Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME									
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8148054870

GEOGRAPHY **0460/42**

Paper 4 Alternative to Coursework **February/March 2021**

1 hour 30 minutes

You must answer on the question paper.

You will need: Insert (enclosed) Ruler
Calculator
Protractor

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.

This document has **20** pages. Any blank pages are indicated.

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1 Students in Botswana did some fieldwork to investigate the CBD of Gaborone, the capital city of Botswana.

(a) (i) What does CBD stand for?

C..... B..... D..... [1]

(ii) Which **one** of the following is **least** likely to be located in the CBD of a city? Tick (✓) your choice in the table below. [1]

	tick (✓)
bank	
concert hall	
government building	
industrial estate	
railway station	

The students decided to test the following hypotheses.

Hypothesis 1: *Buildings in the CBD are taller than buildings elsewhere in the city.*

Hypothesis 2: *The CBD has the best quality of environment in the city.*

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(b) To test **Hypothesis 1** the students agreed to use the number of storeys in each building as a height measurement.

(i) Fig. 1.1, below, is a student's sketch map to show the height of buildings in the Mall, which is in the centre of the CBD. Use the key **to show the following information on Fig. 1.1**. [2]

building	number of storeys
President Hotel	6
Tswana House	2

A student's sketch map of the Mall

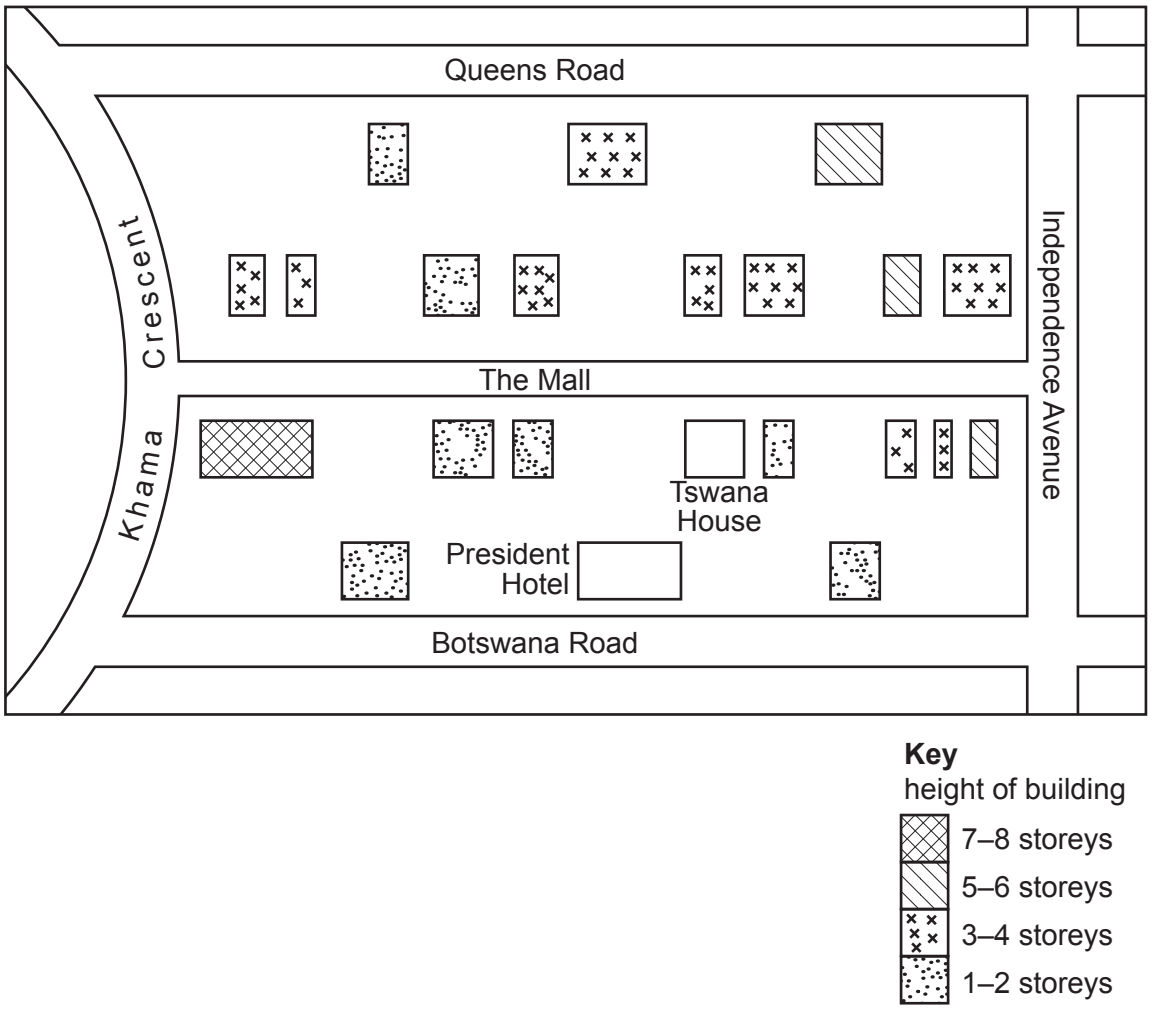


Fig. 1.1

(ii) The students then went to sites along four transects in different directions away from the Mall. At each site they counted the number of storeys in each of 10 buildings. Their average results are shown in Table 1.1 (Insert).

Complete Fig. 1.2 below to show the average building heights along the east transect. [2]

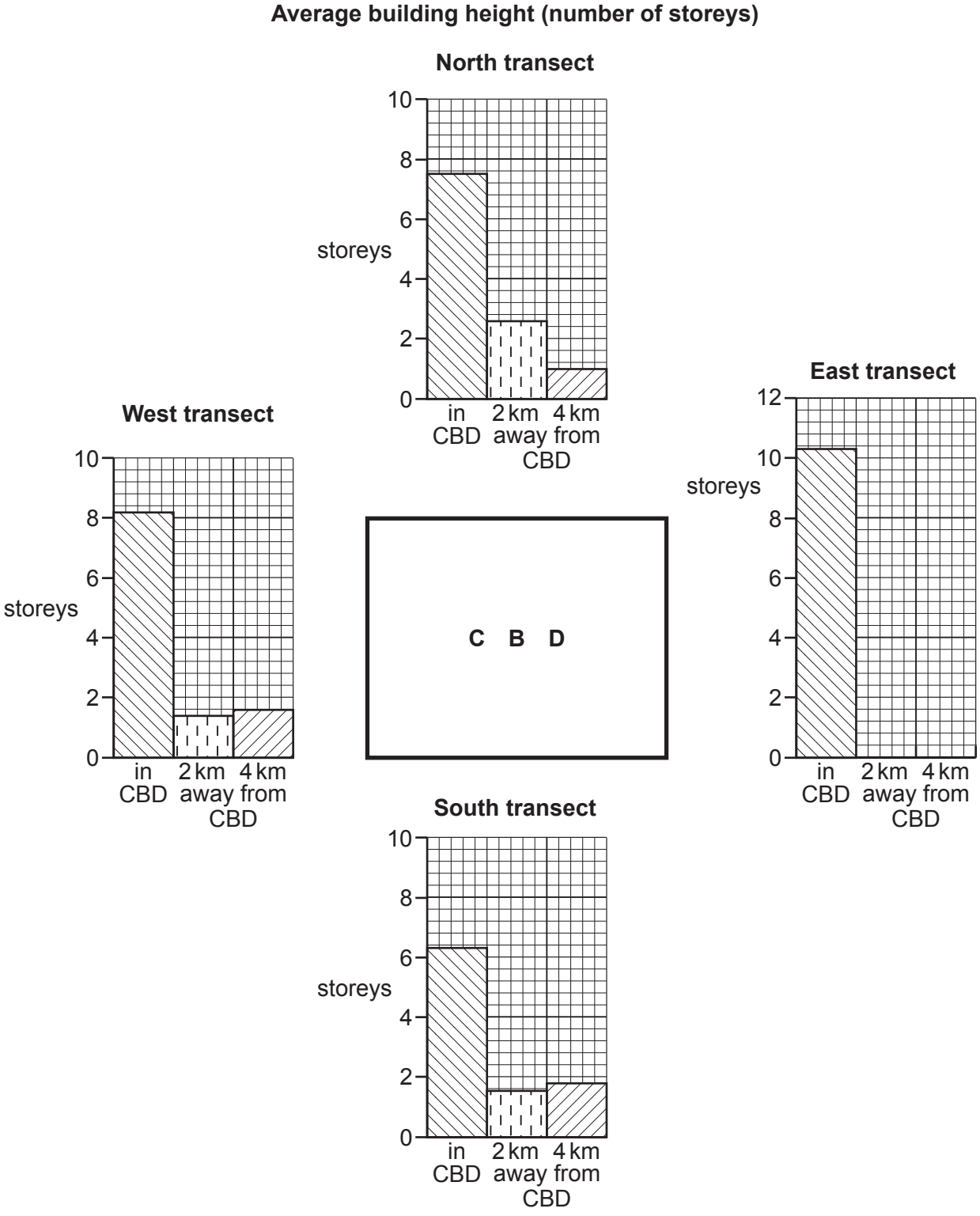


Fig. 1.2

(iii) What is your conclusion about **Hypothesis 1:** *Buildings in the CBD are taller than buildings elsewhere in the city*? Support your decision with evidence from Fig. 1.2 and Table 1.1.

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..... [3]

(iv) Suggest **two** reasons why building height varies in different areas of a city.

1 .....

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2 .....

..... [2]

(c) To collect data for **Hypothesis 2:** *The CBD has the best quality of environment in the city*, the students produced a scoring sheet to measure environmental quality. This is shown in Fig. 1.3 (Insert).

(i) Suggest **two** improvements which the students could have made to their scoring sheet to improve its reliability.

1 .....

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2 .....

..... [2]

(ii) The students used their scoring sheet to assess the quality of the environment at their fieldwork sites along each transect. Their results for the east transect are shown in Table 1.2 (Insert).
Use these results to **complete Fig. 1.4 below**. [2]

Environmental quality scores along the east transect

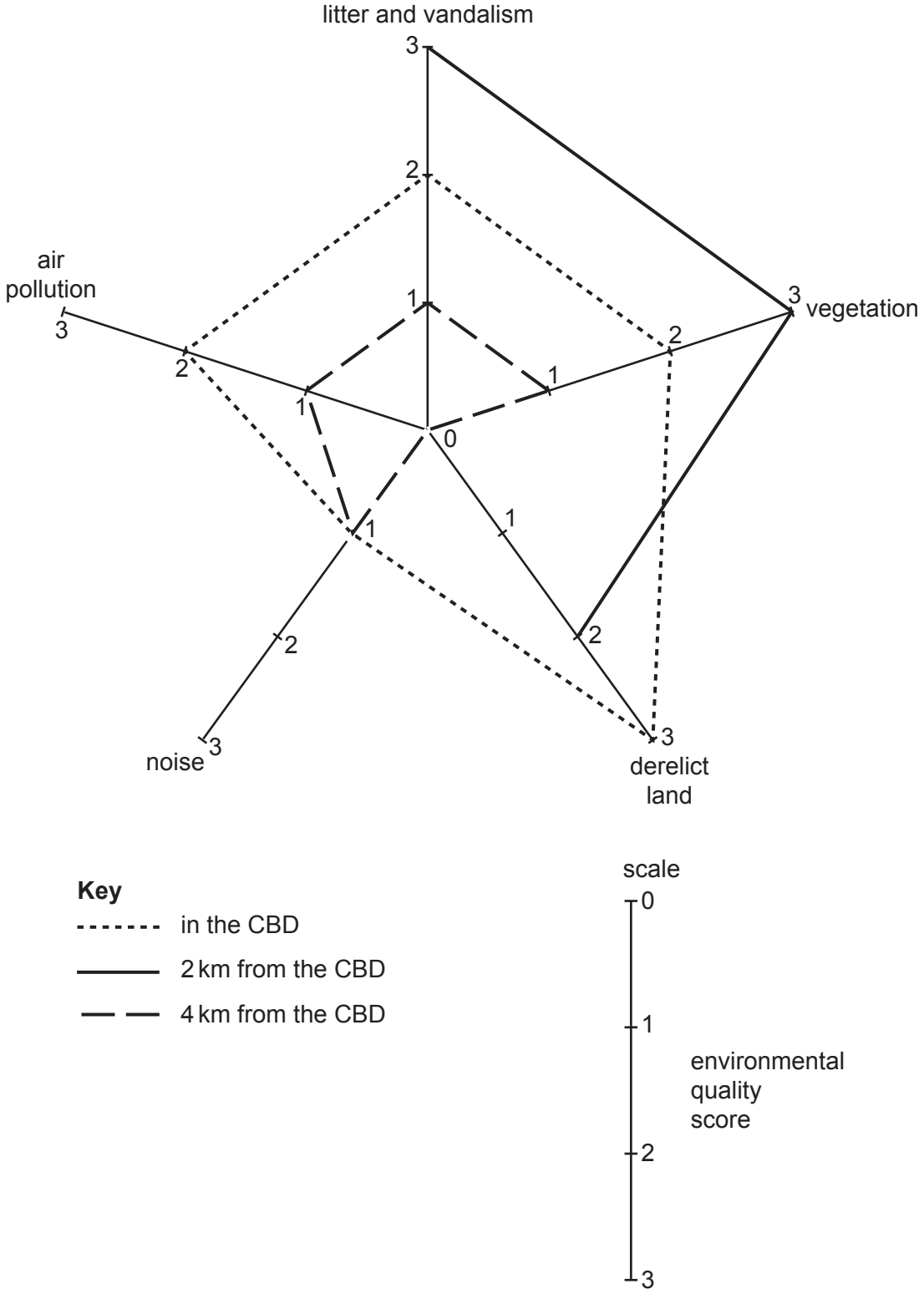


Fig. 1.4

(iii) The total scores of the students' environmental quality survey are shown in Table 1.3 (Insert).
What conclusion would the students make about **Hypothesis 2:** *The CBD has the best quality of environment in the city*? Support your decision with evidence of the total scores from Table 1.3 and the individual feature scores along the east transect from Fig. 1.4 and Table 1.2.

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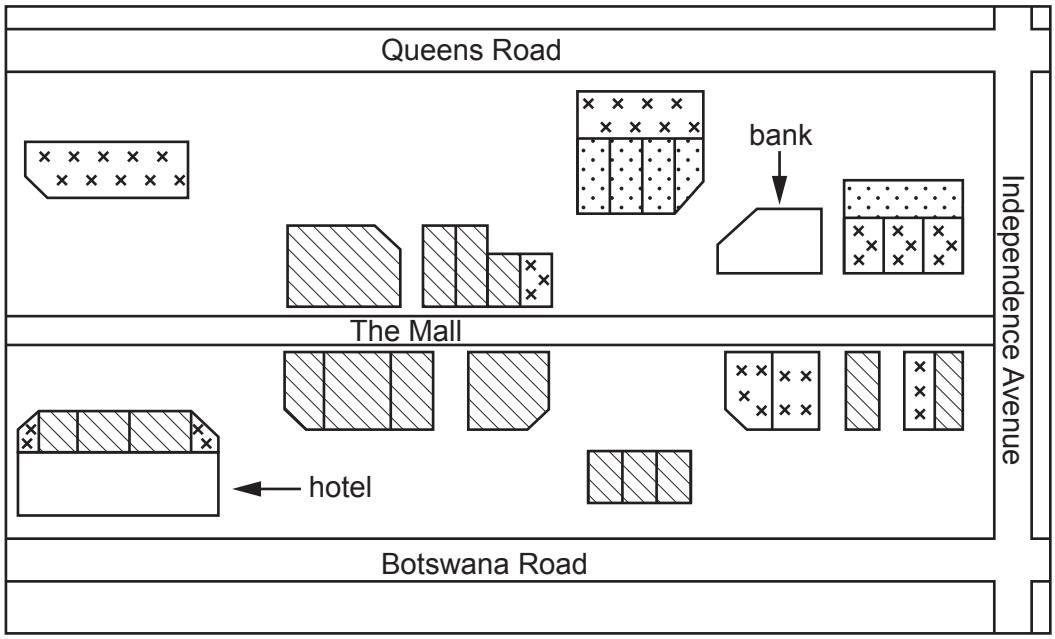
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(d) To extend their fieldwork some students produced a land use map of the CBD. Part of this map is shown in Fig. 1.5 below.

Sketch map of land use in part of the CBD



Key

commercial (shops and restaurants)

offices (including banks)

services (including hotels)

under construction, renovation or vacant

Fig. 1.5

(i) **Use the key to shade** the bank and hotel on Fig. 1.5. [2]

(ii) Suggest why the types of land use shown in Fig. 1.5 are located in the CBD of the city.

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..... [2]

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(iii) The students realised that one weakness of their map was that it only showed land use on the ground floor. Therefore they investigated the uses of the other storeys in two buildings. Their results are shown in Fig. 1.6 (Insert).
Use Fig. 1.6 to describe how these two buildings are different.

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(e) One way in which the CBD is different from other parts of a city is the number of pedestrians. Describe a fieldwork task to find out the number of pedestrians.

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[Total: 30]

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2 Students were doing fieldwork along a river near to their school. They chose seven sites to investigate how the river changes downstream.

The students investigated the following hypotheses:

Hypothesis 1: *The velocity becomes faster as distance downstream increases.*

Hypothesis 2: *The angle of slope of the river bed becomes less steep as distance downstream increases.*

(a) The students used two different methods to measure velocity. In method 1 they used a floating object and in method 2 they used a velocity meter (flowmeter). Fig. 2.1 (Insert) shows their teacher demonstrating how to use a velocity meter.

Describe the two methods the students used to measure velocity.

(i) Method 1: using a floating object

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(ii) Method 2: using a velocity meter (flowmeter)

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(b) The results of the two methods of measuring velocity are shown in Table 2.1 (Insert).

(i) Use these results to **plot the average velocity** measured by method 1 (using a floating object) at sites 6 and 7 in Fig. 2.2 below. [2]

Average velocity results obtained using the two methods

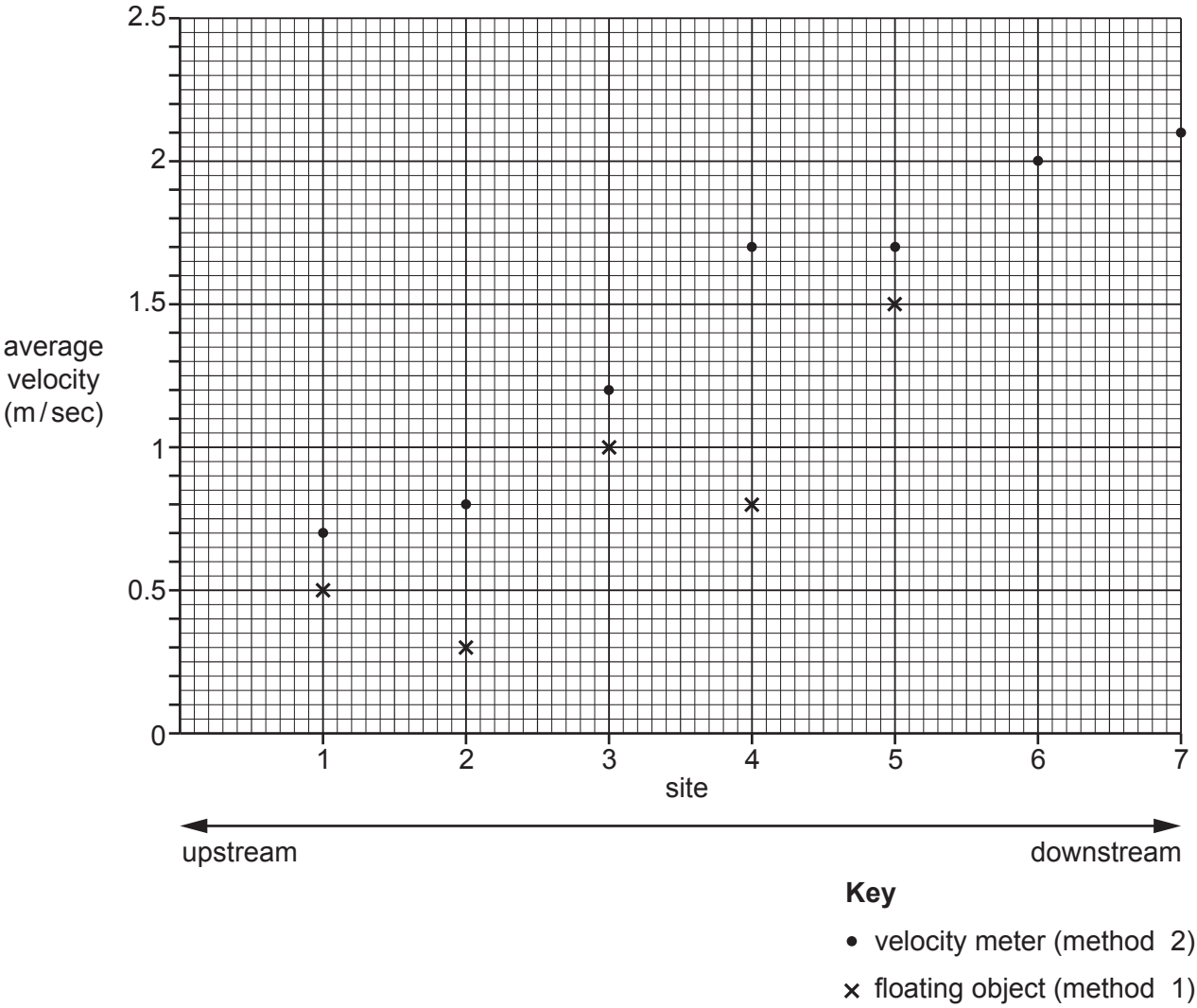


Fig. 2.2

(ii) Suggest **three** reasons why method 2 (using a velocity meter) may produce more reliable results than method 1 (using a floating object).

1 .....

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2 .....

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3 .....

..... [3]

(iii) What conclusion would the students make about **Hypothesis 1:** *The velocity becomes faster as distance downstream increases*? Support the conclusion with data evidence from **method 2 only** (using a velocity meter) in Fig. 2.2 and Table 2.1.

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..... [3]

(c) To test **Hypothesis 2:** *The angle of slope of the river bed becomes less steep as distance downstream increases*, the students measured the angle of slope of the river bed at the seven fieldwork sites.

(i) Describe how they would use the equipment shown in Fig. 2.3 (Insert) to measure the angle of slope.

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(ii) The students measured the angle of slope four times at each site. The results of their measurements are shown in Table 2.2 (Insert).
At which site is there the largest variation in measurements?

Site ..... [1]

(iii) Fig. 2.4 below shows a method chosen by one student to present the results in Table 2.2. Use this method **to show the average angle of slope at site 5** on Fig. 2.4. [1]

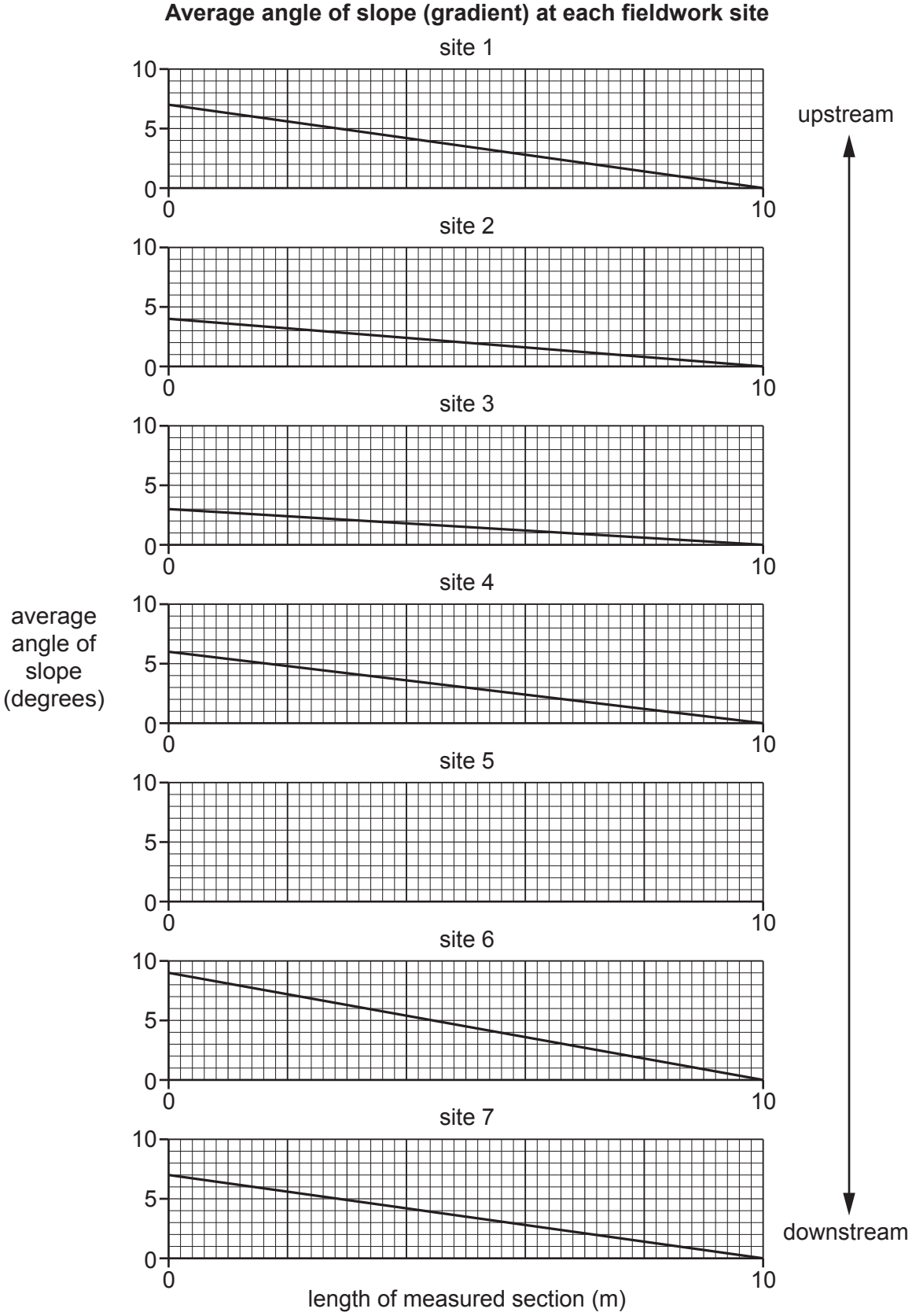


Fig. 2.4

(iv) What conclusion would the students make about **Hypothesis 2:** *The angle of slope of the river bed becomes less steep as distance downstream increases*? Support your answer with data from Fig. 2.4 and Table 2.2.

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(d) The students compared their average velocity results (using a velocity meter) and angle of slope measurements made at the seven sites by plotting them on a scatter graph. This is shown in Fig. 2.5 below.

Scatter graph

Method 2 (using a velocity meter to measure velocity)

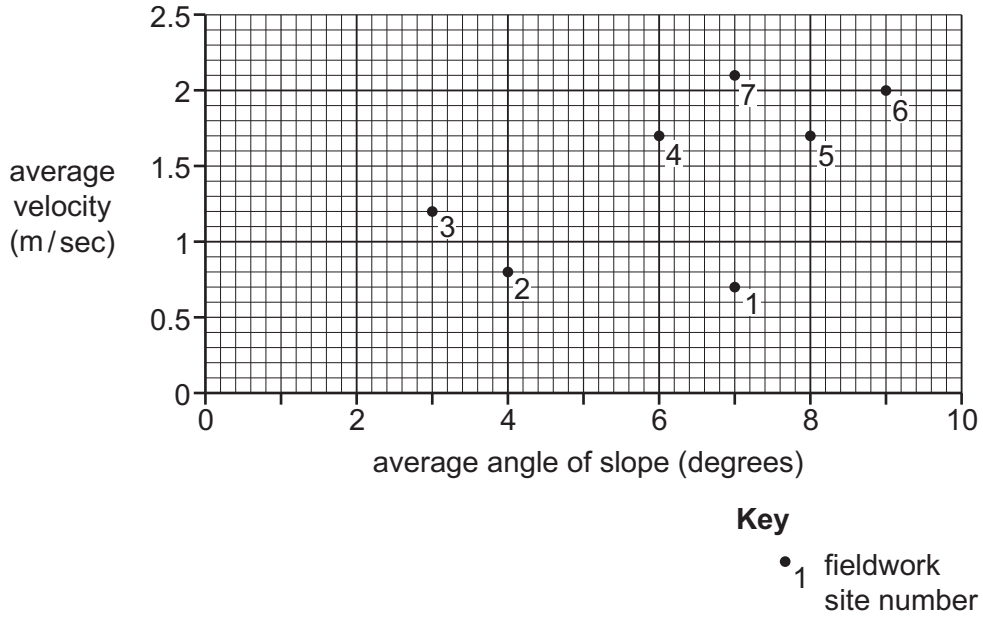


Fig. 2.5

What conclusions can be made about the relationship between the angle of slope and average velocity shown in Fig. 2.5? Do **not** use data in your answer.

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(e) Channel width also varies downstream. Describe a fieldwork method the students could use to investigate the hypothesis: *The river channel becomes wider downstream*.

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[Total: 30]

Additional Pages

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

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