UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

GEOGRAPHY   **2217/02**

Paper 2   **October/November 2009**

2 hours 15 minutes

Candidates answer on the Question Paper.

Additional Materials: Calculator
                          Ruler
                          Protractor
                          Plain paper

1:50 000 Survey Map Extract is enclosed with this Question Paper.

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 a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Section A
Answer **all** questions.
Section B
Answer **one** question.
Sketch maps and diagrams should be drawn whenever they serve to illustrate an answer.
The Insert contains Fig. 9 and Tables 4 and 5 for Question 7, and Table 7 for Question 8.
The Survey Map Extract and the Insert are **not** required by the Examiner.

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.

For Examiner's Use	
Section A	
Q1	
Q2	
Q3	
Q4	
Q5	
Q6	
Section B	
Q7	
Q8	
Total	

This document consists of **27** printed pages, **1** blank page and **1** Insert.

UNIVERSITY *of* CAMBRIDGE
International Examinations

[Turn over

Section A

Answer **all** questions in this section.

1 Study the 1:50 000 map of Glendale, Zimbabwe.

(a) (i) Identify the transport route that crosses the railway at 961797.

....[1]

(ii) Which compass direction does the railway take from Glendale towards Concession?

....[1]

(b) State the general direction of drainage in square 9776.

From .... to .... [1]

(c) (i) Calculate the average gradient of the road between the spot height in 9478 and the spot height in 0081.

Height difference .... metres [1]

Road distance .... metres [1]

Gradient = 1 in .... [1]

(ii) Why do the **actual** gradients over this stretch of road differ from the average gradient?

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....[1]

(d) Fig. 1 shows a cross-section from 930820 to 930880. This is marked as line A–B on the map extract.
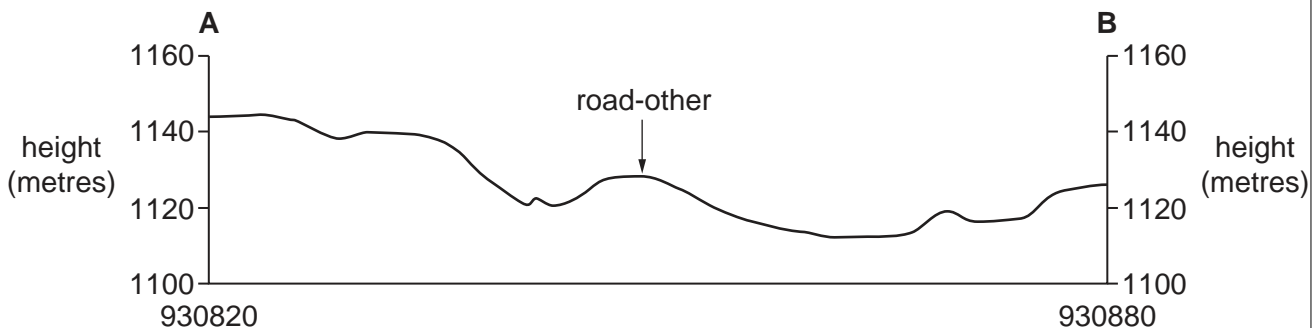

Fig. 1

(i) On Fig. 1 use labelled arrows with the correct letter to show the positions of:
- the narrow tarred road (R)
- the island in the Murowodzi River (I)
- the Mwenje River (M) [3]

(ii) State **four** types of land use along the A–B line.

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....[4]

(e) Study the area of Glendale within the part of the extract shown on Fig. 2.

Fig. 2

(i) Identify **one** example of each of the following services in Glendale;

- Transport ....

- Leisure ....

- Health ....   [3]

(ii) On Fig. 2, draw the course of the Mazowe River and show with an arrow its direction
of flow.   [3]

[Total: 20 marks]

2 (a) Study Table 1 and Fig. 3, which show climate data for Jakarta, Indonesia.

Table 1

months	J	F	M	A
average temperature (°C)	26	26	26	27
rainfall (mm)	340	300	210	140
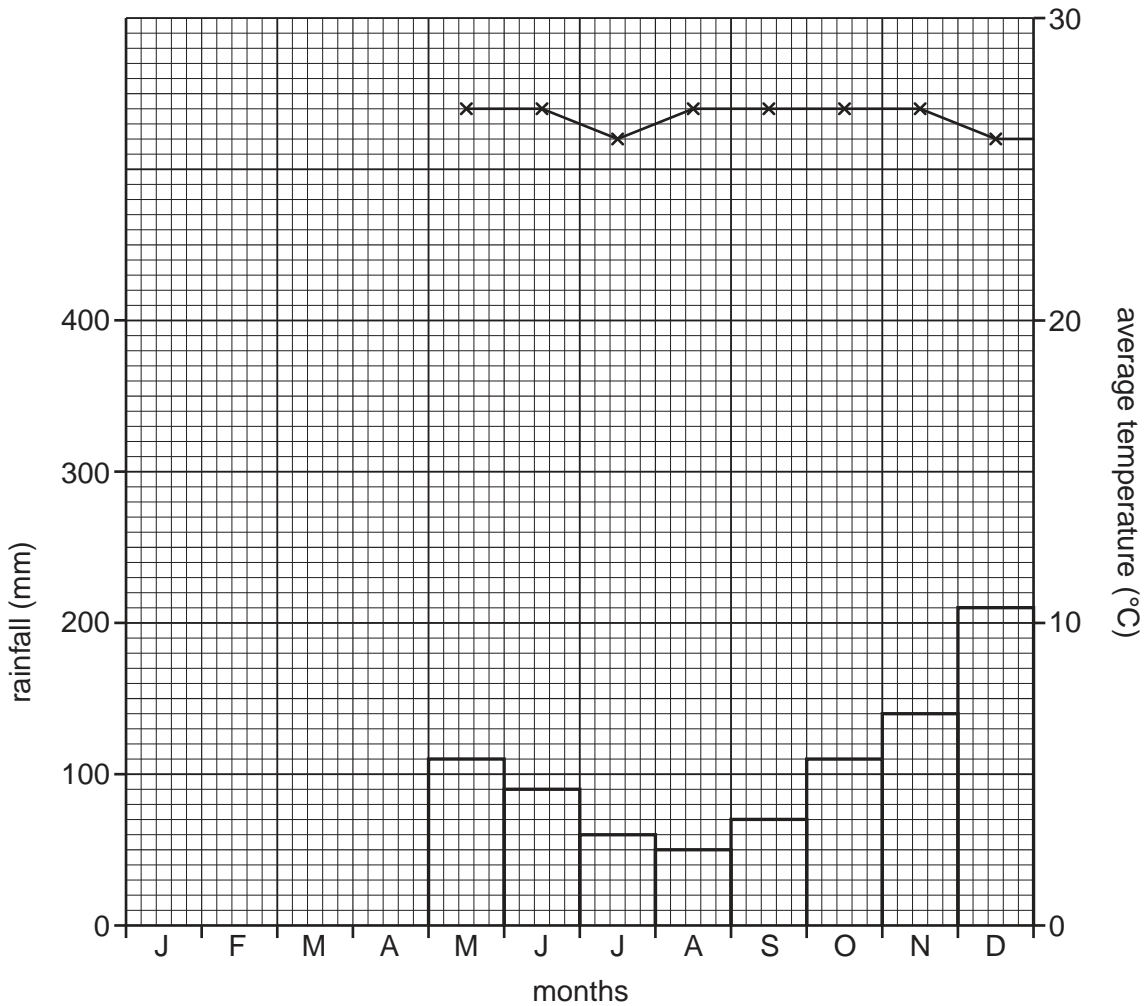
Fig. 3

(i) Use the data from Table 1 to complete the graph in Fig. 3. [2]

(ii) Calculate the annual temperature range for Jakarta.

....[1]

(iii) From the graph, state the temperature and rainfall for September.

Temperature ....

Rainfall .... [2]

(b) Indonesia has many active volcanoes. Eruptions often eject large quantities of dust into the atmosphere. This can have the effect of reducing the temperature.
Suggest **one** reason for this.

....[1]

(c) Following the tsunami of December 2004, when many thousands lost their homes, temporary aid camps were established in Indonesia.
Using Fig. 3, suggest how the climate may have affected the conditions in the aid camps.

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....[2]

[Total: 8 marks]

3 Study Fig. 4, which shows the use of chemical fertilisers in Africa.
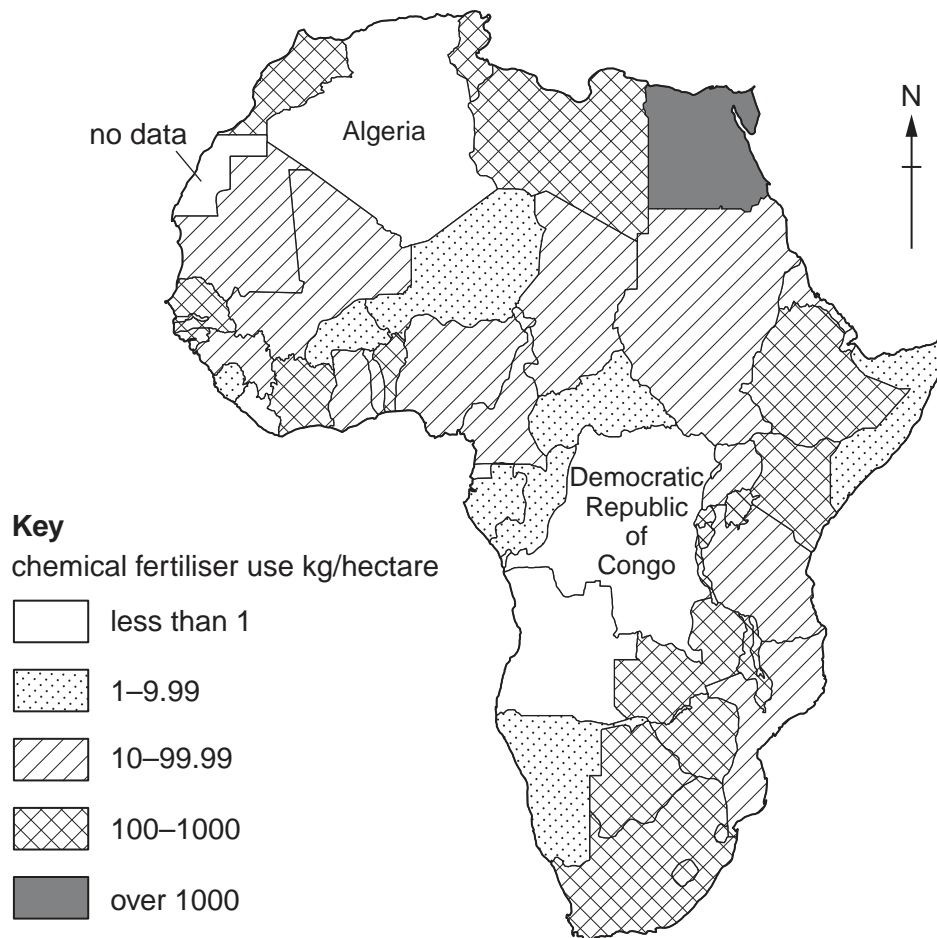
Fig. 4

(a) Complete Fig. 4 using the information below and the correct shading.

Country	kg/hectare
Algeria	130
Democratic Republic of Congo	16

[2]

(b) Circle the correct underlined words to complete the statements.

"A high use of fertiliser per hectare indicates an extensive / intensive farming system.

The country with the highest use of fertiliser per hectare is in the north-east / south of Africa." [2]

(c) Suggest advantages and disadvantages of using chemicals in food production on farms.

Advantages

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Disadvantages

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....[4]

[Total: 8 marks]

4 Study Fig. 5, which is a sketch of a stretch of coast.

Fig. 5

(a) Use arrows, labelled with the given letters, to locate the following on Fig. 5:

- the place where two rock types meet **B**
- evidence of recent cliff collapse / rockfall **C**
- the wave-cut platform **P**   [3]

(b) (i) Identify **two** differences between the cliff to the left and the cliff to the right of the sign.

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....[2]

(ii) Suggest reasons for these differences.

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.... [3]

[Total: 8 marks]

5 Study Table 2, which shows the GDP per person of eight countries. GDP per person gives an indication of level of development.

Table 2

Country	GDP per person (US$)
Canada	31 263
Georgia	2 844
Haiti	1 844
Honduras	2 876
Indonesia	3 609
Italy	28 180
New Zealand	23 413
Norway	38 454

(a) Use the information in Table 2 to rank the countries in order of their GDP per person.

High GDP per person   Norway ....

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Low GDP per person   Haiti ....   [1]

(b) Study Fig. 6, opposite, which shows the employment structure for the same countries.

(i) Use the data in Table 3 to complete the graph, by marking and labelling the positions of Honduras and Canada on Fig. 6.

Table 3

	% primary	% secondary	% tertiary
Honduras (LEDC)	50	20	30
Canada (MEDC)	4	33	63

[2]

Key
× MEDC
● LEDC

% tertiary industry

% secondary industry
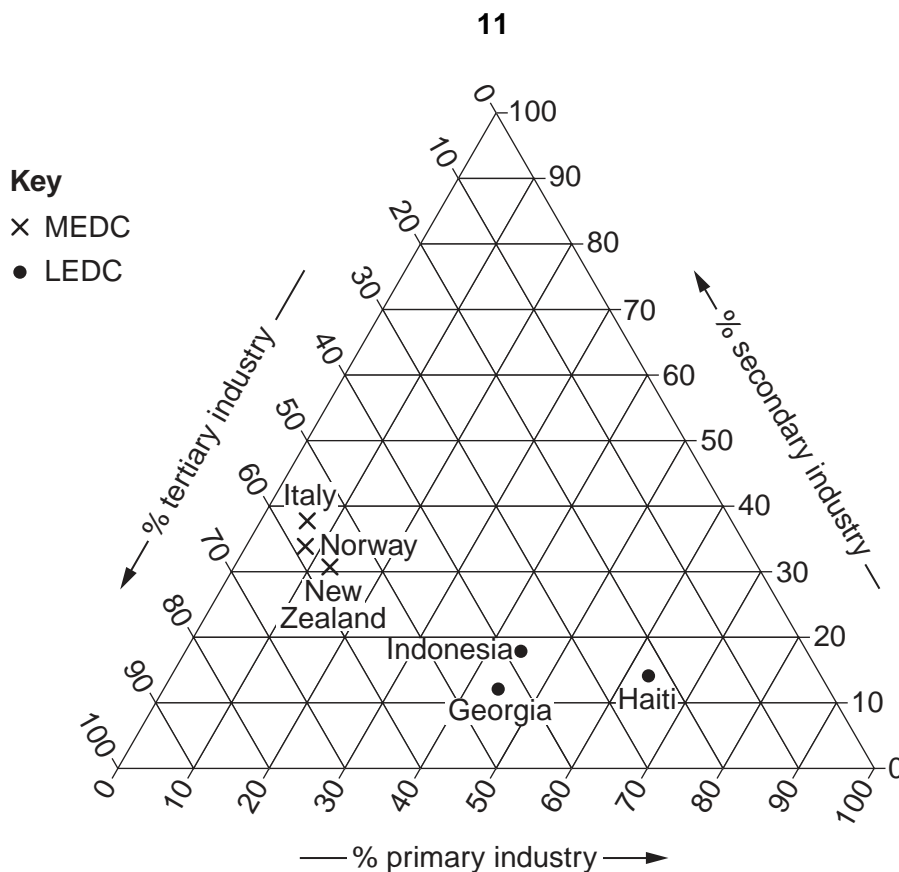
% primary industry

Fig. 6

(ii) Use Fig. 6 to find the percentage employed in primary industry and tertiary industry in Indonesia and New Zealand.

	% Primary	% Tertiary
Indonesia	....	....
New Zealand	....	.... [2]

(c) Describe the differences in employment structure between MEDCs and LEDCs shown in Fig. 6.

Differences

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....[3]

[Total: 8 marks]

 [Turn over

6 Study Fig. 7, which shows the origin of the foreign-born population of the USA as a percentage.

Origin of the foreign-born population of the USA
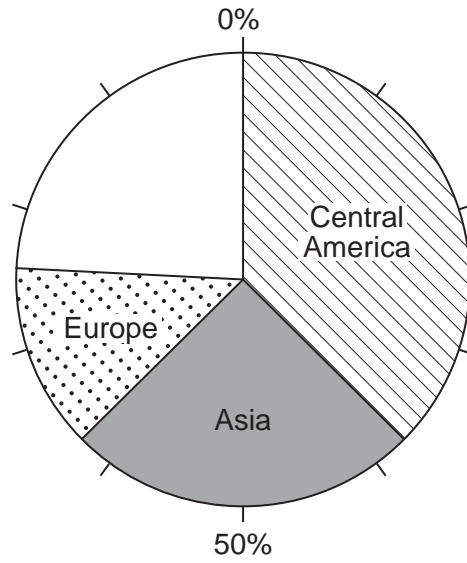
Fig. 7

(a) Complete Fig. 7 using the information below:

Caribbean	10%
South America	6%
Other regions	8%

[2]

(b) Which area has had the highest percentage of migrants to the USA?

....[1]

(c) Study Fig. 8, which shows world regions.
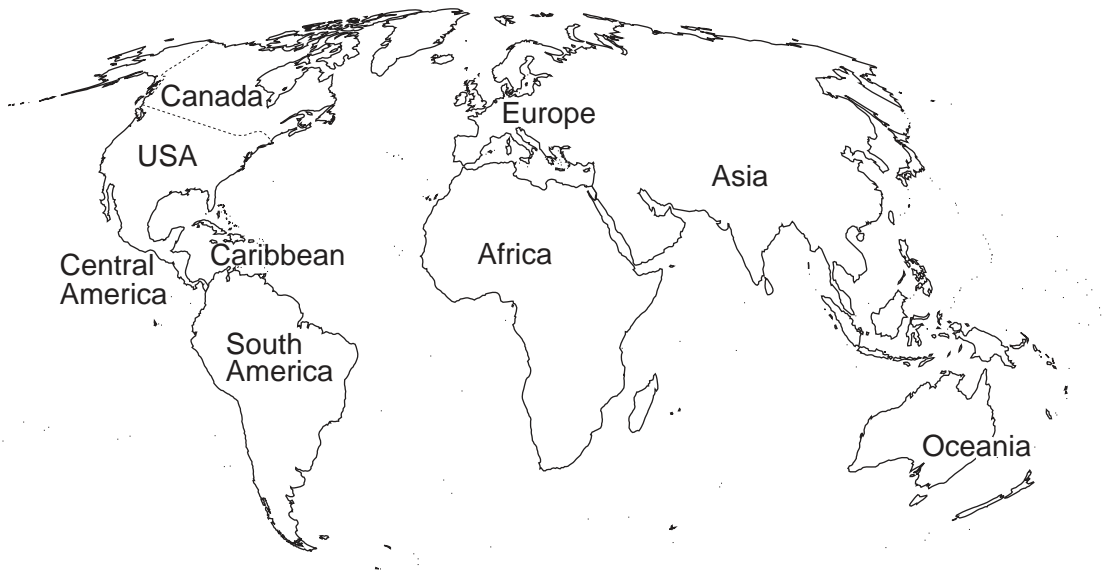
Fig. 8

Identify one region of the world labelled on Fig. 8 which would be included in 'Other regions' on Fig. 7.

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....[1]

(d) Use Fig. 8 to help you to suggest reasons for the pattern of foreign-born population shown in Fig. 7.

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....[4]

[Total: 8 marks]

Section B

Answer **one** question in this section.

7   A major impact of many people visiting countryside areas is the increase in footpath erosion.
A lot of people walking over open ground presses down the soil and wears it away.
Evidence used to indicate the amount of footpath erosion may involve factors such as:

- the percentage of bare ground

- the height of vegetation

- infiltration time (how long it takes water to soak into the soil)

Students who wanted to investigate the impact of this erosion decided to test the following hypotheses:

Hypothesis 1: *Footpath erosion decreases away from the centre of the footpath.*

Hypothesis 2: *Footpath erosion affects the rate at which water soaks into the soil.*

The students carried out their investigation on a path that was very popular for walkers. They chose three sites at varying distances from the car park.
These sites are shown on Fig. 9 (Insert).
At each site, the students carried out their investigation across a 10 metre transect. This is shown in Fig. 10.
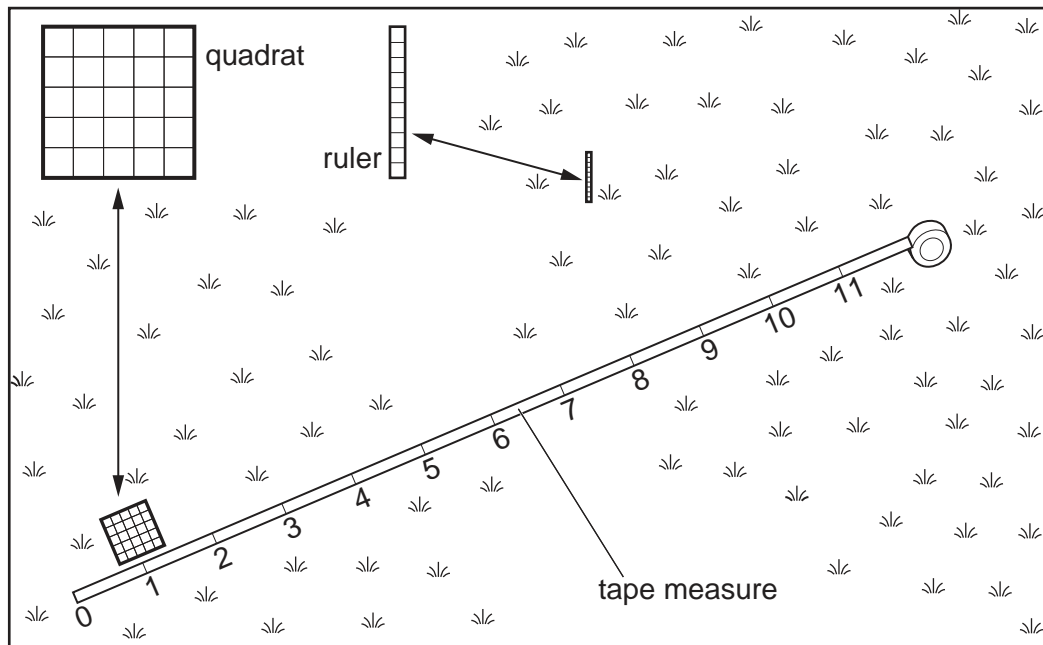
Investigation site and equipment used

Fig. 10

(a) (i) First the students investigated vegetation and bare ground across each transect.

The results of this investigation at Site A are shown in Table 4 (Insert).

How were the results shown in Table 4 obtained?

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....[4]

(ii) Use the results in Table 4 (Insert) to complete the 'kite' diagram, Fig. 11, to show the percentage of bare ground at sample points 10 and 11 across the transect at Site A. Complete the shading to show the amount of bare ground. [3]

**Percentage of bare ground across
the transect at Site A**

Fig. 11

(iii) Use the results in Table 4 (Insert) to complete Fig. 12, to show the average height of vegetation at points 8, 9, 10 and 11 across the transect at Site A. [2]

Average height of vegetation at Site A

Fig. 12

(iv) What conclusion could the students make about **Hypothesis 1**, *Footpath erosion decreases away from the centre of the footpath*? What evidence supports this conclusion?

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....[3]

(b) (i) Next, the students investigated infiltration of water into the soil across the transect. Study Fig. 13, which shows the equipment used by the students to measure infiltration. Their results are shown in Table 5 (Insert).
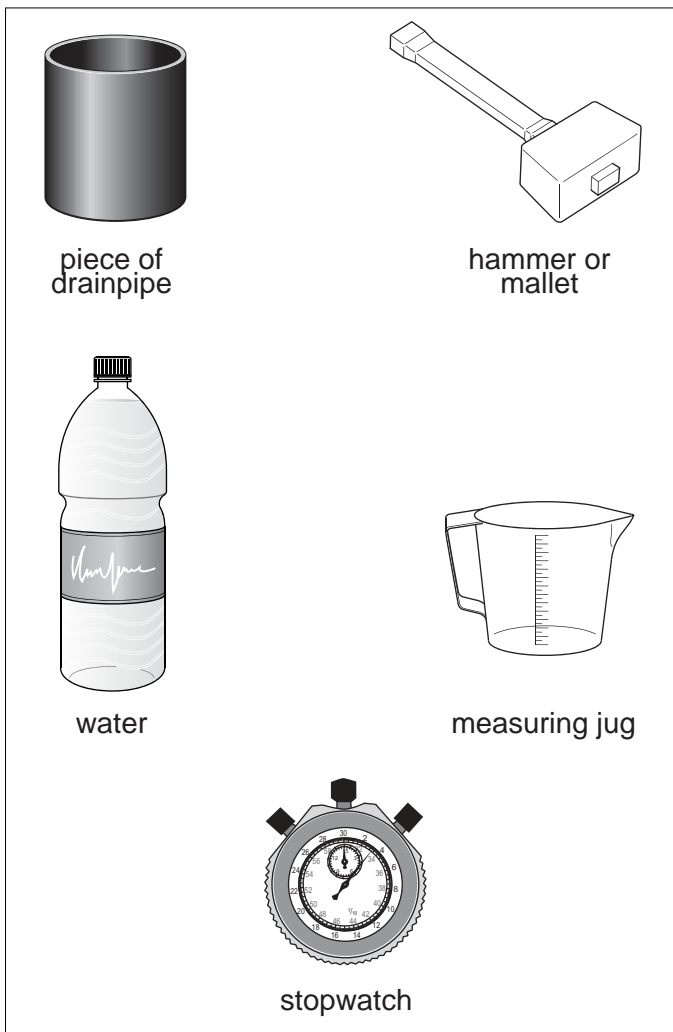
Equipment used to measure infiltration

Fig. 13

Explain how they carried out this investigation.

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....[3]

(ii) Use the results shown in Table 5 (Insert) to complete Fig. 14, to show the infiltration times at points 9, 10 and 11 across the transect. [2]

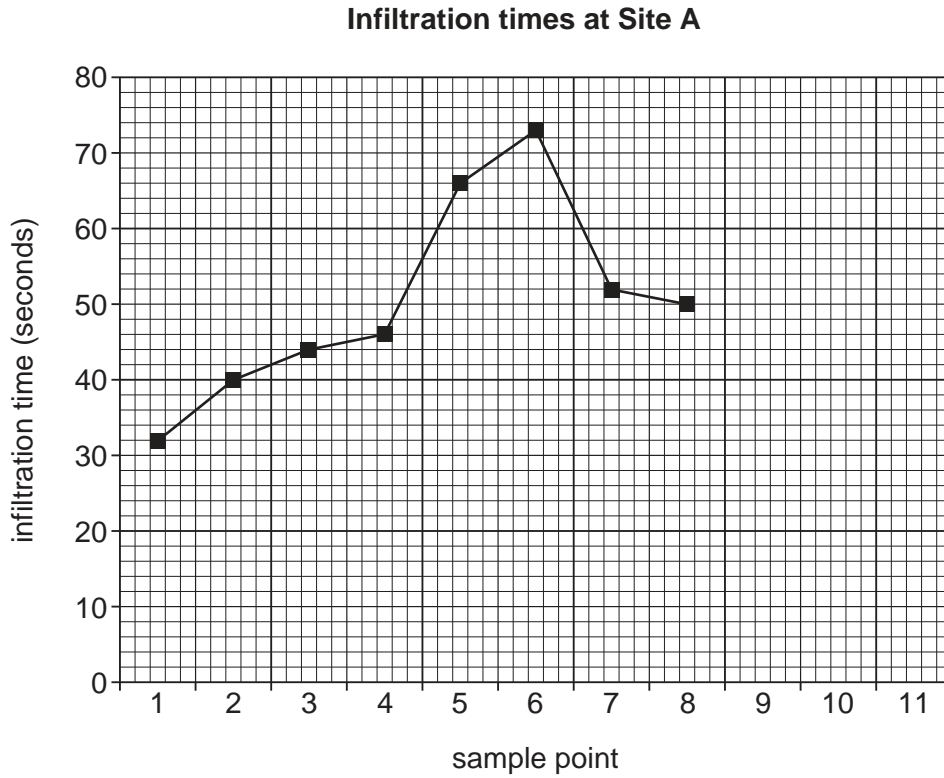**Infiltration times at Site A**

Fig. 14

(iii) Look again at Table 4 (Insert) and Fig. 14. What is the relationship between the percentage of bare ground and the infiltration time at the sample points at Site A?

....

....[1]

(iv) Suggest why the infiltration time increases towards the centre of the path.

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....[2]

(c) The students did the same investigations at Sites B and C, shown on Fig. 9 (Insert). How and why might these results differ from those at Site A?

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....[3]

(d) In this investigation into footpath erosion, the students studied the amount of vegetation cover and the rate at which water soaks into the soil. How might the following suggestions have improved their investigation?

A pedestrian count

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A questionnaire

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Repeating the study at different times of the year

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....[3]

(e) What techniques can be used to protect the natural environment in parts of the countryside which are popular with tourists?

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....[4]

[Total: 30 marks]

8 Students wanted to investigate the quality of the urban landscape in different parts of their town. To do this they decided to carry out an environmental survey, to find out if the quality of the environment varies between streets.

They decided to focus their investigation on the following hypotheses:

Hypothesis 1: *The quality of the environment is affected by the type of land use.*

Hypothesis 2: *The quality of the environment varies with distance from the town centre.*

The students selected 20 streets to survey. Their selection criteria were:

- the street must have one main land use

- the streets must be at different distances from the town centre

They decided to have four land use categories:

- residential

- industrial

- shopping

- open space

(a) The positions of the survey sites are shown on Fig. 15.

Positions of survey sites

Key
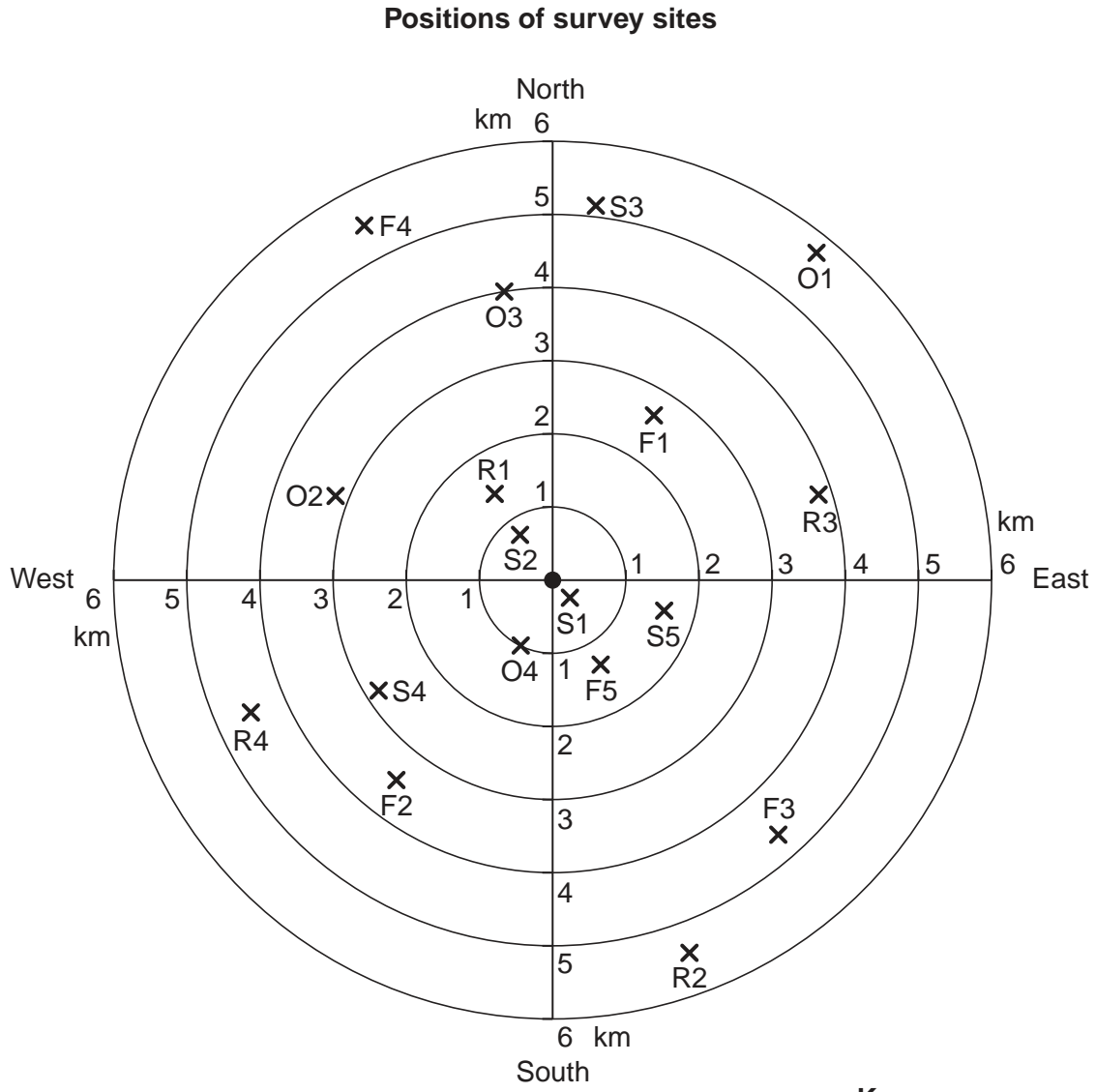
● town centre
✕ position of
survey point

Land uses:
R residential
F industrial
S shopping
O open space

Fig. 15

Complete Fig. 15 by marking on the position of the final two streets, using the information below.

Land use	Reference number	Distance from town centre (km)	Direction from town centre
residential	R5	2.0	north east
open space	O5	4.5	south west

[2]

(b) The students produced an environmental quality reference sheet to use at each site. This is shown in Table 6.

Table 6

Environmental quality reference sheet

Category	Description	Score
Litter	No litter	3
	Small amount of litter	2
	A lot of litter	1
	All kinds of litter scattered widely	0
Roads and pavements	Well maintained	3
	Slightly uneven	2
	Uneven	1
	Very poor condition	0
Trees, shrubs and grass	Well kept	3
	Badly kept or poor quality	2
	Damaged trees and shrubs, grass not cut	1
	Derelict and unplanted areas	0
Street furniture (lamp posts, telephone boxes, street lights, bins)	Well designed and in good condition	3
	Adequate provision, satisfactory condition	2
	Missing or inadequate	1
	Badly cared for or vandalised	0
Road signs	Well placed and visible	3
	Badly placed	2
	Confusing and cluttered	1
	Inadequate information	0
Traffic		3
		2
		1
		0
Noise	Low level noise	3
		2
	Frequent disturbing and distracting noise	1
		0

2217/02/O/N/09

(i) Complete the 'Traffic' section by inserting the following descriptions in the correct order in Table 6:

Traffic moving freely, heavy parking

Traffic congested, not moving freely

Clear road with light parking

Traffic moving freely, light parking [1]

(ii) Complete the 'Noise' section of Table 6 by inserting appropriate descriptions. [2]

(iii) What decisions would the students have to make in organising and carrying out the environmental quality survey?

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....[4]

(c) The students needed to record the results of their environmental quality survey. In Fig. 16, design a sheet which could be used to record their results for one street. [3]

Environmental quality survey

Name of street ....

Fig. 16

(d) The results of the environmental quality survey are shown in Table 7 (Insert).

(i) Use these results to complete the dispersion graph, Fig. 17. Plot the environmental quality scores of the residential streets R1 and R4 and circle the median (middle) value for residential land use. [3]

Results of environmental quality survey

Fig. 17
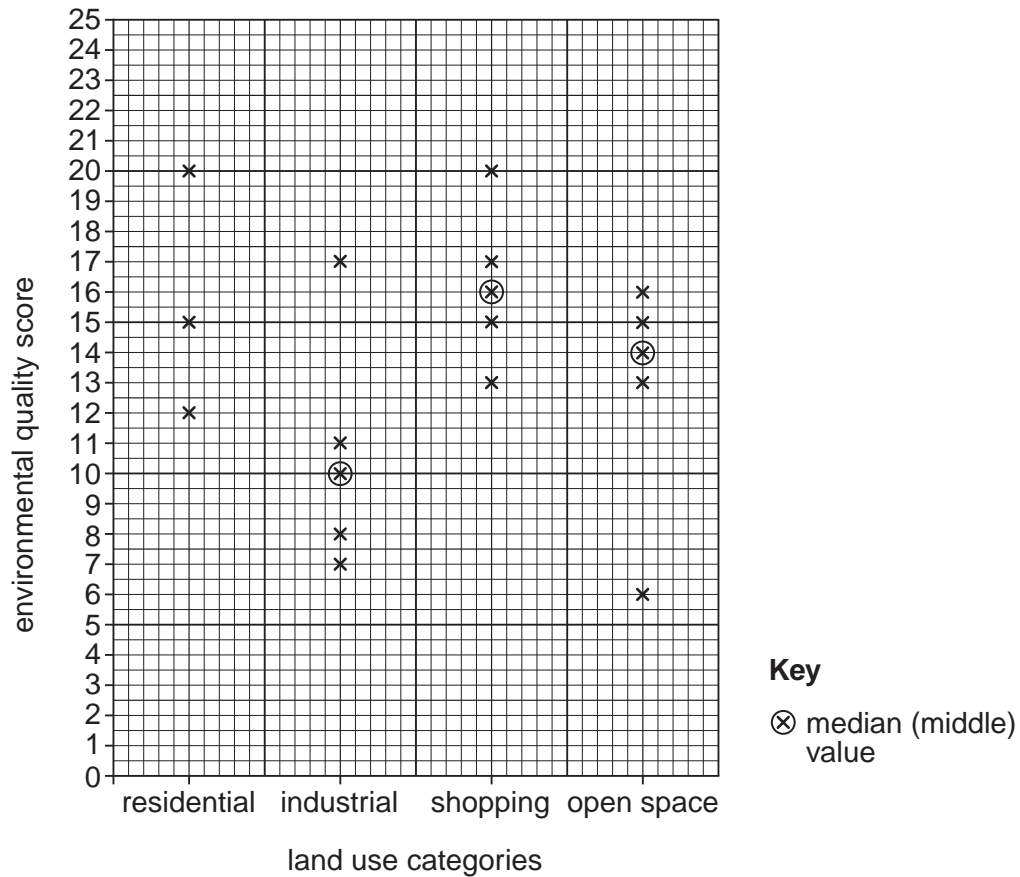
(ii) In the space below, rank the four land use categories in order of their median (middle) score.

Rank	Land use category
High	
↑	
↓	
Low	

[1]

(iii) The students accepted **Hypothesis 1**, that
'*The quality of the environment is affected by the type of land use*'.
Do you agree with them? Support your decision with evidence from Fig. 17.

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....[2]

(iv) Suggest reasons for the difference in results between the industrial areas and the shopping areas.

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....[3]

(e) (i) Look again at the results' sheet, Table 7 (Insert). Use these results to complete the scatter graph, Fig. 18, by plotting the environmental quality scores of the residential streets R1, R4 and R5.   [3]

**How environmental quality varies with distance
from town centre**

Fig. 18

(ii) Looking at the results shown in Fig. 18, do you accept or reject **Hypothesis 2**, that '*The quality of the environment varies with distance from the town centre*'?
Give evidence for your answer.

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....[2]

(f) Having completed the survey, the students were discussing the methods they had used with their teacher. They identified the following two things that they felt could have been improved:

- The environmental quality reference sheet Table 6
- The four land use categories they had identified (residential, industrial, shopping, open space)

What problems do you think the students might have identified about the environmental quality reference sheet and the four land use categories?

The environmental quality reference sheet

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The four land use categories

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....[4]

[Total: 30 marks]

28

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