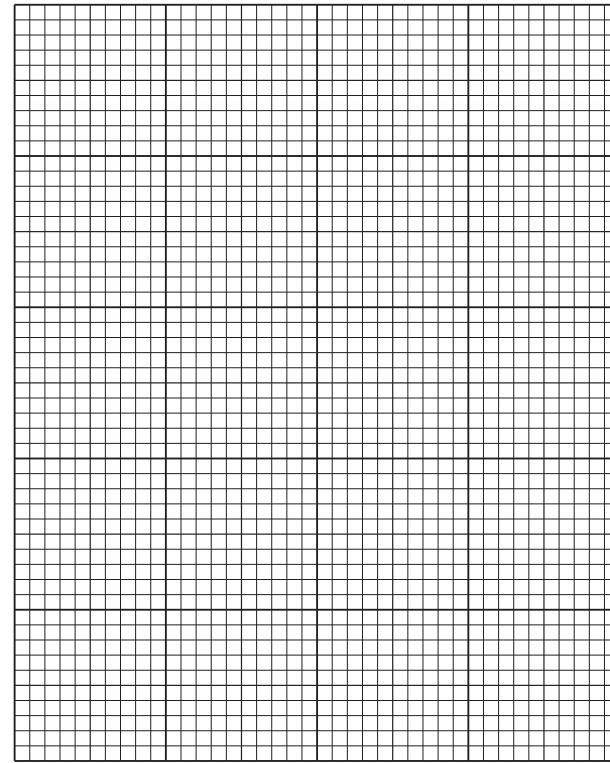


[4]

(ii) Suggest why the actual number of wild fires in 2019 was greater than 80 500.

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(c) Explain how climate change can cause extreme rainfall.

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**(d)** In the year 2000, four different computer models were used to predict future changes to the mean global surface temperature.

Fig. 3.1 shows these four predictions for global surface temperature compared to measured data from the year 2000.

**Key**
— measured data
– – – model A
—·— model B
·········· model C
––– model D
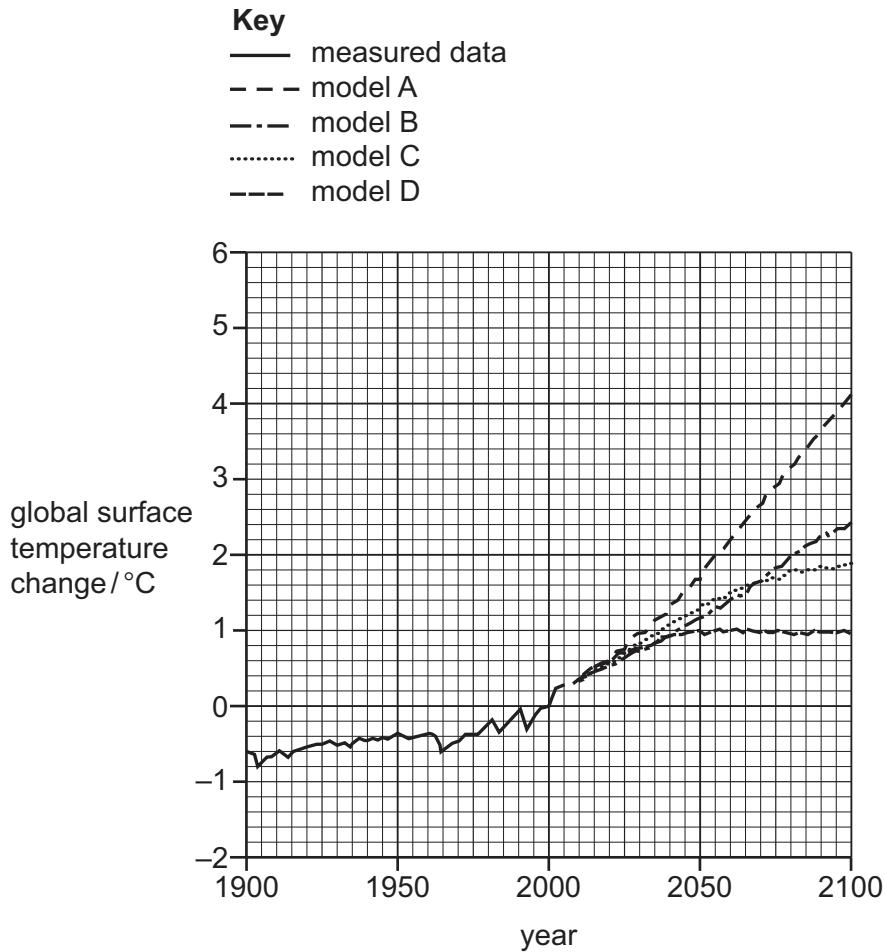


**Fig. 3.1**

**(i)** State what Fig. 3.1 shows about the global surface temperature before the year 2000.

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**(ii)** Suggest **two** reasons for the differences in the four predictions.

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2 .............................................................................................................................

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[2]

**(e)** Fig. 3.2 shows the locations of some research bases in Antarctica.

**Key**

- • research base
- ☐ Antarctic continent
- ▨ ice shelf
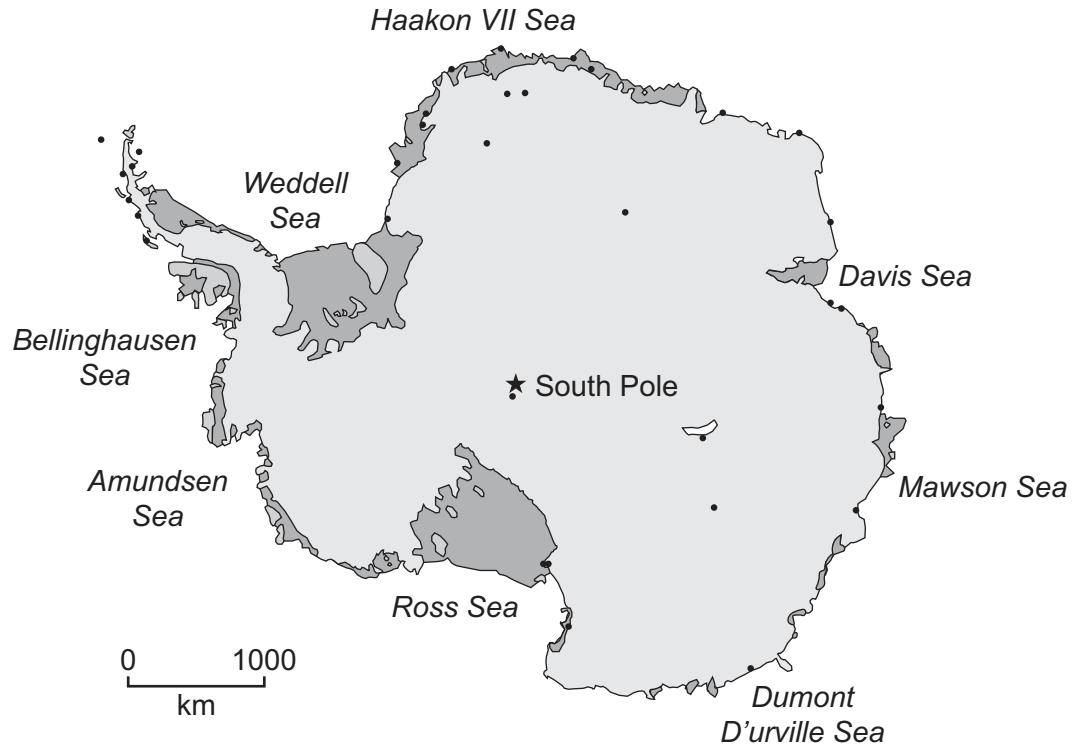


**Fig. 3.2**

**(i)** Suggest why climate change is a concern for Antarctica.

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**(ii)** Describe how the impacts of tourism are controlled in Antarctica.

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[Total: 18]

**4** **(a)** In 2022, the world population was 7.9 billion. 56% of the world's population lived in cities.

**(i)** Calculate the number of people, in billions, who lived in cities in 2022.

Give your answer to **two** significant figures.

................................................. billion [2]

**(ii)** Explain the impacts of increased urbanisation on water security.

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**(b)** Milan is a city in Italy, Europe.

   **(i)** Fig. 4.1 shows a 'vertical forest' in Milan.



**Fig. 4.1**

The vertical forest is two residential tower blocks. Each block is covered in 800 trees, 4500 shrubs and 15 000 small plants. The vertical forest covers an area of 20 000 m$^2$.

Suggest the benefits to the environment of a vertical forest. Give reasons for your answer.

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   **(ii)** Milan has an area of 181.76 km$^2$. In 2022, the population of Milan was 1.352 million people.

   Calculate the population density of Milan in 2022.

   Give the unit for your answer.

   population density = ........................................... unit ........................................... [2]

**(iii)** State **two** economic factors that affect population density.

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2 .............................................................................................................................

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[2]

**(iv)** Explain how environmental factors affect population density.

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**(c)** Italy is classified as a high income country (HIC).

Fig. 4.2 shows the population pyramid for Italy.
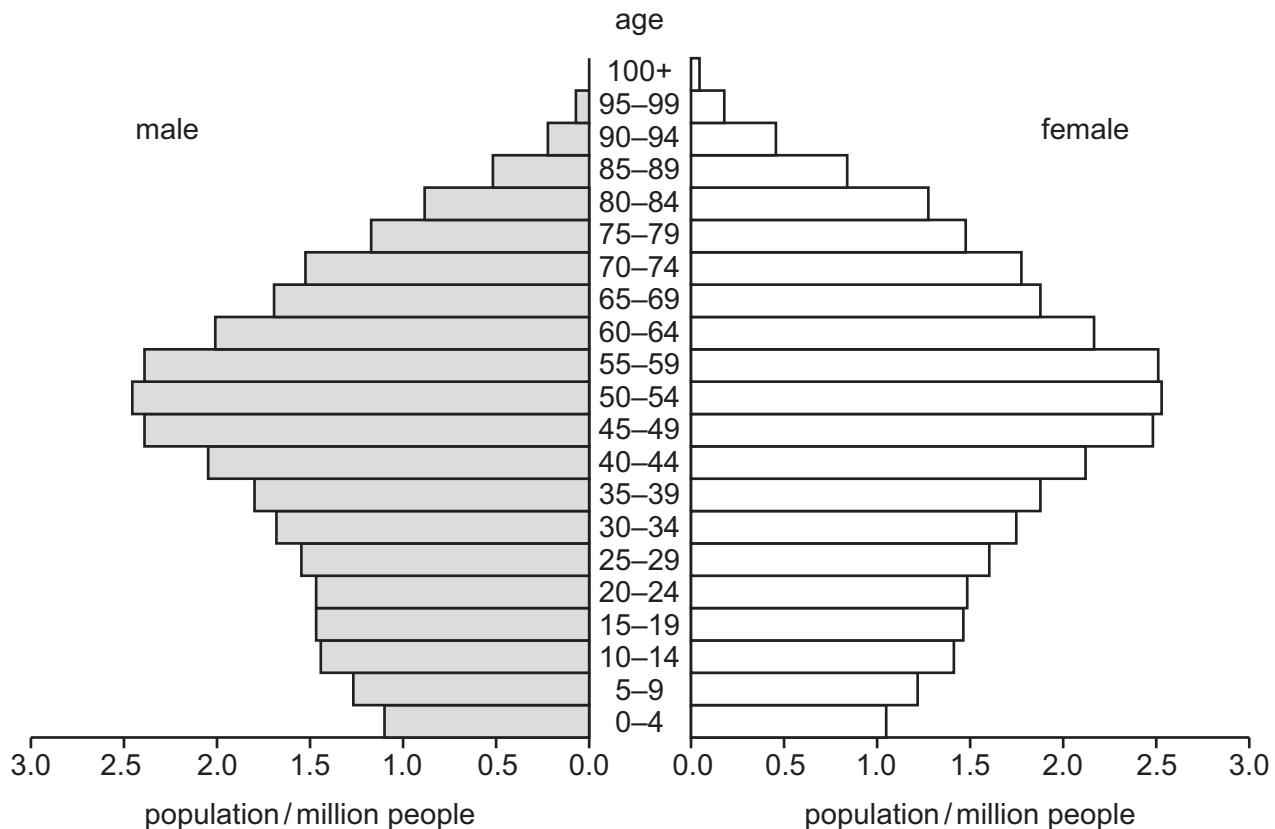


**Fig. 4.2**

**(i)** On the population pyramid, **draw** two horizontal lines to separate the economically active from the young and elderly (old) dependents. [2]

**(ii)** Describe how a population pyramid for a low income country (LIC) is different from the population pyramid for Italy.

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[Total: 24]

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