



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

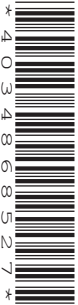
CANDIDATE  
NAME

CENTRE  
NUMBER

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**GEOGRAPHY**

**2217/23**

Paper 2

**May/June 2013**

**2 hours 15 minutes**

Candidates answer on the Question Paper.

- Additional Materials:     Ruler  
                                   Calculator  
                                   Protractor  
                                   Plain paper

1:50 000 Survey Map Extract is enclosed with this question paper.

**READ THESE INSTRUCTIONS FIRST**

Write your Centre number, candidate number and name in the spaces provided.  
Write in dark blue or black pen.  
You may use a soft pencil for any diagrams, graphs or rough working.  
Do not use staples, paper clips, highlighters, glue or correction fluid.  
**DO NOT WRITE ON ANY BARCODES.**

- Section A**  
Answer **all** questions.  
**Section B**  
Answer **one** question.

The Insert contains Photograph A for Question 4, Fig. 7 and Table 7 for Question 7 and Photographs B and C and Table 11 for Question 8.  
The Survey Map Extract and the Insert are **not** required by the Examiner.  
Sketch maps and diagrams should be drawn whenever they serve to illustrate an answer.

At the end of the examination, fasten all your work securely together.  
The number of marks is given in brackets [ ] at the end of each question or part question.

| For Examiner's Use |  |
|--------------------|--|
| <b>Section A</b>   |  |
| <b>Q1</b>          |  |
| <b>Q2</b>          |  |
| <b>Q3</b>          |  |
| <b>Q4</b>          |  |
| <b>Q5</b>          |  |
| <b>Q6</b>          |  |
| <b>Section B</b>   |  |
| <b>Q7</b>          |  |
| <b>Q8</b>          |  |
| <b>Total</b>       |  |

This document consists of **25** printed pages, **3** blank pages and **1** Insert.



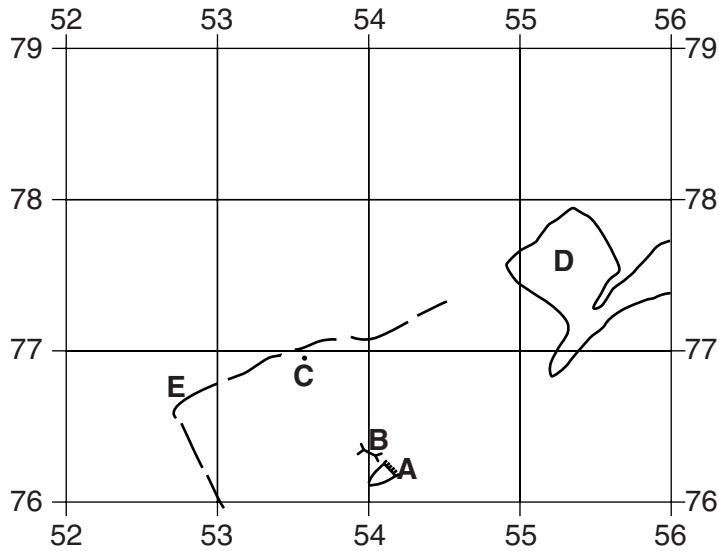
**Section A**

Answer **all** questions in this section.

For  
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1 The 1:50 000 map is of Mukore, Zimbabwe.

(a) Study the area of the map shown in Fig. 1.



**Fig. 1**

- (i) Identify the feature at **A**.  
..... [1]
- (ii) Identify the feature at **B**.  
..... [1]
- (iii) What is the height at spot height **C**?  
..... [1]
- (iv) What is the land use at **D**?  
..... [1]
- (v) What type of road is at **E**?  
..... [1]
- (vi) Draw on Fig. 1, the position of the main river. [1]



(d) Study the main river shown on the map.

(i) State the direction of flow of the main river. Give **one** piece of evidence to support your answer.

Direction of flow .....

Evidence .....

..... [2]

(ii) Describe the other features of the river.

.....

.....

.....

.....

.....

.....

.....

..... [4]

[Total: 20 marks]

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**TURN OVER FOR QUESTION 2**



(c) (i) State a year when Poland experienced a decrease in total population.

.....[1]

(ii) Poland and Germany are neighbouring countries. Suggest why the population of Poland may have decreased in the year you have chosen in (c)(i).

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

[Total: 8 marks]

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Use*

3 Study Fig. 3, which shows a coastal area.

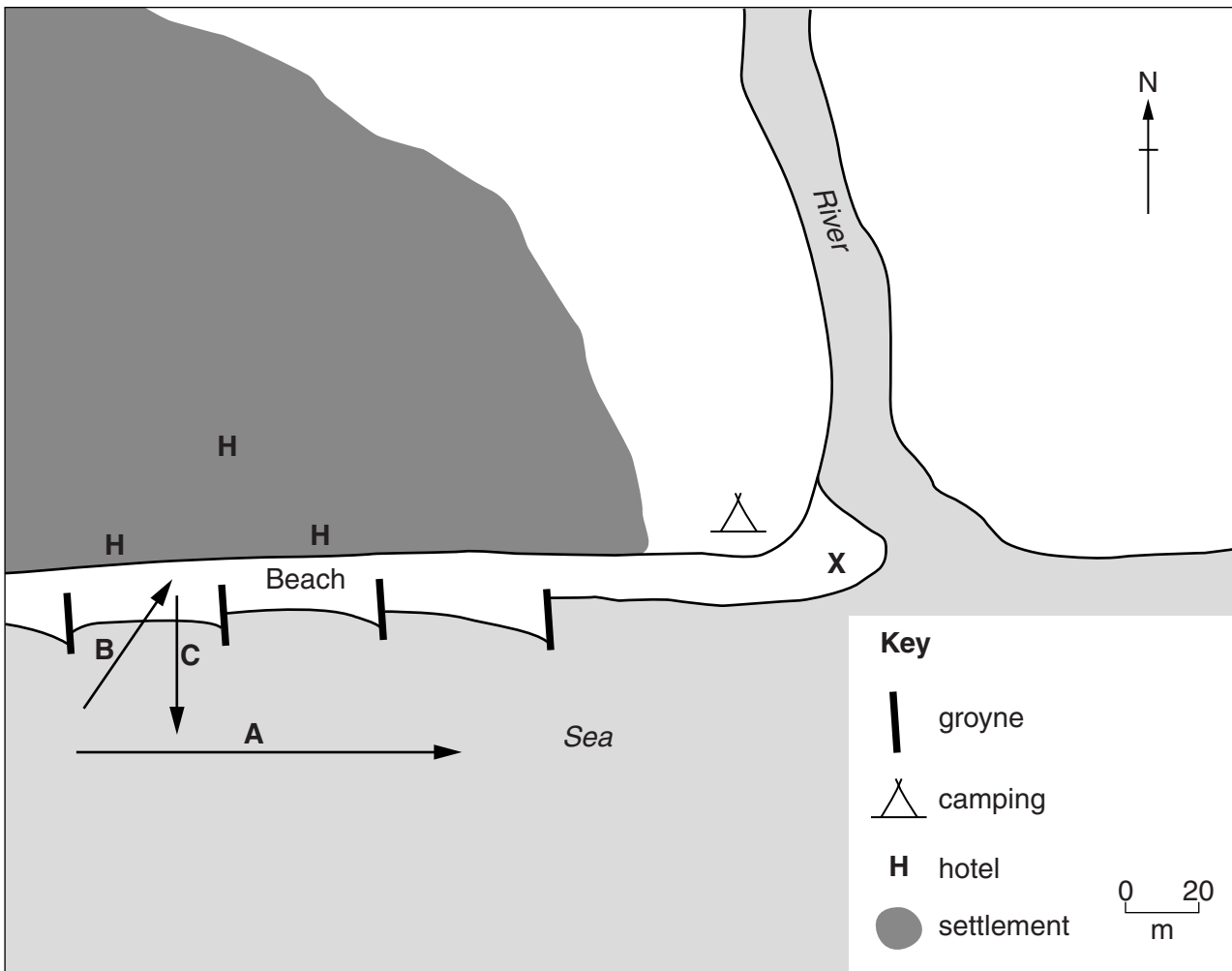


Fig. 3

(a) Match arrows A, B and C to the labels given below.

|                 |  |
|-----------------|--|
| swash           |  |
| backwash        |  |
| longshore drift |  |

[2]

(b) Suggest why people living in this area want to protect the beach from erosion.

.....

.....

.....

.....[3]





4 Study Photograph A (Insert), which shows a rural location in Zimbabwe.

(a) Describe the relief of the area shown in Photograph A.

.....  
.....  
.....  
.....  
.....  
..... [3]

(b) (i) Describe the vegetation of the area shown in Photograph A.

.....  
.....  
.....  
.....  
.....  
..... [3]

(ii) How has human activity affected the vegetation?

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

[Total: 8 marks]

5 Study Fig. 4, which shows the climate of Jeddah, Saudi Arabia.

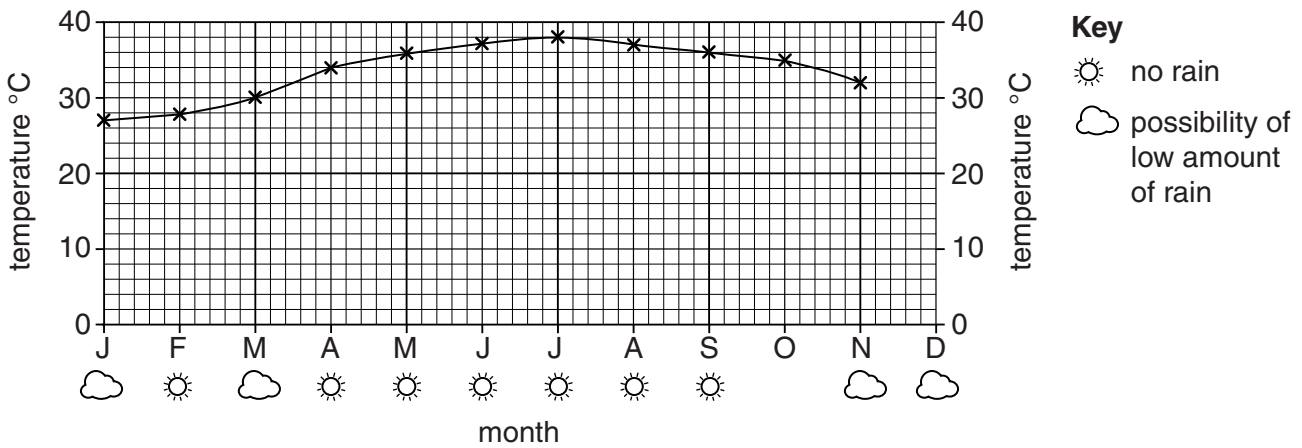


Fig. 4

(a) (i) Complete Fig. 4 to show:

- an average temperature of 29°C in December;
- no rain in October.

[2]

(ii) Jeddah is in the northern hemisphere. How can you tell this from the temperature graph in Fig. 4?

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

(b) Study Fig. 5, which shows demand for and supply of water in Saudi Arabia.

For  
Examiner's  
Use

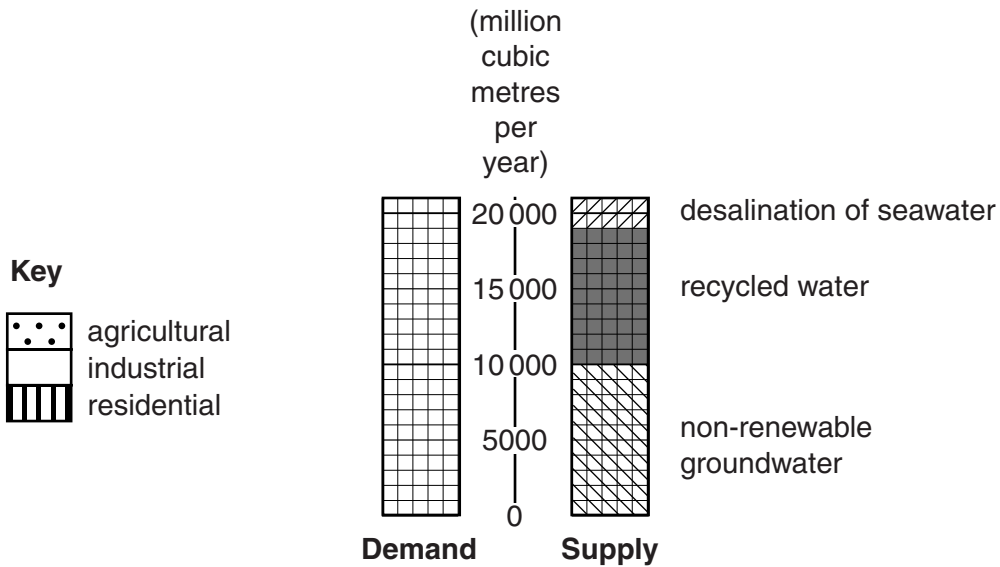


Fig. 5

(i) Use the data in Table 1 to complete Fig. 5. Use the key provided.

Table 1

| Type of Demand | Amount<br>(million cubic metres per year) |
|----------------|---|
| Agricultural   | 18 500                                    |
| Industrial     | 500                                       |
| Residential    | 2 000                                     |

[2]

(ii) How many million cubic metres per year come from recycled water?

.....[1]

(iii) Suggest why Saudi Arabia's groundwater supply is likely to run out.

.....

.....

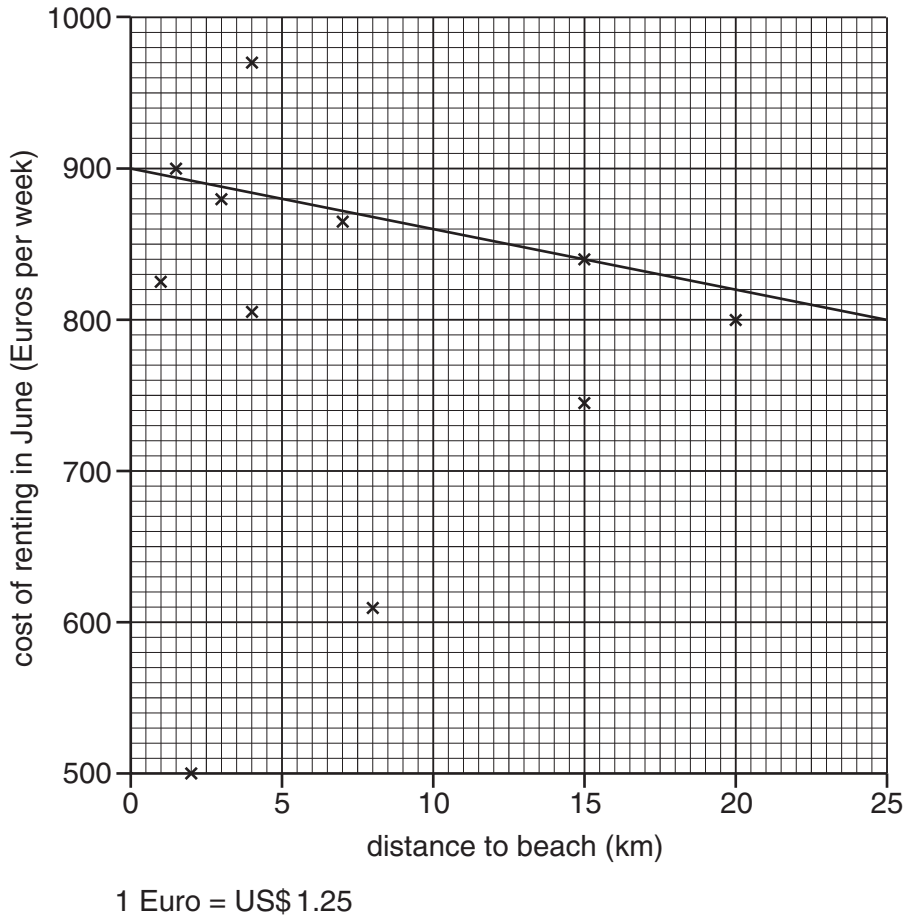
.....

.....[2]

[Total: 8 marks]

6 Study Fig. 6, which shows information about renting 2 bedroomed holiday apartments in northern Spain in June.

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**Fig. 6**

(a) (i) Name the type of graph used in Fig. 6.

..... [1]

(ii) A suggested line of best fit is shown on the graph. Does the line suggest a:

- positive relationship;
- negative relationship;
- no relationship?

Circle the correct answer. [1]

(iii) Do you agree with the position of the line of best fit? Give a reason for your answer.

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

(b) A property 3 km from the beach costs 820 Euros per week in June. Use this information to complete Fig. 6. [1]

(c) Study the climate data in Table 2.

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Use

**Table 2**

|                        | J  | F  | M  | A   | M  | J  | J  | A  | S  | O  | N   | D  |
|------------------------|----|----|----|-----|----|----|----|----|----|----|-----|----|
| Sunshine hours per day | 3  | 3  | 4  | 3   | 5  | 6  | 5  | 5  | 4  | 4  | 2   | 2  |
| Max temperature (°C)   | 12 | 13 | 15 | 16  | 19 | 22 | 25 | 25 | 24 | 20 | 16  | 13 |
| Days with rain         | 15 | 15 | 15 | 17  | 16 | 12 | 11 | 11 | 11 | 15 | 15  | 14 |
| Rainfall (mm)          | 80 | 80 | 65 | 100 | 50 | 40 | 60 | 75 | 60 | 95 | 160 | 80 |

(i) Suggest why June is a popular month for holidays in northern Spain.

.....  
 .....  
 .....  
 .....  
 .....  
 ..... [3]

(ii) In which month is holiday renting likely to be cheapest?  
 Circle the correct answer.

May                  July                  November

[1]

[Total: 8 marks]



(b) The results of the students' traffic survey at site 3 are shown in Table 3, below.

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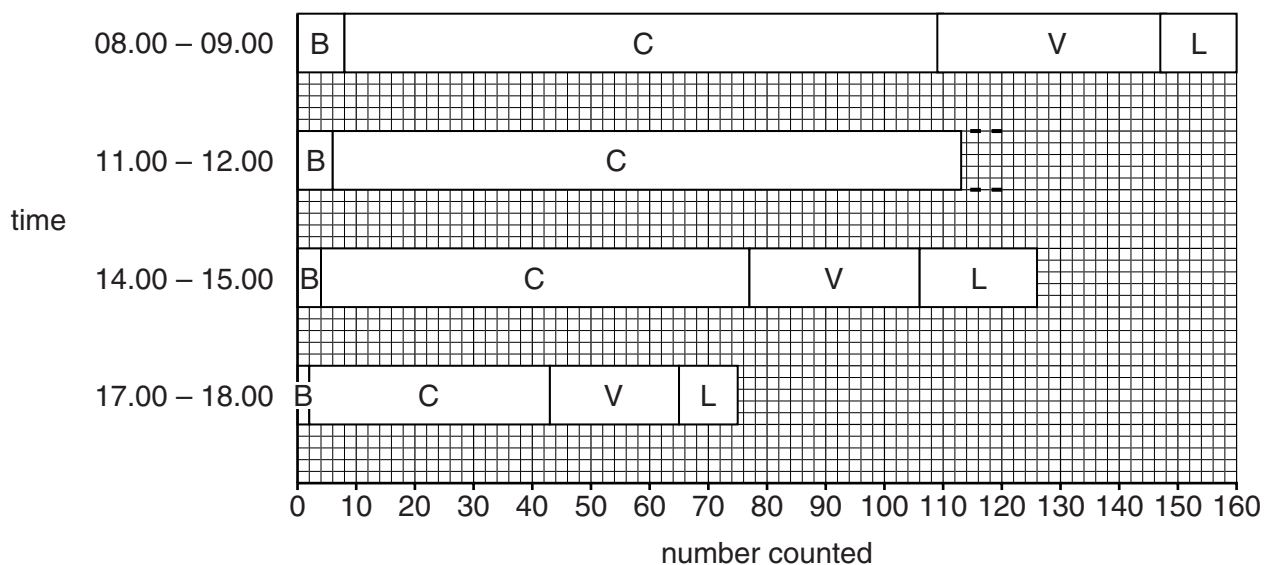
**Table 3**

**Traffic survey results for site 3**

| Time of survey | bikes / motor bikes | cars | vans / minibuses | lorries / buses | Total vehicles |
|----------------|---------------------|------|------------------|-----------------|----------------|
| 08.00 to 09.00 | 8                   | 101  | 38               | 13              | 160            |
| 11.00 to 12.00 | 6                   | 107  | 27               | 18              |                |
| 14.00 to 15.00 | 4                   | 73   | 29               | 20              | 126            |
| 17.00 to 18.00 | 2                   | 41   | 22               | 10              | 75             |

- (i) Complete Table 3 by calculating the total number of vehicles counted between 11.00 and 12.00. [1]
- (ii) Use the data in Table 3 to complete the divided bar graph for the traffic survey results between 11.00 and 12.00 on Fig. 8 below. [2]

**Results of student traffic survey**



**Key**

- B bikes/motorbikes
- C cars
- V vans/minibuses
- L lorries/buses

**Fig. 8**





- (c) To test **Hypothesis 2: Traffic congestion occurs at all sites going towards and away from the road junction** the students used their results to calculate an index of traffic flow for each site. The index is shown in Table 4 below.

**Table 4****Index of traffic flow**

| vehicle type      | number of points allocated* |
|-------------------|-----------------------------|
| bike / motor bike | 0.5                         |
| car               | 1.0                         |
| van / minibus     | 2.0                         |
| lorry / bus       | 3.0                         |

\*more points were allocated to vehicles causing more congestion

The results of using this index between 08.00 and 09.00 at site 3 are shown in Table 5 below.

**Table 5****Index of traffic flow for site 3 between 08.00 and 09.00**

| vehicle type       | bikes / motor bikes | cars       | vans / minibuses | lorries / buses |
|--------------------|---------------------|------------|------------------|-----------------|
| number counted     | 8                   | 101        | 38               | 13              |
| points             | 0.5                 | 1.0        | 2.0              | 3.0             |
| <b>Index score</b> | <b>4</b>            | <b>101</b> | <b>76</b>        | <b>39</b>       |

Total index score between 08.00 and 09.00 at site 3 = **220**

- (i) Calculate the index scores for site 3 between 11.00 and 12.00 in Table 6 below. [2]

**Table 6****Index score of traffic flow for site 3 between 11.00 and 12.00**

| vehicle type       | bikes / motor bikes | cars       | vans / minibuses | lorries / buses |
|--------------------|---------------------|------------|------------------|-----------------|
| number counted     | 6                   | 107        | 27               | 18              |
| points             | 0.5                 | 1.0        | 2.0              | 3.0             |
| <b>Index score</b> |                     | <b>107</b> | <b>54</b>        |                 |

Total index score between 11.00 and 12.00 at site 3 = **218**

(ii) The results of the index of traffic flow for all 8 survey sites are shown in Table 7 (Insert).

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The students decided to show their results in a line graph, Fig. 9 below. Use the data in Table 7 to complete the line for site 1. [2]

Index of traffic flow at survey sites

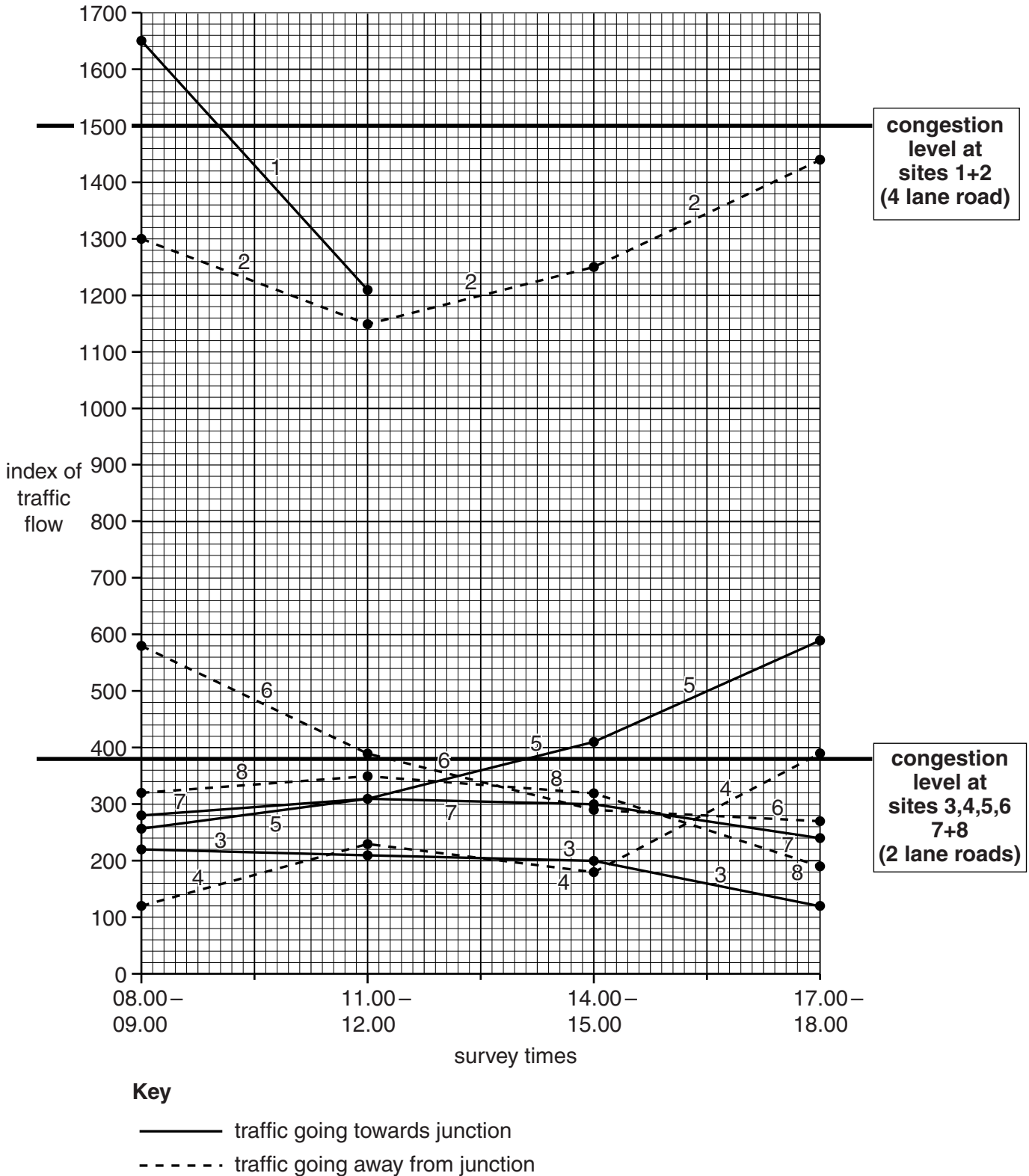


Fig. 9



- 8 Two groups of students were investigating the characteristics of a local river which flowed for 15 km from its source to the sea. They wanted to investigate possible reasons for changes in velocity (speed of flow) downstream. They carried out their fieldwork at five sites along the course of the river.

They decided to test the following hypotheses:

**Hypothesis 1:** *Velocity increases as the river bed slopes more steeply.*

**Hypothesis 2:** *Velocity increases as the wetted perimeter of the river channel increases.*

- (a) Before they began the fieldwork their teacher spoke to them about safety in and around the river. Suggest **two** pieces of advice their teacher could have given them.

1 .....

.....

2 .....

..... [2]

- (b) First the students used a floating object to measure velocity over a distance of 10 metres. The results from Group A at site 1 are shown in Fig. 10 below.

**River recording sheet**

|   |            |
|---|------------|
| Study site: 1                                   | Group A    |
| Measuring velocity                              |            |
| Time for a floating object to travel 10 metres: |            |
| Test 1  | 48 seconds |
| Test 2  | 71 seconds |
| Test 3  | 59 seconds |
| Test 4  | 61 seconds |
| Test 5  | 43 seconds |

**Fig. 10**

- (i) Name **three** different pieces of equipment the group would use to carry out their fieldwork at this site.

1 .....

2 .....

3 ..... [3]



- (iv) At each site the students also measured the downstream slope (gradient) of the river bed using a clinometer and ranging poles. Photograph B (Insert) shows the measurement being taken.

Describe how the students measured the downstream slope.

.....

.....

.....

.....

.....

.....

..... [3]

- (v) The downstream slope and average velocity results which group B obtained at the five sampling sites are shown in Table 9 below.

**Table 9**  
**Results of group B**

| site           | gradient (degrees) | average velocity (m/s) |
|----------------|--------------------|------------------------|
| nearest source |                    |                        |
| 1              | 8                  | 0.29                   |
| 2              | 6                  | 0.43                   |
| 3              | 5                  | 0.37                   |
| 4              | 3                  | 0.46                   |
| 5              |                    |                        |
| nearest mouth  | 1                  | 0.47                   |

What conclusion would the students have made about **Hypothesis 1: Velocity increases as the river bed slopes more steeply?**

Use evidence from Table 9 to support the conclusion.

.....

.....

.....

.....

.....

.....

..... [3]

(c) To investigate **Hypothesis 2: Velocity increases as the wetted perimeter of the river channel increases** the students needed to measure the width of the river channel and the depth of the river at each site.

(i) Complete Fig. 11 below to identify the **two** different pieces of equipment used to measure the width of the river. [2]

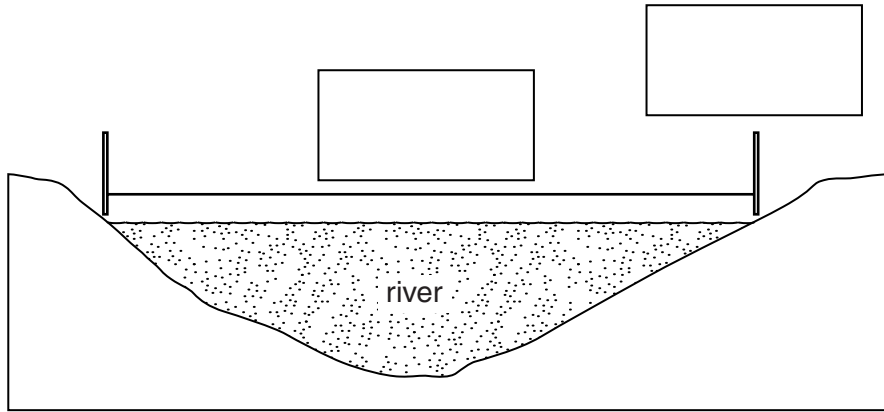


Fig. 11

(ii) The students measured the depth of the river every 0.5 m across the channel. Their results for site 1 are shown in Table 10, below.

**Table 10**  
**Results for site 1**

|                             |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|
| Distance across channel (m) | 0.5  | 1.0  | 1.5  | 2.0  | 2.5  | 3.0  |
| Depth of river (m)          | 0.18 | 0.20 | 0.25 | 0.40 | 0.30 | 0.20 |

Use these results to complete Fig. 12 below, the cross-section of the channel at site 1. [2]

**Cross-section of channel at site 1**

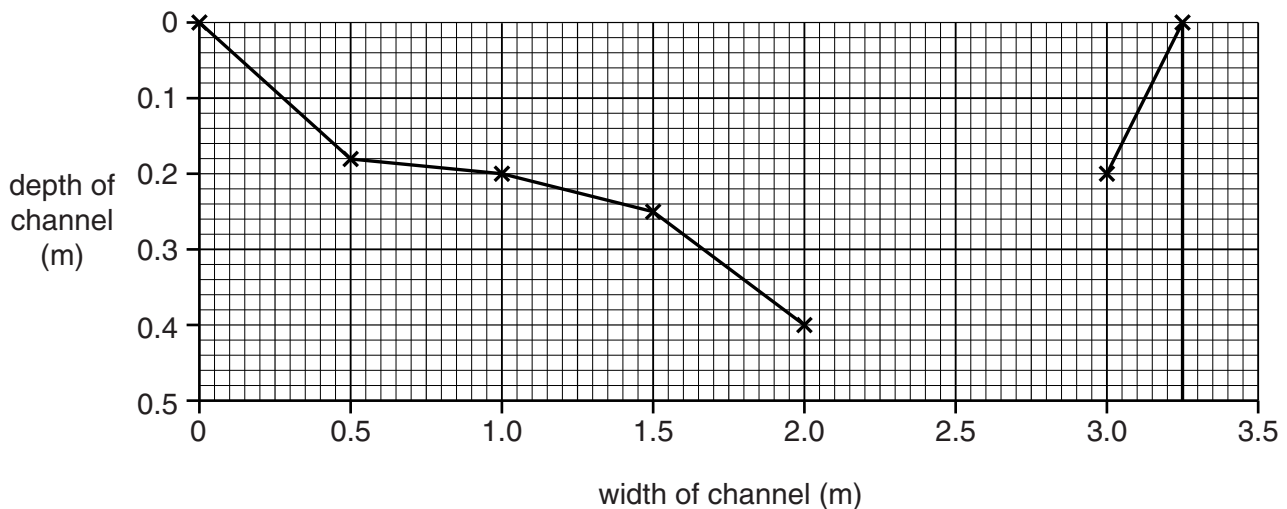


Fig. 12



- (iii) Photograph C (Insert) shows how students measured the wetted perimeter of a river. The wetted perimeter is the part of the channel cross-section which the river touches.

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Their method is described in Fig. 13, below, which is part of a student's fieldwork notebook.

**Extract from fieldwork notebook**

Measuring the wetted perimeter

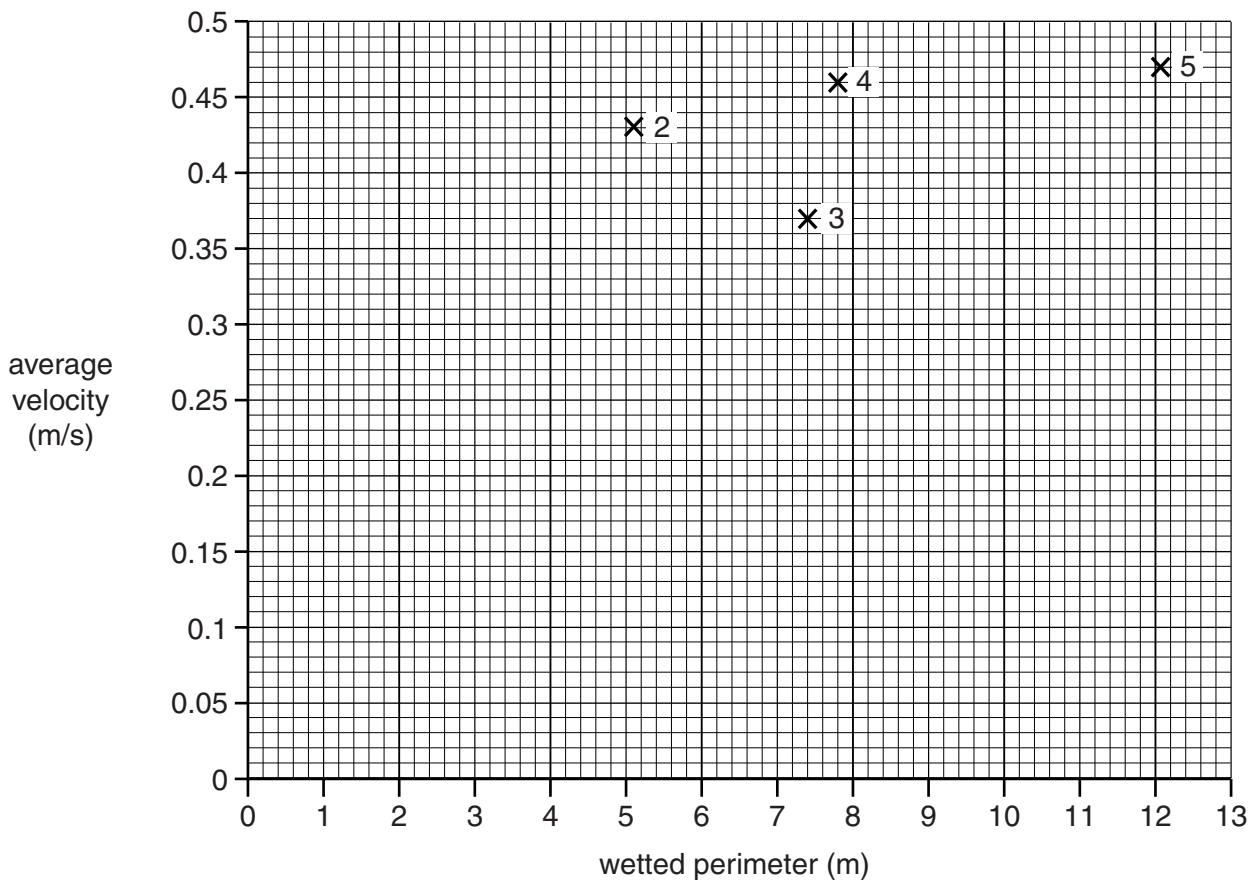
The tape measure was placed along the bed of the river, starting and finishing at water level on both banks.

To make the method more accurate a student walked along it to cross the river.

**Fig. 13**

The students' results are shown in Table 11 (Insert). Use these results to complete Fig. 14 below by plotting the result for site 1. [1]

**Scatter graph of length of wetted perimeter and average velocity**



**Fig. 14**

(iv) Do their results support **Hypothesis 2: Velocity increases as the wetted perimeter of the river channel increases?** Support your conclusion with evidence from Table 11 and Fig. 14.

.....  
.....  
.....  
.....  
.....  
.....  
.....[3]

(v) Suggest **two** disadvantages of their method for measuring the wetted perimeter in a large river.

1 .....

.....

2 .....

.....[2]

(d) To extend their fieldwork the students investigated the impact of people on the river. State **one** impact people may have on a river. Describe how the impact could be investigated.

Impact of people

.....  
.....

Investigation

.....  
.....  
.....  
.....  
.....  
.....  
.....[4]

[Total: 30 marks]



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