Cambridge IGCSE

Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

4340745422

GEOGRAPHY **0460/43**

Paper 4 Alternative to Coursework **October/November 2019**

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, 1.2, 1.3 and 1.5 and Tables 1.1 and 1.2 for Question 1, and Figs. 2.1, 2.2 and 2.5 and Tables 2.2 and 2.3 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 regulated for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

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1 Students from Brazil who lived near Tijuca National Park did some fieldwork to study the tropical rainforest ecosystem. They visited three sites which are described and located in Fig. 1.1 (Insert).

(a) The vegetation in the tropical rainforest adapts to the climate. Use arrows to match the vegetation feature with the reason for its adaptation. One has been completed for you.

Feature of the vegetation	Reason for adaptation
Drip-tip leaves	to compete for sunlight
Tall trees	to make the tree more stable
Large leaves	to remove heavy rainfall
Buttress roots	to allow more transpiration

[2]

The students decided to investigate the effect of vegetation cover at the three sites. They agreed on the following hypotheses:

Hypothesis 1: *Humidity is greater where there is more vegetation cover.*

Humidity is the amount of water vapour in the air.

Hypothesis 2: *Infiltration is quicker where there is more vegetation cover.*

(b) **(i)** To obtain data the students made each of their measurements five times at each site. Explain why this would make their results more reliable.

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..... [2]

(ii) To measure the amount of vegetation cover the students used the piece of equipment shown in Fig. 1.2 (Insert).
What is this piece of equipment called? Tick (✓) your answer below.

	Tick (✓)
barometer	
callipers	
clinometer	
quadrat	
ruler	

[1]

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(iii) To measure humidity the students did a simple test which a student described in his fieldwork notebook, Fig. 1.3 (Insert). Suggest **one** weakness of this test.

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..... [1]

(iv) The students also measured the time it took for water to infiltrate (soak into) the ground. Describe a fieldwork method to measure infiltration. Refer to equipment which could be used.

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(c) The results of the students' measurements are shown in Table 1.1 (Insert).

(i) Which site has the highest amount of vegetation cover? **Circle your answer**.

site A site B site C [1]

(ii) One set of measurement results is shown below.

Percentage of vegetation cover = 68
Percentage of bare ground = 32
Humidity measurement = 90 seconds
Infiltration time = 28 seconds

At which site and for which measurement (1–5) were these results recorded?

Site .....

Measurement number ..... [1]

(iii) Use the results in Table 1.1 to calculate the average infiltration time at site B. Show your calculation below.

Answer = ... seconds

[2]

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(d) Using their results from Table 1.1 the students plotted the graphs shown in Fig. 1.4 below.

Results of students' measurements

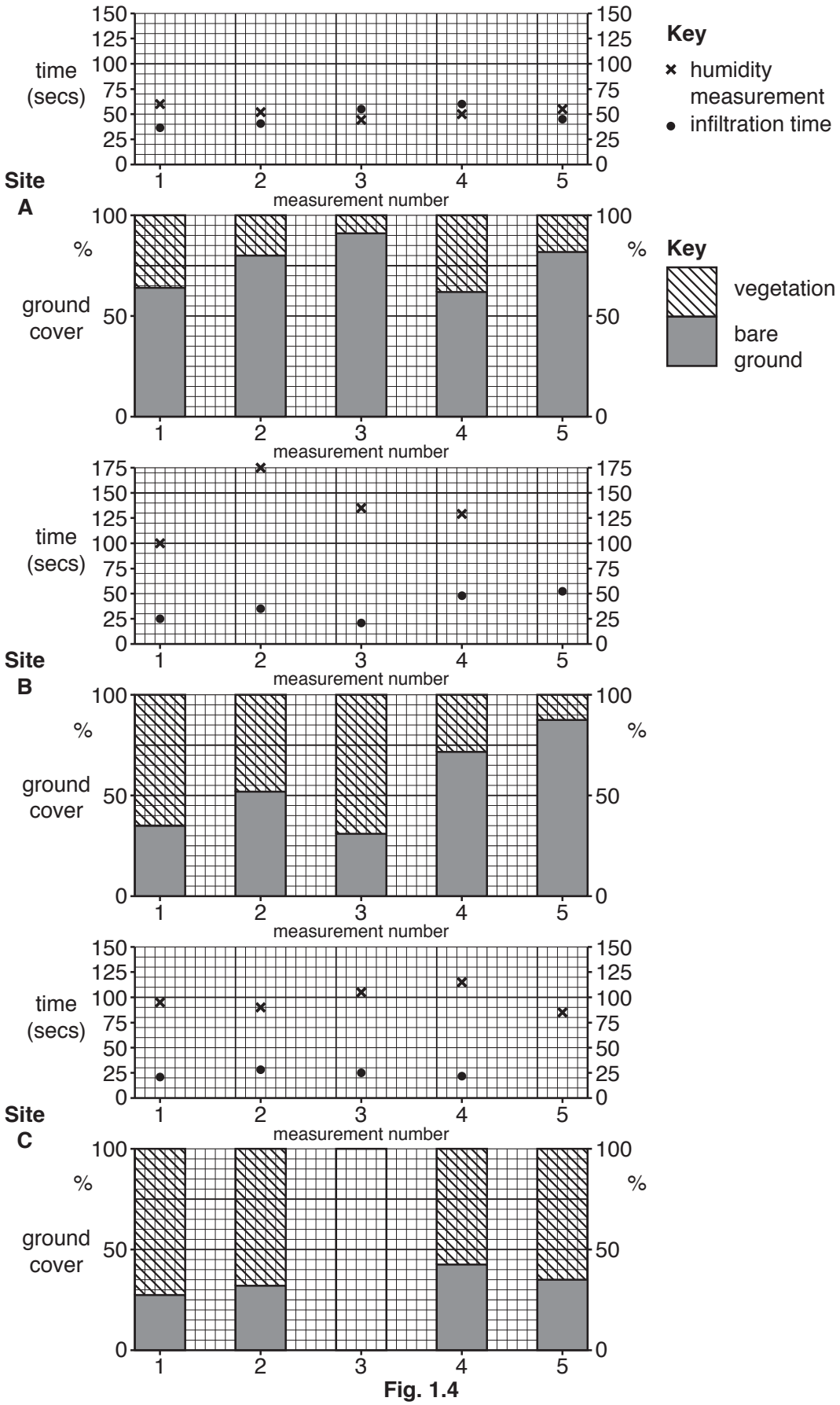


Fig. 1.4

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(i) Use the information in Table 1.1 to **plot the following** on Fig. 1.4:

- the percentage of vegetation cover and the percentage of bare ground in measurement 3 at site **C**
- how long the cobalt chloride paper took to turn pink (humidity measurement) in measurement 5 at site **B**
- the infiltration time in measurement 5 at site **C**. [3]

(ii) Before they made a conclusion to **Hypothesis 1** the teacher reminded the students that the **less** time the paper took to turn pink the greater the humidity of the air.
What conclusion would the students make about **Hypothesis 1:** *Humidity is greater where there is more vegetation cover*? Support your decision with evidence from Fig. 1.4 and Table 1.1.

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(iii) The students decided that **Hypothesis 2:** *Infiltration is quicker where there is more vegetation cover* was **correct**.
What evidence from Fig. 1.4 and Table 1.1 supports their conclusion?

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..... [3]

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[Turn over

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(e) Suggest why infiltration times are different at sites A and C. Look again at Fig. 1.1 (Insert) to help you to answer.

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..... [3]

(f) Whilst doing their fieldwork the students saw many different plant species in the tropical rainforest. As an extension activity, they returned to their three fieldwork sites and counted the number of different species using the reference sheet shown in Fig. 1.5 (Insert). Their results are shown in Table 1.2 (Insert).

(i) One student wanted to show the number of different plant species seen at each site. Which **one** of the following would be suitable to show the information in Table 1.2? Tick (✓) your choice.

	Tick (✓)
Bar graph	
Flow diagram	
Kite diagram	
Radial graph	
Triangular graph	

[1]

(ii) Suggest **two** reasons why the number and types of plant species vary between the sites. Look again at Fig. 1.1 (Insert) to help you to answer.

1 .....

.....

2 .....

..... [2]

[Total: 30]

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2 Students in Mauritius, an island in the Indian Ocean, were studying tourism. Tourism is an important industry in Mauritius and earns much foreign income.

(a) Fig. 2.1 (Insert) shows the number of international tourists who visited Mauritius between 1995 and 2015.

(i) How many international tourists visited Mauritius in 2005?

..... [1]

(ii) Between which two years was there a decline in the number of international tourists visiting Mauritius?

..... and ..... [1]

(iii) Suggest **four** reasons why the number of international tourists visiting LEDCs, such as Mauritius, has increased in the last 30 years.

1 .....

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2 .....

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3 .....

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4 .....

..... [4]

The students decided to investigate why international tourists came to Mauritius and what impact tourists had on people who lived on the island. Their two hypotheses were:

Hypothesis 1: *The physical landscape attracts more tourists to Mauritius than the human landscape.*

Hypothesis 2: *Tourism is a good development for the residents of Mauritius.*

(b) To investigate **Hypothesis 1** the students produced a questionnaire. This is shown in Fig. 2.2 (Insert).

(i) When they showed their questionnaire to their teacher she suggested that before using the questionnaire they should ask:

'Are you a tourist or do you live in Mauritius?'

Why do you think the teacher made this suggestion?

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..... [2]

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[Turn over

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(ii) The answers to Question 1 (Which continent do you come from?) are shown in Table 2.1 below.

Table 2.1

Answers to Question 1

Continent	Number of tourists
Asia	17
Africa	14
Europe	55
Australasia	2
North America	11
South America	1
Total	100

Using Table 2.1, give **two** conclusions about where tourists came from to visit Mauritius. Do **not** just copy out the statistics.

1 .....

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2 .....

..... [2]

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(iii) The answers to Question 2 (Which of the following physical landscape attractions are you visiting in Mauritius?) and Question 3 (Which of the following human landscape attractions are you visiting in Mauritius?) are shown in Table 2.2 (Insert).
Use this data to **complete the bar graphs** in Fig. 2.3 below, to show the number of visits made to the Casela Bird Park and the Grand Bassin temples. [2]

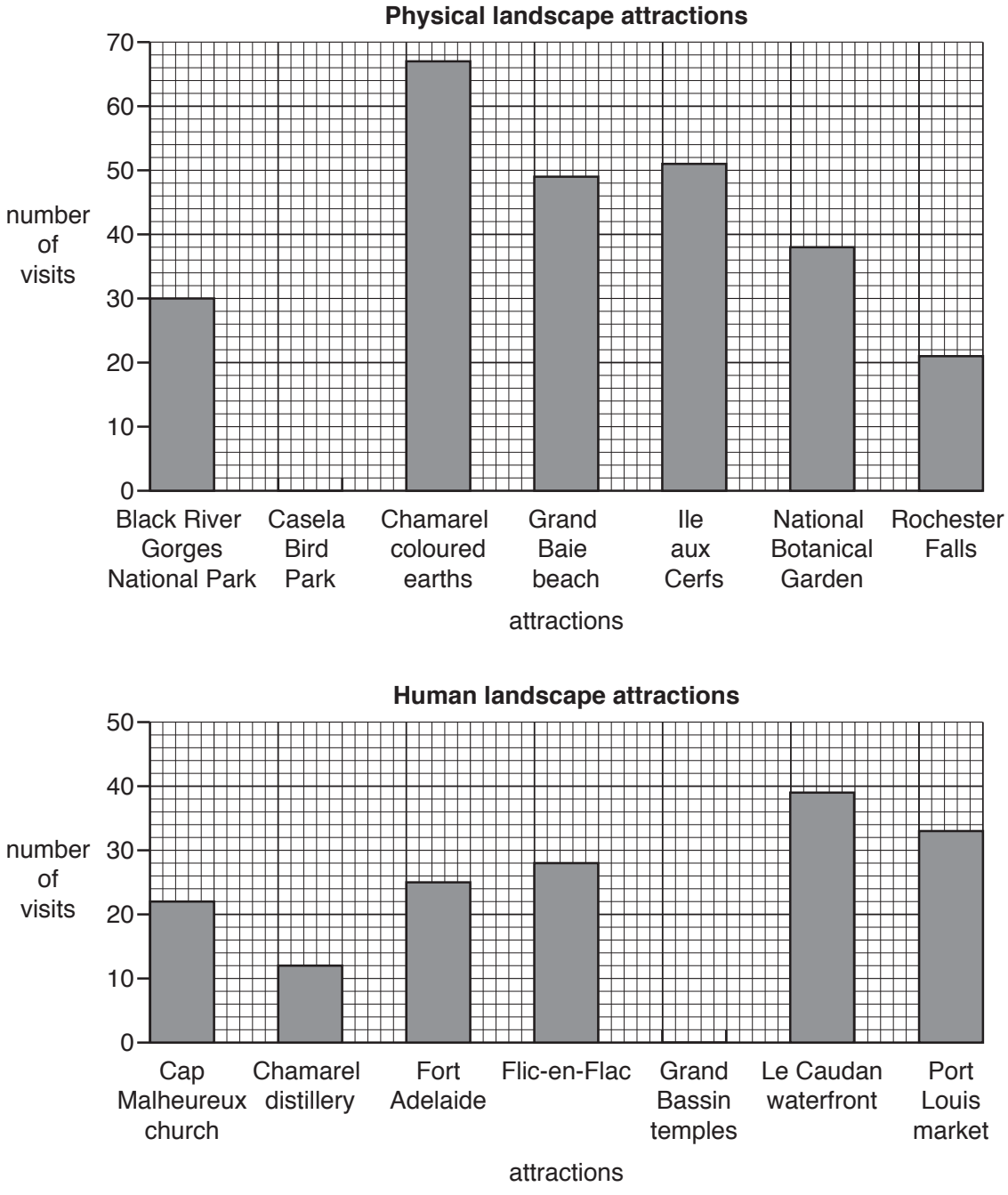


Fig. 2.3

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(iv) **Complete the pie graph and key** in Fig. 2.4 below to show the answers to Question 4 (Overall which attracted you most to Mauritius?).

	Percentage of tourists
Physical landscape attractions	58
Human landscape attractions	42

[2]

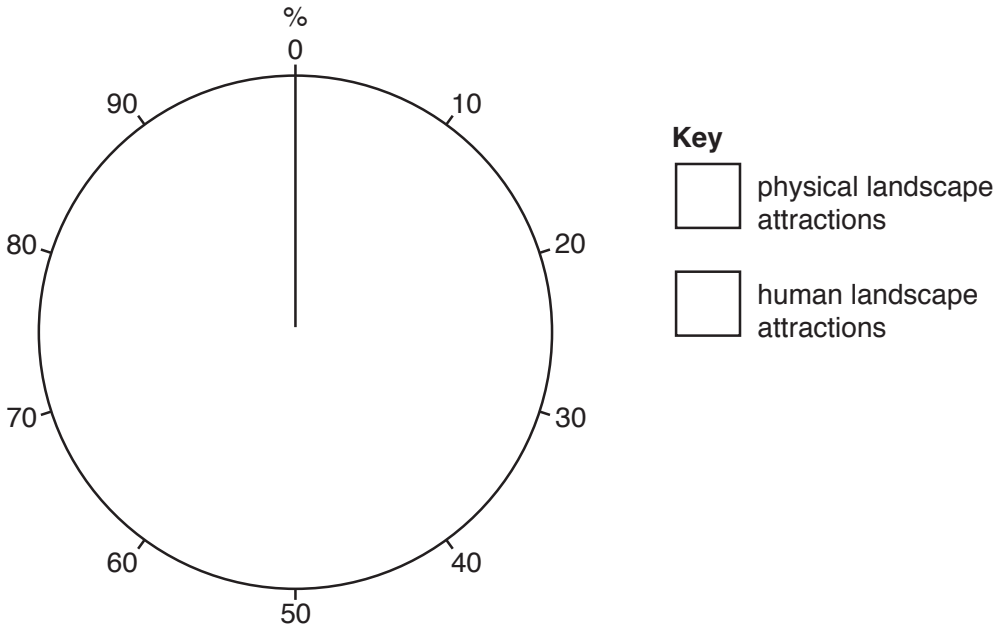


Fig. 2.4

(v) What conclusion would the students make to **Hypothesis 1:** *The physical landscape attracts more tourists to Mauritius than the human landscape*? Support your decision with evidence from Figs. 2.3 and 2.4 and Table 2.2.

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(c) The students used a different questionnaire to investigate **Hypothesis 2:** *Tourism is a good development for the residents of Mauritius*. The questionnaire is shown in Fig. 2.5 (Insert).

Name and describe a sampling method to choose people to complete their questionnaire.

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..... [3]

(d) The answers to Question 2 (Which are the three main benefits of tourism in Mauritius?) and Question 3 (Which are the three main disadvantages of tourism in Mauritius?) are shown in Table 2.3 (Insert).

The students devised this simple index to work out which benefits and disadvantages were most important.

Benefit:	More jobs and income
First choice	39 x 3 = 117
Second choice	25 x 2 = 50
Third choice	11 x 1 = 11
Total index score = 178	

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(i) The students used the results in Table 2.3 to draw the graph in Fig. 2.6 below. **Plot the total index scores** for improved transport and air pollution on Fig. 2.6. [2]

Benefits and disadvantages of tourism for residents

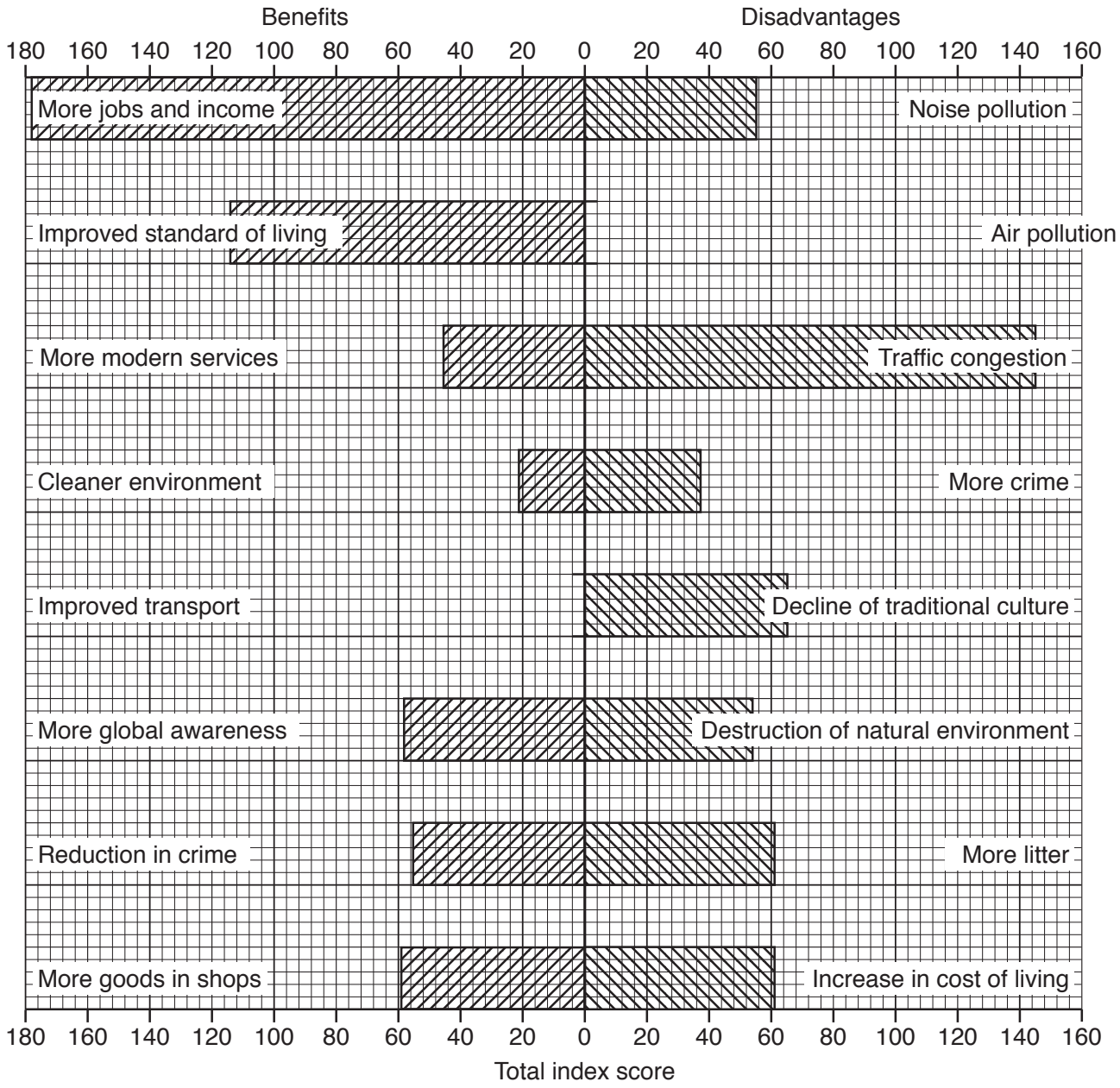


Fig. 2.6

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(ii) Using evidence in Table 2.3 **only**, which **one** of the following statements supports **Hypothesis 2:** *Tourism is a good development for the residents of Mauritius*?

Statement	Tick (✓)
There are more benefits of tourism than disadvantages of tourism.	
The total index score for benefits is greater than the total index score for disadvantages.	
Overall people think the benefits of tourism are greater than the disadvantages.	

[1]

(e) Local people identified traffic congestion as the main disadvantage of tourism in Mauritius.

(i) Suggest why tourism is likely to increase traffic congestion.

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..... [2]

(ii) Describe how the students could carry out fieldwork to investigate the impact of traffic congestion in Mauritius.

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..... [4]

[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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