GradeMax

Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

3587988569

GEOGRAPHY **0460/43**

Paper 4 Alternative to Coursework **October/November 2018**

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 in the spaces provided.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Write your answer to each question in the space provided.
If additional space is required, you should use the lined pages at the end of the booklet.
The question number(s) must be clearly shown.

Answer **all** questions.

The Insert contains Figs. 1.1, 1.2, 1.3, 1.4 and Tables 1.2, 1.3 and 1.4 for Question 1, and Table 2.1 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 syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

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1 Students in England did fieldwork at twelve sites on a stream called Ashes Hollow. It flows for about 5 km from where the stream begins, until it joins the stream called Quinny Brook. They selected six sites upstream of a waterfall, and six sites downstream of it.
Fig. 1.1 (Insert) shows Ashes Hollow and Fig. 1.2 (Insert) shows the waterfall.

(a) Choose from the table below the correct geographical word for

confluence
meander
mouth
source
watershed

(i) 'where the stream begins' ..... [1]

(ii) 'it joins the stream called Quinny Brook.' ..... [1]

The two hypotheses which the students tested were:

Hypothesis 1: *The cross sectional area of the channel increases downstream.*

Hypothesis 2: *Sinuosity is greater downstream of the waterfall.*

Sinuosity is a measurement of how much a river meanders. A higher sinuosity score shows that the river meanders more.

Fig. 1.3 (Insert) shows a method to calculate sinuosity.

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(b) Before they began their fieldwork the students assessed the possible hazards they may come across. Their decisions are shown in Table 1.1 below.

Table 1.1

Risk assessment

Hazard	Likelihood	Severity	Risk	Management
Walking along the side of the road to the valley	1	5	5	Shout warnings, keep to one side of the road
Weather conditions in the valley	3	2	6	Wear suitable clothing
Rocks falling from the valley side	2	3	6	Do not go underneath rocks on the valley side
Slippery surfaces in and around the river	4	3	12	
Fast currents in the river	3	3	9	
Catch disease from the river water	2	3	6	

Likelihood of encountering hazard: 1 (little chance) to 5 (greatest chance)
Severity of hazard: 1 (not likely to be dangerous) to 5 (very dangerous)
Risk = likelihood of encountering hazard × severity of hazard

(i) Which **one** of the possible hazards did the students consider to have the greatest risk?

.....[1]

(ii) Suggest different ways to manage each of the following hazards during fieldwork:

Slippery surfaces in and around the river

.....

.....

Fast currents in the river

.....

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Catch disease from the river water

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.....[3]

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(c) To test their hypotheses the students made three measurements at each of the twelve sites. They measured the width of the channel, the depth of the channel, and the sinuosity of the channel. Their methods are shown in three photographs in a student's notebook, Fig. 1.4 (Insert).
In the table below **match each photograph** to the method it shows.

Measurement method	Photograph (A, B, C)
width of channel	
depth of channel	
channel sinuosity	

[2]

(d) The results of the students' measurements for **Hypothesis 1:** *The cross sectional area of the channel increases downstream*, are shown in Table 1.2 (Insert).

(i) Which **one** of the following is the correct method to calculate cross sectional area? Tick (✓) your choice.

Method	Tick (✓)
average depth plus width	
average depth minus width	
average depth multiplied by width	

[1]

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(ii) Use the results in Table 1.2 to **plot the cross sectional area** at site 3 on Fig. 1.5 below. [1]

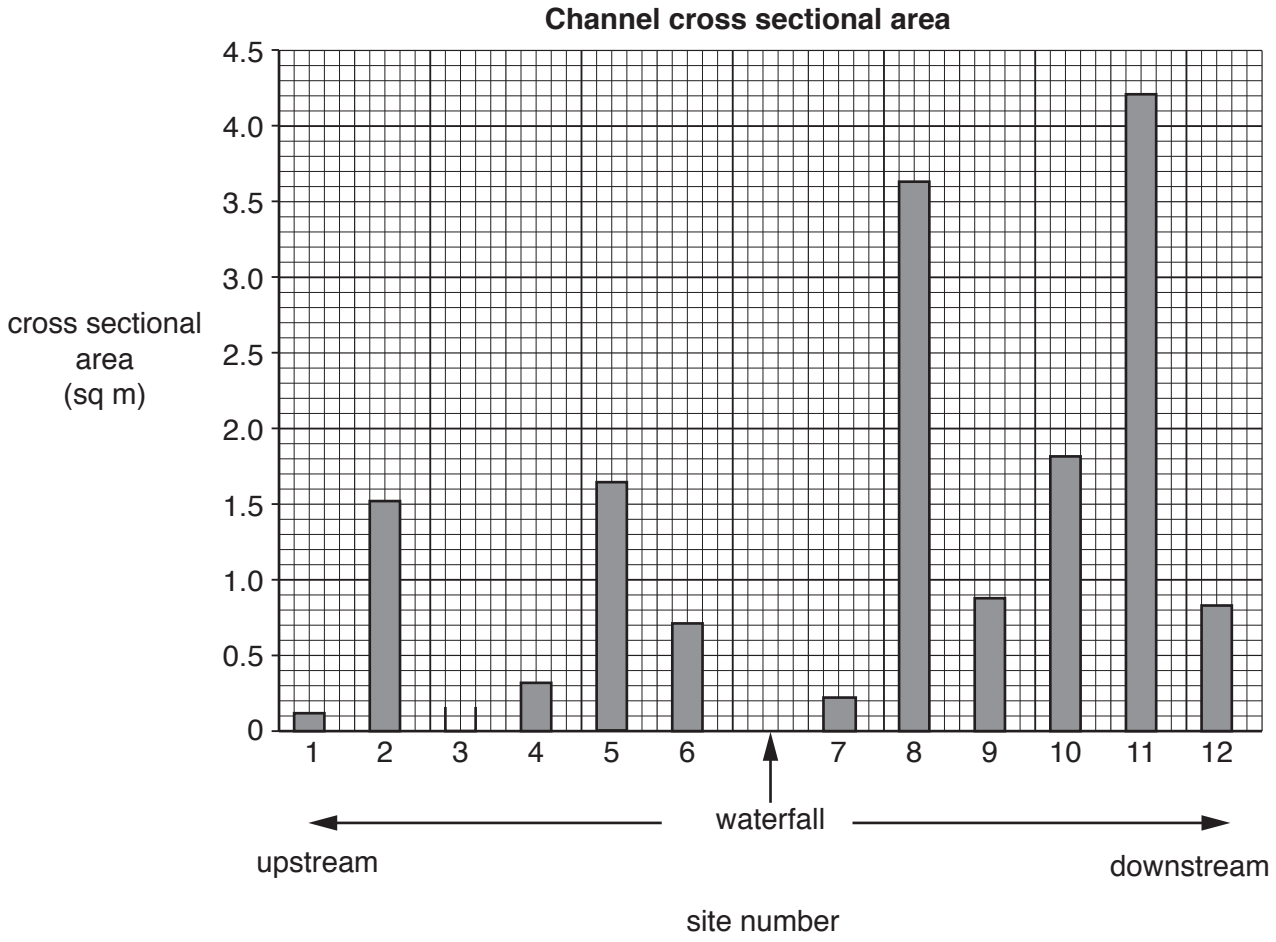


Fig. 1.5

(iii) To what extent do the results shown in Fig. 1.5 support **Hypothesis 1:** *The cross sectional area of the channel increases downstream*? Circle your decision below and support it with evidence from Fig. 1.5 and Table 1.2.

completely partially not at all

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.....[4]

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(e) To investigate **Hypothesis 2:** *Sinuosity is greater downstream of the waterfall*, the students measured the sinuosity at the twelve sites upstream and downstream of the waterfall. (Sinuosity is a measurement of how much a river meanders. A higher sinuosity score shows that the river meanders more.)

Their results are shown in Table 1.3 (Insert).

(i) Use the results **to plot the sinuosity score** at site 10 on Fig. 1.6 below. [1]

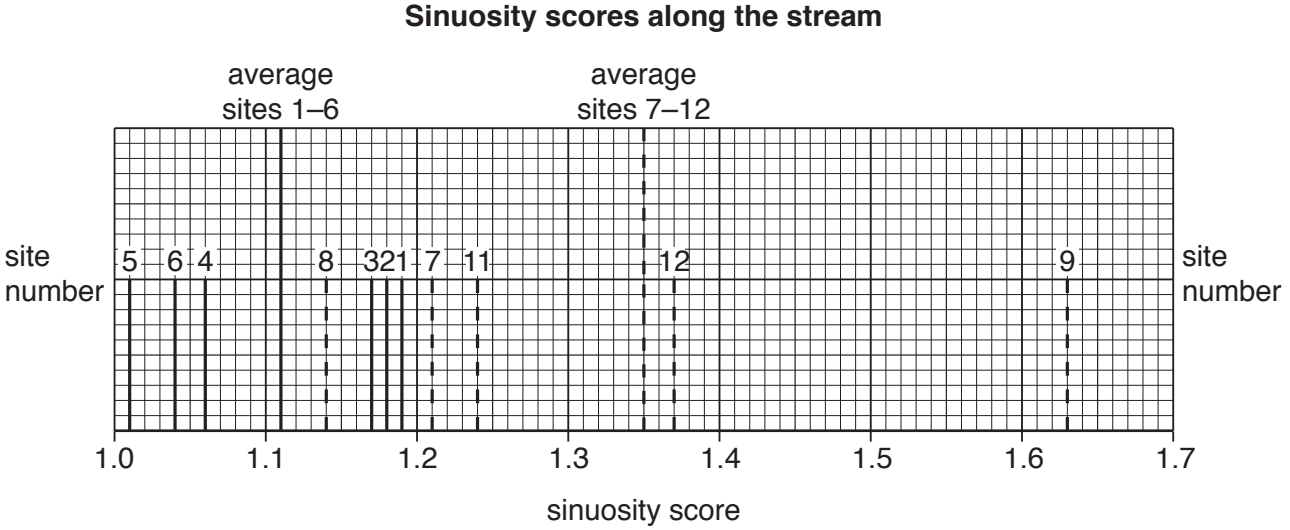


Fig. 1.6

(ii) What conclusion did the students make about **Hypothesis 2:** *Sinuosity is greater downstream of the waterfall*?
Use evidence from Fig. 1.6 and Table 1.3 to support the conclusion.

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.....[3]

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(f) As an extension activity to their fieldwork the students measured the width of the valley floor. The students expected that the width of the valley floor would increase downstream.

(i) Why do valley floors generally become wider downstream?

.....

.....[1]

(ii) Their results are shown in Table 1.4 (Insert). **Plot the width of the valley floor** at site 8 on Fig. 1.7 below. [1]

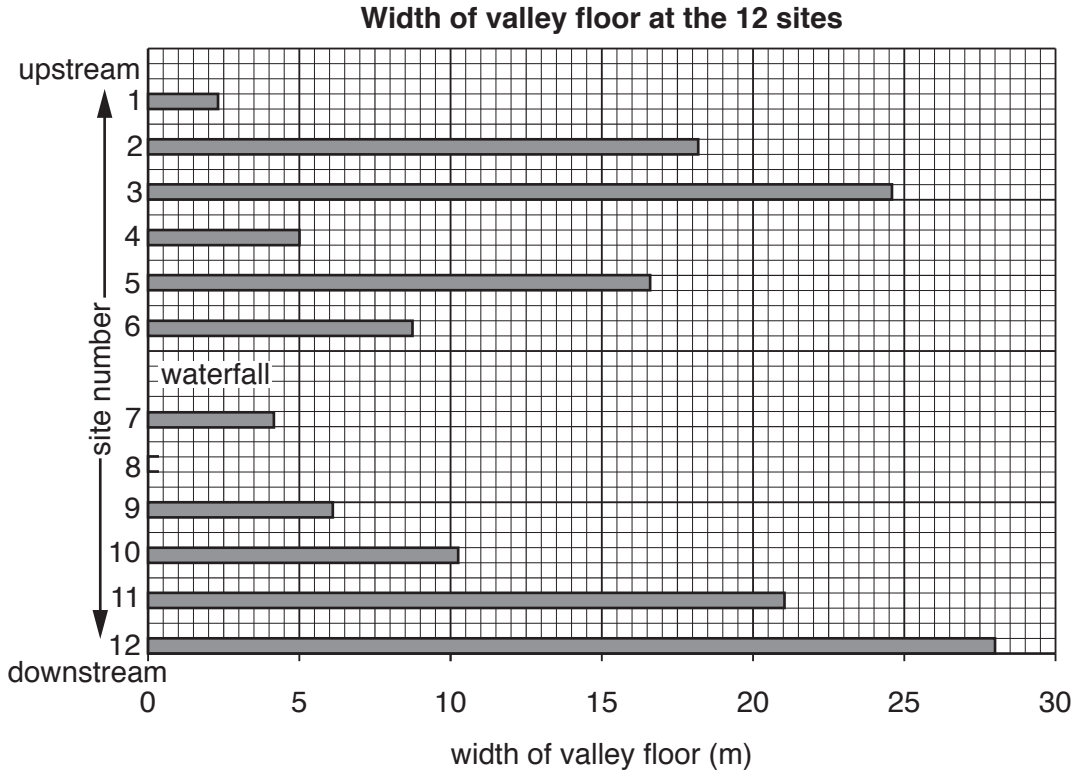


Fig. 1.7

(iii) Give **two** pieces of evidence from Fig. 1.7 and Table 1.4 that the width of the valley floor was **not** wider downstream of the waterfall than upstream of the waterfall.

1 .....

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2 .....

.....[2]

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(g) Describe a method the students could use to measure another characteristic of the river at the 12 sites. Do **not** refer to width, depth or sinuosity.

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.....[4]

(h) Fig. 1.2 (Insert) shows the waterfall on Ashes Hollow stream. Explain how a waterfall is formed.

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.....[4]

[Total: 30]

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2 A class of students in the UK wanted to investigate how the quality of the urban environment varied between different areas of their town. They decided to do an environmental quality survey.

The students decided to focus their investigation on four types of land use:

- industry
- open space
- residential (housing)
- shops.

They concentrated their investigation on the following hypotheses:

Hypothesis 1: *The quality of the urban environment varies between different types of land use.*

Hypothesis 2: *The quality of the urban environment improves as distance from the town centre increases.*

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(a) The students selected 20 sites (including 5 of each land use) to do their environmental quality survey. At each chosen site there was one main land use. The sites varied in distance from the town centre.
The location of the survey sites are shown on Fig. 2.1 below.

Location of survey sites in the town

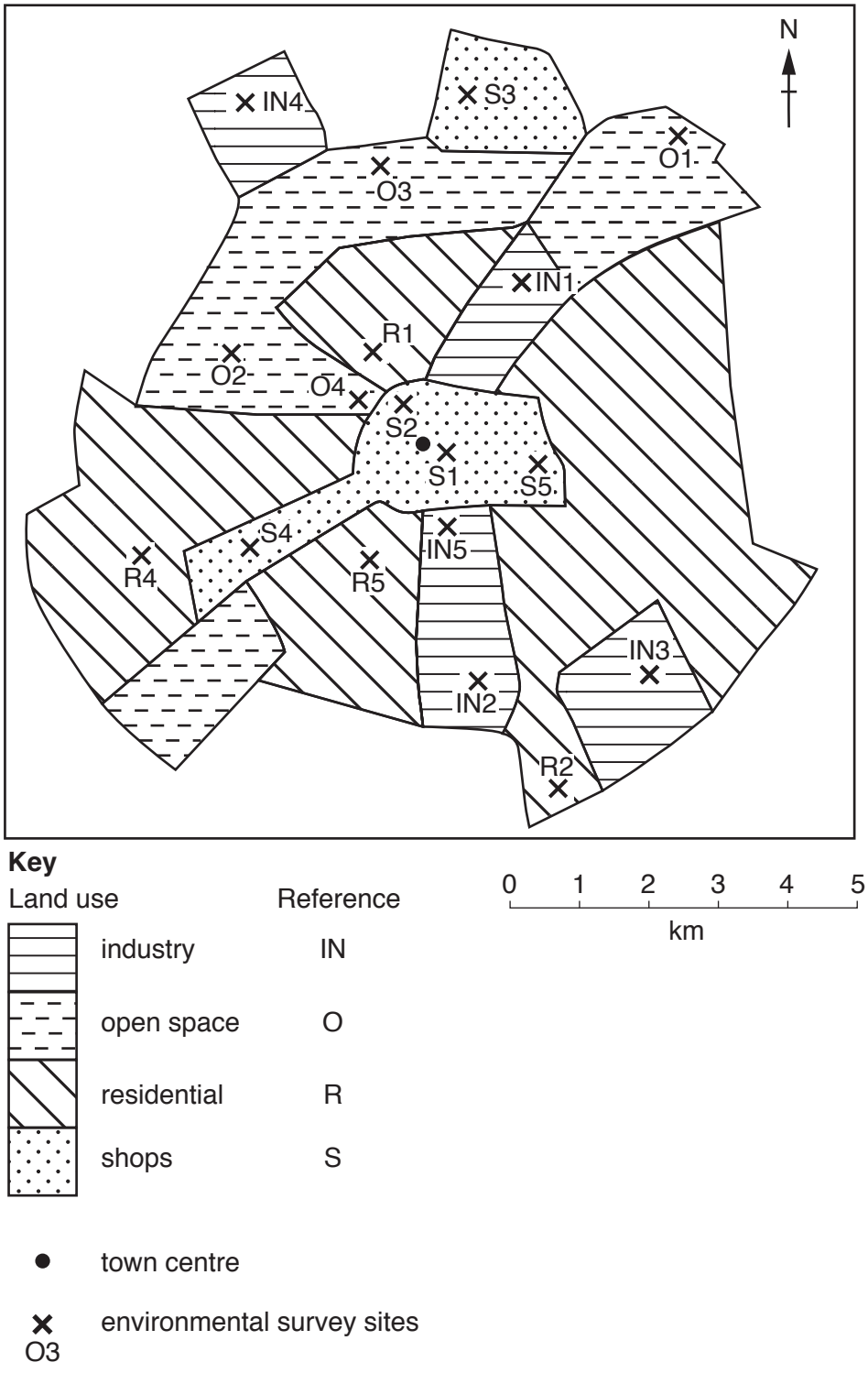


Fig. 2.1

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Complete Fig. 2.1 by marking on the location of **two** sites, O5 and R3, using the information below.

Reference number	Main land use	Distance from town centre (km)	Direction from town centre
O5	Open space	4.5	south west
R3	Residential	3.8	east north east

[2]

(b) The students produced a reference sheet to use at the environmental quality survey sites. This is shown in Fig. 2.2 on page 12.

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Environmental quality reference sheet

Category	Description	Score
Litter and graffiti	None visible	3
	Small amount	2
	A lot which is obvious	1
	All kinds which spoil the appearance	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 (seats, telephone boxes, street lights, litter 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	Little traffic with few parked vehicles	3
	.....	2
	.....	1
	.....	0
Noise	Low level, no disturbance	3
	Occasional and little disturbance	2
	Frequent, disturbing and distracting	1
	High level, very disturbing and distracting	0

Fig. 2.2

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(i) **Complete the Traffic category** by writing the following descriptions in the correct order on Fig. 2.2.

Traffic not moving with many parked vehicles

Traffic moving slowly with many parked vehicles

Traffic moving freely with few parked vehicles [1]

(ii) Suggest advantages of using the reference sheet during the environmental quality survey.

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.....

.....[2]

(iii) The students agreed to work in four groups with each group doing the environmental quality surveys in one type of land use. Each group did their surveys at different times of the day. Why might this make the results less reliable?

.....

.....[1]

(iv) Give **two** pieces of advice about safety which the students would be given by their teacher.

1 .....

.....

2 .....

.....[2]

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(c) (i) The students needed to record the results of their environmental quality survey. In Fig. 2.3 below, **draw a results sheet** which they could use to record results at each site they visited. [3]

Environmental Quality Survey Results Sheet

Site reference number .....

Fig. 2.3

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(ii) The results of the environmental quality survey are shown in Table 2.1 (Insert).
Use these results to complete the dispersion graph in Fig. 2.4 below. **Plot the environmental quality score** of:
the residential site R1
the average (mean) value for industry. [2]

Results of environmental quality survey

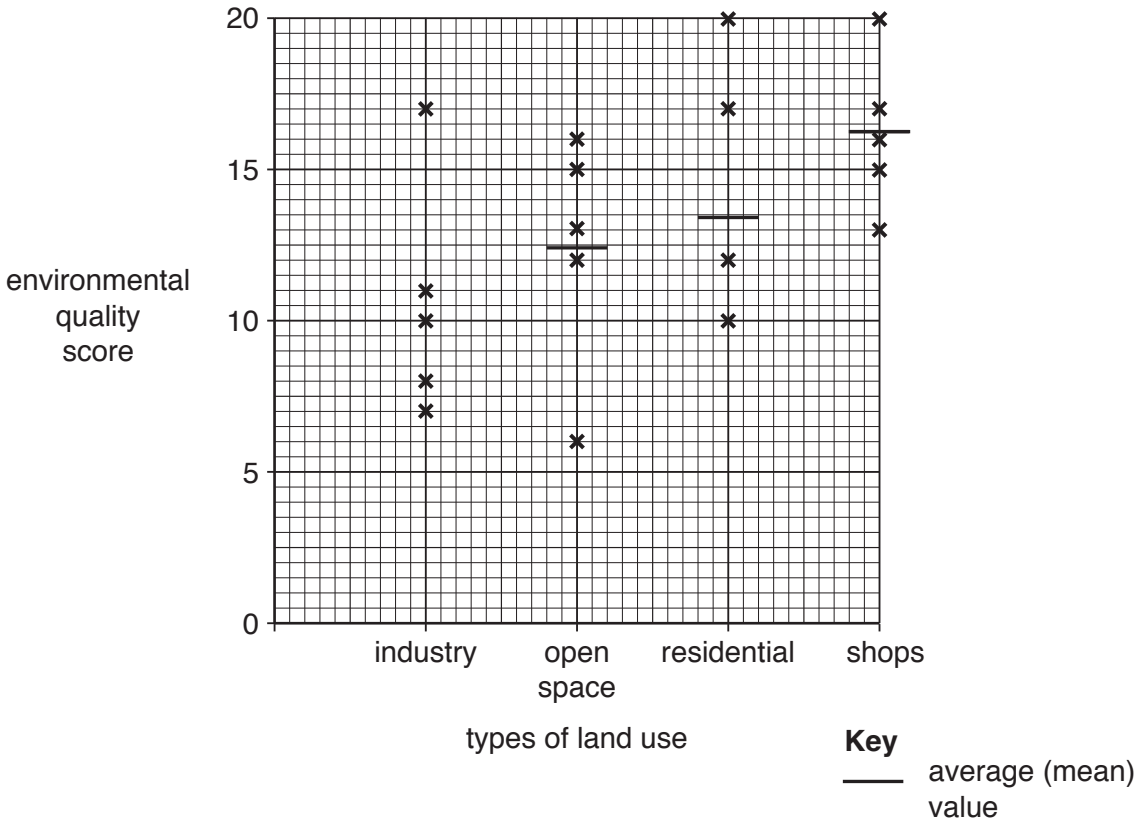


Fig. 2.4

(iii) The students' conclusion was that **Hypothesis 1:** *The quality of the urban environment varies between different types of land use* is true.
Do you agree with this conclusion? Support your decision with evidence from Fig. 2.4 and Table 2.1.

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(iv) Suggest reasons why there is variation in the quality of the environment between **industrial** sites in an urban area.

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.....[3]

(d) The students used the results of the environmental quality survey (Table 2.1) to consider **Hypothesis 2:** *The quality of the urban environment improves as distance from the town centre increases*.

(i) Use the results in Table 2.1 to **plot the environmental quality score of the shops site S5** on the scatter graph, Fig. 2.5, below. [1]

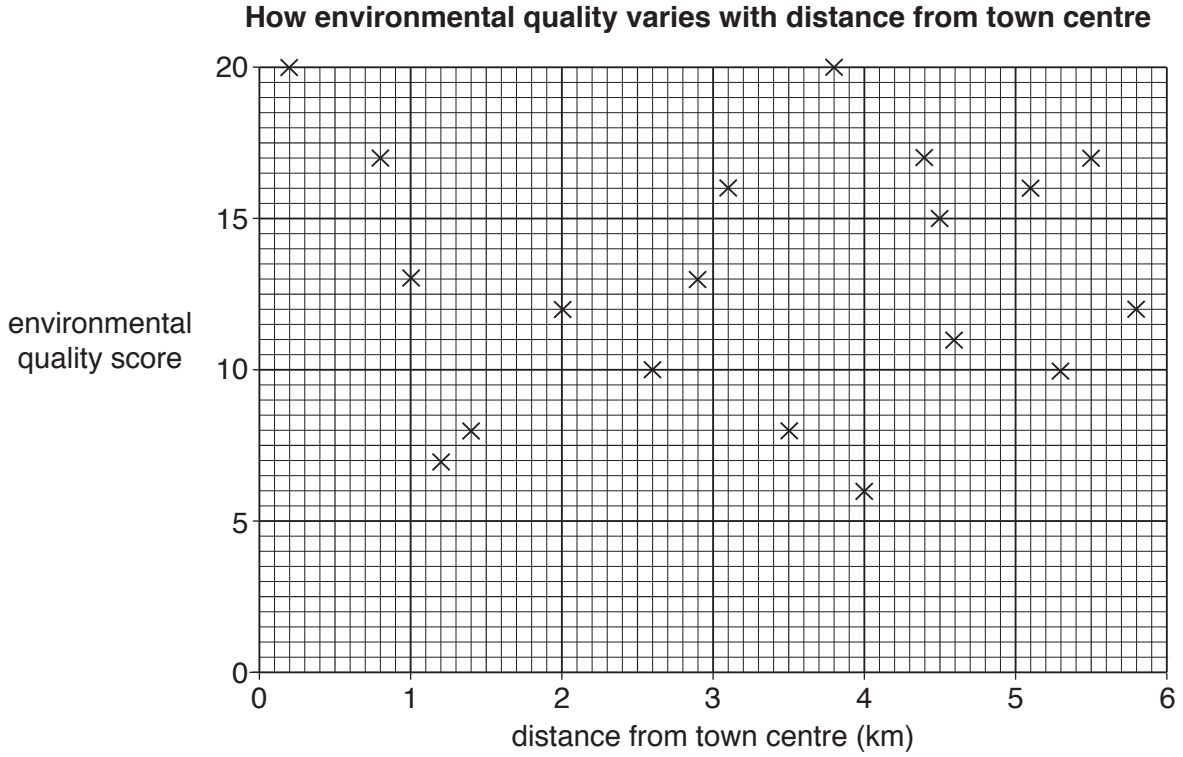


Fig. 2.5

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(ii) The students made a conclusion that **Hypothesis 2:** *The quality of the urban environment improves as distance from the town centre increases* was false. Support this conclusion with evidence from Fig. 2.5 and Table 2.1.

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.....[3]

(e) Having completed their environmental quality survey the students learned that the scores varied between areas of the town.
Suggest **two** ways that the local government could improve the environment of low-scoring areas.

1 .....

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2.....

.....[2]

(f) One group of students wanted to do some extension work to find out the opinions of local people about the environment at the sites they had visited.
Describe a fieldwork method the students could use to find out people's opinions.

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[Total: 30]

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Additional Pages

If you use the following lined pages to complete the answer(s) to any question(s), the question number(s) must be clearly shown.

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