



Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE
NAME

CENTRE
NUMBER

| | | | | | |
|--|--|--|--|--|--|
| | | | | | |
|--|--|--|--|--|--|

CANDIDATE
NUMBER

| | | | | |
|--|--|--|--|--|
| | | | | |
|--|--|--|--|--|



GEOGRAPHY

0460/43

Paper 4 Alternative to Coursework

October/November 2016

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 Fig. 1, Table 1 and Photograph A for Question 1, and Figs. 5 and 6 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.

The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **15** printed pages, **1** blank page and **1** Insert.

- 1 Students at a school in Paris, France, used the school's weather station to measure atmospheric pressure, temperature and rainfall during 15 days in January. They tested the following hypotheses:

Hypothesis 1: *Temperature increases as atmospheric pressure increases.*

Hypothesis 2: *Rainfall decreases as atmospheric pressure increases.*

- (a) (i) Complete the table below to show which measuring instruments are used in or outside a Stevenson screen. Put the following instruments under the correct heading:

wind vane

wet-and-dry bulb thermometer

maximum-minimum thermometer

rain gauge

[2]

| Used in a Stevenson screen | Used outside a Stevenson screen |
|-----------------------------------|--|
| | |
| | |

- (ii) Which **one** of the following instruments would the students use to measure atmospheric pressure? Circle your answer.

anemometer

barometer

hygrometer

[1]

- (b) (i) To measure atmospheric pressure the students took readings at the same time each day. Why was taking the readings at the same time each day important?

.....

.....[1]

- (ii) The label 'mb' is usually given to the unit of atmospheric pressure. What does 'mb' stand for?

.....[1]

- (iii) The students also measured the maximum temperature for each day using a thermometer like the one shown in Fig. 1 (Insert). What was the maximum temperature recorded by the thermometer in Fig. 1?

Circle your answer.

8°C

20°C

30°C

35°C

38°C

[1]

- (c) (i) The results of the students' measurements are shown in Table 1 (Insert). Use these results to plot the atmospheric pressure and maximum temperature for 7th and 10th January on the scatter graph, Fig. 2 below. [2]

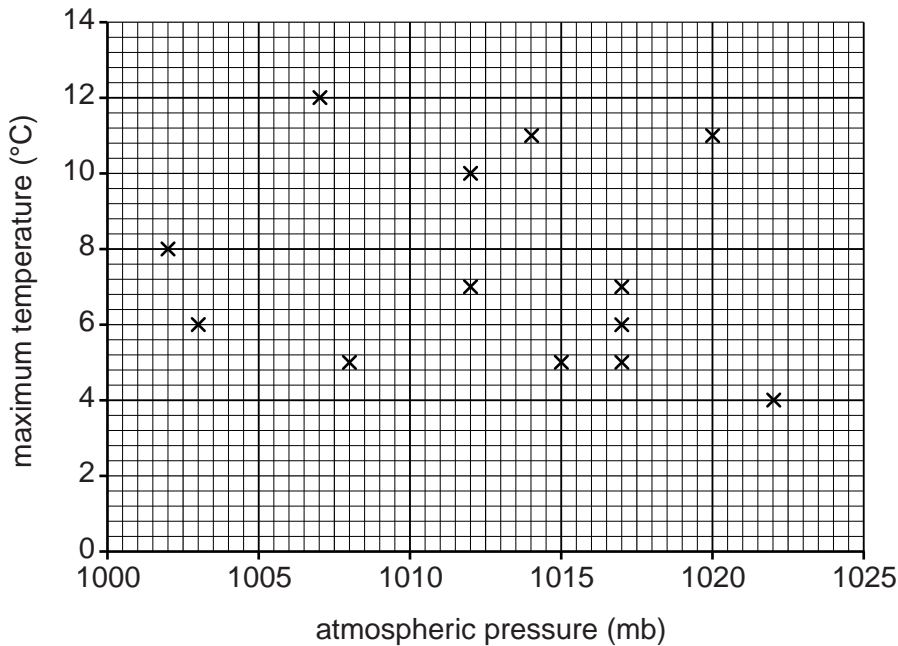


Fig. 2

- (ii) What conclusion did the students make about **Hypothesis 1: *Temperature increases as atmospheric pressure increases?***

Support your answer with evidence from Table 1 and Fig. 2.

.....

.....

.....

.....

.....

.....

.....

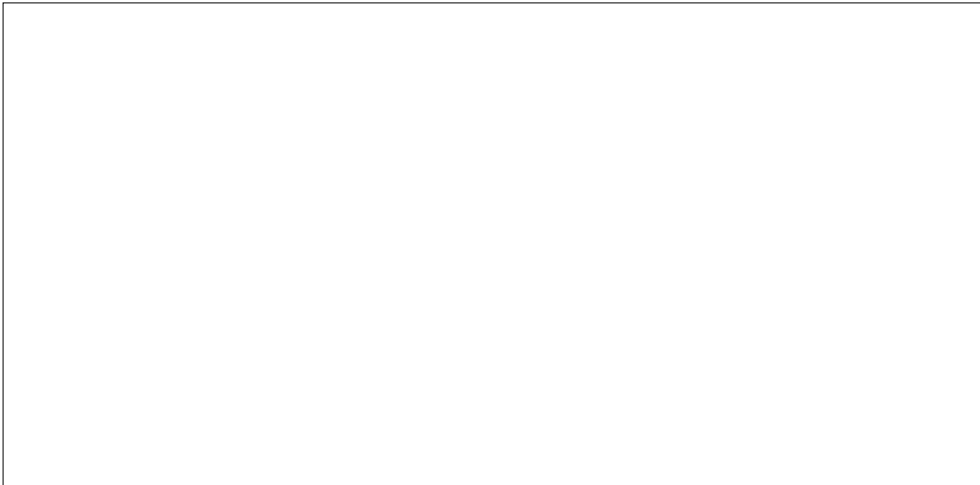
.....

.....

.....

.....[4]

(d) (i) The students used a rain gauge to measure daily rainfall. In the box below draw and label a simple rain gauge. [3]



(ii) Why did their teacher recommend that the rain gauge should be located:

– away from the school playground;

.....
.....

– away from trees?

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

(iii) Describe how the students would make their measurements using the rain gauge.

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....[4]

- (iv) The students' measurements are shown in Table 1 (Insert). Use these results to plot the atmospheric pressure and rainfall for 20th January on Fig. 3 below. [2]

Results of students' measurements

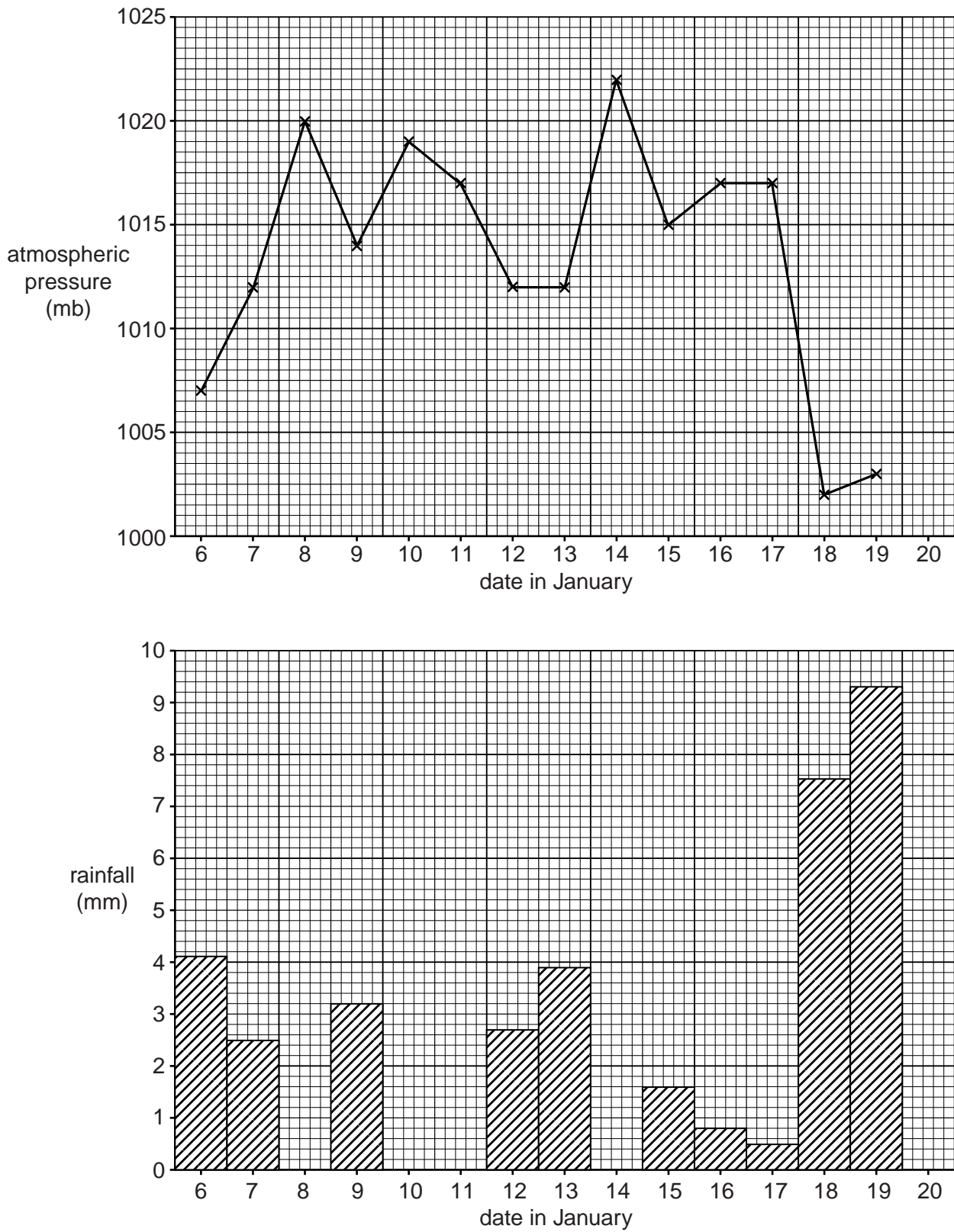


Fig. 3

(v) Do the results shown in Fig. 3 and Table 1 support **Hypothesis 2**: *Rainfall decreases as atmospheric pressure increases*? Use data to support your decision.

.....
.....
.....
.....
.....
.....
.....
.....

[3]

(e) To extend their fieldwork the students decided to use a sunshine recorder to measure the amount of sunshine on each day. Photograph A (Insert) shows a sunshine recorder. Describe how a sunshine recorder is used.

.....
.....
.....
.....
.....
.....
.....
.....
.....

[4]

[Total: 30 marks]

2 A student was studying how renewable energy sources are used to generate electricity in the UK.

- (a) (i) Which **one** of the following is the correct definition of renewable energy?
Tick (✓) your choice.

| | Tick (✓) |
|---|----------|
| Energy which comes from rocks under the sea | |
| Energy which is produced from plants and animals | |
| Energy which comes from resources that will not run out | |
| Energy which is created in thermal power stations | |
| Energy which is stored in a nuclear power station | |

[1]

- (ii) Fig. 4 below shows the fuel sources used to generate electricity in the UK in 1990 and 2013. What percentage of electricity was generated by renewable sources in 1990?

..... %

[1]

Fuel sources used to generate electricity in the UK

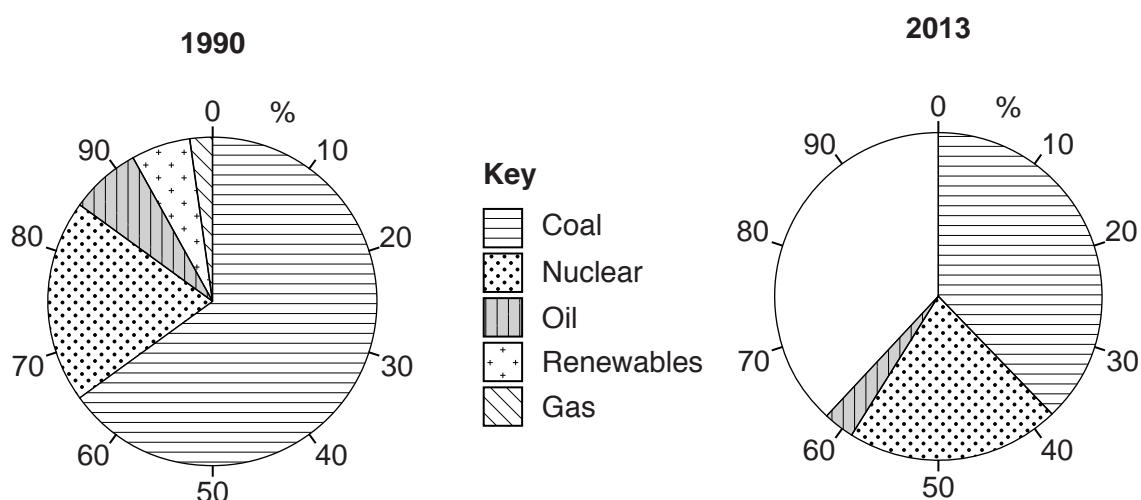


Fig. 4

- (iii) Complete the pie chart for 2013 using the following information:

| Energy source | % |
|---------------|----|
| Renewables | 11 |
| Gas | 27 |

[2]

- (iv) Identify **two** main changes in the production of electricity from fossil fuels in the UK between 1990 and 2013.

1

.....

2

.....[2]

- (b) The students looked at plans to build a tidal barrage across the estuary of the River Severn. This area is shown in Fig. 5 (Insert). They decided to find out the opinions of local residents in Weston-super-Mare about the planned tidal barrage scheme.

The students investigated the following hypotheses:

Hypothesis 1: *Most local people think that tidal power is a good way to generate electricity.*

Hypothesis 2: *Local people think that the tidal barrage built across the estuary will benefit the area.*

- (i) To begin their investigation the students produced a questionnaire which is shown in Fig. 6 (Insert).

Suggest **three** reasons why their teacher approved the questionnaire.

1

.....

2

.....

3

.....[3]

- (ii) The students decided to ask the opinions of 100 people. Name a suitable sampling method to select the people.

..... [1]

- (iii) Describe how the students would use your chosen sampling method.

.....

.....

.....

.....[2]

- (c) The results of the question: *Do you think that generating electricity by tidal power is a good idea?* and reasons for the answer, are shown in Table 2 below.

Table 2

Answers to question: *Do you think that generating electricity by tidal power is a good idea?*

| Answer | Number of people | Answer | Number of people |
|---|------------------|--|------------------|
| Yes | 71 | No | 29 |
| Tidal power does not pollute the atmosphere | 45 | Turbines only work when the tide is coming in or going out | 17 |
| Tidal power is renewable | 18 | A tidal barrage does not produce much power | 7 |
| Tidal power is free | 8 | A tidal barrage is expensive to build | 5 |

- (i) Which reason is given by most people questioned in favour of using tidal power to generate electricity?

.....
[1]

(ii) Use the results in Table 2 to complete Fig. 7 below by drawing in the **two** missing bars. [2]

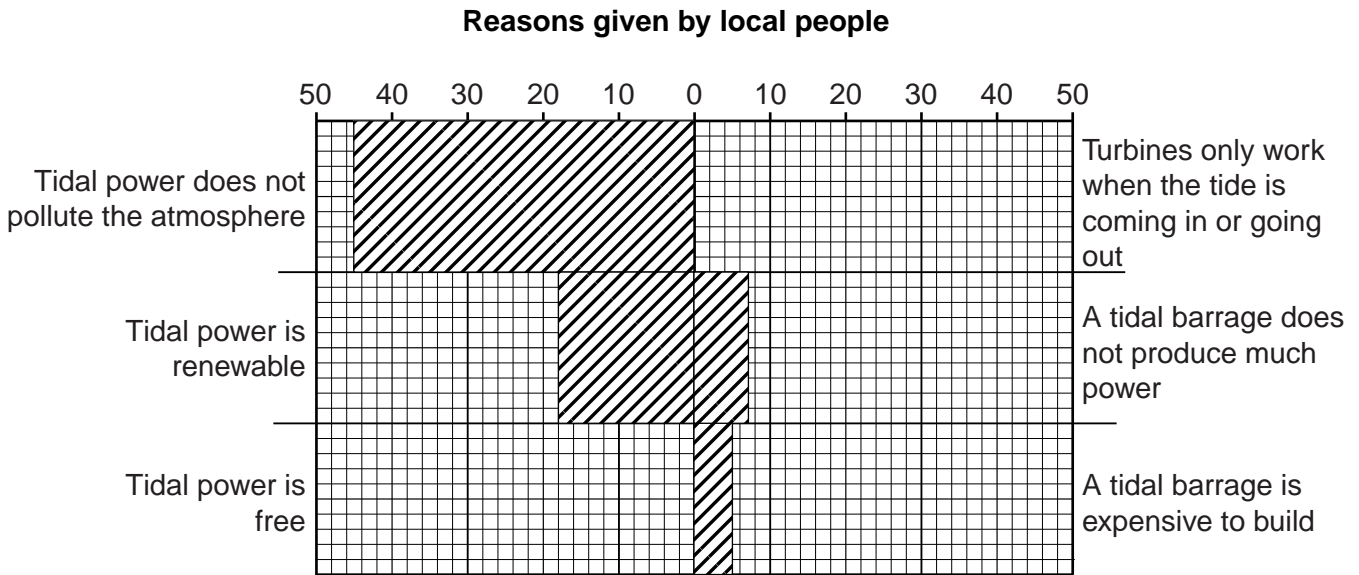


Fig. 7

(iii) Do the results shown in Table 2 and Fig. 7 support **Hypothesis 1**: *Most local people think that tidal power is a good way to generate electricity?*

Use data to support your conclusion.

.....

.....

.....

.....[2]

- (d) The opinions of 100 local people about whether the local area is a good location in which to build a tidal barrage are shown in Table 3 below.

Table 3

The opinions of 100 local people

| Opinion | Agree strongly | Agree | Disagree | Disagree strongly |
|---|----------------|-----------|-----------|-------------------|
| The tidal barrage will threaten natural habitats of seabirds and fish | 70 | 20 | 7 | 3 |
| There will be a lot of disruption to the area whilst the barrage is being built | 31 | 36 | 19 | 14 |
| The tidal barrage will spoil the view of the estuary | 20 | 40 | 28 | 12 |
| Total number of responses | 121 | 96 | 54 | 29 |
| | | | | |
| The tidal barrage will be a tourist attraction | 70 | 23 | 5 | 2 |
| The tidal barrage will help to stop flooding in the local area | 37 | 37 | 20 | 6 |
| Construction of the barrage will create jobs in the area | 21 | 31 | 26 | 22 |
| Total number of responses | 128 | 91 | 51 | 30 |

(i) Use the results in Table 3 to complete Fig. 8 below, which shows the results of the statement 'The tidal barrage will help to stop flooding in the local area'. [3]

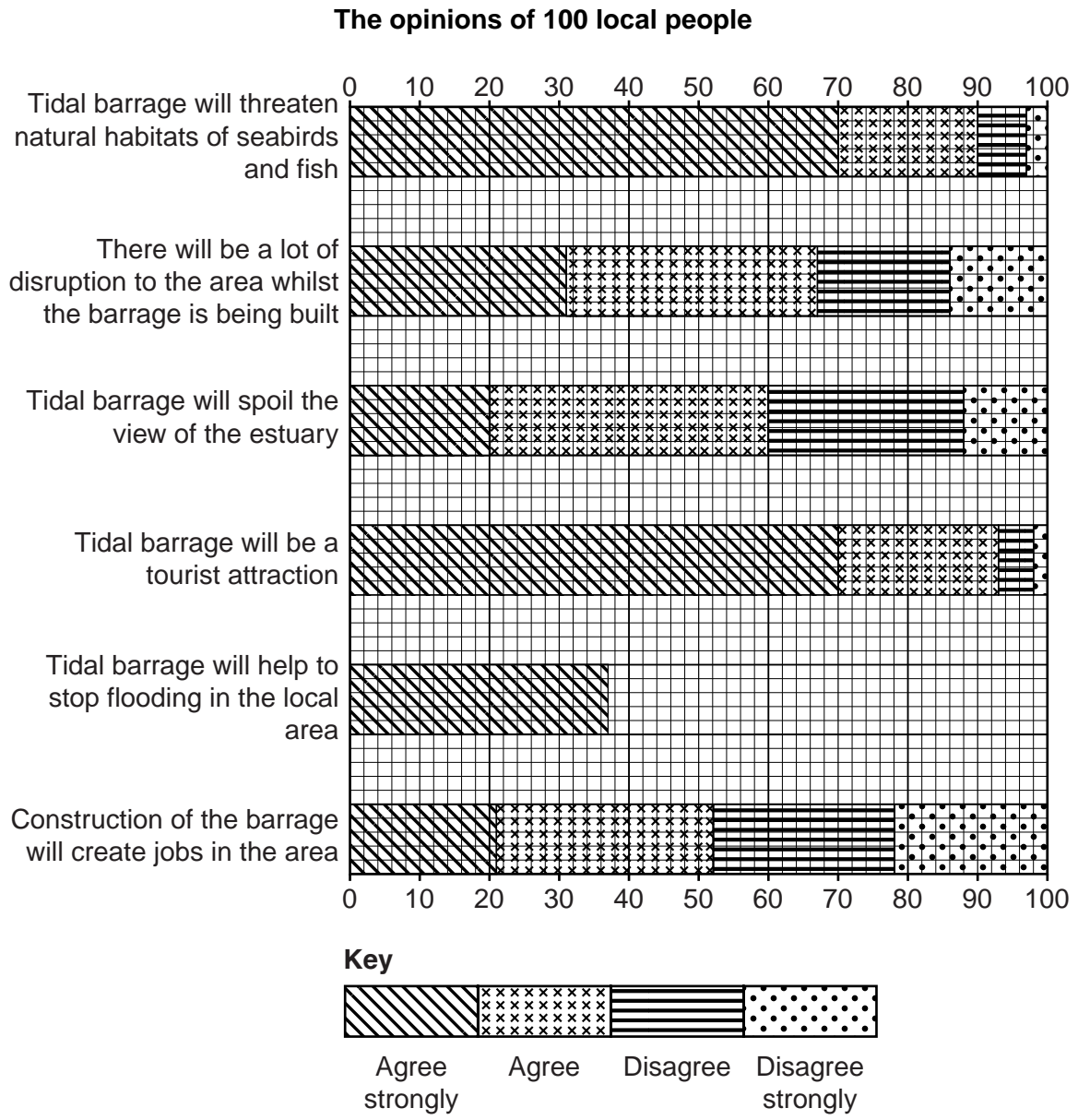


Fig. 8

(ii) Which **one** of the statements has the most even balance of opinions given by 100 local people?

.....

.....[1]

(iii) The students reached the conclusion that **Hypothesis 2: Local people think that the tidal barrage built across the estuary will benefit the area** was both true and false to a certain extent. What evidence in Table 3 and Fig. 8 supports this conclusion?

.....
.....
.....
.....
.....
.....[3]

(e) To extend their study the students asked some local people for their opinions on renewable energy and global warming. However, some of the people they spoke to did not know what these terms meant. So the students decided to produce an information sheet to give to people. The following answers will be part of this information.

(i) Tidal power is one type of renewable energy. Give **two** other examples of renewable energy.

1
2[2]

(ii) Explain how global warming occurs.

.....
.....
.....
.....
.....
.....
.....
.....[4]

[Total: 30 marks]

BLANK PAGE

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge International Examinations Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cie.org.uk after the live examination series.

Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.