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Cambridge Assessment International Education

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8152317697

GEOGRAPHY **0460/41**

Paper 4 Alternative to Coursework **May/June 2025**

1 hour 30 minutes

You must answer on the question paper.

You will need: Insert (enclosed)
Calculator
Protractor
Ruler

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.
- If additional space is needed, you should use the lined pages at the end of this booklet; the question number or numbers must be clearly shown.

INFORMATION

- The total mark for this paper is 60.
- The number of marks for each question or part question is shown in brackets [ ].
- The insert contains additional resources referred to in the questions.

LEDCs – Less Economically Developed Countries
MEDCs – More Economically Developed Countries

This document has **16** pages. Any blank pages are indicated.

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1 Students in Shanghai, China, did fieldwork to compare different areas of the city. The part of Shanghai where they did their fieldwork is Pudong. The Pudong area has changed as it has been re-developed in the twenty-first century.

(a) Use Fig. 1.1 (Insert) to describe Pudong in the twenty-first century.

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To collect data, the students did fieldwork in five areas along a metro railway line which goes from the CBD to the rural-urban fringe. The five fieldwork areas are described in Fig. 1.2 (Insert).

One group of students tested the following hypotheses:

Hypothesis 1: *The land use varies between different areas of Pudong.*

Hypothesis 2: *As distance from the CBD increases, the amount of traffic and the number of pedestrians decrease.*

(b) To investigate **Hypothesis 1**, the students recorded the main use of 100 buildings in each area.

(i) Describe a suitable method to select 100 buildings for their survey.

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..... [2]

(ii) Give **two** reasons why the method you described in **(i)** will give reliable results.

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(c) When they returned to school, the students put the use of their buildings into four groups. Their results are shown in Table 1.1 (Insert).

(i) Use the results in Table 1.1 to **complete the pie graph for Sunland** on Fig. 1.3. [3]

Land use in the five fieldwork areas

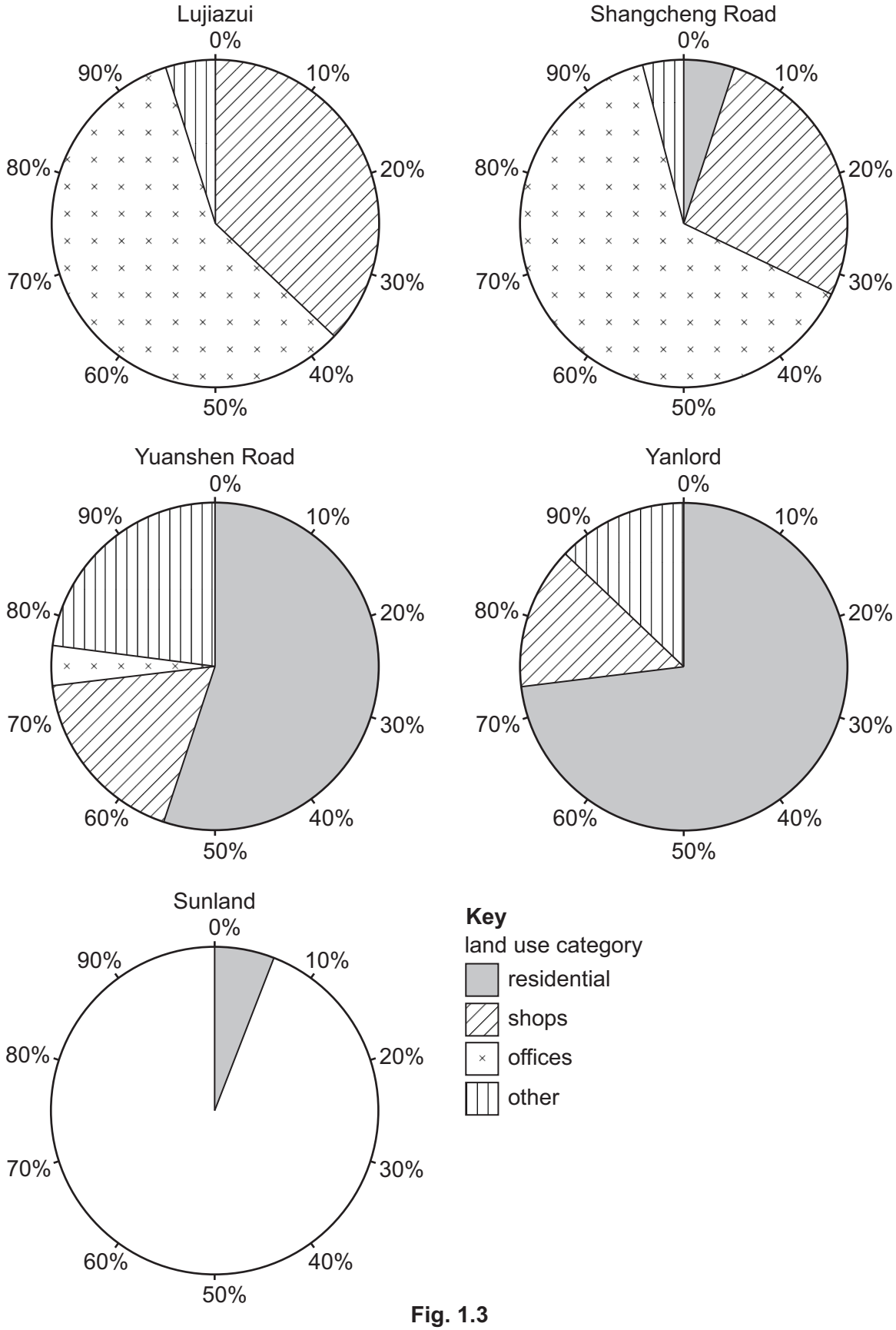

Fig. 1.3

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(ii) Whilst some students chose to plot their results on pie graphs, other students showed them on divided bar graphs. Use the results in Table 1.1 to **complete the divided bar graph for Yuanshen Road** on Fig. 1.4. [2]

Land use in the five fieldwork areas

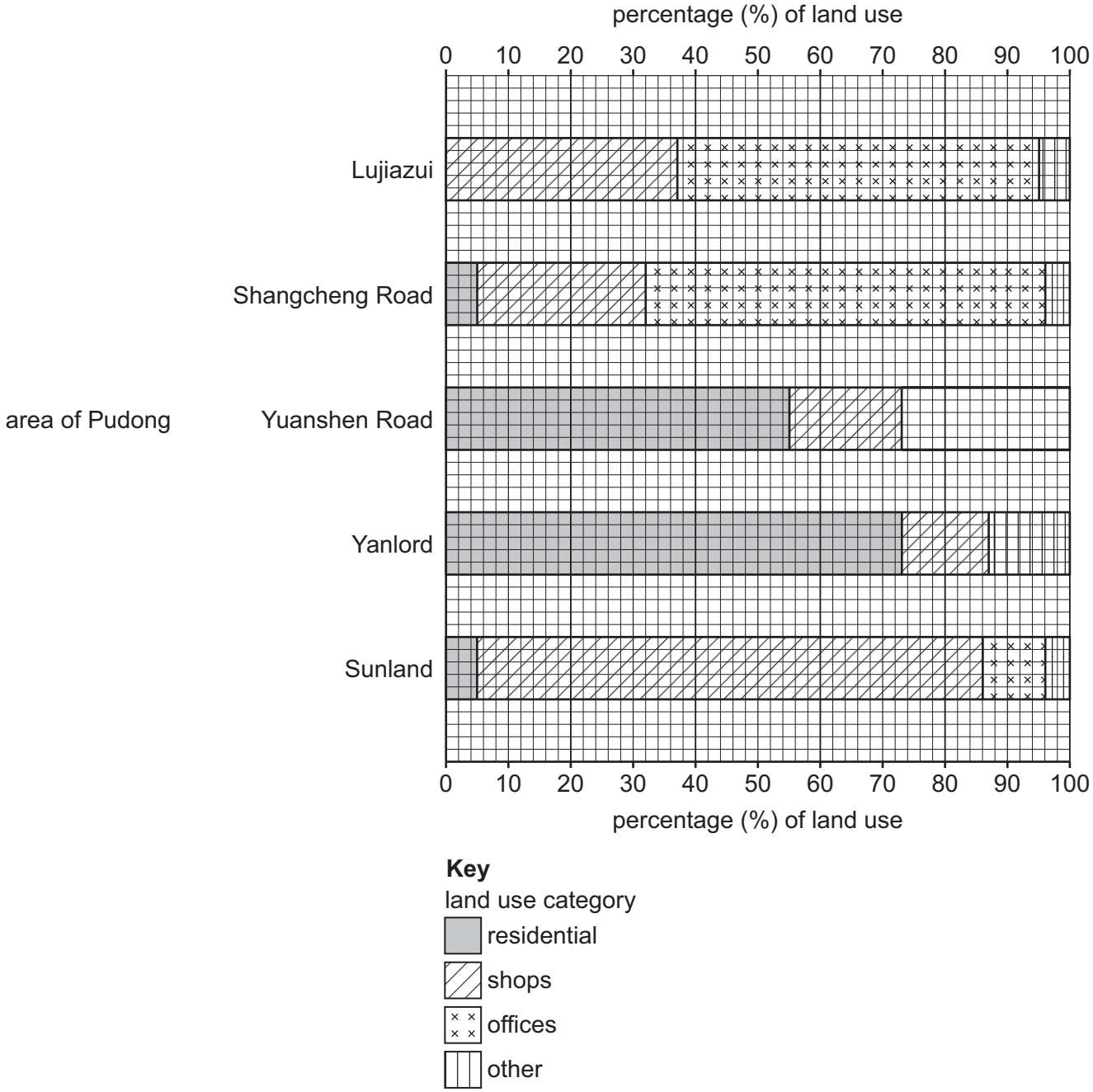

Fig. 1.4

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(iii) What conclusion would the students make about **Hypothesis 1:** *The land use varies between different areas of Pudong*? Support your answer with evidence from Table 1.1 and Fig. 1.3 or Fig. 1.4.

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(d) To investigate **Hypothesis 2:** *As distance from the CBD increases, the amount of traffic and the number of pedestrians decrease*, the students used the method described in Fig. 1.5 (Insert), an extract from a student's fieldwork notebook.

(i) From Fig. 1.5 identify **three** ways that the students made sure their method was reliable.

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[3]

(ii) Which **one** of the following would make sure that results from different areas could be accurately compared? Tick (✓) your answer.

	tick (✓)
Counting begins as soon as the students arrive in their fieldwork area.	
Counting ends when the students have timed five minutes.	
Counting starts and finishes at the same time in each area.	
Counting is done in the morning.	
Counting continues until the students have enough people and vehicles.	

[1]

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(e) The results of the students' traffic and pedestrian counts are shown in Table 1.2 (Insert).

(i) Use the results in Table 1.2 to **plot the number of vehicles and pedestrians** at Sunland on Fig. 1.6. [2]

Results of traffic and pedestrian counts

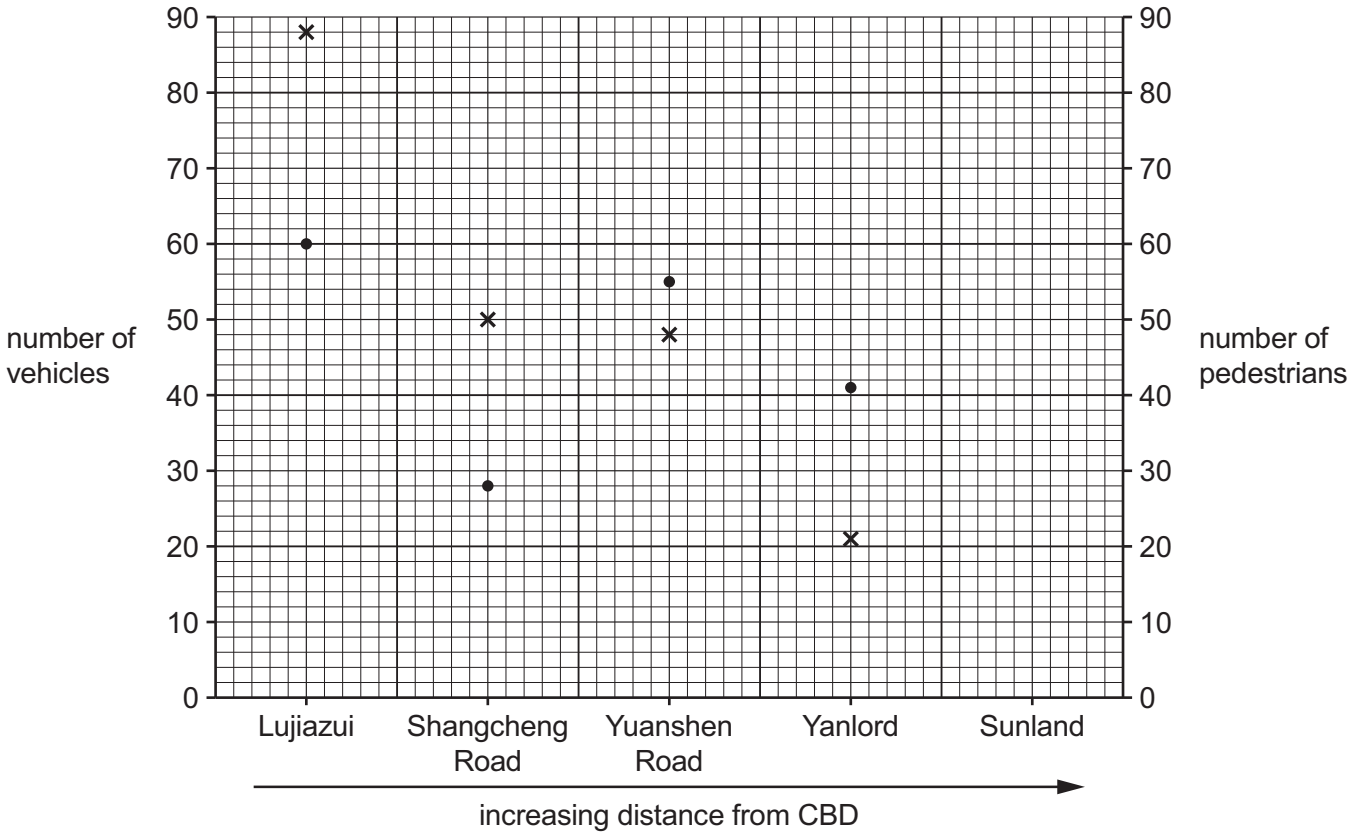

Fig. 1.6

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(ii) Which **one** of the following conclusions did the students make about **Hypothesis 2:** *As distance from the CBD increases, the amount of traffic and the number of pedestrians decrease*? Tick (✓) your decision.

	tick (✓)
The hypothesis is true for both traffic and pedestrians.	
The hypothesis is true for one and false for one.	
The hypothesis is false for both traffic and pedestrians.	

Support your decision with evidence from Fig. 1.6 and Table 1.2.

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(f) Other students investigated how the quality of the environment varied between the five areas of Pudong. Describe a fieldwork method they could use to do this.

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2 A class of students went on a field visit to some sand dunes on the east coast of England. Coastal sand dunes are popular places for people to visit but this may affect the natural environment.

Having studied the formation of sand dunes in class, the students wanted to find out more about their shape and the vegetation that grows on them.

(a) Use the letters (**A–E**) to **put the following statements in the correct order** in the table to show the sequence of how sand dunes are formed.

A: Sand is deposited around the obstacles to form an embryo dune.

B: The onshore wind is slowed down by obstacles such as rocks and grass on the beach.

C: Constructive waves deposit sand on the beach.

D: Vegetation such as marram grass grows on the dunes helping to stabilise them.

E: The onshore prevailing wind blows dried sand inland.

order	letter
1	
2	
3	
4	
5	

[3]

The students tested the following hypotheses.

Hypothesis 1: *The profile of sand dunes in the area matches a typical profile drawn in a textbook.*

Hypothesis 2: *The type of vegetation growing on the sand dunes changes as distance from the sea increases.*

(b) To investigate both hypotheses, the students used a tape measure to mark out a transect line from the sea going across the beach and sand dunes.

(i) Look at Fig. 2.1 (Insert). Identify the correct line for the students' transect. (Circle) your answer below.

A **B** **C** **D** [1]

(ii) Give **one** reason why the line you have chosen is the correct line.

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(c) To investigate **Hypothesis 1**, the students measured the changing angle of slope every 10 metres across the sand dunes inland from the sea. They used:

- a tape measure
- two ranging poles
- a clinometer app on their phone. This is shown in Fig. 2.2 (Insert).

Explain how the students used this equipment to measure the angle of slope.

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(d) One student used their results to draw the profile shown in Fig. 2.3.

(i) **Complete the student's profile** by joining the points between 140 and 180 m from the sea on Fig. 2.3. [1]

(ii) **Shade in** the sand dunes on Fig. 2.3. [1]

(iii) The students compared their profile in Fig. 2.3 with a textbook profile shown in Fig. 2.4 (Insert).

They decided that **Hypothesis 1:** *The profile of sand dunes in the area matches a typical profile drawn in a textbook* was **partly true**. Support this conclusion by referring to similarities and differences between the student's profile (Fig. 2.3) and the textbook profile (Fig. 2.4).

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Student's profile of sand dunes

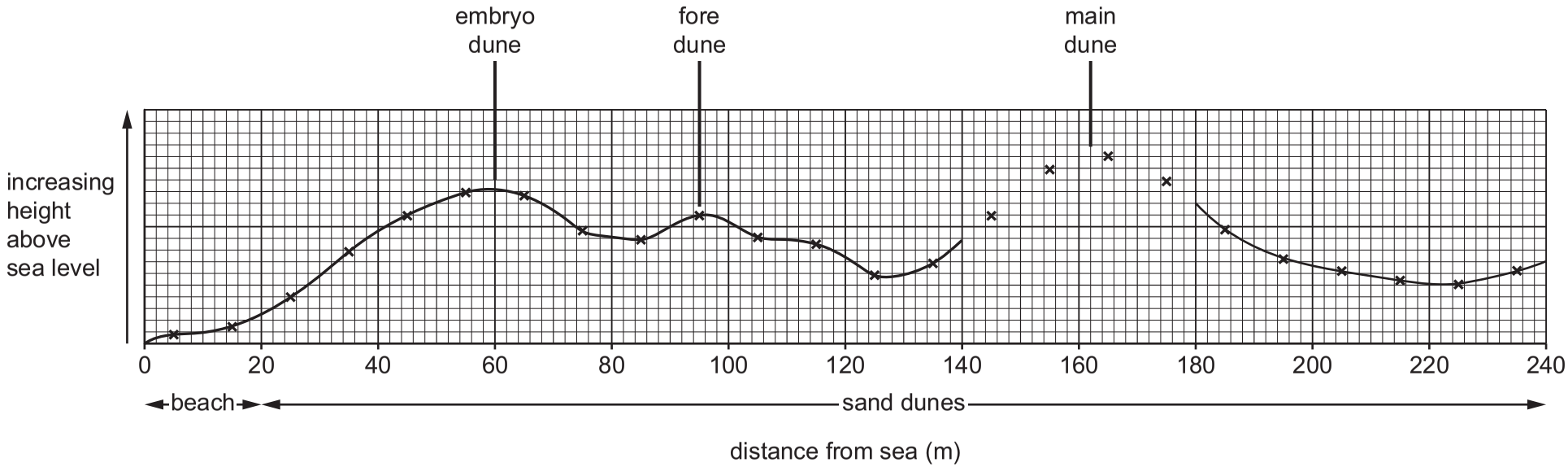

Fig. 2.3

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(e) To investigate **Hypothesis 2:** *The type of vegetation growing on the sand dunes changes as distance from the sea increases*, the students identified four types of vegetation growing on the sand dunes (reeds, heather, marram grass and couch grass).

(i) The students used the quadrat, shown in Fig. 2.5 (Insert), to measure the different types of vegetation cover at points 20 m apart along their transect line. How would the students use the quadrat?

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(ii) The students' results are shown in Table 2.1 (Insert). Use these results to **plot the marram grass cover** at 220 m and 240 m from the sea on Fig. 2.6. [2]

(iii) Do the students' results support **Hypothesis 2:** *The type of vegetation growing on the sand dunes changes as distance from the sea increases*? Use evidence from Fig. 2.6 and Table 2.1 to support your decision.

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(f) Suggest **two** ways the students could have improved their fieldwork methods.

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Vegetation growing on the sand dunes

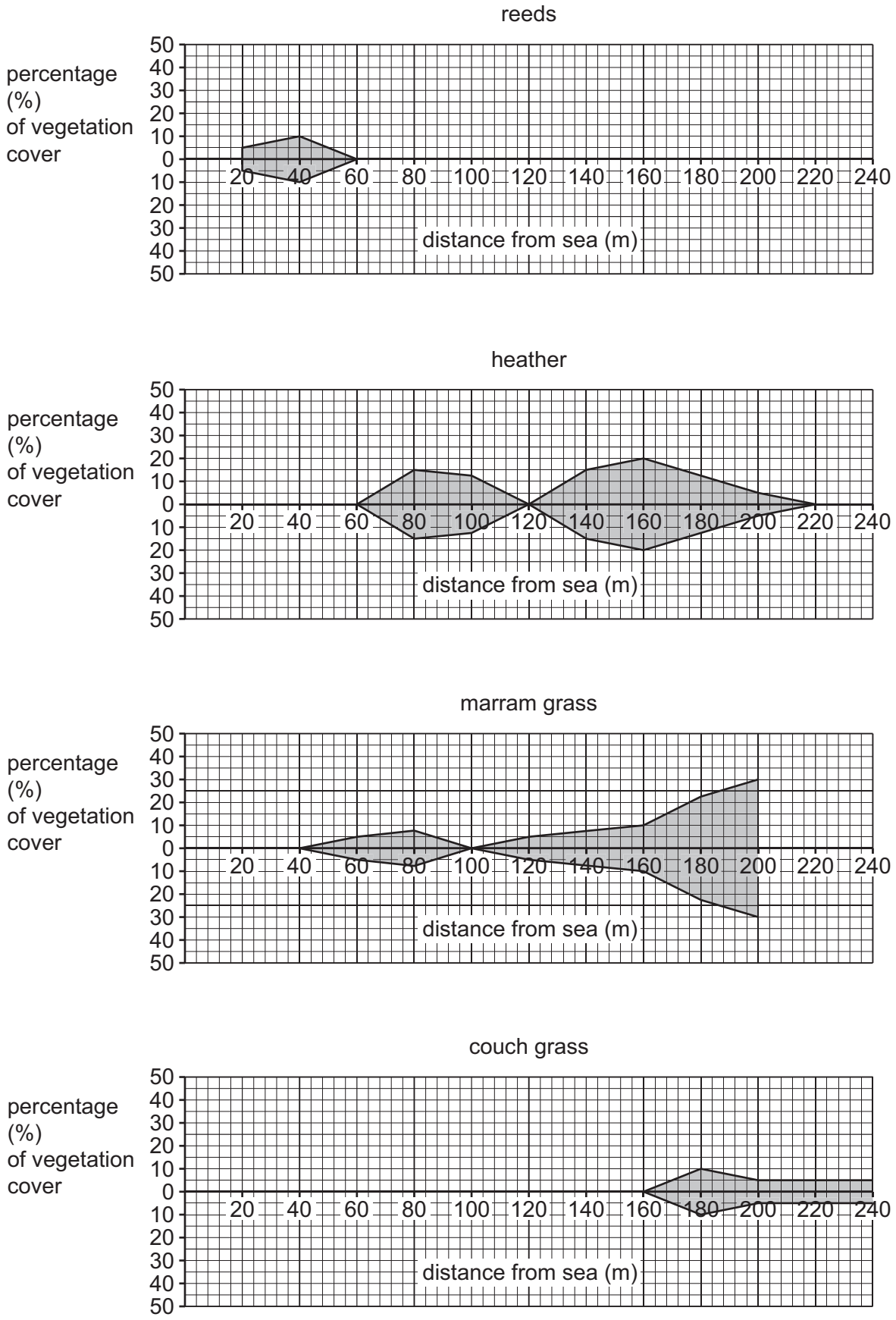

Fig. 2.6

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(g) The students agreed that sand dunes are important coastal features which need protection.

(i) Give **two** reasons why they are important.

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[2]

(ii) To extend their fieldwork, the students looked for evidence of management methods used to protect the sand dunes along the coast. Suggest **four** methods they might have seen.

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