Cambridge Assessment International Education

Cambridge O Level

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

GEOGRAPHY **2230/02**

Paper 2 Geographical Skills **October/November 2022**

1 hour 45 minutes

You must answer on the question paper.

You will need: Insert (enclosed)
1:50 000 survey map (enclosed)
Calculator
Plain paper
Protractor
Ruler

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- Sketch maps and diagrams should be drawn whenever they serve to illustrate the answer.
- If additional space is needed, you should use the lined pages at the end of this booklet; the question number or numbers must be clearly shown.

INFORMATION

- The total mark for this paper is 60.
- The number of marks for each question or part question is shown in brackets [ ].
- The insert contains additional resources referred to in the questions.

This document has **16** pages.

DC (CJ/JG) 303789/3

[Turn over

Section A: Mapwork skills

1 Study the map extract of Taupo in New Zealand. The scale is 1:50 000. The heights are in metres. The contour interval is 20 metres.

(a) (i) Find the name TAUPO on the map extract. Give the four-figure grid reference for the grid square in which TAUPO is written.

..... [1]

(ii) Do you think Taupo is a village, town or city? Use map evidence to explain your answer.

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.....

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..... [2]

(iii) Study the urban areas in grid square 6713 (central Taupo) and grid square 6810 (south Taupo). **Complete Table 1.1** to describe the difference in street pattern and the difference in open space.

Table 1.1

	grid square 6713 (central Taupo)	grid square 6810 (south Taupo)
street pattern	....	....
open space	....	....

[2]

(b) (i) Describe the characteristics and course of the river which flows from the north edge of the map at 690179 to its mouth in grid square 6613.

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..... [3]

(ii) Give a six-figure grid reference for the road bridge that crosses the river in Taupo.

..... [1]

(c) Use the map extract to complete Table 1.2. For each grid square state the main land use. One has been completed for you.

Table 1.2

grid square	main land use
6807	.....
7315	.....
7115	geothermal power station
6907	.....

[3]

(d) Study Area A in the east of the map extract.

(i) How high is Mount Tauhara at grid reference 751124? Give your answer in metres.

..... [1]

(ii) Describe the relief and drainage shown in Area A.

- relief (height, slope and shape of the land)

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- drainage (number, size and pattern of streams and rivers)

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[4]

(iii) If you walked down the Tauhara Track from the summit at 751124 to Mountain Road at 731113, approximately how far would you walk? Tick (✓) the correct answer.

☐ less than 1 km

☐ 1–2 km

☐ more than 2 km

[1]

(iv) On which state highway, and in which direction, would you drive to get from the junction with Mountain Road at 732104 to the roundabout on the outskirts of Taupo at 706114?

state highway number .....

direction .....

[2]

[Total: 20]

Section B: Geographical skills

2 **(a)** Study Fig. 2.1, which shows the number of visitors to the Royal Regalia Museum in Bandar Seri Begawan between 2014 and 2018.

Visitors to the Royal Regalia Museum, Bandar Seri Begawan, 2014–18

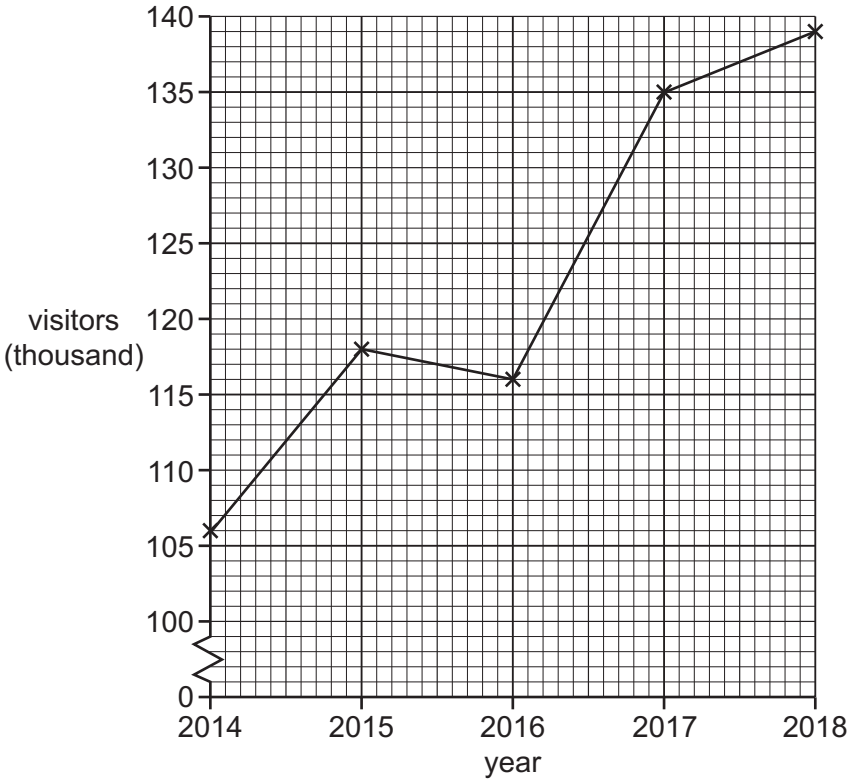

Fig. 2.1

(i) Describe how the number of visitors to the Royal Regalia Museum changes from 2014 to 2018.

.....

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..... [3]

(ii) Name **two** other popular tourist destinations in Bandar Seri Begawan.

1 .....

2 .....

[2]

(b) Study Fig. 2.2, which shows the relationship between the number of tourist arrivals to Brunei and the income from tourism from 2012 to 2018.

Tourist arrivals and income from tourism, Brunei, 2012–18

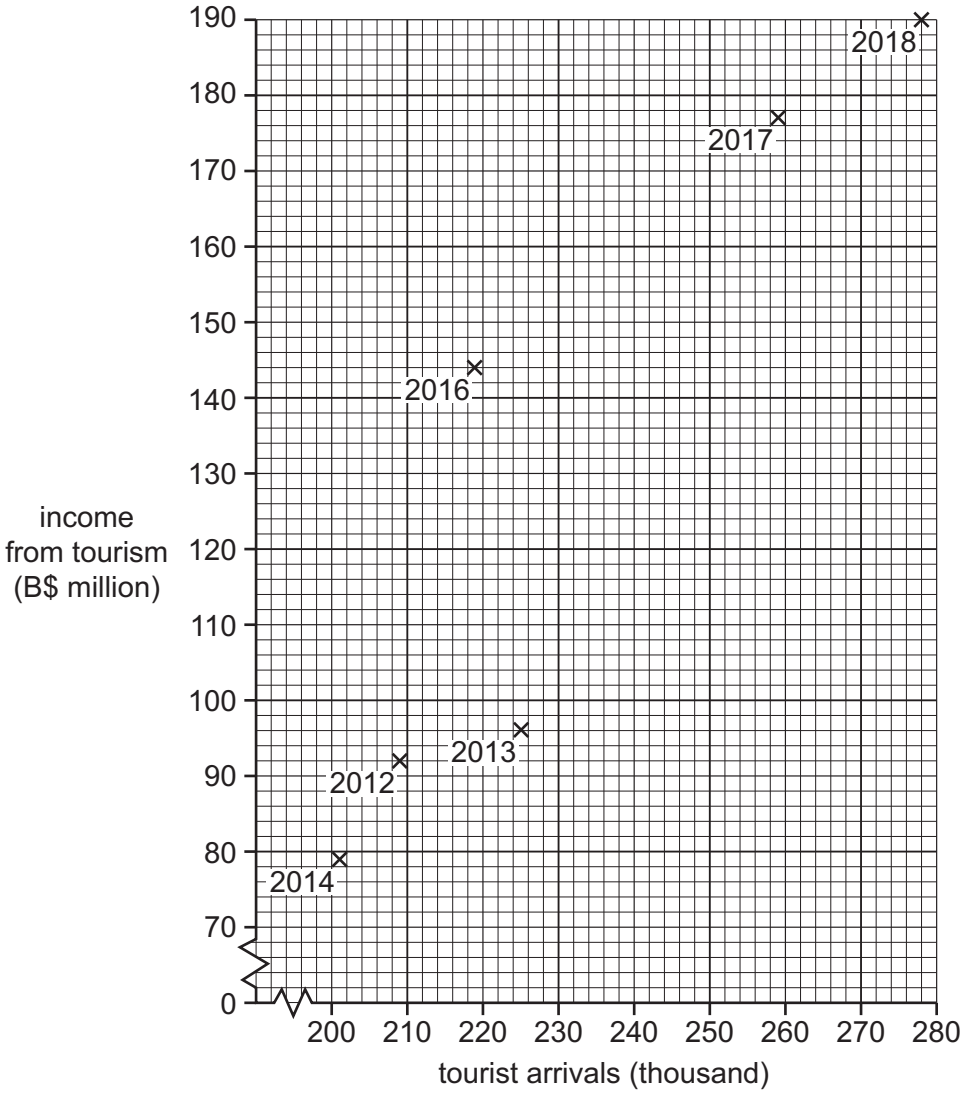

Fig. 2.2

(i) **On Fig. 2.2, plot and label the following data** for 2015.

year	2015
tourist arrivals (thousand)	218
income from tourism (B$ million)	147

[1]

(ii) **Add a line of best fit on Fig. 2.2** to show the general relationship between the number of tourist arrivals and the income from tourism. [1]

(iii) **On Fig. 2.2**, (circle) **one** year that is an anomaly. [1]

(iv) **Complete the following sentences** by choosing the correct word from the list of words underneath.

The scatter graph shows a ..... relationship. This means that as the number of tourists increases, the income from tourism ..... .

negative	neutral	positive
decreases	stays the same	increases

[2]

[Total: 10]

3 **(a)** Study Fig. 3.1, which shows the average number of international migrants per year from 1970 to 2020.

Average number of international migrants per year, 1970–2020

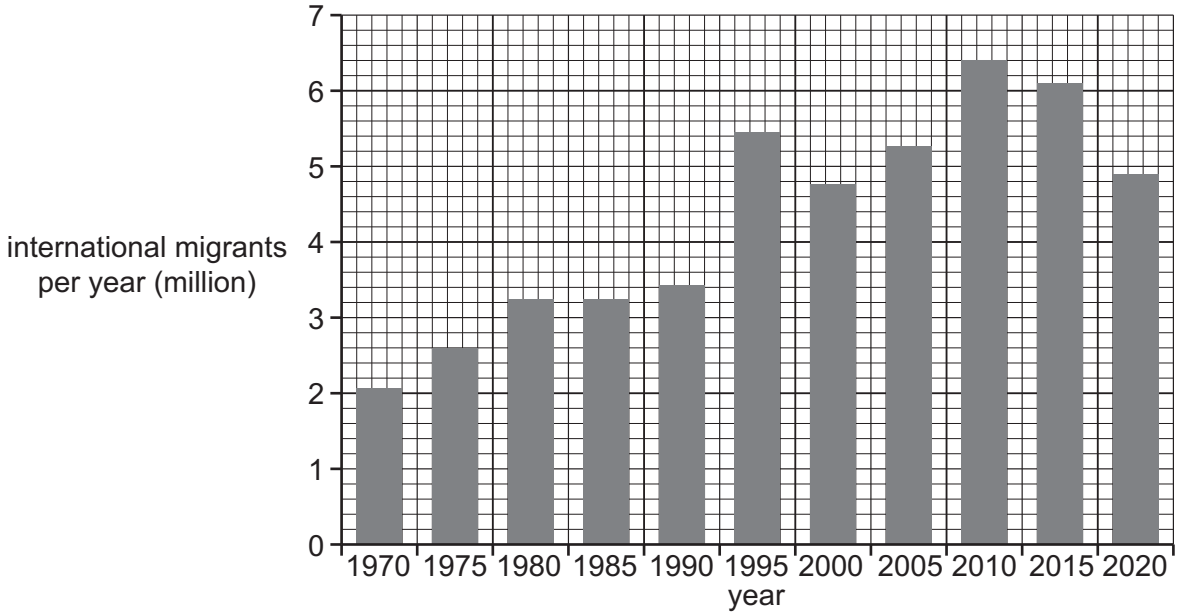

Fig. 3.1

Complete the following description of the changes shown in Fig. 3.1.

Globally, the average number of migrants has increased steadily between 1970 and 2010, except for the year ..... . It increased from around 2 million in 1970 to ..... million in 2010. It has since ..... to 4.9 million in 2020.

[3]

(b) Study Fig. 3.2 (Insert), which shows international migrants as a percentage of total population in 2019.

Use Fig. 3.2 to complete Table 3.1 by adding ticks (✓) in the correct places. One has been completed for you.

Table 3.1

continent	mainly <1%	mainly 1–5%	mainly 6–10%	mainly 11–20%	mainly >20%
Europe				✓	
Asia					
Africa					
Oceania					

[3]

(c) Study Table 3.2, which shows the countries with the highest levels of net emigration between 2010 and 2020.

Complete Table 3.2 by putting the countries in rank order from highest to lowest.

Table 3.2

country	net emigration (per year)
Bangladesh	415 000
China	329 000
India	501 000
Syria	752 000
Venezuela	370 000

rank order	country
1	.....
2	.....
3	.....
4	.....
5	.....

[2]

(d) Study Fig. 3.3, which shows the percentage of male and female international migrants in Southeast Asia and Western Asia in 2019.

Percentage of male and female international migrants, Southeast Asia and Western Asia, 2019

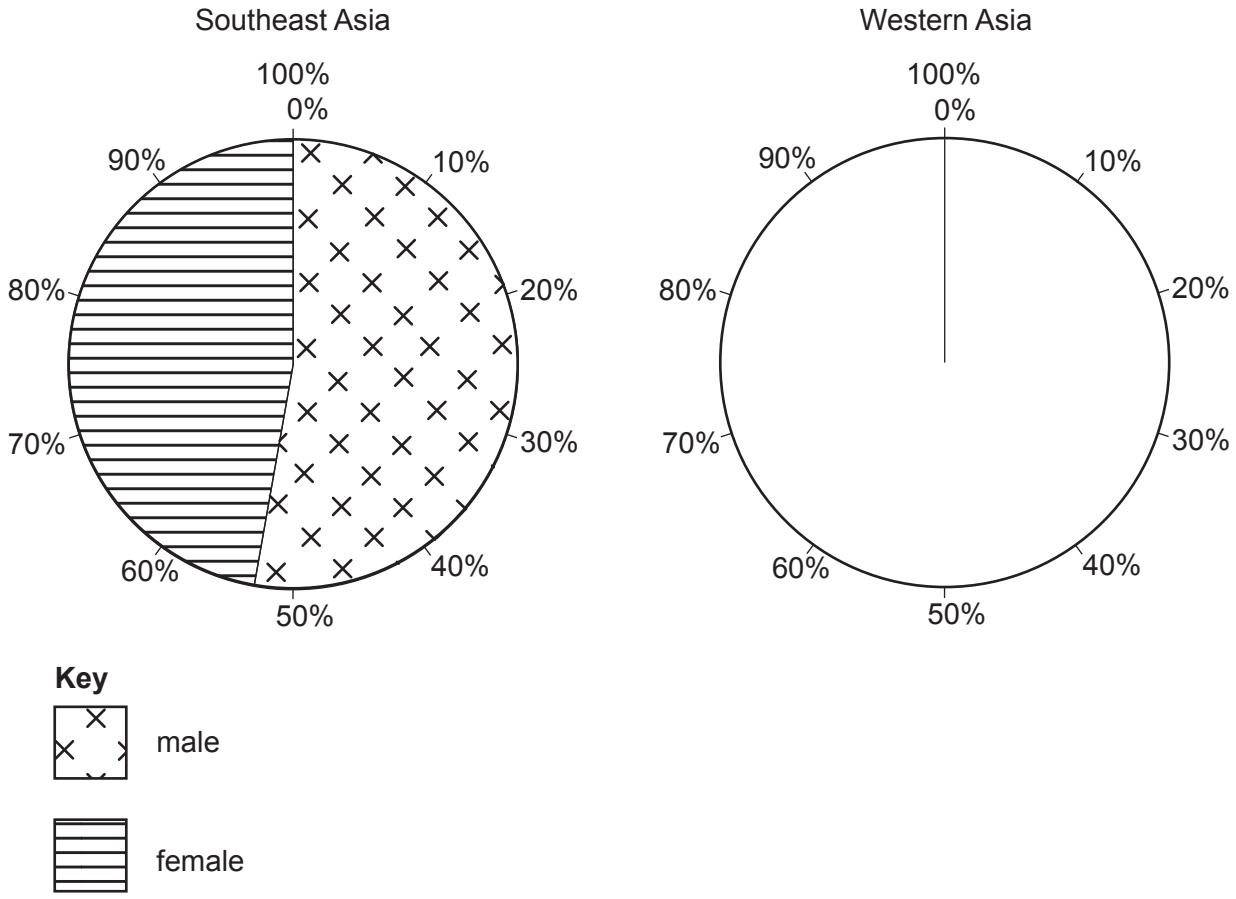

Fig. 3.3

Complete the pie graph for Western Asia on Fig. 3.3 to show that females are 35% of international migrants. [2]

[Total: 10]

Section C: Geographical investigation

4 Students at a school in Indonesia did fieldwork on the Petanu river on the island of Bali. The students chose 8 sites along the river to investigate how the river changes downstream. The location of the Petanu river and the fieldwork sites are shown in Fig. 4.1 (Insert).

The students investigated the following hypotheses:

Hypothesis 1: *River velocity (speed of flow) increases downstream.*

Hypothesis 2: *The area of the cross section of the river increases downstream.*

(a) Before working in groups the whole class of students carried out a pilot study at one site.

Identify **two** advantages of carrying out a pilot study. Tick (✓) your choices.

	tick (✓)
draw a sketch map of the course of the river	
practise fieldwork techniques	
photograph different features of the river	
get to know each other	
learn how to work safely in the river	

[2]

(b) To collect data for **Hypothesis 1:** *River velocity (speed of flow) increases downstream*, the students measured the river velocity (speed of flow) at each of the 8 sites along the river. This method is shown in Fig. 4.2 (Insert).

Describe how the students measured the river velocity (speed of flow).

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..... [4]

(c) Study Fig. 4.3, which shows the average velocity of the river at the 8 fieldwork sites.

Average velocity of the river at the 8 fieldwork sites

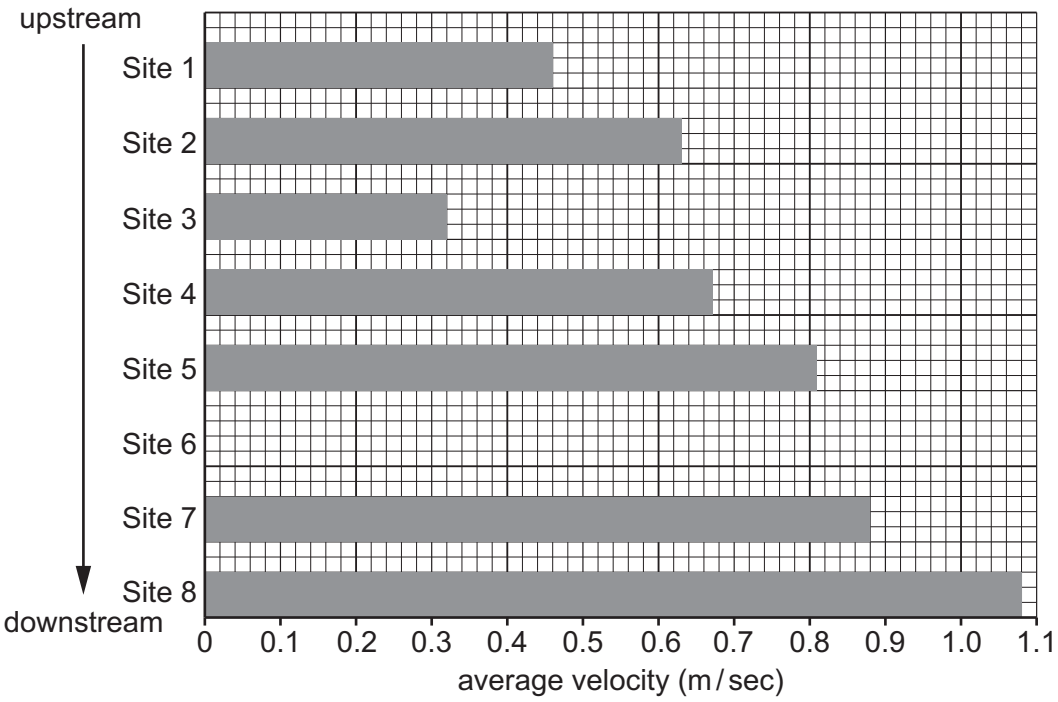

Fig. 4.3

(i) On Fig. 4.3, plot the following data for Site 6.

Site 6	average velocity 0.86 m / sec

[1]

(ii) What conclusion would you make about **Hypothesis 1:** *River velocity (speed of flow) increases downstream*? Use data from Fig. 4.3 to support your conclusion.

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..... [3]

(d) To investigate **Hypothesis 2:** *The area of the cross section of the river increases downstream*, the students measured the width and depth of the channel at each of the 8 sites along the river.

Study Fig. 4.4 (Insert), which shows some fieldwork methods.

Which photograph (A, B or C) shows the method for measuring width and depth?

measurement method	Photograph (A, B or C)
width of channel	
depth of channel	

[2]

(e) Study Table 4.1 (Insert), which shows the results of the students' fieldwork measurements.

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

calculation	tick (✓)
average depth + width	
average depth – width	
average depth × width	

[1]

(ii) Use the results in Table 4.1 (Insert) to **plot the area of the cross section at Site 6 on Fig. 4.5**.

Area of cross section of the river at the 8 fieldwork sites

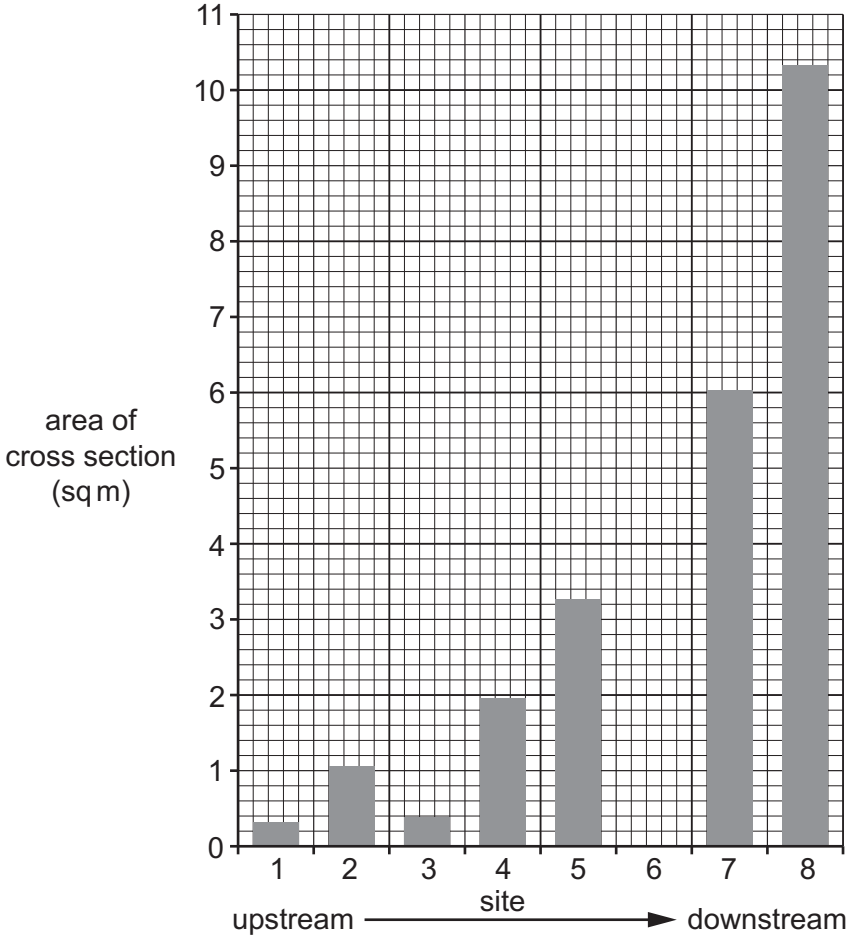

Fig. 4.5 [1]

(iii) Do the results shown in Fig. 4.5 support **Hypothesis 2:** *The area of the cross section of the river increases downstream*? Support your answer with data from Table 4.1 and Fig. 4.5.

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..... [3]

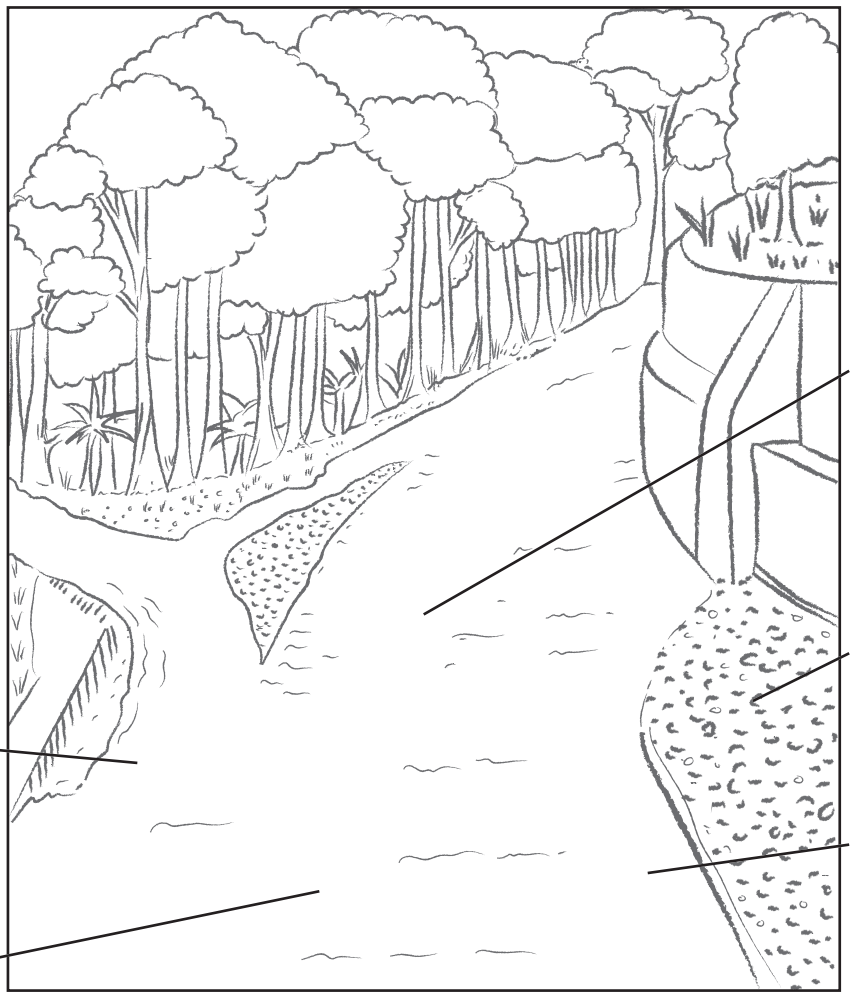
(f) Study Fig. 4.6 (Insert), which shows a fieldwork sketch of the **upper course** of the Petanu river and Fig. 4.7, which shows a fieldwork sketch of the **lower course** of the Petanu river.

Complete the labels on Fig. 4.7, by choosing the correct words from the list of words underneath, to explain the changes in velocity, width and depth along the lower course of the Petanu river.

less	vertical	higher	greater	steeper
solution	more	saltation	lower	traction

[3]

Fieldwork sketch of the lower course of the Petanu river



The width of the river is ..... due to more lateral erosion.

Load size decreases due to abrasion and attrition.

Velocity is ..... because there is less energy lost to friction due to smaller bedload size.

There is more discharge than in the upper course.

The river is deeper due to more ..... erosion.

Fig. 4.7

[Total: 20]

Additional page

If you use the following page to complete the answer to any question, the question number must be clearly shown.

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