

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 GG3a

INVESTIGATIVE GEOGRAPHY

A. PHYSICAL GEOGRAPHY INVESTIGATION

B. HUMAN GEOGRAPHY INVESTIGATION

P.M. FRIDAY, 19 May 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 the factors influencing infiltration rates of water into soil in a small drainage basin in central Wales

Two students wanted to measure infiltration at four sites in part of an upland drainage basin in order to investigate any variations in the infiltration rates. The students knew that infiltration rates depend on a variety of physical and human factors.

Map 1 on **page 3** shows the part of the upland drainage basin that they chose.

The four sites where the infiltration rates were measured are labelled 1 – 4 on this map.

- 1. (a) Apart from height, state **two** pieces of evidence from the map extract which suggest that this is an **upland** drainage basin. [2]

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- (b) Suggest why the students needed to collect their data at a variety of locations. [3]

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- (c) Define *random sampling* and explain why it would have been inappropriate for determining the location of the four sites. [3]

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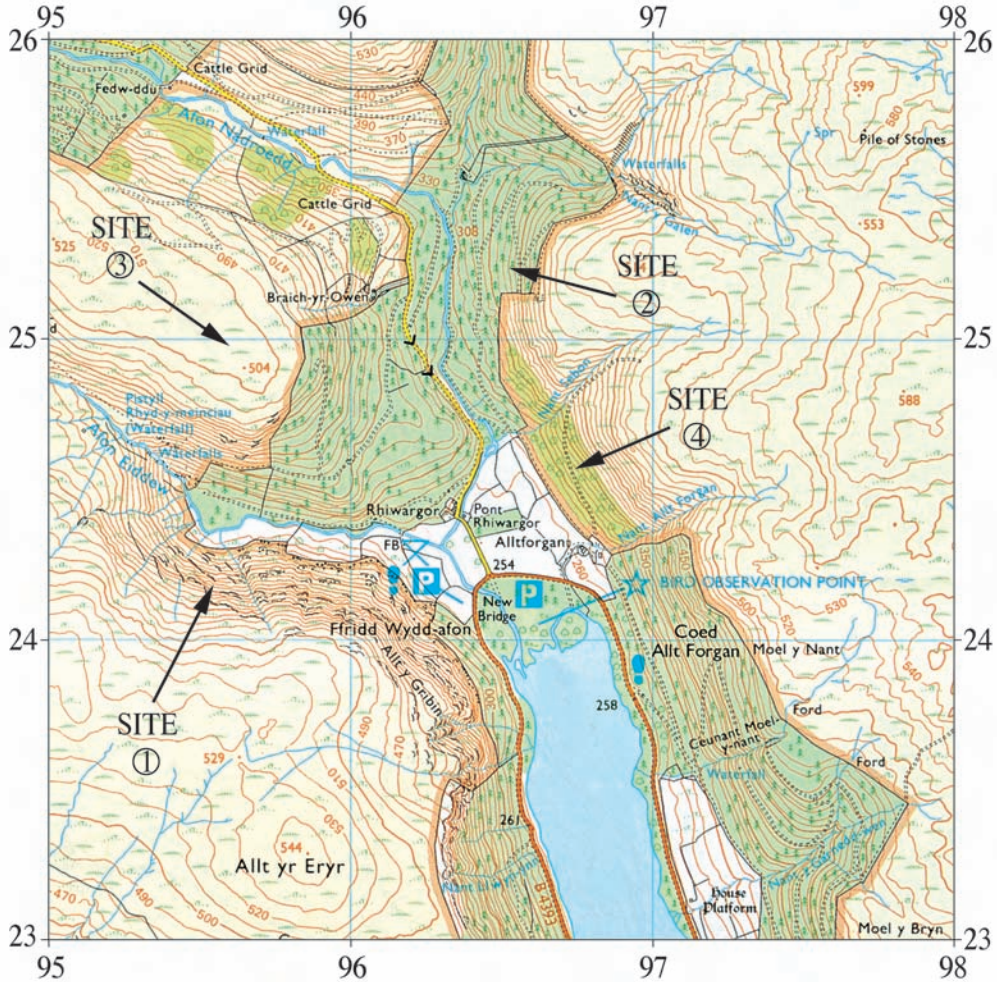
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OS map extract showing part of an upland drainage basin



Map 1

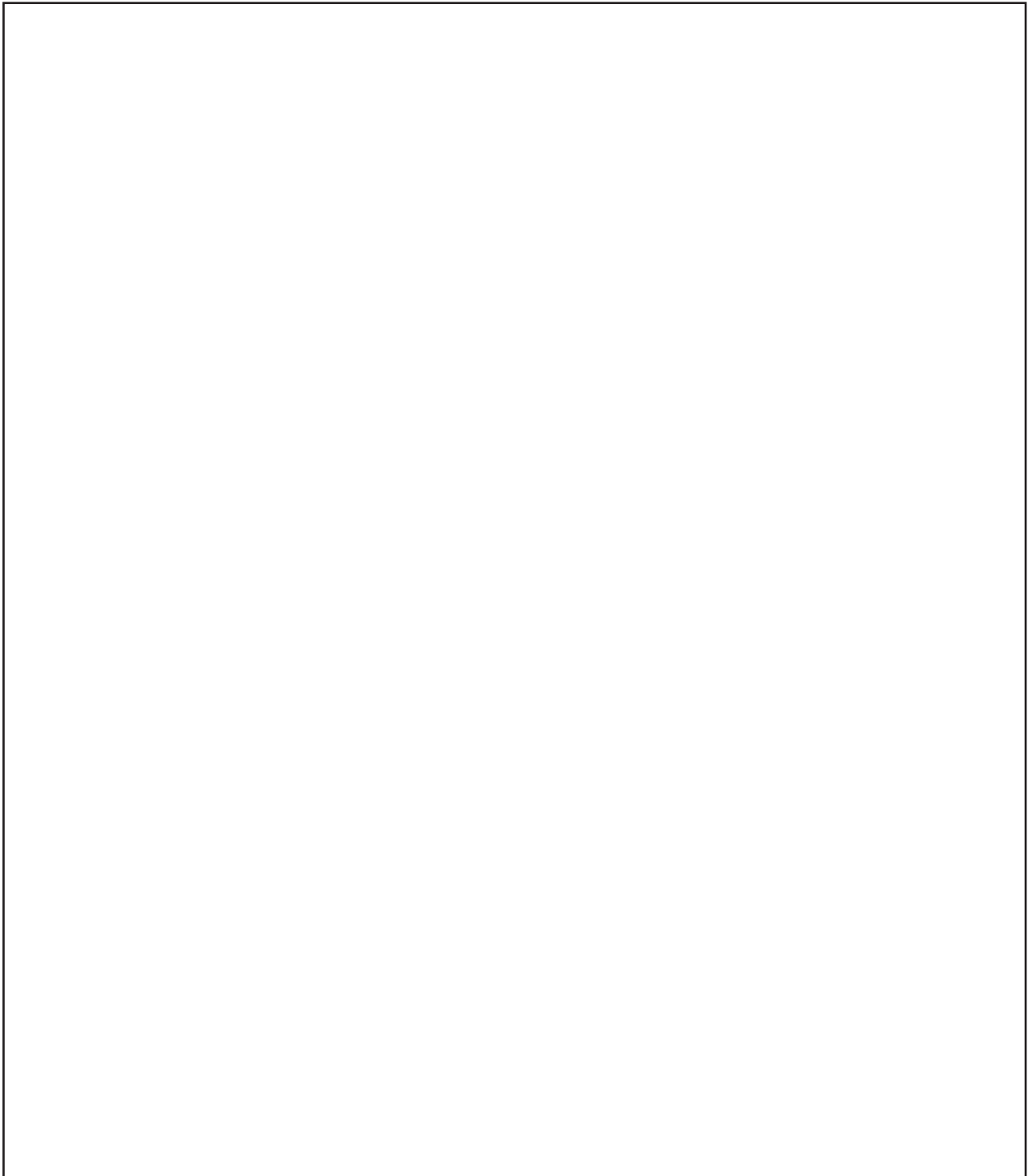
2. **Diagram 1** on **page 5** shows the method used by the students to measure the infiltration rates. They carried out this procedure over a set period of time at each of the four sites. These measurements were carried out in summer after several days of dry weather.

Design a recording sheet in the space below that the students could have used for the collection of this fieldwork data at the four sites.

Use the information on **Diagram 1** and **Graph 1** on **page 5** to help you.

[5]

Recording Sheet



Measurement of Infiltration

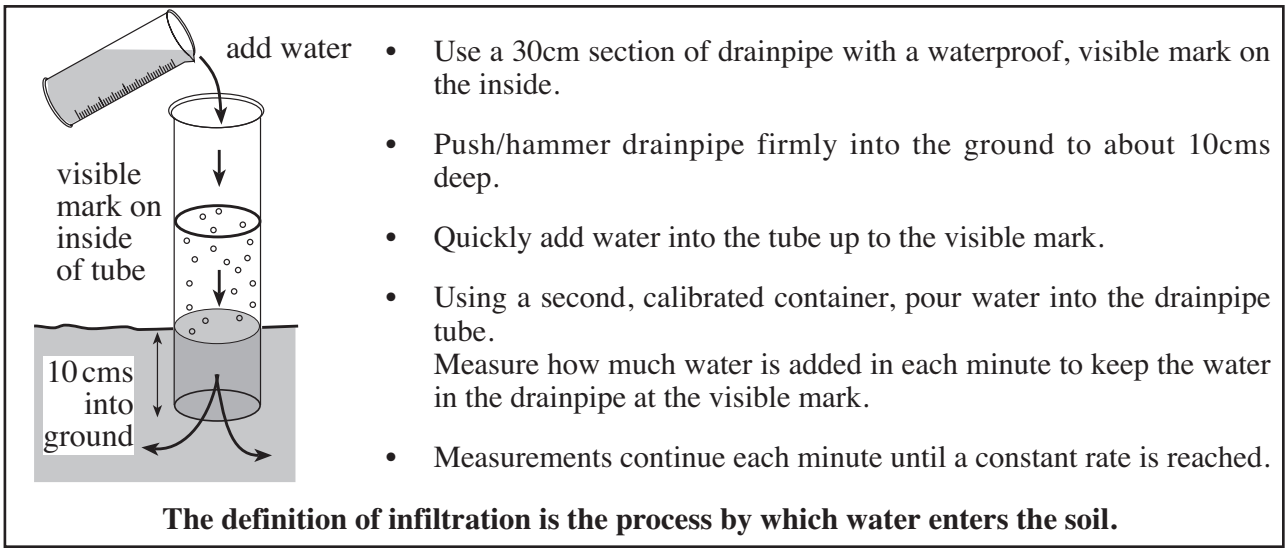
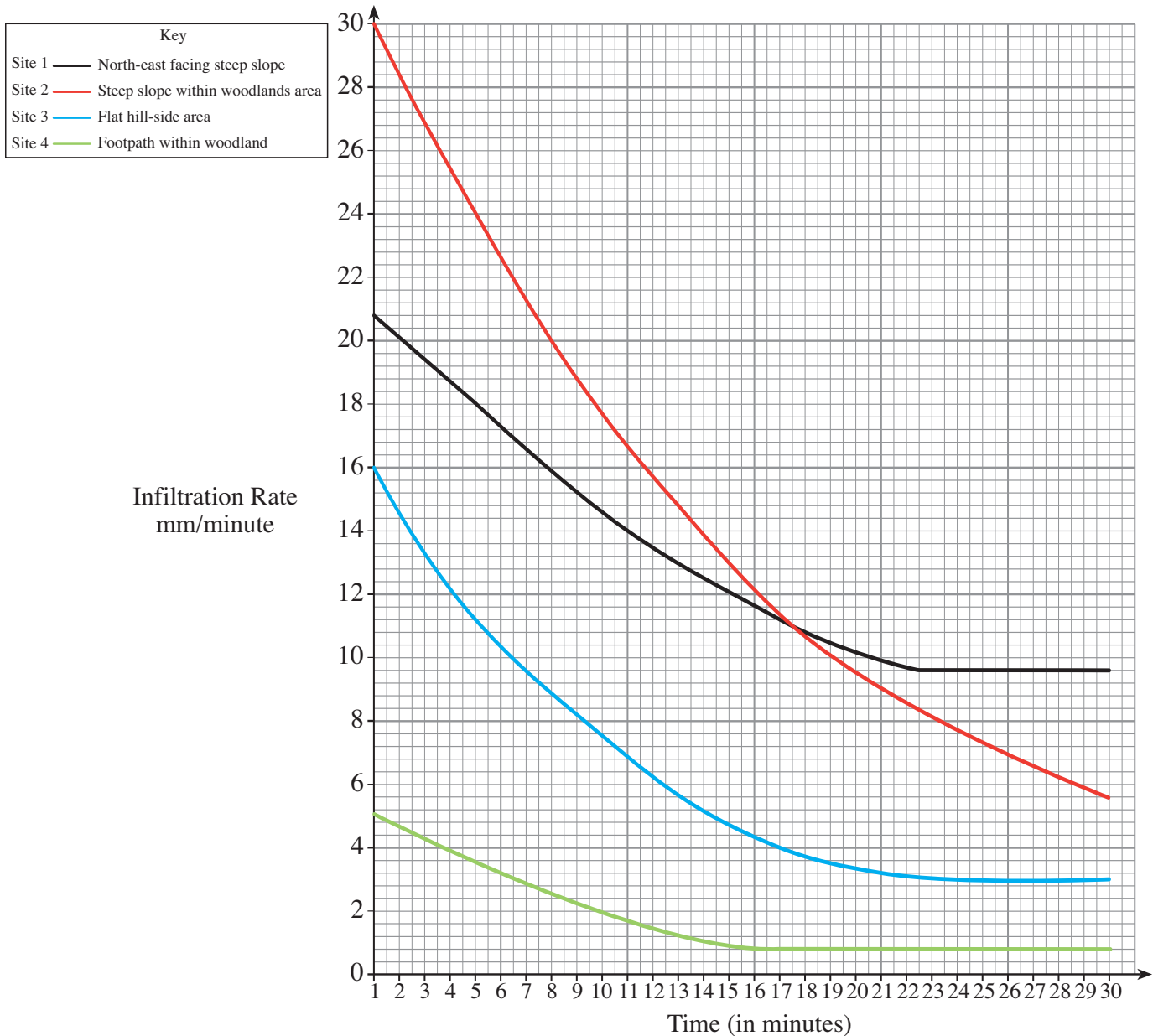


Diagram 1



Graph 1

3. The students recorded all the required data for the four sites and then one of them drew **Graph 1** to represent these data. The graph only shows the information for the first 30 minutes of measurement at each site.

(a) Compare the infiltration curves revealed by the graph. [4]

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(b) State the final constant infiltration rate for the flat hillside site. [1]

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(c) Explain why a final constant infiltration rate for the steep wooded slope site cannot yet be given from the information shown on **Graph 1**. [1]

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4. Discuss how the students could improve and develop this study. [6]

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SECTION B. HUMAN GEOGRAPHY INVESTIGATION**A study of patterns of deprivation along an urban transect**

A student wanted to study patterns of deprivation within her home city in South Wales. She knew that one of the best sources of information would be the 2001 National Census. She also knew that she would not have the time to consider deprivation across the whole city and so she decided to use **one** urban transect. Before starting her study in detail she walked along her chosen transect from the city centre outwards.

1. (a) What is meant by the term '*transect*'? [1]

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- (b) Apart from considerations of safety and access, suggest why it was a good idea for her to walk along the transect before starting her study in detail. [2]

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- (c) Explain why investigating more than one transect outwards from the city centre would have improved her study. [2]

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2. The student needed to get the detailed census information for the areas along the transect. For most local urban studies the best scale of data is at ‘ward’ level. **Table 1** shows some of the census information that she obtained for the wards along the transect. **Map 2a** on **page 10** shows the location of the wards and the chosen transect.

Selected variables by ward

National Census 2001

Ward	Distance from city centre to centre of ward (km)	Total Population (000s)	Unemployment Rate (%)	Population Density (per sq.km)	Population Change (1991-2001) %	Car ownership (%)	Detached houses (%)
A	2.2	8.3	4.7	641	- 7.7	33	3.2
B	3.1	13.2	4.8	778	- 1.7	42	2.1
C	3.9	6.7	3.8	659	- 0.3	51	4.4
D	5.2	10.4	3.6	489	+ 1.6	64	10.4
E	5.8	5.8	4.1	402	+ 1.3	78	29.2
F	6.9	17.1	2.8	231	+ 5.7	79	34.2
G	7.7	13.9	2.4	188	+ 4.8	81	54.8
H	8.9	4.8	1.3	113	+ 13.8	93	83.1

Table 1

(a) The student carried out her investigation in 2006.
Explain how and why this limits the value of the census data she obtained. [3]

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(b) Which variable in the table is not relevant to her study on patterns of deprivation? [1]

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(c) State
(i) a variable showing a perfect positive correlation with distance from city centre; [1]

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(ii) a variable showing a strong negative correlation with distance from city centre. [1]

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3. By using five of the variables in **Table 1**, the student calculated a Deprivation Index. This was done by ranking each of these variables for the eight wards, with a rank of 1 for least deprived and 8 for the most deprived. When totalled for each ward this is the Deprivation Index.

Table 2 shows the Deprivation Index for each ward.

Ward	Deprivation Index
A	36
B	38
C	30
D	23
E	23
F	14
G	11
H	5

Table 2

- (a) (i) Complete a choropleth map (density shading) on **Map 2b** on **page 10**, using the Deprivation Indices. Choose suitable class boundaries and appropriate shading. Produce a key in the space provided next to the map on **page 10**. [4]
- (ii) Briefly explain your decision for the class boundaries. [2]

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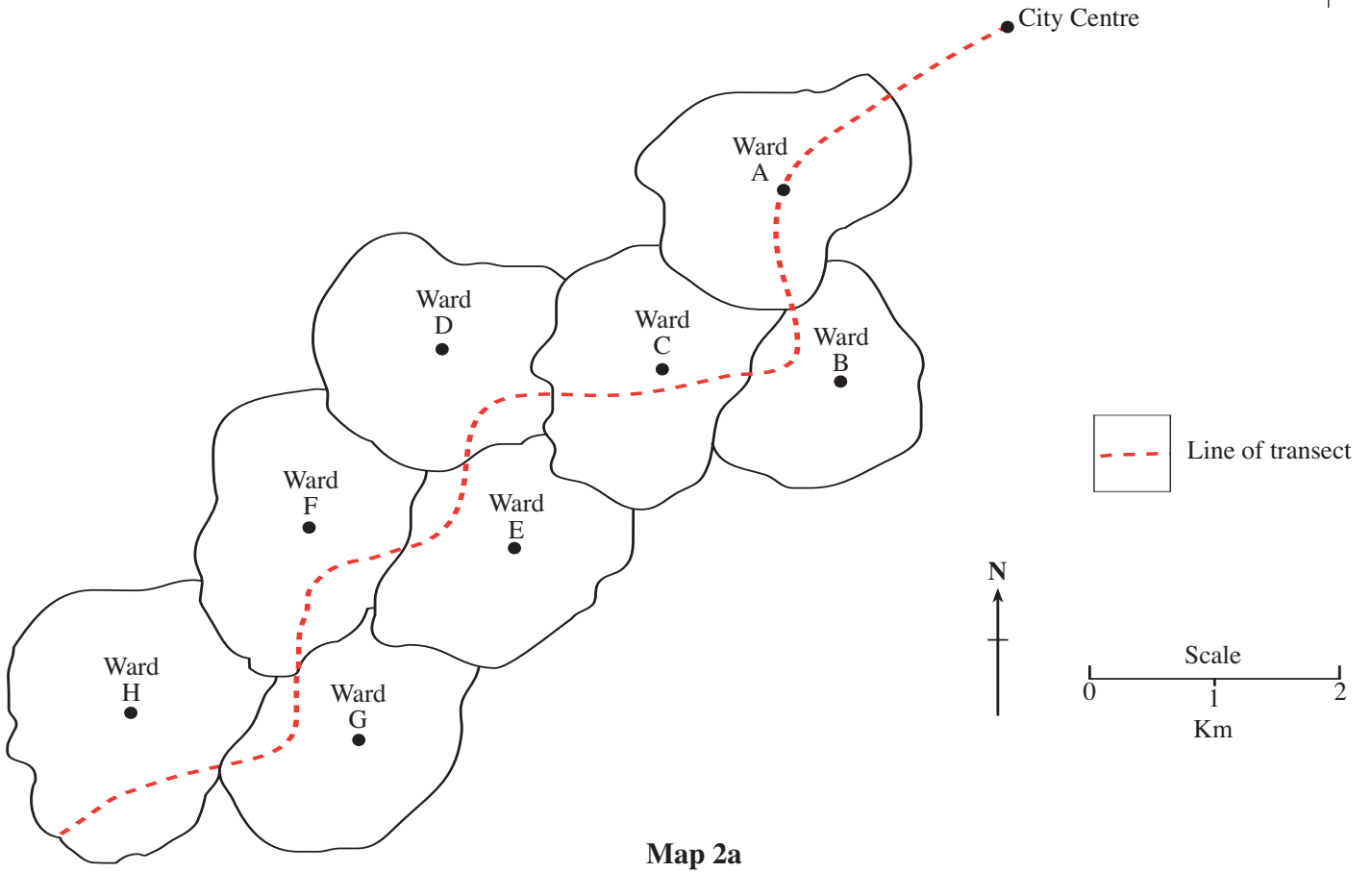
- (b) Outline **two** disadvantages of using the choropleth technique to show these patterns of deprivation. [2]

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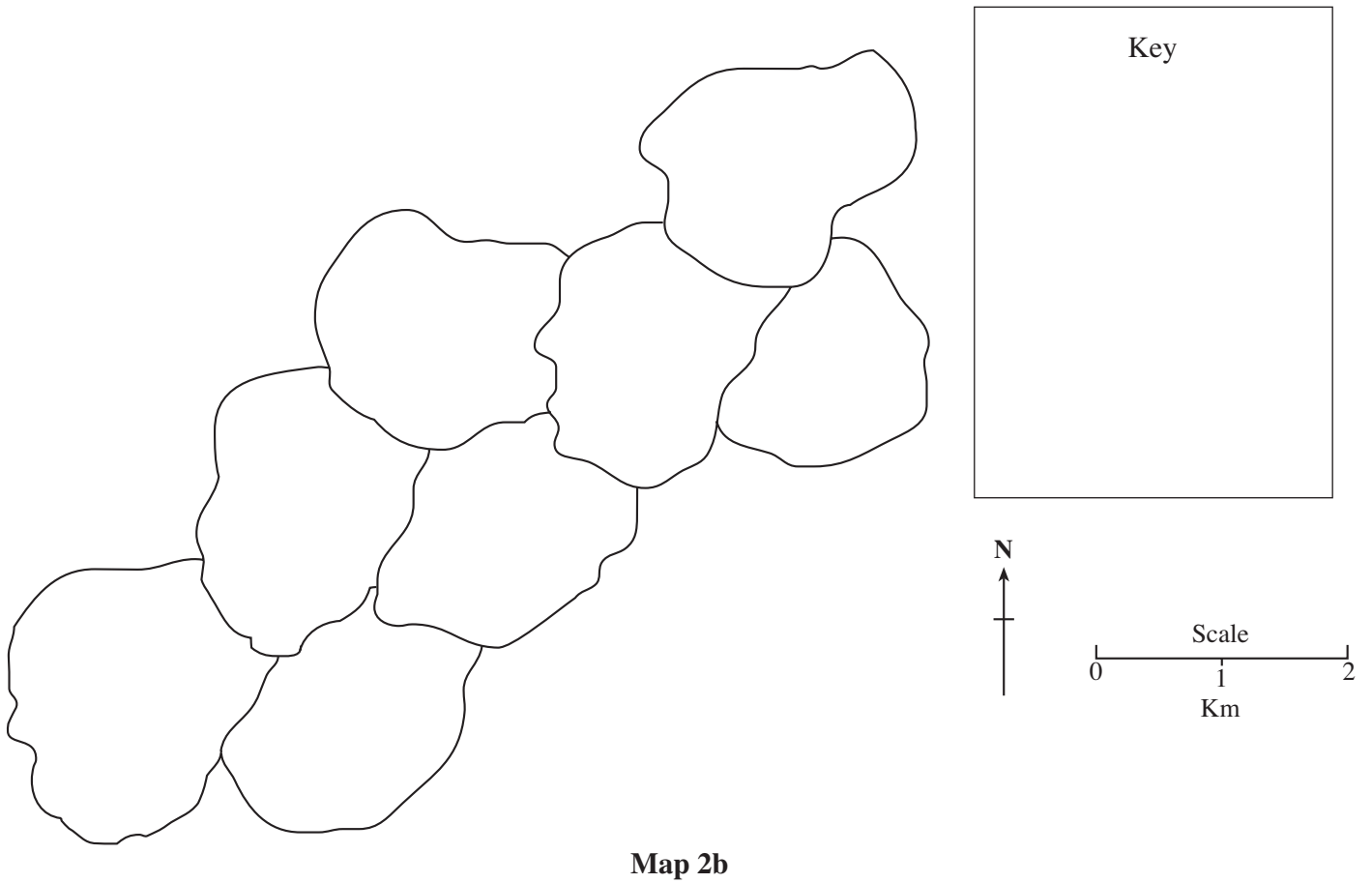
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Map 2a



Map 2b

- 4. The map, together with the information in **Table 1**, strongly suggest that the transect chosen by the student does reveal a pattern of deprivation from the city centre outwards. So far, the information used by her has been secondary data from the National Census.

Consider what **primary** data the student could collect to help confirm the pattern of deprivation along this transect. Justify your suggestions. [6]

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