GradeMax

Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

8168215755

GEOGRAPHY **0460/41**

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

1 hour 30 minutes

Candidates answer on the Question Paper.

Additional Materials: Calculator
Protractor
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 and 1.4 and Tables 1.1 and 1.2 for Question 1, and Figs. 2.1, 2.2, 2.3, 2.4, 2.6, 2.7, 2.8, 2.9, 2.10 and 2.11 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.

This document consists of **17** printed pages, **3** blank pages and **1** Insert.

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1 Students were learning about problems in urban settlements. They agreed with their teacher that traffic was a problem in the centre of their local town. They decided to do fieldwork to investigate the issue.

The students tested the following hypotheses:

Hypothesis 1: *The number of vehicles in the town centre varies throughout the day.*

Hypothesis 2: *Traffic congestion is a big problem in the town centre.*

(a) To investigate **Hypothesis 1** the students did a traffic count at different sites in the town centre. These sites are shown on Fig. 1.1 (Insert).

(i) Which **two** of the following are important features of a traffic count? Tick (✓) your choices below.

Feature	Tick (✓)
Pedestrians who walk past the counting site and then return must be counted twice.	
Counting must start and finish at the same time at all counting sites.	
Students should work by themselves so they are not distracted by others.	
The speed of each vehicle must be recorded using a stop watch.	
A tally method must count and record vehicles in groups of five.	
Identify every fifth vehicle which passes the counting site by make and model of vehicle.	

[2]

(ii) The students agreed to count the number of vehicles for 10 minutes at two hour intervals between 07:00 and 19:00.
Suggest why the students decided to make the counts last for 10 minutes.

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.....[2]

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(b) The results of the traffic counts are shown in Table 1.1 (Insert).

(i) At which site were most vehicles counted during the day?

Site number ..... [1]

(ii) **Plot the total number of vehicles** counted at 17:00 and 19:00 on Fig. 1.2, below. [2]

Results of traffic count

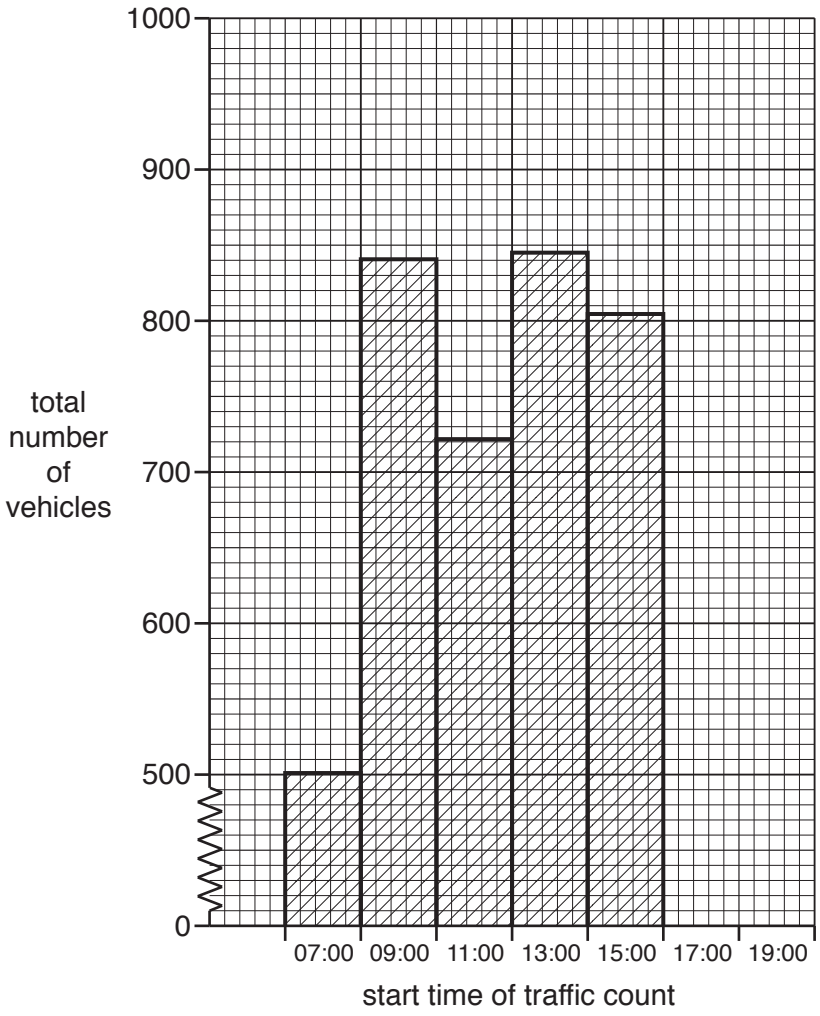


Fig. 1.2

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[Turn over

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(iii) What conclusion did the students make about **Hypothesis 1:** *The number of vehicles in the town centre varies throughout the day*? Support your decision by **only** referring to data for the total number of vehicles and the number of vehicles counted at sites 5 and 6 at different times. This data is shown in Fig. 1.2 and highlighted in Table 1.1.

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.....[4]

(iv) Suggest **two** factors which might influence the amount of traffic in a town centre during the day.

1 .....

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2 .....

.....[2]

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(c) One student used the results in Table 1.1 to draw flow lines on a map of the town centre to show the total number of vehicles counted during the day at each survey site. This is shown in Fig. 1.3, below.

(i) Use data from Table 1.1 **to draw the flow line for site 8** on Fig. 1.3. (Look at Fig. 1.1 to see the direction of traffic movement.) [1]

Flow map to show total number of vehicles counted at each survey site

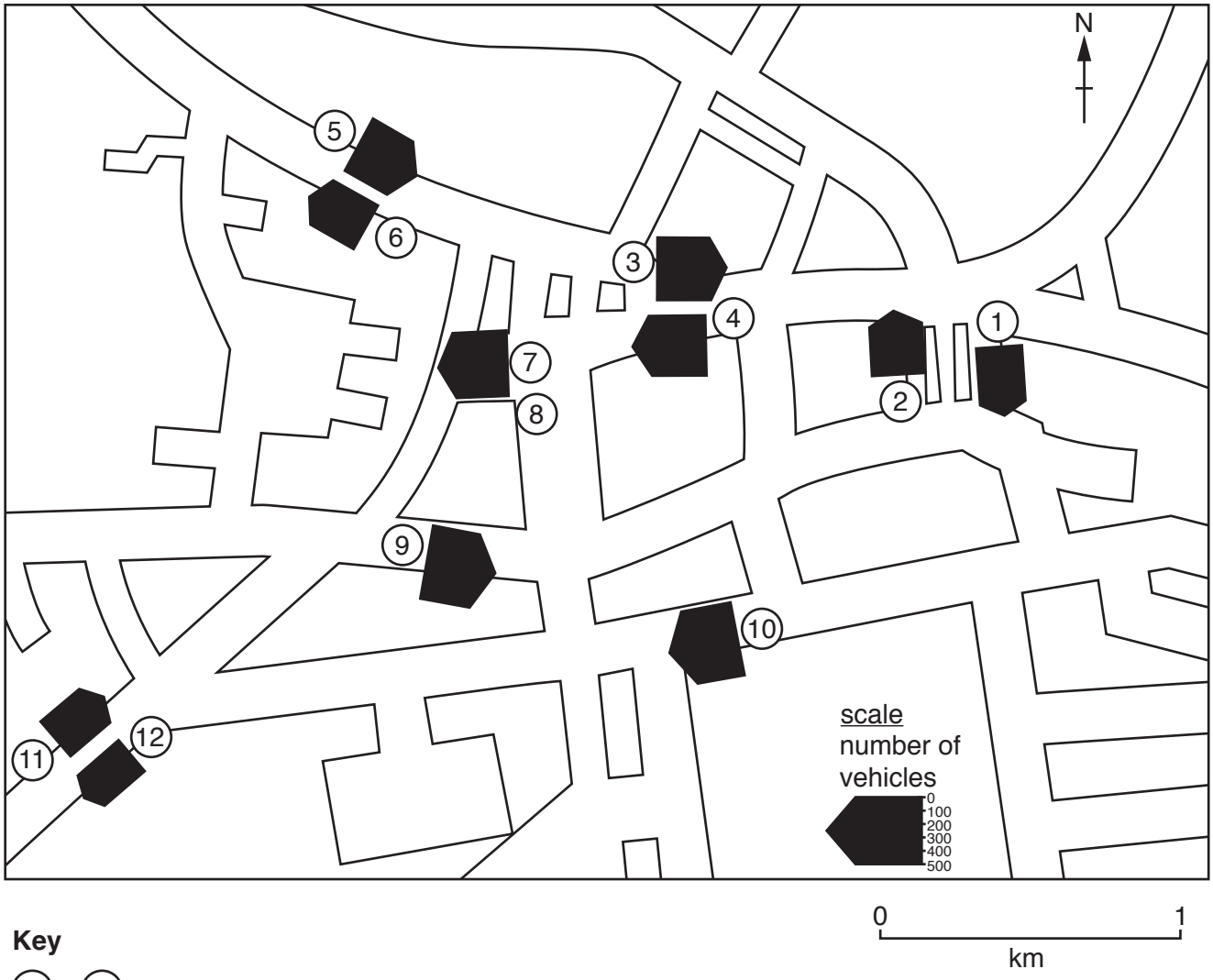


Fig. 1.3

(ii) The students only counted the total number of vehicles at each site. A possible improvement to this method is to identify and count different categories of vehicles. Complete the table below by suggesting **three** other categories which the students could include in their traffic count.

Category of vehicle
1 Car
2
3
4

[1]

(d) To investigate **Hypothesis 2:** *Traffic congestion is a big problem in the town centre*, the students produced a questionnaire to use with people in the town centre. The questionnaire is shown in Fig. 1.4 (Insert).

(i) They decided to give the questionnaire to every fifth person who walked past them. What is this sampling method called?

.....[1]

(ii) Give **two** advantages of using a sampling method when using a questionnaire.

1 .....

.....

2 .....

.....[2]

(e) The results of the questionnaire are shown in Table 1.2 (Insert).

(i) Use the results for Question 1 **to complete Fig. 1.5**, below. [2]

At what time of day do you think traffic congestion is worst?

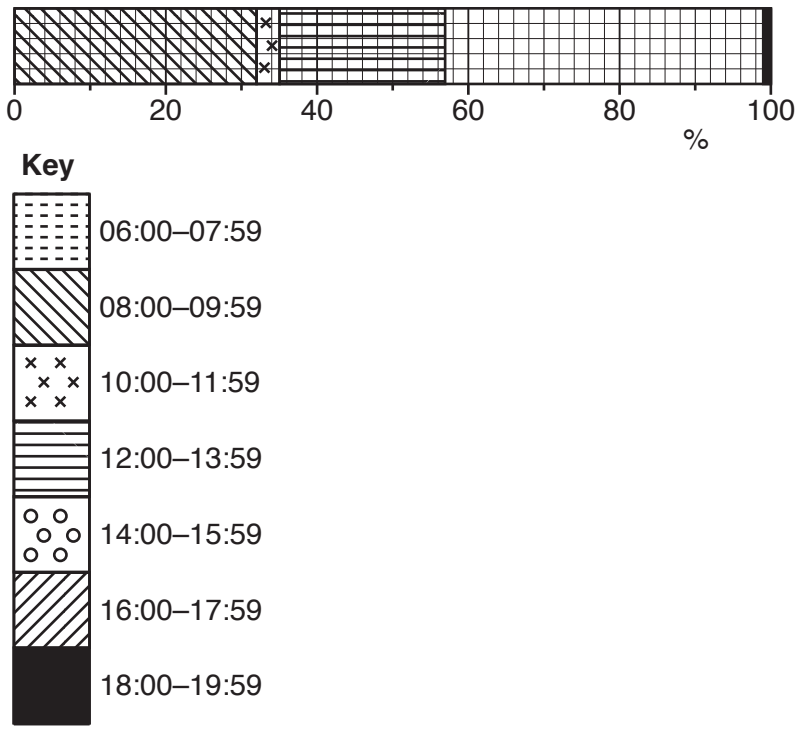


Fig. 1.5

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(ii) How do the results for Question 1 in the questionnaire support the results of the students' traffic count? Look again at Fig. 1.2 and Table 1.1 to help you to answer.

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.....[2]

(iii) Use the results for Question 2, in Table 1.2 (Insert), **to complete Fig. 1.6** below. [2]

Answers to Question 2:
On how many days of the week do you think there is traffic congestion?

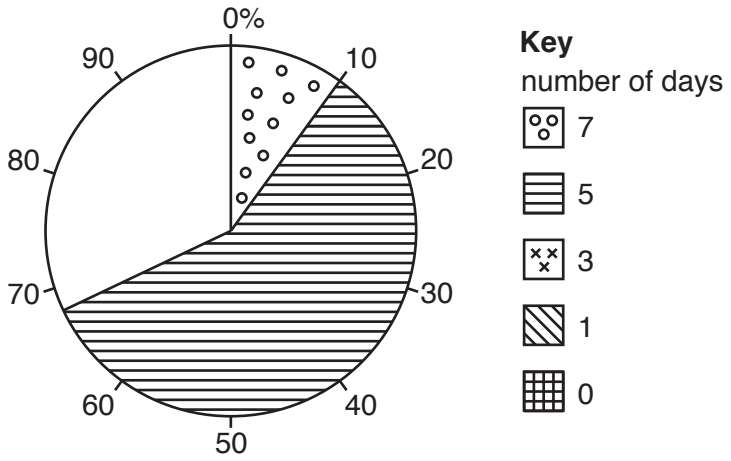


Fig. 1.6

(iv) The students decided that the results of the questionnaire agreed with **Hypothesis 2:** *Traffic congestion is a big problem in the town centre*.
Use evidence from Figs. 1.5 and 1.6 and Table 1.2 to support their conclusion.

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.....[3]

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(f) Traffic congestion in the centre of towns and cities is caused by large numbers of vehicles. Suggest **three** ways to reduce traffic congestion in a town or city centre.

1 .....

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2 .....

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3 .....

.....[3]

[Total: 30]

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2 A group of students went to do fieldwork at Bawdsey on the east coast of England. They wanted to investigate movement of beach material along the coast and methods of protecting the coast against erosion by the sea.

The students agreed to test the following hypotheses:

Hypothesis 1: *Longshore drift takes place along the coast at Bawdsey.*

Hypothesis 2: *Coastal defences have a positive impact on the coastline.*

(a) When the students were planning their fieldwork they studied the tide table and weather forecast. These are shown in Figs. 2.1 and 2.2 (Insert).

(i) At what date and time is the highest tide forecast in Fig. 2.1?

Date ..... Time ..... [1]

(ii) Explain why the students needed to study the tide table whilst planning fieldwork.

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.....[2]

(iii) Look at Fig. 2.2. At what time is there forecast to be the highest temperature, strongest wind and least cloud cover?

..... [1]

(iv) Give **two** advantages of studying the weather forecast when planning fieldwork.

1 .....

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2 .....

.....[2]

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(b) In class the students revised how longshore drift is important in moving beach material along the coast. This is shown in Fig. 2.3 (Insert).
Explain how longshore drift moves beach material along the coast.

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.....[4]

(c) To investigate **Hypothesis 1:** *Longshore drift takes place along the coast at Bawdsey*, the students used the fieldwork method described in Fig. 2.4 (Insert).

(i) Suggest why the students painted the pebbles.

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.....[1]

(ii) The results of the students' measurements are shown in Table 2.1 (Insert).
Complete the histogram and the long axis measurement in Fig. 2.5, below.
The long axis is a measurement of the longest part of a pebble. [2]

Results of students' measurements

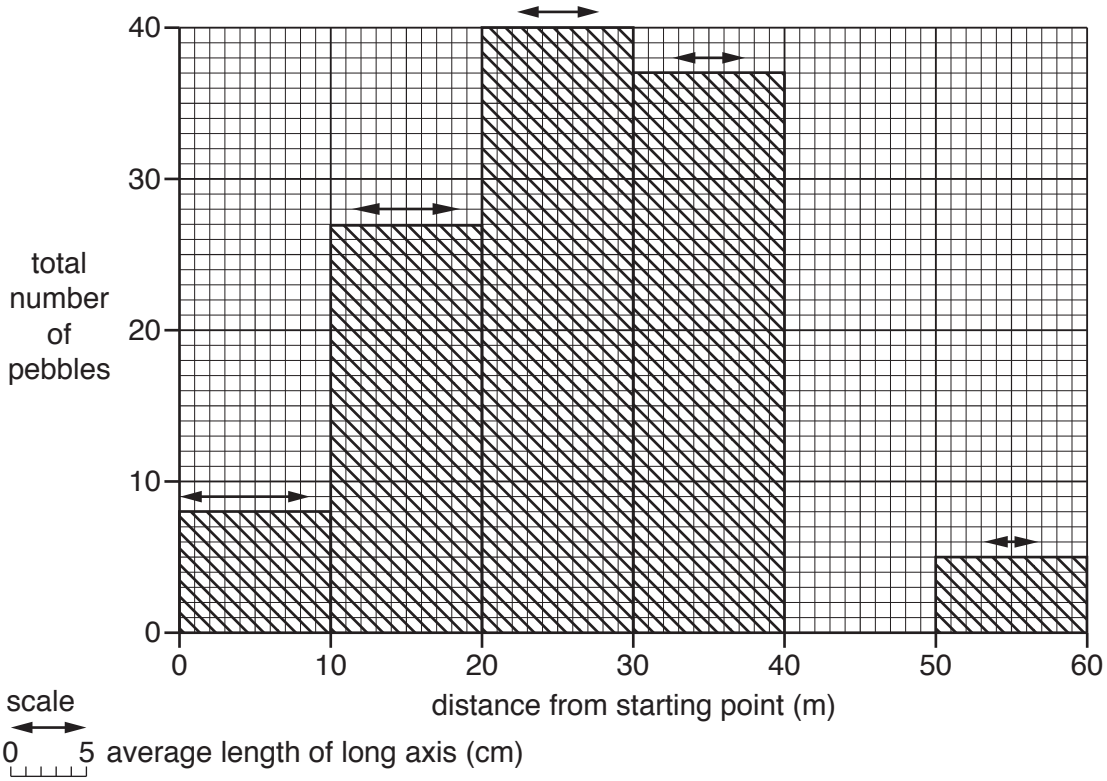


Fig. 2.5

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(iii) The students' conclusion was that **Hypothesis 1:** *Longshore drift takes place along the coast at Bawdsey* was true. Use evidence from Fig. 2.5 and Table 2.1 to support this conclusion. Refer to different pebble sizes in your answer.

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.....[4]

(d) In an area further along the coast the students noted some groynes like the one shown in Fig. 2.6 (Insert).

Describe the groyne and explain how it can reduce the effect of longshore drift.

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.....[2]

(e) The students also looked at other ways of reducing coastal erosion. These are shown in Figs. 2.7, 2.8, 2.9 and 2.10 (Insert).

To investigate **Hypothesis 2:** *Coastal defences have a positive impact on the coastline*, the students did a bi-polar survey of the different defences. Their bi-polar survey sheet is shown in Fig. 2.11 (Insert).

(i) Describe how the students could make sure their results of the bi-polar survey were reliable.

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.....[2]

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(ii) The results of the bi-polar survey of gabions, shown in Fig. 2.7 (Insert), are in the following table.

Type of coastal defence: Gabions

	Score					
Negative factor	–2	–1	0	+1	+2	Positive factor
Ugly			✓			Attractive
Does not protect land behind beach					✓	Protects land behind beach
Erosion by the waves still happens					✓	Stops all erosion by the waves
Poor access to beach		✓				Good access to beach
Dangerous to people				✓		Safe for people
High construction and maintenance costs		✓				Low construction and maintenance costs
Lots of disturbance caused during construction	✓					Little disturbance caused during construction

Use these results **to complete the graph and calculate the total score** for gabions in Fig. 2.12 on page 13. [2]

Results of the bi-polar survey

WOODEN GROYNE TOTAL SCORE = +3

Negative factor	–2	–1	0	+1	+2	Positive factor
Ugly						Attractive
Does not protect land behind beach						Protects land behind beach
Erosion by the waves still happens						Stops all erosion by the waves
Poor access to beach						Good access to beach
Dangerous to people						Safe for people
High construction and maintenance costs						Low construction and maintenance costs
Lots of disturbance caused during construction						Little disturbance caused during construction

Fig. 2.12

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GABIONS **TOTAL SCORE =**

Negative factor	–2	–1	0	+1	+2	Positive factor
Ugly						Attractive
Does not protect land behind beach						Protects land behind beach
Erosion by the waves still happens						Stops all erosion by the waves
Poor access to beach						Good access to beach
Dangerous to people						Safe for people
High construction and maintenance costs						Low construction and maintenance costs
Lots of disturbance caused during construction						Little disturbance caused during construction

RIP RAP **TOTAL SCORE = –4**

Negative factor	–2	–1	0	+1	+2	Positive factor
Ugly						Attractive
Does not protect land behind beach						Protects land behind beach
Erosion by the waves still happens						Stops all erosion by the waves
Poor access to beach						Good access to beach
Dangerous to people						Safe for people
High construction and maintenance costs						Low construction and maintenance costs
Lots of disturbance caused during construction						Little disturbance caused during construction

Fig. 2.12

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SEA WALL TOTAL SCORE = –4

Negative factor	–2	–1	0	+1	+2	Positive factor
Ugly	■	■				Attractive
Does not protect land behind beach			■	■		Protects land behind beach
Erosion by the waves still happens			■	■		Stops all erosion by the waves
Poor access to beach	■	■				Good access to beach
Dangerous to people						Safe for people
High construction and maintenance costs	■	■				Low construction and maintenance costs
Lots of disturbance caused during construction	■	■				Little disturbance caused during construction

BEACH REPLENISHMENT TOTAL SCORE = +4

Negative factor	–2	–1	0	+1	+2	Positive factor
Ugly			■	■		Attractive
Does not protect land behind beach			■			Protects land behind beach
Erosion by the waves still happens	■	■				Stops all erosion by the waves
Poor access to beach			■	■		Good access to beach
Dangerous to people			■	■		Safe for people
High construction and maintenance costs		■				Low construction and maintenance costs
Lots of disturbance caused during construction						Little disturbance caused during construction

Fig. 2.12

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(iii) To what extent do the results of the fieldwork support **Hypothesis 2:** *Coastal defences have a positive impact on the coastline*? Support your decision with data from Fig. 2.12. Refer to different coastal defences in your answer.

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(f) As an extension task the students decided to measure wave frequency. Describe a method the students could use on a field visit to measure wave frequency.

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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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