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0460/42

October/November 2011

1 hour 30 minutes

Additional Materials: Ruler

Write your Centre number, candidate number and name on all the work you hand in.
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.

Answer **all** questions.

The Insert contains Figs 1, 3 and 4 for Question 1 and Table 3 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.

This document consists of **12** printed pages, **4** blank pages, and **1** Insert.

- 1 Some students were investigating two local beaches made up of different materials. The beaches were about 5 km apart in a popular tourist area. The beaches are shown in Fig. 1 (Insert).

For
Examiner's
Use

They decided to test the following hypotheses:

Hypothesis 1: *The size of beach material increases away from the low water mark.*

Hypothesis 2: *The environmental impact of tourism varies between the two beaches.*

- (a) To investigate **Hypothesis 1** the students used a tape measure to plot a transect line from the edge of the sea at the low water mark to the top of each beach. They then used a quadrat to systematically sample the beach material at points along the transect line of each beach.

- (i) What is systematic sampling?

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

- (ii) Give **two** advantages of using this method over random sampling.

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

- (b) The results of the investigation at selected sites are shown in Table 1, below.

Table 1

Results of beach material investigation at selected sites

	Beach material (%)		
	Sand	Shingle	Pebbles
Site 1 – Beach X	90	10	0
Site 2 – Beach X	95	5	0
Site 3 – Beach Y	75	20	5
Site 4 – Beach Y	0	50	50

- (i) Suggest **one** problem of using a classification of beach material as sand, shingle or pebbles.

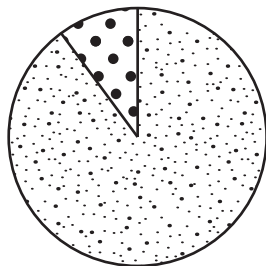
.....
.....[1]

(ii) Complete the pie graph for site 3 at beach Y in Fig. 2 below.

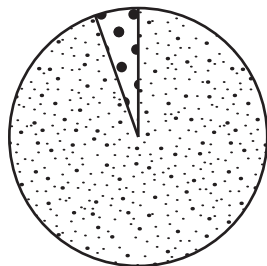
[2]

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**Site 1 – Beach X at low
water mark**



**Site 2 – Beach X at
the sea wall**



Key



sand

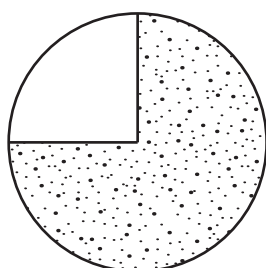


shingle



pebbles

**Site 3 – Beach Y at low
water mark**



**Site 4 – Beach Y at
the foot of the cliff**

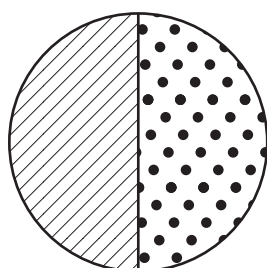


Fig. 2

(iii) Describe how proportions of the three materials differ between beaches **X** and **Y**.

Sand:

.....

Shingle:

.....

Pebbles:

.....[3]

- (iv) Is **Hypothesis 1**: *The size of beach material increases away from the low water mark* true for

neither beach beach **X** beach **Y** beaches **X** and **Y** ?

Circle your answer. Support your conclusion with data from Table 1 and Fig. 2.

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..... [4]

- (c) To investigate **Hypothesis 2**: *The environmental impact of tourism varies between the two beaches* the students produced a bi-polar scoring index which they used to survey the amount of litter on the beaches at four different sites (A, B, C and D), shown in Fig. 1. Fig. 3 (Insert) shows their bi-polar scoring sheet.

- (i) What decisions would the students have to make in planning the bi-polar survey?

.....

.....

.....

.....

.....

..... [3]

- (ii) The results of the survey of the impacts of tourism are shown on Fig. 4 (Insert). Complete Fig. 5, below, by plotting the results for plastic at sites C and D. [2]

For
Examiner's
Use

Results of the survey of the impact of tourism

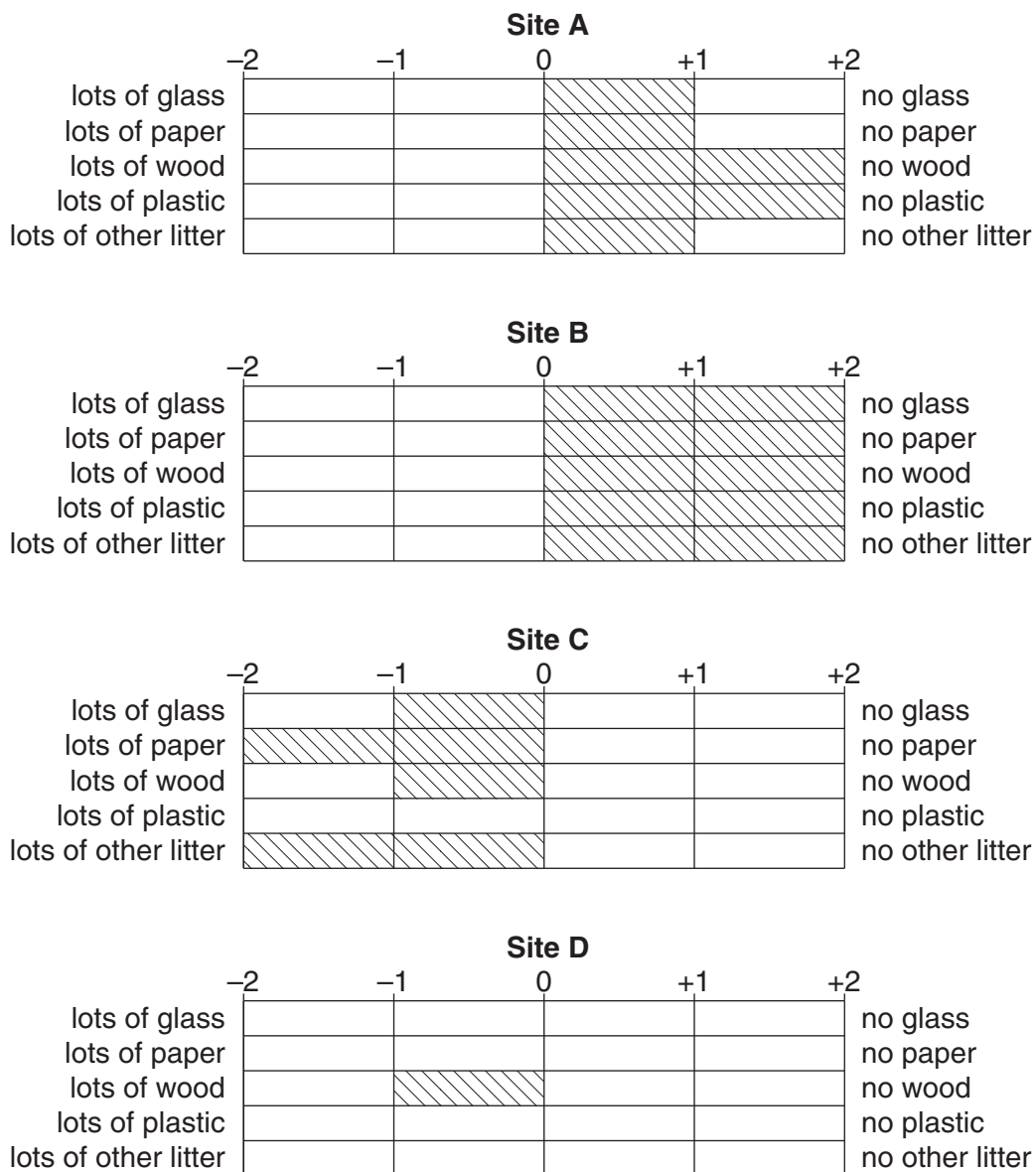


Fig. 5

- (iii) Identify **one** similarity and **one** difference between the results for sites A and B.

Similarity

.....

Difference

.....[2]

- (iv) Do the results of the bi-polar litter survey in Figs 4 and 5 support **Hypothesis 2:** *The environmental impact of tourism varies between the two beaches?* Explain your conclusion.

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.....[2]

- (v) Suggest reasons for the results of the bi-polar survey of the environmental impact of tourism.
Refer back to Fig. 1 (Insert) to help you to answer.

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.....[3]

- (d) (i) Suggest another hypothesis that the students could have investigated to compare the **natural** features of the two areas of coast they studied.

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.....[1]

- (ii) Describe how they could investigate the hypothesis you have chosen.

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.....[4]

[Total: 30 marks]

- 2 A group of students who were studying rural settlement in an MEDC decided to do some fieldwork in five local villages. They decided to test the following hypotheses:

Hypothesis 1: *As the population of a village increases there is an increasing number of different types of service found there.*

Hypothesis 2: *The three main reasons why people live in a village are the attractive scenery, peaceful location and the fact that they were born there.*

- (a) To investigate **Hypothesis 1** the students needed to collect some data about the five villages. They decided to split into five pairs; each pair visited one village.

- (i) Their first task was to find out the population of the five villages. Suggest **two** ways they could have done this.

1

.....

2

..... [2]

- (ii) Each pair of students discussed how they would be able to compare the types of service found in each village. They thought of the following methods:

A Make a list of all the services found in the village,

B Decide on the types of service to look for and tick them off when they were seen in the village.

Which do you think is the best method? Give **two** reasons for your choice.

Method

1

.....

2

..... [2]

- (iii) Suggest **one** disadvantage of each pair of students working in a different village.

.....

..... [1]

- (b) The results of students' fieldwork are shown in Table 2 opposite.

Table 2 Results of fieldwork

Village	Population	Types of service									
		Bus stop	Cafe	Doctors' surgery/ clinic	Garage	General store	Place of worship	Post box	Primary school for ages 5–11	Railway station	Total
Ince	1500	✓	✓	✓	✓	✓	✓	✓	✓	✓	9
Albany	729	✓	✓	✗	✓	✓	✓	✓	✗	✗	
Bethel	542	✓	✗	✓	✗	✓	✓	✓	✓	✗	6
Mead	234										3
Stanley	40	✗	✗	✗	✗	✗	✗	✓	✗	✗	1

- (i) Add the following information to Table 2:
In Mead there is a general store, post box and a cafe. [1]
- (ii) Complete Table 2 by adding the total number of types of service found in Albany. [1]
- (iii) Identify the highest order service shown in Table 2.
..... [1]
- (iv) The students plotted the results onto a scatter graph, Fig. 6, opposite.
Label the horizontal axis of the graph. [1]
- (v) Plot the results for Ince on Fig. 6. [1]
- (vi) The students decided that their results supported **Hypothesis 1**: *As the population of a village increases there is an increasing number of different types of service found there.*
What evidence from Table 2 and Fig. 6 supports their decision?
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..... [3]
- (vii) Suggest why larger villages have a greater number of different types of service.
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..... [2]

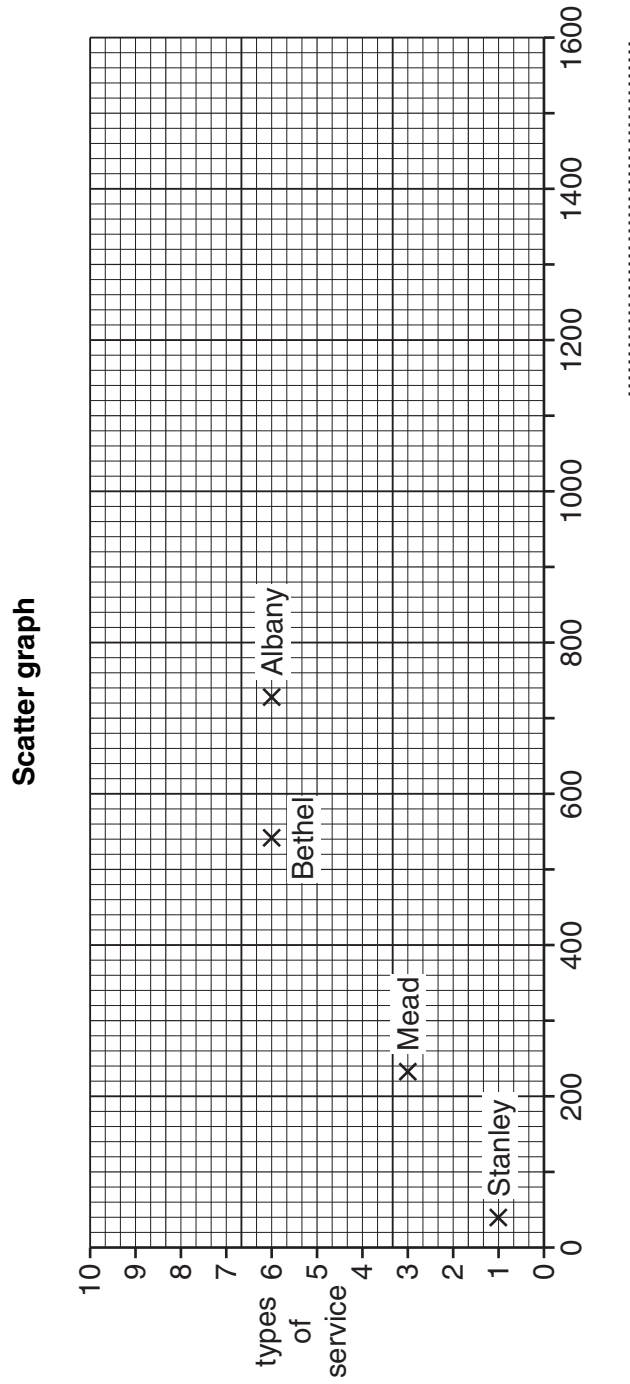


Fig. 6

- (c) To investigate **Hypothesis 2**: *The three main reasons why people live in a village are the attractive scenery, peaceful location and the fact that they were born there* the students asked a sample of the population of Bethel 'What is the main reason you live in Bethel?' They grouped the answers they received as shown in Table 3 (Insert).

- (i) Under which reason in Table 3 would the following answers be included?

1 I have always lived in the village.

Reason

2 Even though I work in an office in the city 40kms away, I can get there in 30 minutes.

Reason

3 The views of the hills and lake are spectacular, especially at sunset.

Reason [3]

- (ii) Complete Fig. 7, below, by plotting the results for:

- moved to the village on retirement
- low crime rate.

[2]

Reasons why people live in Bethel

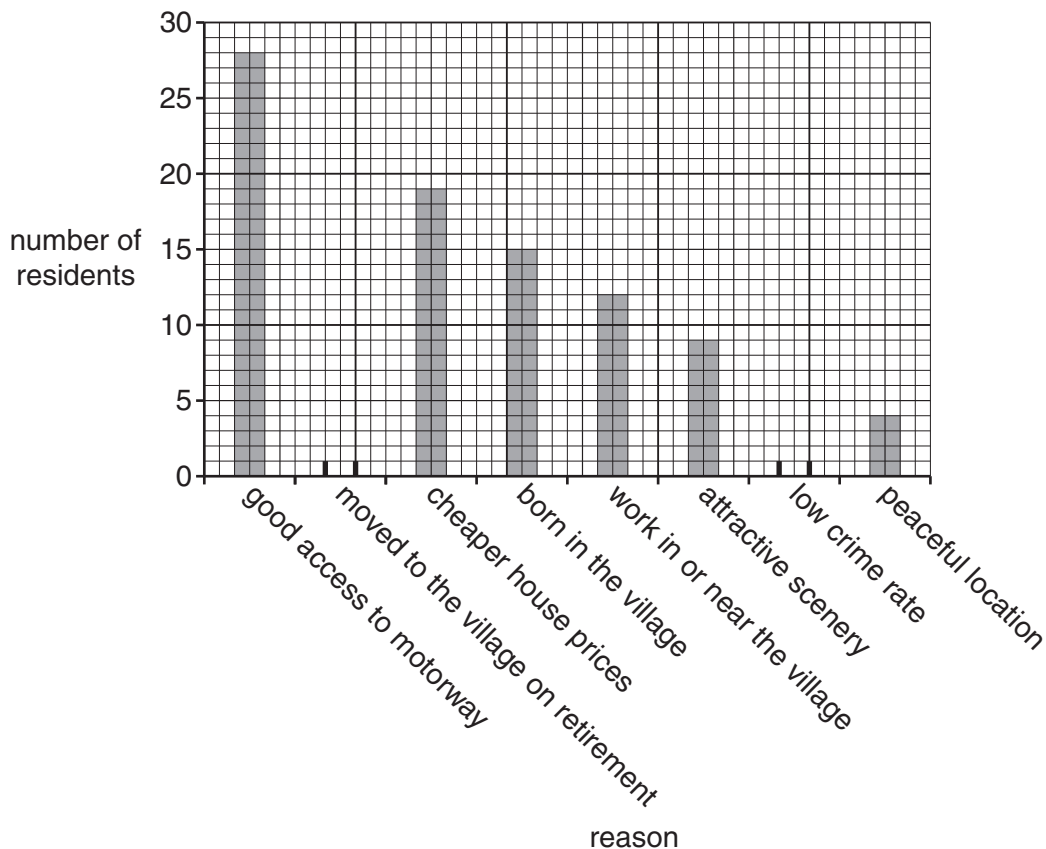


Fig. 7

- (iii) What conclusion would the students have made about **Hypothesis 2**: *The three main reasons why people live in a village are the attractive scenery, peaceful location and the fact that they were born there*? Support your answer with data from Fig. 7.

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.....[4]

- (d) Suggest **two** problems which the pair of students may have faced in doing their survey in Bethel.

1.....

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2.....

.....[2]

- (e) Some students wanted to find out more about how the villages were changing in addition to population changes. Suggest a suitable investigation and describe how it could be done.

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.....[4]

[Total: 30 marks]

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