



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE
NAME

CENTRE
NUMBER

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GEOGRAPHY

0460/04

Paper 4 Alternative to Coursework

May/June 2008

1 hour 30 minutes

Candidates answer on the Question Paper.

Additional Materials: Calculator
Ruler

READ THESE INSTRUCTIONS FIRST

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** the questions.
The Insert contains Fig. 1 for Question 1 and Figs 6 and 8 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.

| For Examiner's Use | |
|--------------------|--|
| Q1 | |
| Q2 | |
| Total | |

This document consists of **14** printed pages, **2** blank pages and **1** Insert.



- 1 Students at a school in the Netherlands, a northern European country, investigated the microclimate around their school. This was to find out whether buildings and different types of ground surface influenced the air temperature and the relative humidity.

The two hypotheses used by the students were

- *'the school buildings increase the outside air temperature'*
- *'vegetation on the surface of the ground affects the relative humidity'*

- (a) (i) The recording of air temperature and relative humidity took place in calm, stable conditions during November. Why was this important to the investigation?

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.....[2]

- (ii) Study the map, Fig. 1 (Insert), which shows eight sites, labelled A to H, around the school buildings. These sites were used by the students for measuring the air temperature and relative humidity. Explain how school buildings in November (a winter month) may influence the outside air temperature at different sites.

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.....[2]

- (b) (i) The school's Stevenson screen is located at Site A. Suggest reasons why this is the best location for a Stevenson screen.

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- (ii) A traditional maximum-minimum (Six's) thermometer is located in the Stevenson screen. Use Fig. 2 to identify maximum, minimum and present temperature shown on the thermometer. Record these in the boxes on Fig. 2. [3]

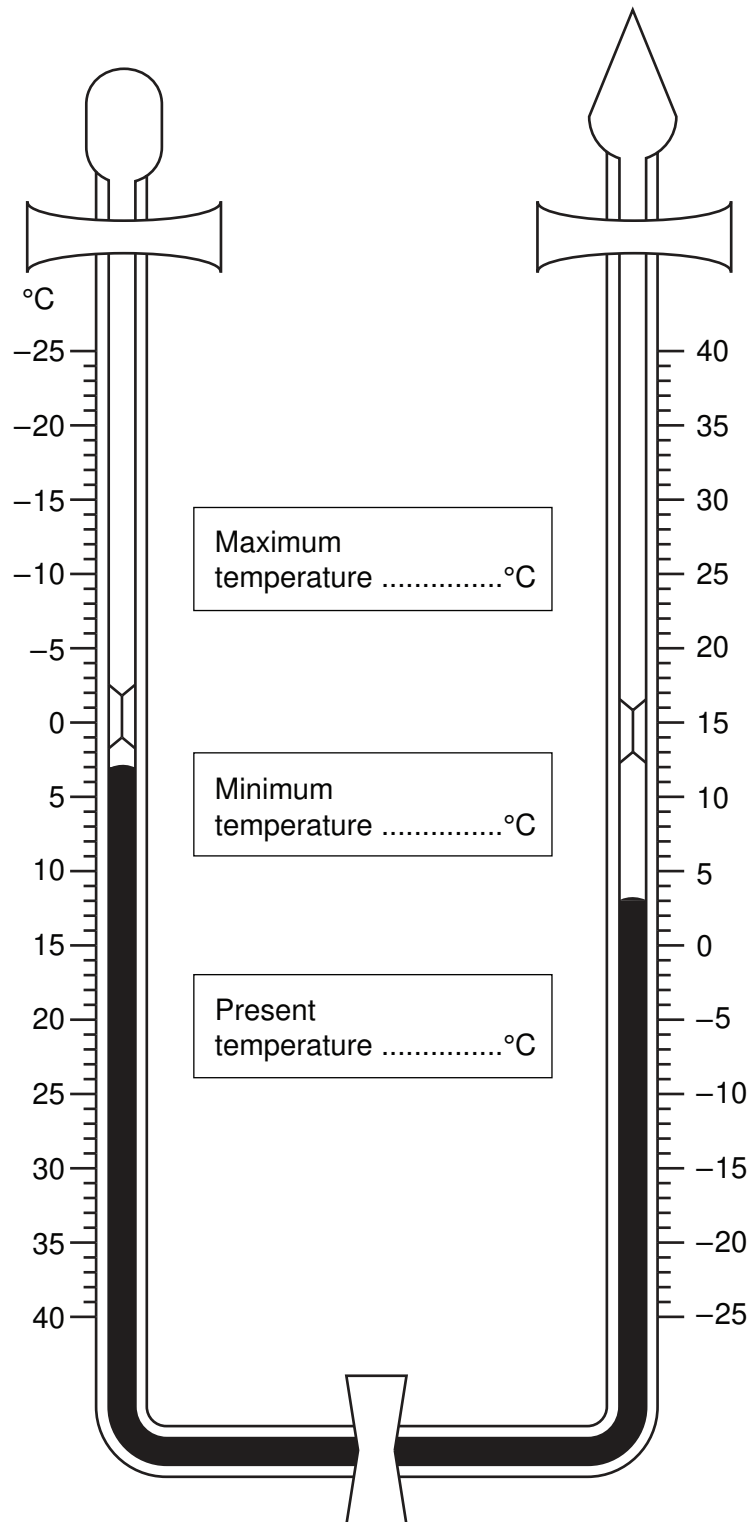


Fig. 2

- (c) The air temperature at the other seven sites was measured using a hand-held digital thermometer. Study the instructions from the teacher (Fig. 3).

Readings should be taken at each site at 08.00 and 15.00 hours. Hold the digital thermometer at waist height for 30 seconds. Write the air temperature on the recording sheet. Repeat the measurement two minutes later. Calculate the average (mean) temperature of the two readings. Record this on the sheet too. Do this in the morning and in the afternoon for three days.

Fig. 3

- (i) State a disadvantage of this method.

Disadvantage:
..... [1]

- (ii) Suggest why the recordings were repeated each morning and afternoon.

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..... [1]

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QUESTION 1 CONTINUES ON PAGE 6

(d) Study Table 1, which shows the air temperature at each site.

Table 1

Air temperature at each site (°C)

| Site | A | B | C | D | E | F | G | H | Average temperature (08.00 and 15.00) |
|------------------------|------|------|------|------|------|------|------|------|---------------------------------------|
| Distance from building | 32m | 2m | 3m | 40m | 1m | 17m | 9m | 2m | |
| Day 1, 08.00 | 5.0 | 5.3 | 5.8 | 5.3 | 5.7 | 5.5 | 5.8 | 6.5 | 5.6 |
| Day 1, 15.00 | 12.0 | 11.8 | 13.0 | 11.6 | 11.5 | 11.8 | 12.0 | 12.3 | 12.0 |
| Day 2, 08.00 | 3.0 | 3.8 | 3.8 | 3.0 | 3.5 | 2.9 | 3.2 | 3.5 | 3.3 |
| Day 2, 15.00 | 3.0 | 3.4 | 4.4 | 3.4 | 4.6 | 3.3 | 3.3 | 3.8 | 3.6 |
| Day 3, 08.00 | 3.0 | 3.1 | 4.5 | 2.8 | 4.2 | 3.1 | 2.9 | 3.0 | 3.3 |
| Day 3, 15.00 | 5.0 | 5.9 | 7.0 | 4.6 | 6.2 | 5.1 | 5.3 | 5.8 | 5.6 |
| Three day site average | 5.2 | 5.5 | 6.4 | 5.1 | 5.9 | 5.2 | 5.4 | 5.8 | |

Use the average temperature (08.00 and 15.00) data to describe the changes in air temperature during the three days.

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- (e) Study the scatter graph (Fig. 4), which shows the three day average air temperature at each site.

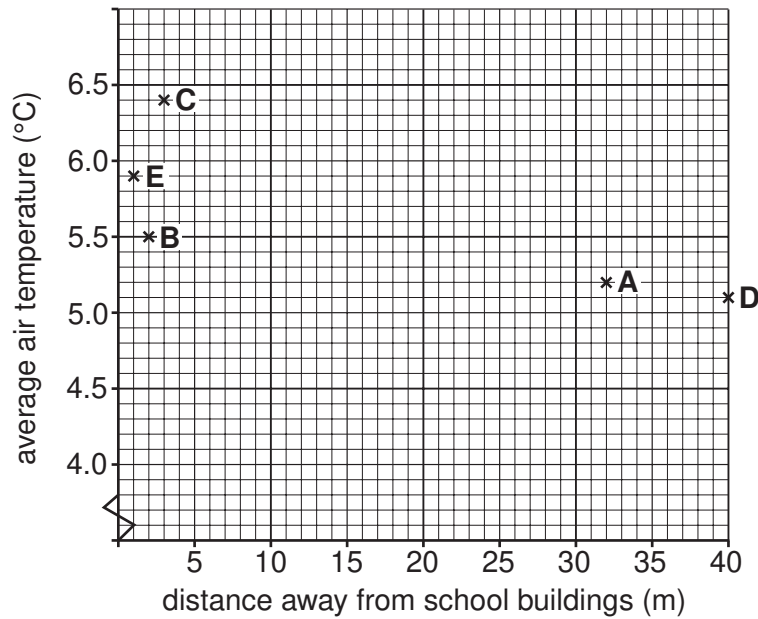


Fig. 4

- (i) Use the three day site average temperatures from Table 1 to complete the scatter graph (Fig. 4) for Sites F, G and H. [3]
- (ii) Draw a line of best fit on the graph. [1]
- (iii) How does the distance from the school buildings influence the air temperature? State evidence from Fig. 4 and the school map Fig. 1 (Insert) to support your answer.

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[3]

- (f) At the same times of each day, the students also used a digital hygrometer to measure relative humidity at each site. The students observed and recorded the type of ground surface.

Study Table 2, which shows the results of the students' measurements and observations.

Table 2

| Site | A | B | C | D | E | F | G | H |
|---------------------------|-------|--------------|----------|--------|----------|-------|------------|----------|
| Average relative humidity | 75% | 77% | 76% | 75% | 73% | 73% | 75% | 77% |
| Type of ground surface | grass | small plants | concrete | tarmac | concrete | trees | near water | concrete |

Is there a higher relative humidity at the sites where there is vegetation on the surface? Use the space below, and the average relative humidity data in Table 2 to calculate your result and state your answer.

Space for calculations and answer

| | |
|---|--|
| Average relative humidity for sites with vegetation | |
| Average relative humidity for sites without vegetation | |
| Is there a higher relative humidity at the sites where there is vegetation on the surface? Your answer | |

[2]

(g) (i) Does the data collected by the students support the original hypotheses?

- *'the school buildings increase the outside air temperature'*
- *'vegetation on the surface of the ground affects the relative humidity'*

Ring your answer for each hypothesis and explain your decision.

Hypothesis 1 – *'the school buildings increase the outside air temperature'*

Answer YES TO SOME EXTENT NO

Reason

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Hypothesis 2 – *'vegetation on the surface of the ground affects the relative humidity'*

Answer YES TO SOME EXTENT NO

Reason

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(ii) Critically evaluate the data collection methods used in this investigation.

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[Total: 30 marks]

- 2 Students investigated the impact of tourists on the settlement of Pescasseroli in the Abruzzi National Park in central Italy. The hypothesis for the investigation was *'the tourists who visit the National Park have a positive impact on the settlement of Pescasseroli'*. Information about the settlement of Pescasseroli is shown below.

Pescasseroli is a settlement of 2000 inhabitants. It is located on a wide plain surrounded by mountains, in the heart of the Abruzzi National Park. Activities in winter include downhill skiing and cross country skiing. In the summer there are ample opportunities for a variety of trekking and outdoor activities. There are six hotels in the settlement and 11 restaurants for visitors and residents to use.

Fig. 5

- (a) The students used the Internet to find out about the settlement. The information in Fig. 5 is from this secondary source of data. They also collected primary data.

- (i) What is meant by a *primary* source of data?

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 [1]

- (ii) State **two** examples of a primary source of data.

..... [1]

- (b) The students designed questionnaires for the tourists and residents to assess the impact of tourists. Fig. 6 (Insert) shows the questionnaires.

Question T1 (i) to the tourists was designed to investigate the method of transport used by tourists to reach the National Park. Fig. 7 is a pie chart of the results.

Method of transport used by tourists

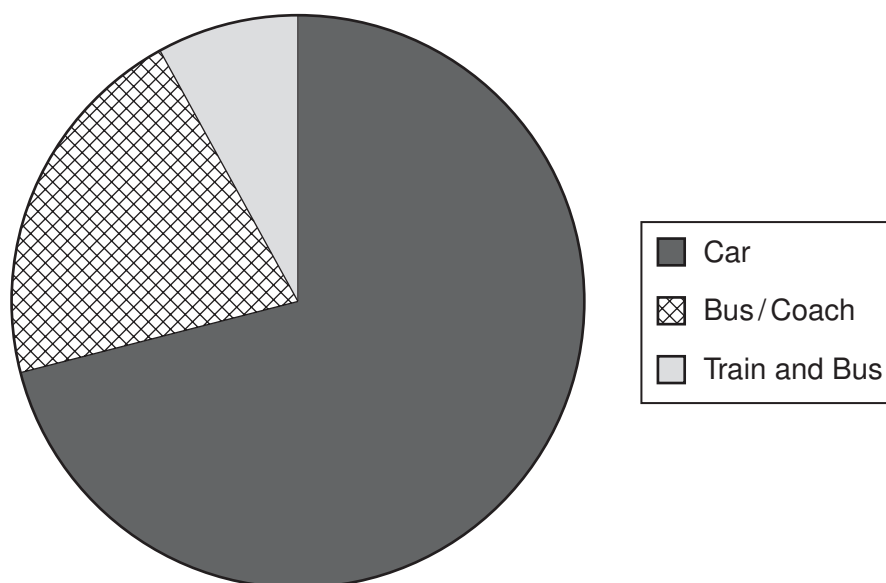


Fig. 7

- (i) Describe the pattern shown by these results.
Suggest **one** reason for this pattern.

Describe





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Reason

.....[3]

- (ii) Fig. 8 (Insert) shows the results of the questionnaire for tourists. Use the results from question T1 (ii) to complete the pictograph on Fig. 9, to represent the tourists' opinions about parking problems in the settlement. [2]

Tourists' opinions about parking

| | |
|---|--|
|  Very difficult | |
|  A little difficult | |
|  No problem |  |

 or  or  = 4 people

Fig. 9

- (c) Study question T2 and question T3 of the questionnaire for tourists, Fig. 6 (Insert). Explain why these are important questions for the investigation.

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- (d) Study the results of question T4 of the questionnaire for tourists, Fig. 8 (Insert). Draw a bar graph on Fig. 10 to show the main reasons why visitors come to the Abruzzi National Park. [4]

Reasons for visiting the Abruzzi National Park

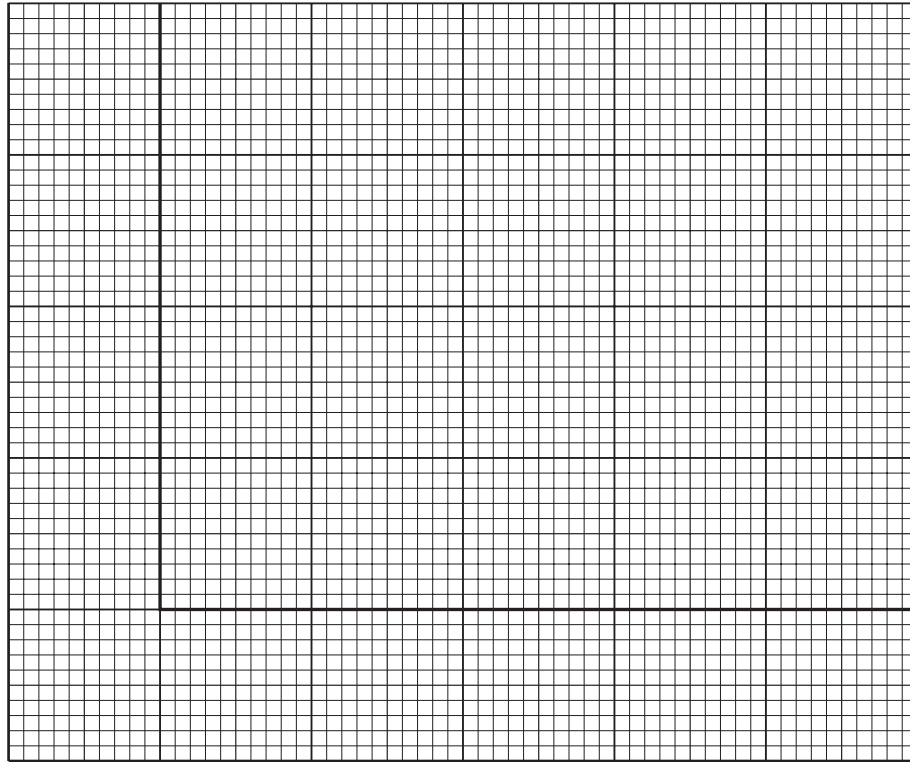


Fig. 10

- (e) (i) Use the age and gender information from Fig. 8 (Insert) to explain whether the tourist questionnaire results in this sample are reliable and representative.

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- (ii) Suggest how the main reason for visiting the National Park may change at a different time of the year or at a different time of the day.

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Results of questionnaire for residents (125 results)

| | | | Number | % |
|----|--------------------------|---------------|--------|----|
| R1 | Length of residency | Under 5 years | 19 | 15 |
| | | 5–10 years | 22 | 18 |
| | | 11–15 years | 66 | 53 |
| | | Over 15 years | 18 | 14 |
| R2 | Opinion of main problems | None | 50 | 40 |
| | | Crowded | 18 | 14 |
| | | Litter | 15 | 12 |
| | | Traffic | 26 | 21 |
| | | Noisy people | 16 | 13 |

| | | | Yes | No |
|----|---|-----------------------------|-----|-----|
| R3 | Residents' views on benefits of tourism | Tourism related job | 66% | 34% |
| | | Adequate tourist facilities | 72% | 28% |
| | | Adequate parking | 69% | 31% |
| | | Improved facilities | 83% | 17% |

Fig. 11

