* 0019655541801 *

Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME											
CENTRE NUMBER							CANDIDATE NUMBER				

GEOGRAPHY **0460/43**

Paper 4 Alternative to Coursework **May/June 2024**

1 hour 30 minutes

You must answer on the question paper.

You will need: Insert (enclosed)
Calculator
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.

LEDC – Less Economically Developed Country
MEDC – More Economically Developed Country

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

1 Students studying urban land use did fieldwork to investigate the land use in their city.

To collect data the students did fieldwork at six sites at increasing distances from the city centre along a main road which they used as a transect line.

The students investigated the following hypotheses:

Hypothesis 1: *Residential land use occupies most of the land area at all sites*.

Hypothesis 2: *The percentage of land used for industry increases as distance from the city centre increases*.

(a) At each fieldwork site the students measured 100 metres along the main road. Within this area they recorded the:

- land use every 10 metres
- ground floor land use
- land use on both sides of the road.

Give **one** advantage and **one** disadvantage of their method.

advantage ....

....

....

disadvantage ....

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[2]

(b) Fig. 1.1 (Insert) shows the categories of land use which the students used along with examples of different types of land use.

Complete the following table by putting the examples of land use into the correct land use category. One example has been completed for you.

example of land use	land use category
hospital	public building
cinema	
apartment	
general store	

[3]

(c) A week before their fieldwork, the students did a pilot study. An example of the students' completed recording sheet at a pilot study site is shown in Fig. 1.2 (Insert).

(i) Use these results to complete the tally chart which the students used to record the land use every 10 metres. **Insert the tally** and **number** for each land use category.

Tally chart of land use every 10 metres at the pilot study site

land use category	**tally**	**number**
residential	////	4
industrial		0
commercial (shops)	𝍸 //	7
entertainment		
public building		
open space		
transport		
services (offices)		

[2]

(ii) Give **two** advantages of first doing fieldwork at the pilot study site.

1 ....

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2 ....

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[2]

(d) When they had completed their fieldwork, the students calculated the percentage of land use in each category at the six sites. Their results are shown in Table 1.1 (Insert). They used these results to draw the divided bar graphs shown in Fig. 1.3.

(i) Use the results in Table 1.1 to **complete the graph** at site 4 on Fig. 1.3. [2]

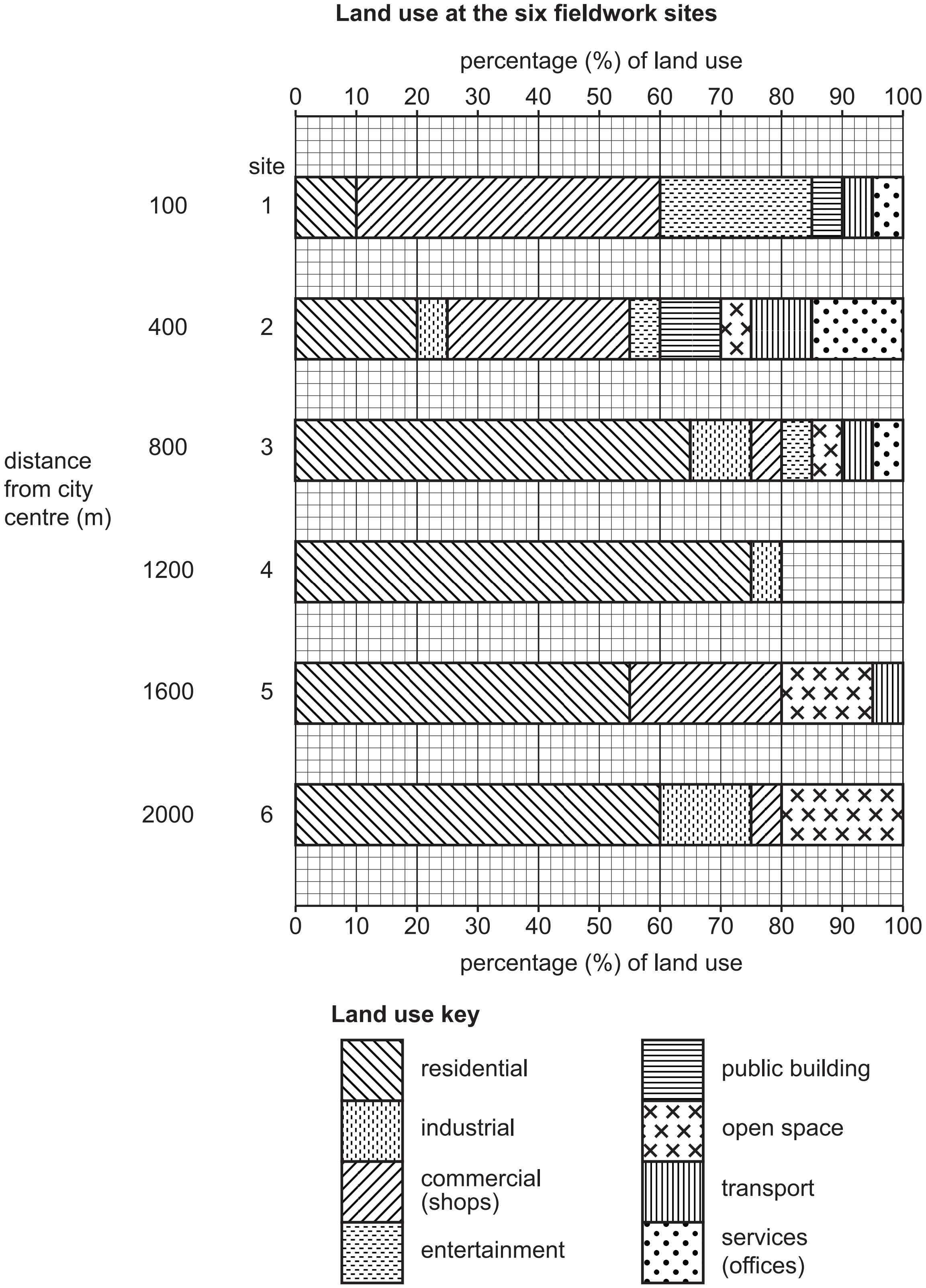

Fig. 1.3

(ii) Using Fig. 1.3 and Table 1.1, describe the **two largest** differences in land use between sites 1 and 6. Use statistics in your answer.

1 ....

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2 ....

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[4]

(iii) What conclusion did the students make about **Hypothesis 1**: *Residential land use occupies most of the land area at all sites*? Support your decision with evidence from Fig. 1.3 and Table 1.1.

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.... [4]

(iv) The students agreed that **Hypothesis 2**: *The percentage of land used for industry increases as distance from the city centre increases* was **partly true**. Support this conclusion with evidence from Fig. 1.3 and Table 1.1.

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.... [3]

(v) Suggest why urban land use changes as distance from a city centre increases.

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.... [4]

(e) Other students investigated how the quality of the environment changed along a transect from the city centre outwards. Describe a method they could use to do this.

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.... [4]

[Total: 30]

2 Students in southern England did fieldwork on a local river to investigate how it changed downstream. They wanted to find out if the changes shown in the Bradshaw model of river characteristics were shown in the local river.

The students investigated the following hypotheses:

Hypothesis 1: *River velocity increases downstream*.

Hypothesis 2: *The size of bedload decreases downstream*.

The students selected four sites along the river to do their fieldwork.

(a) To investigate **Hypothesis 1**: *River velocity increases downstream*, the students measured the velocity at each site using the equipment shown in Fig. 2.1 (Insert).

(i) Describe how the students used this equipment to measure velocity.

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.... [4]

(ii) Suggest why the students measured velocity three times at each site.

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.... [2]

(iii) The students calculated the average velocity of flow at each site. Their results are shown in Table 2.1 (Insert). **Plot the result for site 3** on Fig. 2.2. [1]

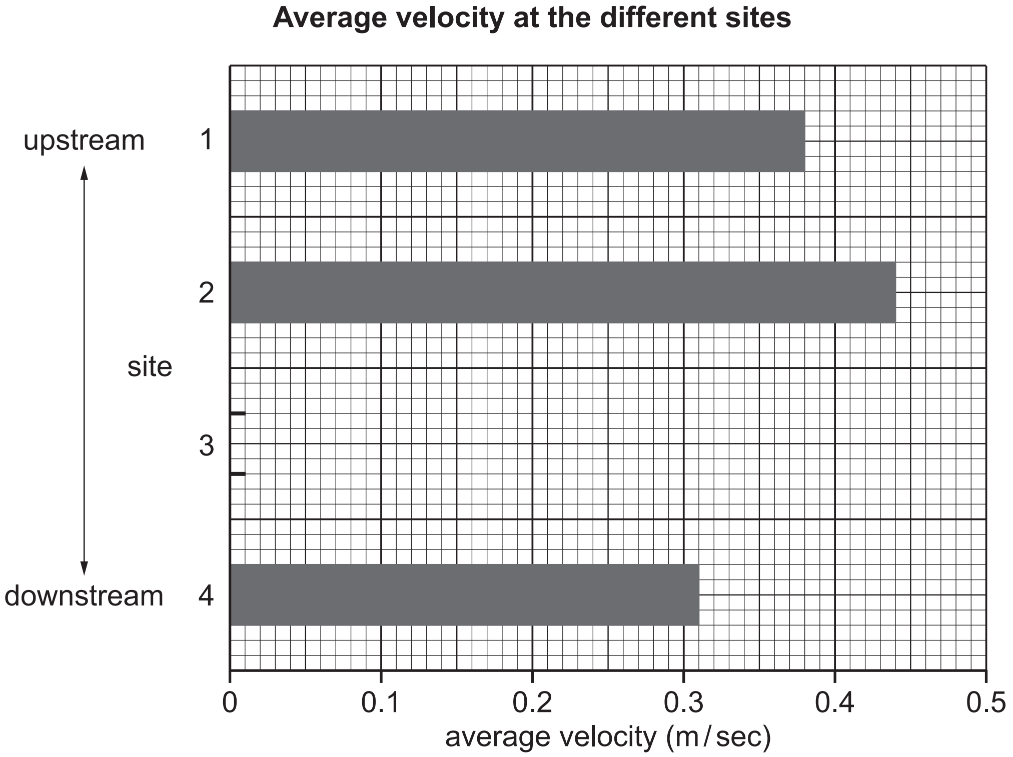

Fig. 2.2

(iv) The students' conclusion was that their results did **not** agree with **Hypothesis 1**: *River velocity increases downstream*. Use evidence from Fig. 2.2 and Table 2.1 to explain why they made this conclusion.

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.... [2]

(b) The students researched possible reasons why the river did **not** match the Bradshaw model that river velocity increases downstream.

(i) Suggest **two** ways that **human** impact could affect the velocity of river flow.

1 ....

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2 ....

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[2]

(ii) Describe how **natural** features of the river and river channel could increase its velocity.

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.... [2]

(c) The students made some measurements to investigate **Hypothesis 2**: *The size of bedload decreases downstream*.

(i) At each site the students selected 20 pebbles at random from the bed of the river. They then measured the length (long axis) of the pebbles using callipers which are shown in Fig. 2.3 (Insert). Describe how the students measured the length of a pebble.

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.... [2]

(ii) For each site the students calculated the average size of the bedload and grouped the individual measurements.
Their results at site 2 are shown in Table 2.2 (Insert). Use these results to **complete the histogram for site 2** in Fig. 2.4. [2]

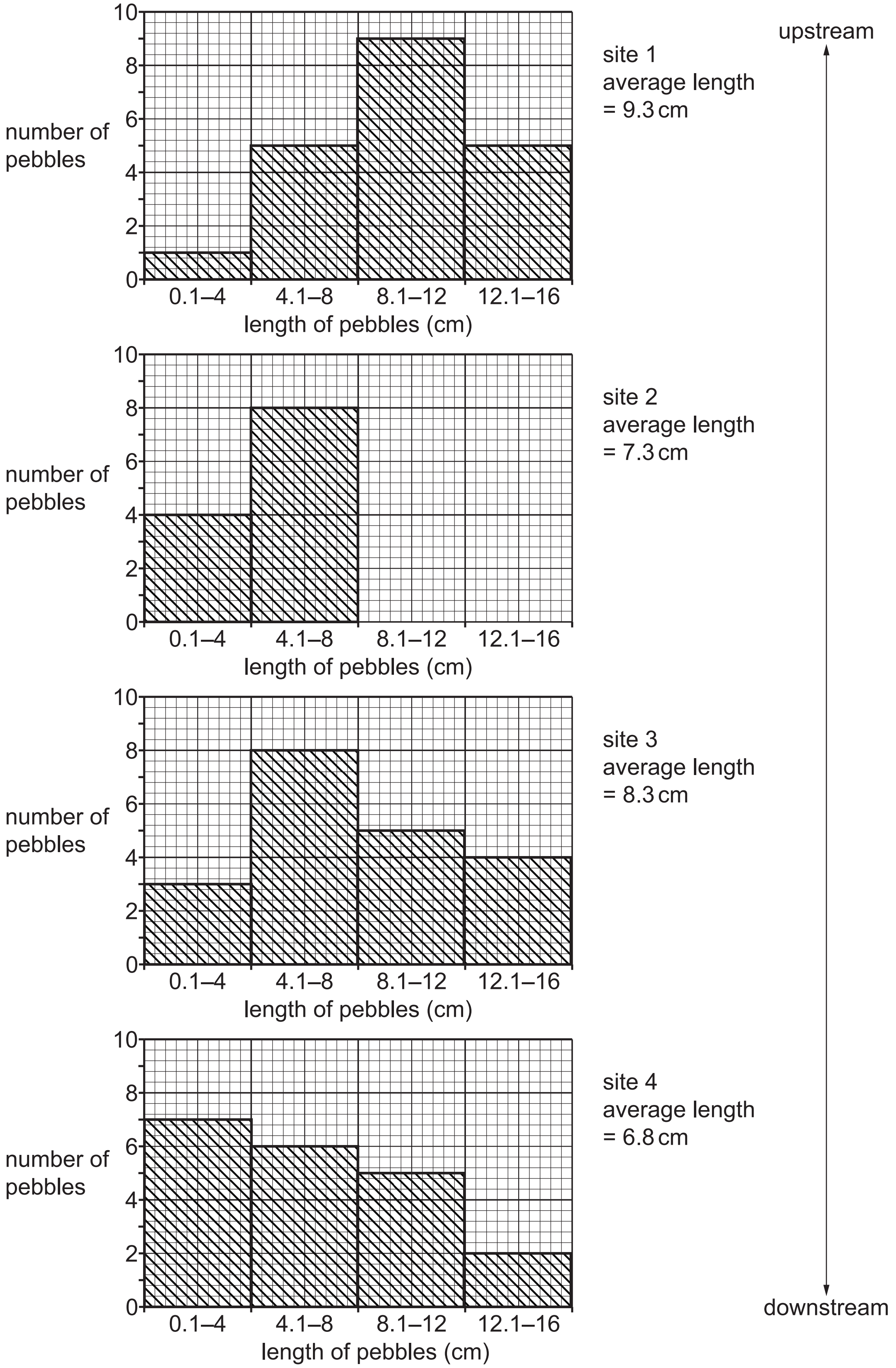

Fig. 2.4

(iii) Which conclusion in the table below is most accurate for **Hypothesis 2**: *The size of bedload decreases downstream*? Tick (✓) your decision and support it with evidence from Fig. 2.4.

	tick (✓)
The hypothesis is completely true.	
The hypothesis is generally true.	
The hypothesis is false.	

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.... [4]

(d) When they had finished their fieldwork, the students discussed possible ways to improve their fieldwork methods.

(i) One student suggested they could have used a flowmeter to measure river velocity. A flowmeter is shown in Fig. 2.5 (Insert). Describe how the students would use a flowmeter to measure river velocity.

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.... [3]

(ii) Suggest why using a flowmeter may make results more reliable than the equipment the students used (shown in Fig. 2.1 (Insert)).

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.... [2]

(iii) Another student suggested that selecting pebbles at random from the river bed at each site could produce unreliable results. Suggest **two** weaknesses of selecting pebbles at random.

1 ....

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2 ....

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[2]

(e) Identify **two** statements which correctly describe how **two** different river characteristics change downstream. Tick (✓) your choices.

	tick (✓)
The gradient of the river bed is steeper downstream.	
The river gets shallower downstream.	
The river gets wider downstream.	
The river discharge increases downstream.	
The river carries less load downstream.	

[2]

[Total: 30]

Additional pages

If you use the following pages to complete the answer to any question, the question number must be clearly shown.

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