Candidate Name	Centre Number	Candidate Number

WELSH JOINT EDUCATION COMMITTEE
General Certificate of Education
Advanced Subsidiary/Advanced

CYD-BWYLLGOR ADDYSG CYMRU
Tystysgrif Addysg Gyffredinol
Uwch Gyfrannol/Uwch

443/01

GEOGRAPHY – UNIT GG3 a

INVESTIGATIVE GEOGRAPHY

A. PHYSICAL GEOGRAPHY INVESTIGATION
B. HUMAN GEOGRAPHY INVESTIGATION

P.M. WEDNESDAY, 18 January 2006

(1½ hours)

For Examiner's use only	
Section A	
Section B	
Total	

ADDITIONAL MATERIALS

In addition to this examination paper, you will need a calculator.

INSTRUCTIONS TO CANDIDATES

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** questions in the spaces provided.

Your answers should be confined to the lined spaces provided. The lined sheets at the back of the book may only be used if you have made substantial deletions in your answers.

INFORMATION FOR CANDIDATES

You are reminded that marking will take into account the quality of communication used in your answers.

The number of marks is given in brackets at the end of each question or part-question.

No certificate will be awarded to a candidate detected in any unfair practice during the examination.

SECTION A. PHYSICAL GEOGRAPHY INVESTIGATION

A study of micro-climate within a valley in an upland area of Wales.

A group of four students wanted to investigate how micro-climate, specifically temperature, varied across a deep valley. In particular, they wanted to see if woodland could have an influence on temperature within this valley. The Ordnance Survey extract, **Map 1**, shows the area chosen by the students for their study. Their transect line is marked on the map as a broken line from **A** to **B**. Two students worked on each valley side. They were aware that temperature usually decreases as height increases.

Map 1, opposite, shows the main features of the study area.

1. *(a)* Using evidence from the map, state **two** reasons why the students thought that there would be temperature variations across this valley. [2]

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2. .....

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(b) Explain why two students were needed on each valley side in order to collect valid temperature readings across the complete transect from **A** to **B**. [2]

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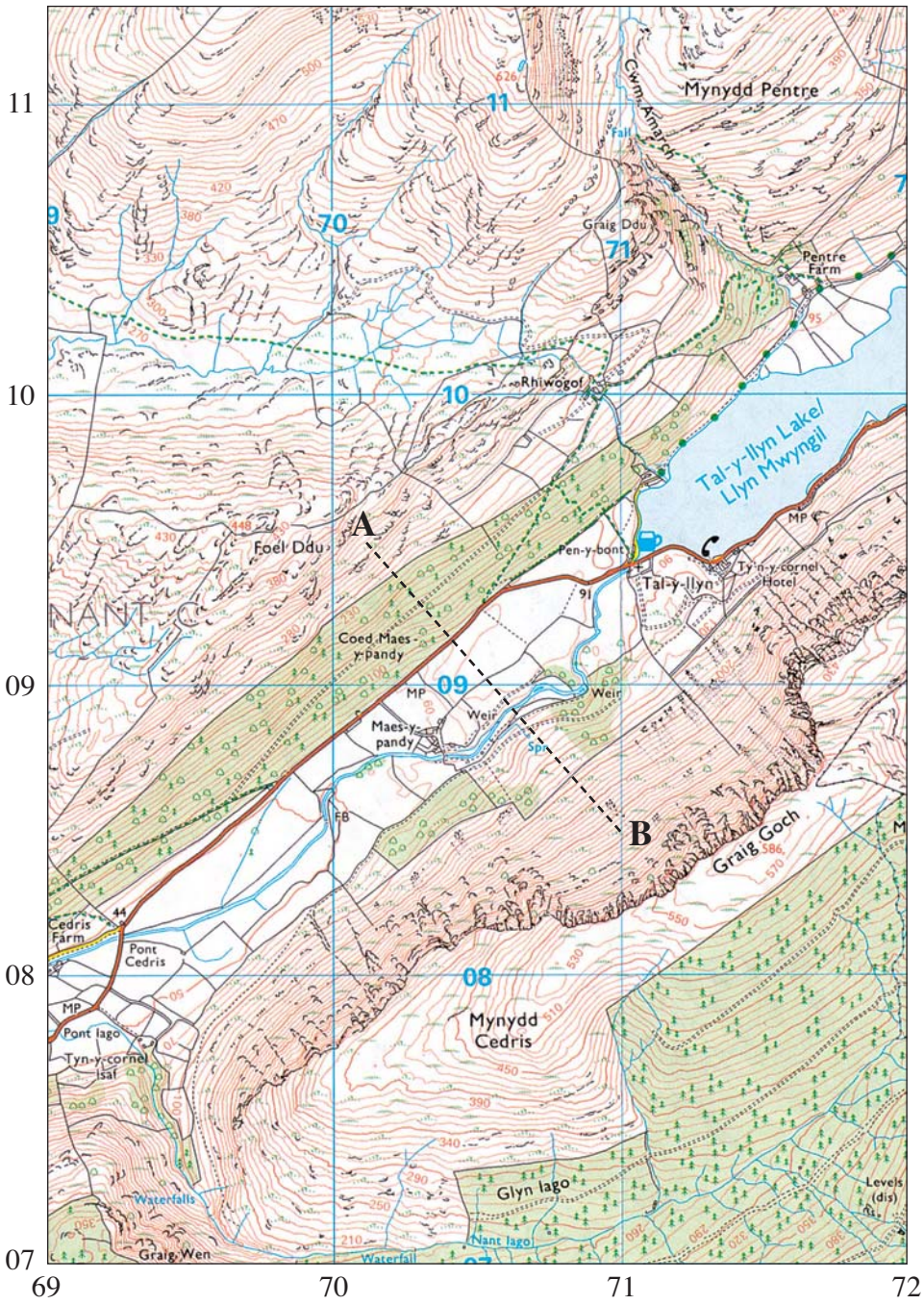
The Study Area



Map 1

Turn over.

2. The students decided to record the temperature at twelve locations from top to bottom on each slope. They used portable electronic thermometers that were able to measure in tenths of a degree Celsius. The information was collected on a sunny morning in spring.

(a) Because the students were using more than one thermometer, what should they have done before starting to record the temperatures? [2]

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(b) Apart from problems of safety or access, suggest another difficulty for the students in collecting valid comparative temperature values at twelve locations on each slope. [2]

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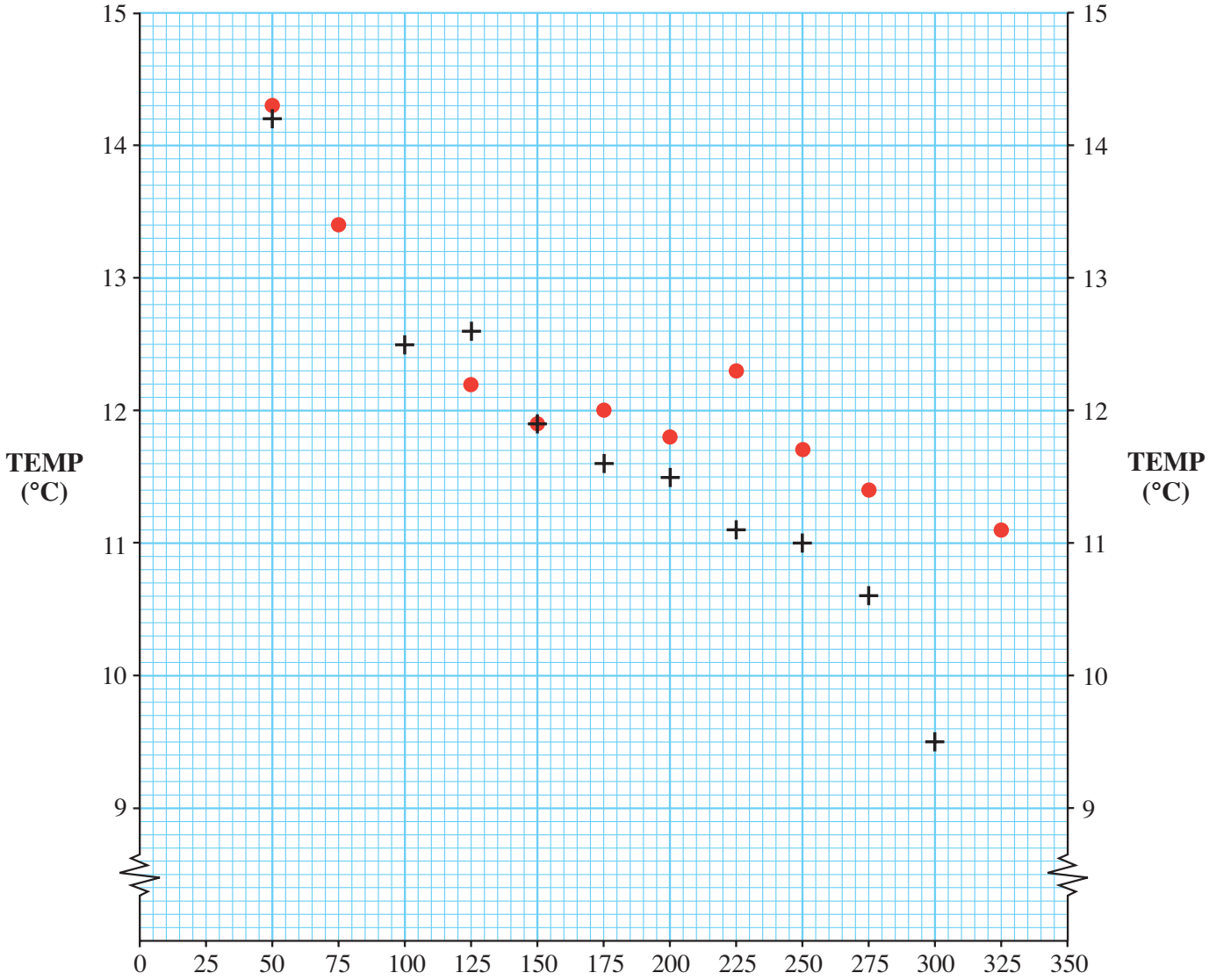
The students managed to take accurate temperature readings at the twenty four locations across the transect. **Table 1** shows the data that were obtained. They decided to represent these statistics on a graph. Most of the data have already been plotted on **Graph 1 on page 5**, but four of the temperature/height co-ordinates have not yet been plotted. These have been marked with an asterisk (*).

Location	North-west facing slope (temp °C)	South-east facing slope (temp °C)	rank	Height (m)	rank	d	d^2
1 (slope top)	9.1 *	11.1		325 *	1		
2	9.5	10.1 *		300 *	2		
3	10.6	11.4		275	3		
4	11.0	11.7		250	4		
5	11.1	12.3		225	5		
6	11.5	11.8		200	6		
7	11.6	12.0		175	7		
8	11.9	11.9		150	8		
9	12.6	12.2		125	9		
10	12.5	12.1 *		100 *	10		
11	13.7 *	13.4		75 *	11		
12 (slope base)	14.2	14.3	1	50	12		
					Σd^2	=	

Table 1

The relationship between temperature (°C) and height (m)



Key:

● South-east facing slope temperature/height data

\+ North-west facing slope temperature/height data

Graph 1

3. *(a)* From the information in **Table 1**, complete the plotting of the temperature/height data on **Graph 1**, above. [2]

(b) On **Graph 1**, circle the most anomalous temperature/height co-ordinate. [1]

(c) Describe the relationships shown on the graph. [4]

4. Calculate the Spearman's Rank Correlation Coefficient between the two variables of **height** and the **temperature** for the **south-east** facing slope.
Use the columns in **Table 1** to help you. The rankings for height and the first ranking for temperature on the south-east facing slope have already been completed.
All calculations for the Spearman's Rank Correlation Coefficient need to be shown in the space provided here for this question.
The formula for Spearman's Rank Correlation Coefficient is: $1 - \left(\frac{6\Sigma d^2}{n(n^2 - 1)} \right)$. [4]

5. The value of the Spearman's Rank Correlation Coefficient for the two variables of **height** and **temperature** for the **north-west** facing slope was calculated to be -0.99.

To what extent did all the available evidence help the students to decide whether the woodland had any influence on temperature along this transect? [6]

Evidence from **Map 1**, **Graph 1**, and the values of the two correlation coefficients, can be used to answer this question.

SECTION B. HUMAN GEOGRAPHY INVESTIGATION

A study of the impact of visitors within part of a National Park.

A student lived in a village of about 600 people that was located within a picturesque part of a National Park. He decided to investigate the impact that large numbers of visitors could be having in this particular area, including the village itself. The title of his study was:

'Do large numbers of visitors have both positive and negative impacts in my local area of the National Park?'

1. *(a)* Suggest the best time of year for the student to carry out this investigation. [1]

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(b) Explain your answer to *(a)* above. [2]

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2. The student decided that he wanted to find out information about the visitors to his study area so he carried out a questionnaire. He completed fifty questionnaires in the village. He chose his interviewees by stratified sampling.

(a) What is meant by the term '*stratified sampling*'? [1]

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(b) Explain why stratified sampling was an appropriate method for this questionnaire survey. [3]

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3. Four of the questions, and some of the overall results, are set out in **Results Sheet 1** below.

1. How have you arrived in the area today?	car 41		coach/bus 6		bicycle 3
2. Is this a day visit or are you in this area for longer?	day visit 22			a longer visit 28	
3. If it is a longer visit, what type of accommodation are you staying in?	hotel 5	bed/breakfast 8	caravan 7	tent 5	friends 3
4. Why have you come to this area today?	*(The answers to this question were recorded separately)*				

Results Sheet 1

(a) Suggest why the answers given for Question **4** on the Results Sheet had to be recorded separately. [2]

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(b) Explain why Questions **2** and **3** on the Results Sheet helped the student to find out about the economic impact of visitors to the area. [4]

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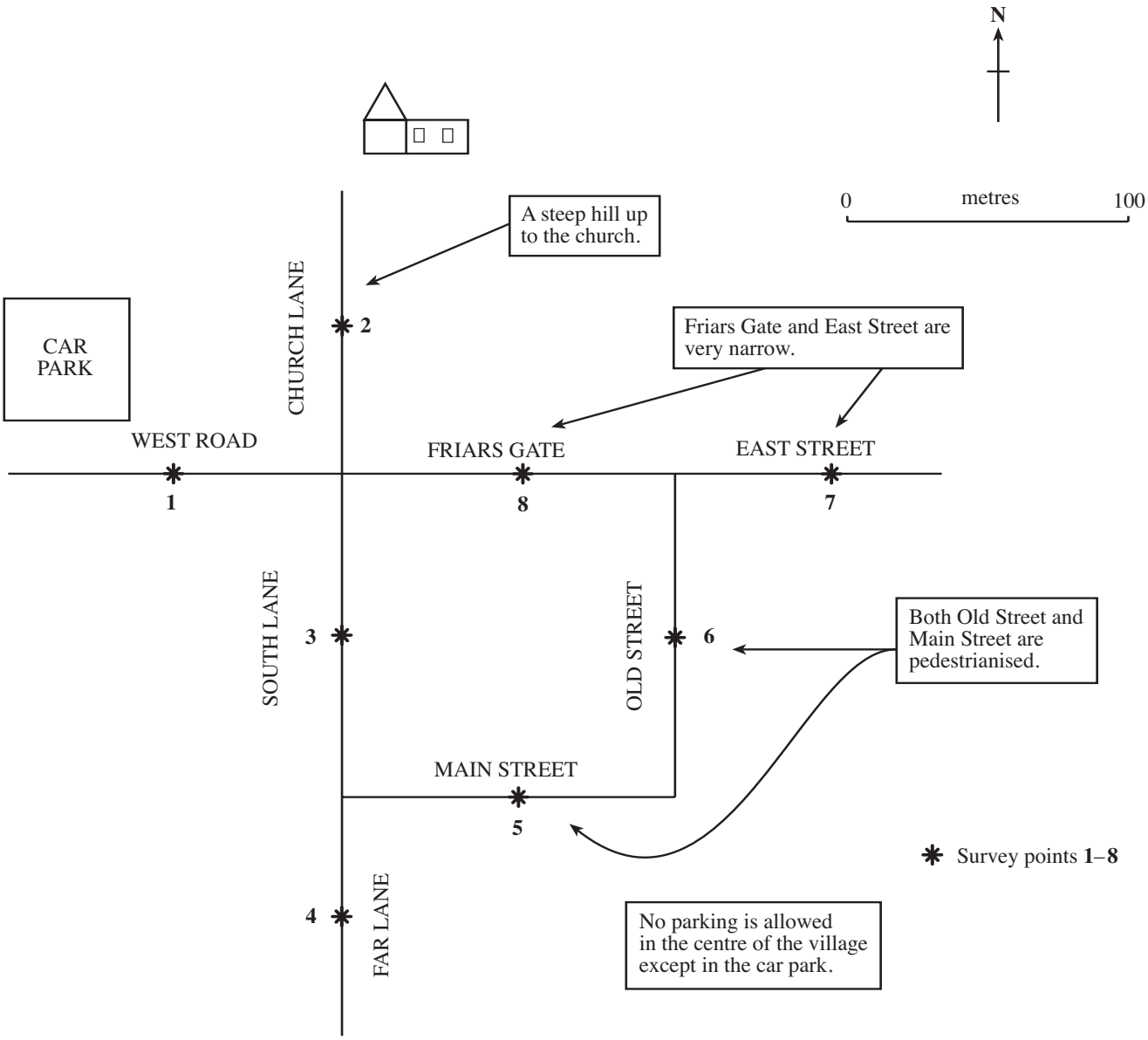
4. As part of his investigation he decided to look at the impact of large visitor numbers on the village. He decided to carry out a pedestrian count at eight survey points along roads in the village. **Table 2** shows the number of pedestrians passing the student in ten minutes at each of the eight survey points.

Survey point	1	2	3	4	5	6	7	8
Number of pedestrians	180	34	119	40	133	112	14	53

Table 2

Map 2 below shows the network of roads and the position of the eight survey points. It also shows some information about the characteristics of this central area of the village, which has many old buildings and tourist shops.

For use with **Question 4**



Map 2

Map 3

***For use with* Question 4**

Turn over.

A flow-line technique was used to show the pattern of movement created by the visitors. **Map 3**, on **page 11**, shows the completed pedestrian flow-lines for seven of the eight roads in **Table 2**.

(a) (i) What scale has been used for the construction of the flow-lines? [1]

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(ii) Suggest why such a scale was chosen. [1]

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(iii) Complete **Map 3** by drawing on the flow-line to represent the number of pedestrians for survey point 4. [1]

(b) Using the information shown on **Map 2**, explain the pattern of pedestrian flows within the village, shown by **Map 3**. [3]

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5. During his work, the student became aware that the ownership of second homes is a social issue in and near the village. This was because some visitors liked the area so much that they decided they would want to live here some of the time.

Suggest how, where, and from whom, the student could have obtained the necessary information in order to research this topic, making certain that he obtained a range of views.

In your answer you should justify your choices. [6]

For continuation only. These pages should be used in EXCEPTIONAL CIRCUMSTANCES.

Examiner only
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