



Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE
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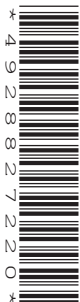
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GEOGRAPHY

0460/42

Paper 4 Alternative to Coursework

October/November 2015

1 hour 30 minutes

Candidates answer on the Question Paper.

Additional Materials: Ruler
 Calculator

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 an HB pencil for any diagrams or graphs.

Do not use staples, paper clips, glue or correction fluid.

DO NOT WRITE IN ANY BARCODES.

Write your answer to each question in the space provided.

If additional space is required, you should use the lined pages at the end of this booklet. The question number(s) must be clearly shown.

Answer **all** questions.

The Insert contains Figs 1, 4 and 5, Photograph A and Table 1 for Question 1, and Table 2 and Figs 8, 10 and 11 for Question 2.

The Insert is **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.

The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **17** printed pages, **3** blank pages and **1** Insert.

- 1 Students at Princeton University in the USA investigated temperature differences around the campus. One group studied the effect of buildings on temperature and tested the following hypotheses.

Hypothesis 1: *Temperature will be highest next to buildings.*

Hypothesis 2: *Temperature will be higher on the south side of a building (the side facing the sun).*

Fig. 1 (Insert) shows a sketch map of the study area. The students decided to measure temperatures near to two buildings at six times of the day during one day in July (summer).

- (a) To measure temperature they used a digital thermometer. This is shown in Photograph A (Insert).

- (i) Give **three** advantages of the digital thermometer over a maximum-minimum thermometer.

1

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2

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3

..... [3]

- (ii) How could the students check that their temperature readings were accurate?

.....

.....

.....

..... [2]

- (b) The results of the students' measurements are shown in Table 1 (Insert).

- (i) What was the highest temperature recorded on the north facing side of the Guyot building?

..... °C [1]

- (ii) At what distance from the Guyot building was the largest variation in temperature?

..... metres (m) [1]

(iii) Use the results in Table 1 to complete Fig. 2B on page 4.

[2]

Guyot building temperatures

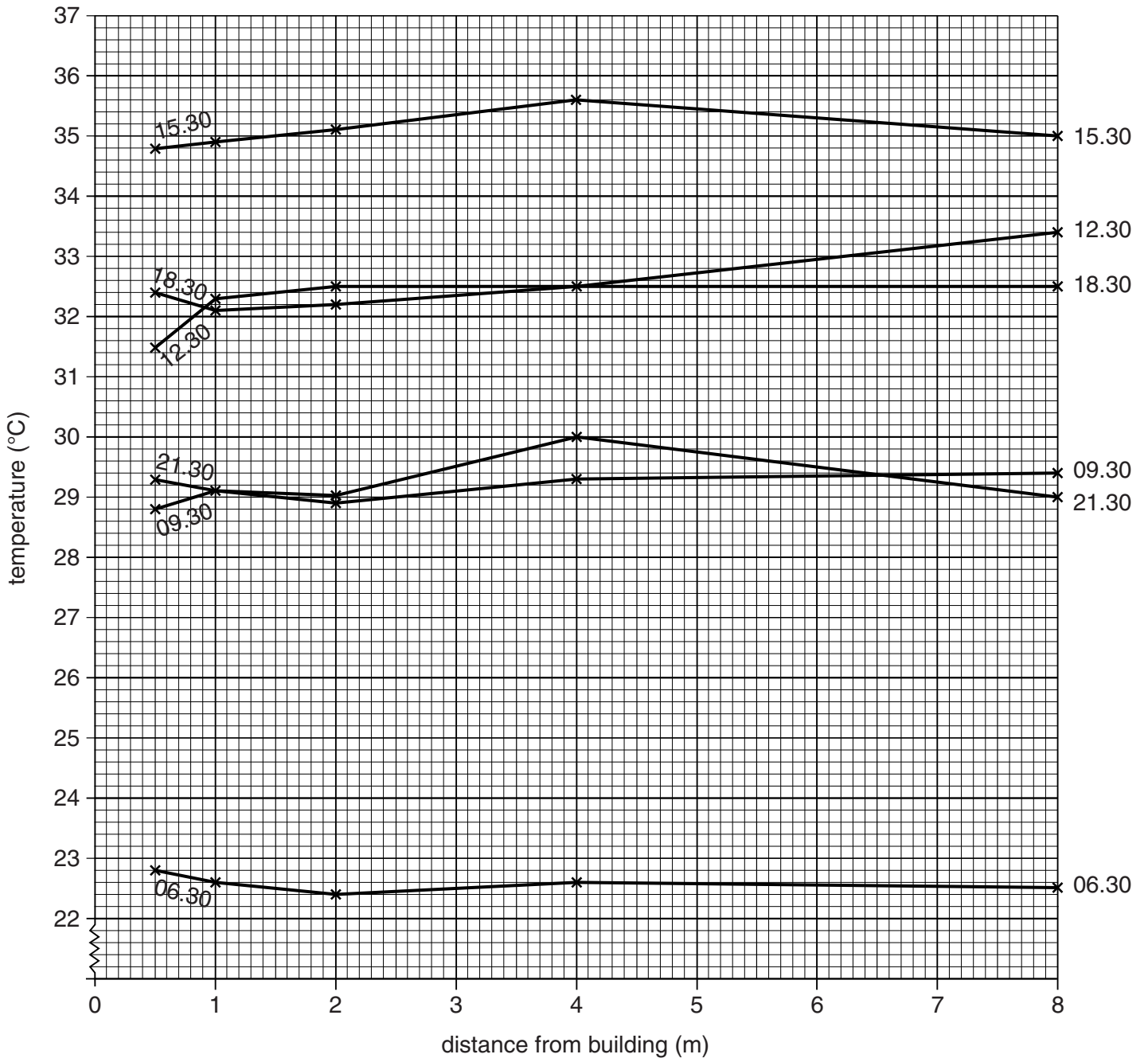


Fig. 2A

Eno building temperatures

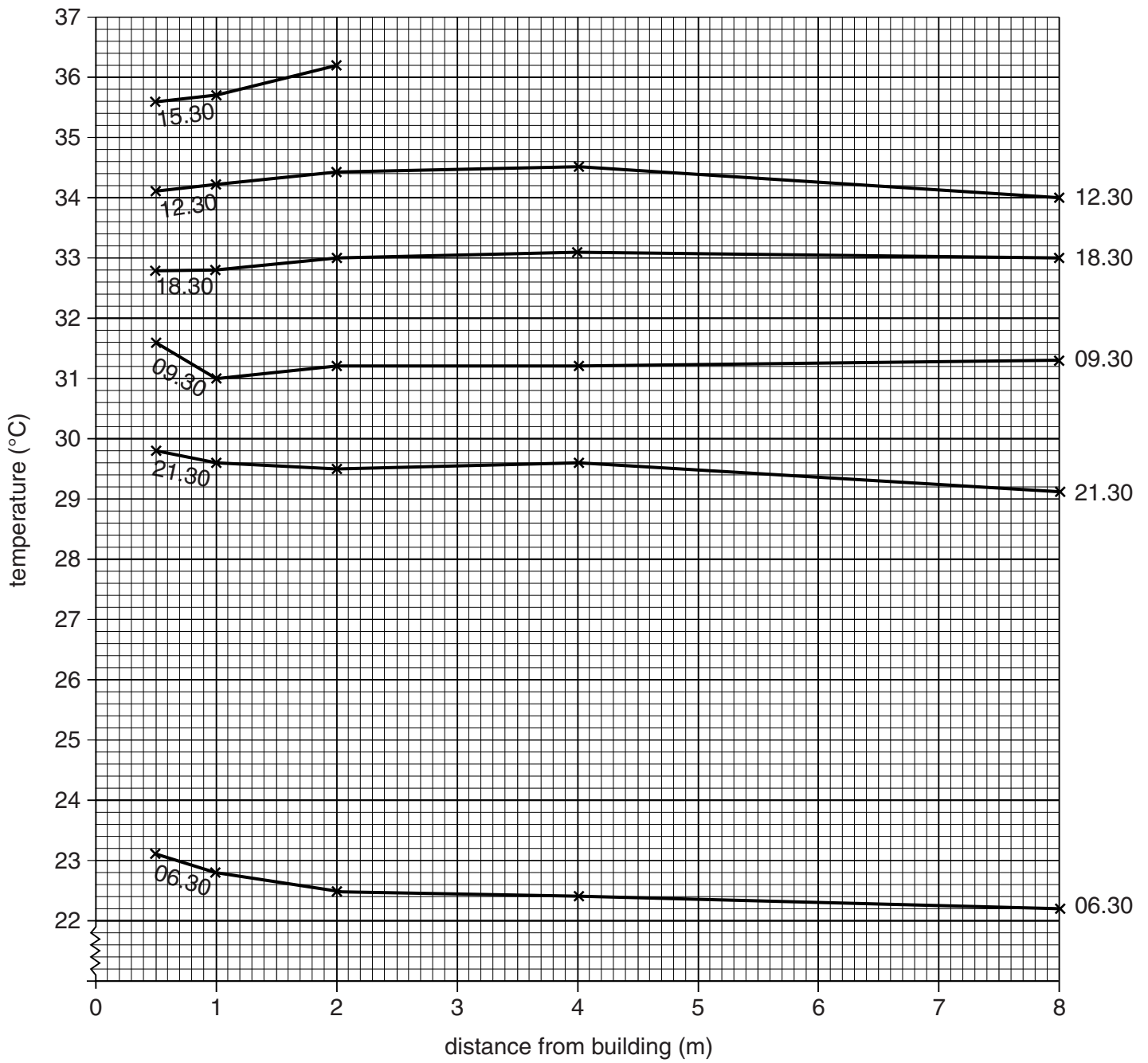


Fig. 2B

- (iv) At which location do the temperature measurements better support **Hypothesis 1: Temperature will be highest next to buildings?**

Circle your chosen location below.

- The Guyot building
- The Eno building

Support your choice with evidence from Table 1 and Figs 2A and 2B.

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

- (v) Suggest why temperatures may be higher nearer to a building.

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

- (vi) One student noticed that a tree was partially shading one measuring site near the Eno building. Look again at Table 1 and circle below the measuring site where the tree was located.

Distance of sites from the Eno building:

- 0.5m 1.0m 2.0m 4.0m 8.0m [1]

- (c) To investigate **Hypothesis 2: Temperature will be higher on the south side of a building (the side facing the sun)**, the students calculated the average temperature at each time of day at the two locations. These are shown in Table 1 (Insert).

- (i) Calculate the average temperature at 12.30 at the Eno building and write your answer on the line below.

..... °C [1]

(ii) Plot the average temperature calculated in c(i) on Fig. 3 below.

[1]

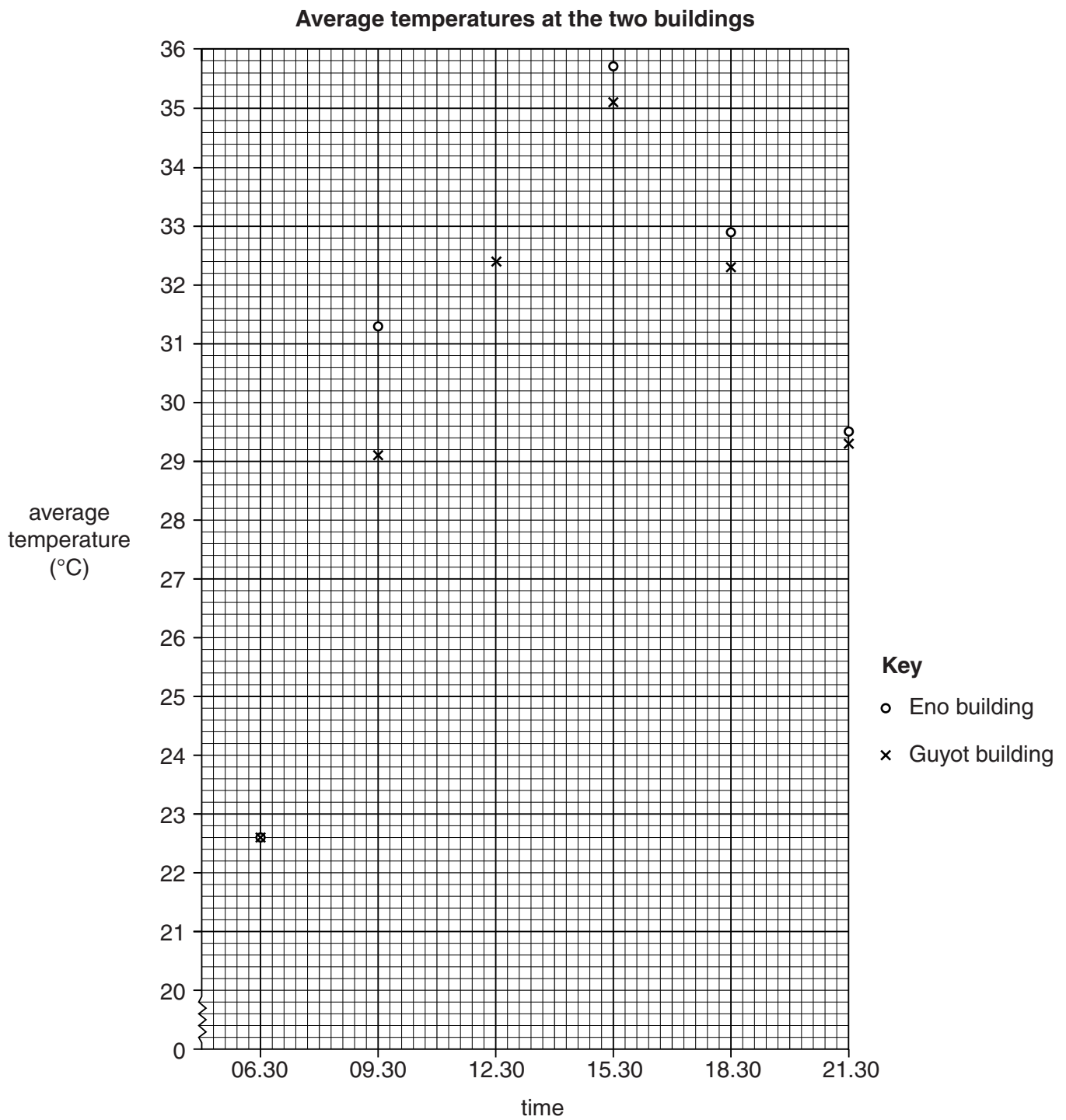


Fig. 3

(iii) The students decided that **Hypothesis 2: *Temperature will be higher on the south side of a building (the side facing the sun)*** was true. Support their conclusion with evidence from Fig. 3 and Table 1.

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

(iv) Look again at Table 1 (Insert).

Why is there a difference in temperature between the two buildings at 09.30?

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

(v) Suggest **one** other factor that could cause temperature variation in a small area.

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

(vi) The students discussed how they could improve their investigation to make it more reliable. Suggest **two** ways to improve the reliability of their investigation.

1
.....
2
..... [2]

(d) Another feature of weather which may vary over a small area is relative humidity.

(i) Which **one** of the following is the correct definition of relative humidity?

Tick your answer in the box below.

[1]

Definition	Tick (✓)
The amount of water vapour held in the air during the day.	
The amount of moisture in the air as a percentage of the total moisture it could hold at that temperature.	
The minimum amount of water vapour in the air when it is warmed up.	
The percentage of moisture in the air after heavy rainfall.	

(ii) Relative humidity is calculated by using a wet and dry bulb thermometer (hygrometer). This is shown in Fig. 4 (Insert). Explain why the two thermometers show different temperatures.

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..... [4]

(iii) Read the temperature of the wet bulb thermometer shown in Fig. 4 and use the relative humidity table shown in Fig. 5 (Insert) to calculate the relative humidity of the example shown.

Dry bulb temperature = 24 °C

Wet bulb temperature = °C

Temperature difference = °C

Relative Humidity = %

[2]

[Total: 30 marks]

- 2 Students who lived on a Mediterranean island in Europe were studying tourism. They decided to compare two local places to see why tourists came to visit. Badesi is a popular beach resort with hotels and apartments. Valledoria is a natural beach without hotels and apartments.

The students tested the following hypotheses:

Hypothesis 1: *More tourists visit Badesi than Valledoria because it is more attractive.*

Hypothesis 2: *The main reason for tourists visiting Badesi and Valledoria varies in importance.*

- (a) To test whether more tourists visit Badesi than Valledoria the students did a visitor count near the beach at both places.

Visitor count

Location	Time	Day	Month
Badesi	09.30 – 09.45	Sunday	January (winter)
Valledoria	12.30 – 12.45	Monday	July (summer)
	16.30 – 16.45		

Tally chart of number of visitors

Fig. 6

- (i) Complete Fig. 6, which is an example of a recording sheet, to show the information below. The location has been done for you.

Location	Valledoria
Time	09.30 – 09.45
Day	Monday
Month (Season)	July (summer)
Number of visitors	27

[2]

(ii) Give **three** instructions the students would have been given by their teacher to make the visitor count accurate.

1

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2

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..... [3]

(iii) Explain why the students did the visitor count on Sunday and Monday.

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..... [2]

(iv) Explain how and why their results might have been different if they had done this visitor count in January (winter).

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..... [2]

(v) Table 2 (Insert) shows the results of the visitor counts. Use these results to complete Fig. 7B, below. [2]

Results of visitor counts

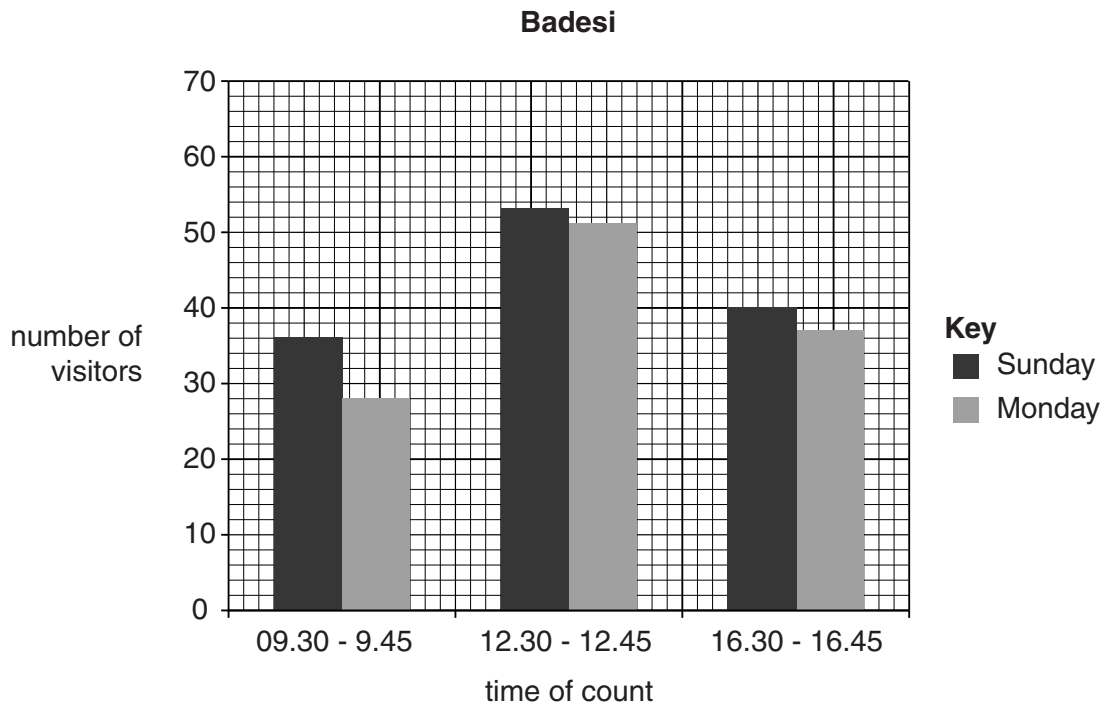


Fig. 7A

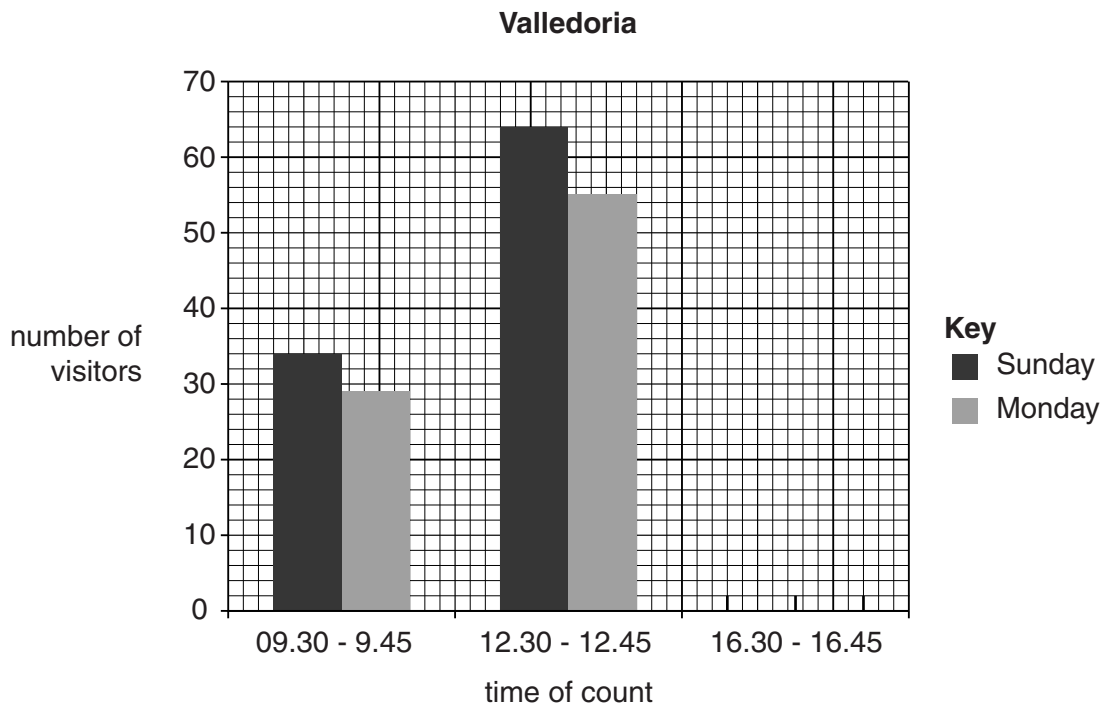


Fig. 7B

(b) To compare the attractiveness of the two locations the students produced a bi-polar scoring index. Fig. 8 (Insert) shows their scoring sheet.

(i) How might the following difficulties of using the bi-polar scoring sheet be overcome?

The scoring is subjective and scores may vary between students.

.....

The score may vary at different times.

.....
 [2]

(ii) The results of the bi-polar survey are shown in Table 3, below. Complete Table 3 by calculating the total score for Valledoria. [1]

Table 3
Results of bi-polar survey

	Badesi	Valledoria
Beach material	+2	-1
Beach width	+2	+1
Wildlife	-2	+1
Visitor access	+2	0
Car parking	-2	+2
Litter on beach	0	+1
Protection against sea	+1	-1
Beach facilities	+2	-2
View behind beach	-2	+2
Noise	-1	+1
Total	+2	

(iii) Use Table 3 to complete Fig. 9 below for Valledoria

[2]

Bi-polar graph

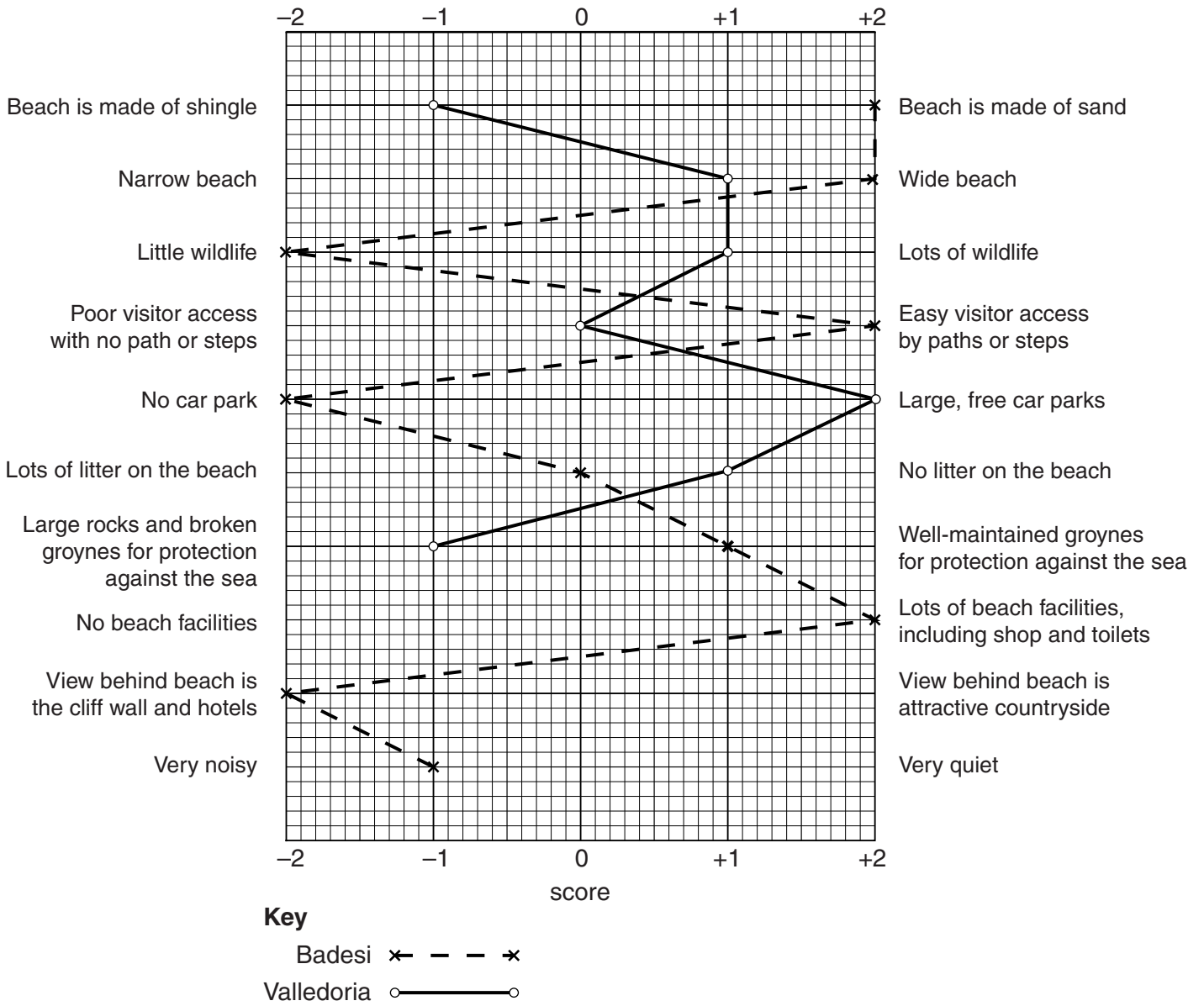


Fig. 9

- (iv) When the students studied the results of the pedestrian count and the bi-polar survey they reached the conclusion that the results did **not** support **Hypothesis 1: More tourists visit Badesi than Valledoria because it is more attractive**. Support their conclusion with data from Figs 7A and 7B and Tables 2 and Table 3.

Number of visitors

.....

Attractiveness of the location

..... [2]

- (c) To investigate **Hypothesis 2: The main reason for tourists visiting Badesi and Valledoria varies in importance**, the students used a questionnaire with tourists at both locations. The questionnaire is shown in Fig. 10 (Insert).

- (i) The results of Question 2 in the survey are shown in Fig. 11 (Insert).

Use the information in Fig. 11 to complete Table 4 for Valledoria below. [2]

Table 4

Main reasons why tourists visited the two locations

Rank order	Main Reason for visiting Badesi	Percentage of visitors
1	Sunbathing on the beach	23
2	Eating in a restaurant	20
3	Shopping	17
4	Swimming	12
5	Fishing	10
6=	Sailing	8
6=	Windsurfing	8
8	Cycling	2
9	Looking at the scenery	0
9=	Walking	0

Rank order	Main reason for visiting Valledoria	Percentage of visitors
1	Windsurfing	22
2		20
3		17
4		14
5	Fishing	12
6	Swimming	8
7	Cycling	4
8	Sunbathing on the beach	3
9	Eating in a restaurant	0
9=	Shopping	0

(ii) What conclusion would the students make about **Hypothesis 2: *The main reason for tourists visiting Badesi and Valledoria varies in importance?*** Use evidence from Fig. 11 and Table 4 to support your answer.

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..... [4]

(iii) How could the students use the information which they collected on age and gender of visitors to make their conclusion more detailed?

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..... [1]

(iv) The students only asked visitors for the main reason for their visit. Why might this be a weakness of their survey?

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

(d) To extend their fieldwork the students decided to investigate more hypotheses about tourism.

Suggest **two** questions which the students could have added to their questionnaire on tourism shown in Fig. 10 (Insert). Give a different reason why they might add each question.

Question 1

Reason

Question 2

Reason

..... [4]

[Total: 30 marks]

Additional Pages

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

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