

CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

**GEOGRAPHY**

**0460/05**

Paper 5 Alternative to Coursework

May/June 2003

Additional Materials: Answer Booklet/Paper  
Ruler

**1 hour 45 minutes**

**READ THESE INSTRUCTIONS FIRST**

If you have been given an Answer Booklet, follow the instructions on the front cover of the Booklet.  
Write your Centre number, candidate number and name on all the work you hand in.  
Write in dark blue or black pen on both sides of the paper.  
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions.

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.

Sketch maps and diagrams should be drawn whenever they serve to illustrate an answer.

This document consists of **3** printed pages, **1** blank page and an insert.



- 1 Students visited an area of upland. They chose to measure soil erosion along footpaths to investigate the impact of tourists. A two-metre length of string was placed across the footpath at regular intervals of 200m from the Information Centre as shown on Fig. 1 (Insert). Two measurements were taken at each site
- the width of the footpath using a measuring tape,
  - the percentage of bare ground using a quadrat or measuring frame.
- (a) The results were recorded on a recording sheet. State **three** pieces of essential information, *other than the results*, required on every recording sheet of this investigation. [3]
- (b) Study Fig. 1 and the results for the footpath width in Table 1 (Insert). Describe the overall patterns of width change for **each** path as distance from the Information Centre increases. [2]
- (c) A quadrat was placed four times across the 2 m string, twice on either side of the path centre. The percentage of bare ground was calculated in each quadrat.
- (i) Study Fig. 1. Compare in detail, stating data, the changes in bare ground along the two paths. You should consider the distance from the Information Centre and changes across the footpaths. [6]
- (ii) State **two** ways in which this method of investigating footpath erosion may be either unreliable or inaccurate. [2]
- (d) The students also decided to count the number of pedestrians using the paths at different times of the day.
- (i) Suggest why different times were chosen. [1]
- (ii) Which recording method is most suitable for counting pedestrians? [1]
- (iii) Use the results in Table 2 (Insert) to suggest the most common distance people walk from the Information Centre. Give reasons for your answer. [3]
- (e) (i) Explain in detail why a large number of people may increase soil erosion on a footpath. [5]
- (ii) Using the information from Fig. 1, state where the soil erosion should be reduced. Suggest how this may be done. [3]
- (f) Tourists may also increase the amount of litter in an area. Describe in detail how students in the area shown in Fig. 1 would investigate this environmental problem. [4]

[Total : 30]

- 2 Geography students compared three settlements to investigate the settlement hierarchy in the area. The students decided to test the following hypothesis:

*'A larger settlement will have a greater number of services and more traffic than a smaller settlement.'*

- (a) (i) What is a 'settlement hierarchy'? [1]  
 (ii) Describe and explain how the number of services and the traffic volume may change within a settlement hierarchy. [3]
- (b) Table 3 (Insert) shows the results of a building count and the survey of services and traffic in each settlement.
- (i) The number of buildings in each settlement was found by using a secondary source of data. What is a secondary source of data? State **one** example of a secondary source. [2]  
 (ii) Briefly compare the different types of services available at each settlement shown in Table 3. [2]
- (c) Study Table 3 and Fig. 2 (Insert).
- (i) Using information from Table 3 plot and label clearly each of the settlements A, B and C on Fig. 2. The graph also shows a number of other settlements. [3]  
 (ii) Draw a 'best fit line' onto the scattergraph. [2]
- (d) The students measured traffic at 10.00 hours in the three settlements. One student observed that settlement A was linear but settlements B and C were nucleated.
- (i) Explain, with the help of diagrams, what the student meant by 'linear settlement' and 'nucleated settlement'. [4]  
 (ii) The students decided to count traffic in the centre of each settlement. Why was a central location chosen? [2]  
 (iii) Suggest when and why the traffic survey should be repeated. [2]
- (e) The results of the traffic survey are shown on Table 3.  
 Draw an accurate bar graph to plot the traffic survey results for settlements A, B and C. [5]
- (f) Write a conclusion to this investigation. You should state if you accept the hypothesis. Give reasons for your answer with reference to the services and traffic results. [4]

[Total : 30]



## Model Answers and Examiner's Notes

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Q1

- (a)(i) Three essential pieces of information required on a recording sheet are the name of a student (✓), the date (✓) and the time (✓). [3]

Alternative answers that would have earned marks include:

- the location of the recorder/ site number
- the weather at the time of the recording.

The South West footpath becomes narrower with increasing distance from the Information Centre (1.9 m to 0.3 m) (✓).

The North East path also narrows (1.9 m to 2.0 m) (✓). [2]

- (c)(i) At the Information Centre, the footpath was 1.9 m wide with the largest percentage of bare ground in the centre of the path at 75% and 70%, but with bare ground extending across the width of the path.  
At 200 m on the North East path, bare ground was only found in the centre and the percentage had decreased considerably to 41% and 38% (✓), while on the South West path bare ground had increased in the centre of the path to 82% and 84%, but with a decrease on the edges (✓).  
At 400 m and 600 m on the North East path bare ground decreased in percentage and width with increasing distance (✓), while on the South West path it increased in the centre of the path at 400 m to 98% and 95%, but declined in percentage and width between 400 m and 600 m (✓).  
More bare ground was found on the South West path than in the North West path (✓).  
Bare ground areas were wider on the South West path than on the North East path at all distances (✓). [6]

- (ii) The methods used to investigate footpath erosion may be unreliable due to unrepresentative site locations (✓). [2]  
Inaccuracy in recognising and measuring bare ground (✓).

Alternative answers that would have earned marks include:

- inaccuracy in locating the centre of the path
- data lacking detail of relief of footpath area.

- (d)(i) Different times were chosen because the number of visitors will change during the course of the day (✓). [1]

An alternative answer that would have earned marks includes:

- different times will give a better representative example.

(ii) Tally counts are the best method of recording pedestrians (✓). [1]

(iii) The most common distance that people walk from the Information Centre is 400 m (✓). The reasons are that the total numbers are highest at 400 m (✓) and that numbers rapidly decline with distances over 400 m (✓). [3]

*Note: Distances and reasons are required in the answer.*

(e)(i) Footpath soil erosion may increase by trampling of feet (✓), removal of vegetation and plant roots (✓), reduction in plant growth (✓), roots no longer binding soil together (✓), bare soil being more vulnerable to wind and water erosion. [5]

(ii) Soil erosion ought to be reduced in the centre of the South West path from the Information Centre to 400 m (✓).  
Methods by which reduction may be achieved are by using alternative routes to allow vegetation to recover (✓) and by putting down wooden boards or tarmac (✓). [3]

An alternative answer that would have earned marks includes:

- fence off area to prevent access until vegetation recovers.

*Note: One mark is reserved for suggestion.*

(f) Investigation of litter could be carried out by using each 200 m site (✓), designing a recording sheet for results (✓) and by devising a scoring system (✓). Where large amounts of litter get a high score and small amounts get a low score (✓). [4]

*Note: One mark is reserved for the identification of locations.*

Q2

(a)(i) 'Settlement hierarchy' is the ranking/order of settlements (✓). [1]

(ii) Larger settlements higher up the hierarchy have more services and a larger volume of traffic (✓). Smaller settlements at the bottom of the hierarchy have fewer services and less traffic (✓). This is explained by settlements at the top

of the hierarchy having a larger population and covering a larger area than those lower down (✓). [3]

*Note: One mark is reserved for each of description and explanation.*

(b)(i) Secondary data is information not collected by the student but by someone else (✓).  
An example is data from a map (✓). [2]

An alternative answer that would have earned marks includes:

- from a census
- from a weather station.

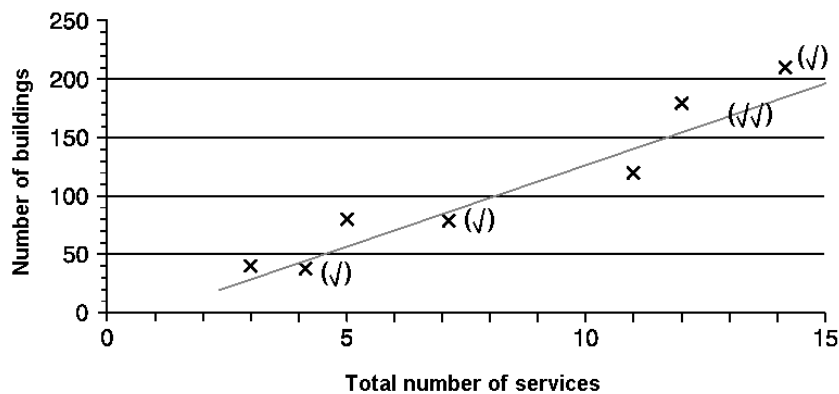
*Note: One mark is awarded for definition and one mark for example.*

(ii) Settlement A has only the basic services of churches, postal agency and school (✓). Settlements B and C have additional services such as health clinics, playgrounds. Only C has a bank (✓). [2]

(c)(i) See plots on scatter graph. [3]

(ii) Best fit line of graph [2]

The relationship between a number of buildings and the number of services in a settlement



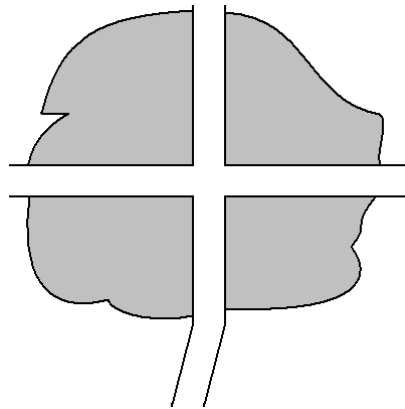
**Fig. 2 for Question 2**

(d)(i) A 'linear settlement' is an elongated settlement (✓).



A 'nucleated settlement' is a settlement with a cluster of buildings which are

close together around a centre (✓).



(✓)

[4]

(ii) A central location was used so that no traffic would be missed (✓), particularly important for a nucleated settlement which may have a number of roads leading in to it (✓).

[2]

(iii) The traffic count should be repeated on a different day (✓). This is to give a more accurate picture of traffic and a more representative sample (✓).

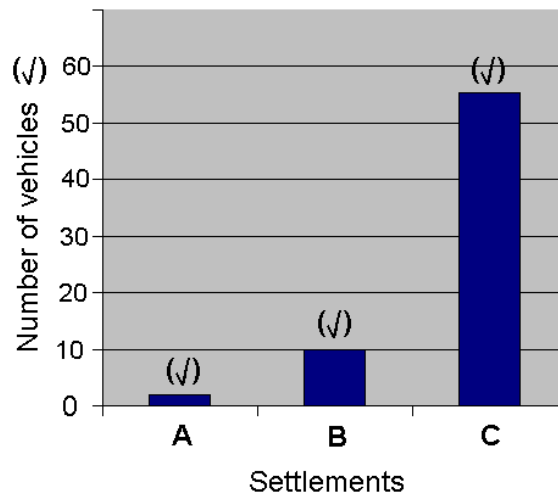
[2]

Alternative answers that would have earned marks include:

- at a different time
- under different weather conditions.

(e)

Traffic Survey for 3 Settlements A B C (✓)



[5]

*Note: Marks are given for labelling of both axes, appropriate division of number axis, correct bar lengths and appropriate title.*

(f) The stated hypothesis is correct (✓). The largest settlement C has 14 services while the smallest A has only 4 (✓). The amount of traffic increases from a

low count at settlement A (2) to a higher count at settlement B (10) (✓), with the highest number at settlement C (56), which has more buildings and more services than the other two (✓).

[4]

*Note: One mark reserved for correct decision.*

*One mark reserved for comment for each of services and traffic.*

*Reference to data is essential for a complete answer.*