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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER | | | | | |

CANDIDATE NUMBER | | | | |

6651371377

GEOGRAPHY **0460/41**

Paper 4 Alternative to Coursework **October/November 2012**

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 a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.
DO **NOT** WRITE ON ANY BARCODES.

Answer **all** questions.

The Insert contains Figs 1, 2 and 7, Tables 1, 2, 3 and 4 and Photograph A for Question 1 and Figs 8, 9 and 10 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.

For Examiner's Use	
Q1	
Q2	
Total	

This document consists of **13** printed pages, **3** blank pages and **1** Insert.

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1 A class of students was planning some fieldwork on a local river. They wanted to investigate possible differences in speed of flow (velocity) of the river in a meander and a straight section of the river.

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They decided to test the following hypotheses:

Hypothesis 1: *The speed of flow (velocity) is faster in the middle of the channel in a straight section of a river.*

Hypothesis 2: *The speed of flow (velocity) is faster on the outside of the channel in a river meander.*

(a) Before the students began the fieldwork their teacher spoke to them about safety in and around the river. Suggest **three** pieces of advice their teacher could have given them about safety.

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.....[3]

(b) The students were divided into two groups (boys and girls) to do the fieldwork. Each group worked on one straight section and one meander. To investigate the two hypotheses the students needed to collect some data.

(i) They measured the depth of the river at points across the channel. They recorded their measurements on the chart shown in Fig. 1 (Insert).
Describe how the students would make their measurements. Refer to the equipment they would have used.

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(ii) One method to measure speed of flow is by using a flowmeter, shown in Fig. 2 (Insert) and Photograph A (Insert). Give **one** advantage and **one** disadvantage of this method.

Advantage .....

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Disadvantage .....

.....[2]

(iii) The students used floats and a stopwatch to measure the speed of flow. Describe how the students carried out their fieldwork using this equipment.

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.....[3]

(iv) The velocity results measured by the group of girls and their calculation for one site are shown in Fig. 3 below.

River Recording Sheet (Girls)

Study site: Meander: Left side of channel

Measurement of velocity

Length of time for a small floating object to travel 10 metres:

Test 1 17 seconds
Test 2 14 seconds
Test 3 13 seconds
Test 4 16 seconds
Test 5 15 seconds

Average (mean) length of time to float 10 metres = $\frac{75}{5}$ seconds = 15 seconds

$$\text{Velocity} = \frac{\text{distance}}{\text{time}}$$

$$= \frac{10 \text{ metres}}{15 \text{ seconds}}$$

= 0.66 metres per second

Fig. 3

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Complete Fig. 4 below to calculate the average (mean) velocity of the river at one sampling site of the boys' group. [3]

For Examiner's Use

River Recording sheet (Boys)

Study site: Meander: Middle of channel

Measurement of velocity

Length of time for a small floating object to travel 10 metres:

Test 1 29 seconds
Test 2 20 seconds
Test 3 18 seconds
Test 4 25 seconds
Test 5 18 seconds

Average (mean) length of time to float 10 metres =

$$\text{Velocity} = \frac{\text{distance}}{\text{Time}}$$

=

=

Fig. 4

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(c) The results of the girls' fieldwork are shown in Tables 1, 2, 3 and 4 (Insert).

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(i) Use the results in Table 3 (Insert) to complete the cross section of the river channel at the meander and shade in the river in Fig. 5 below. The other cross-section has been completed for you. [2]

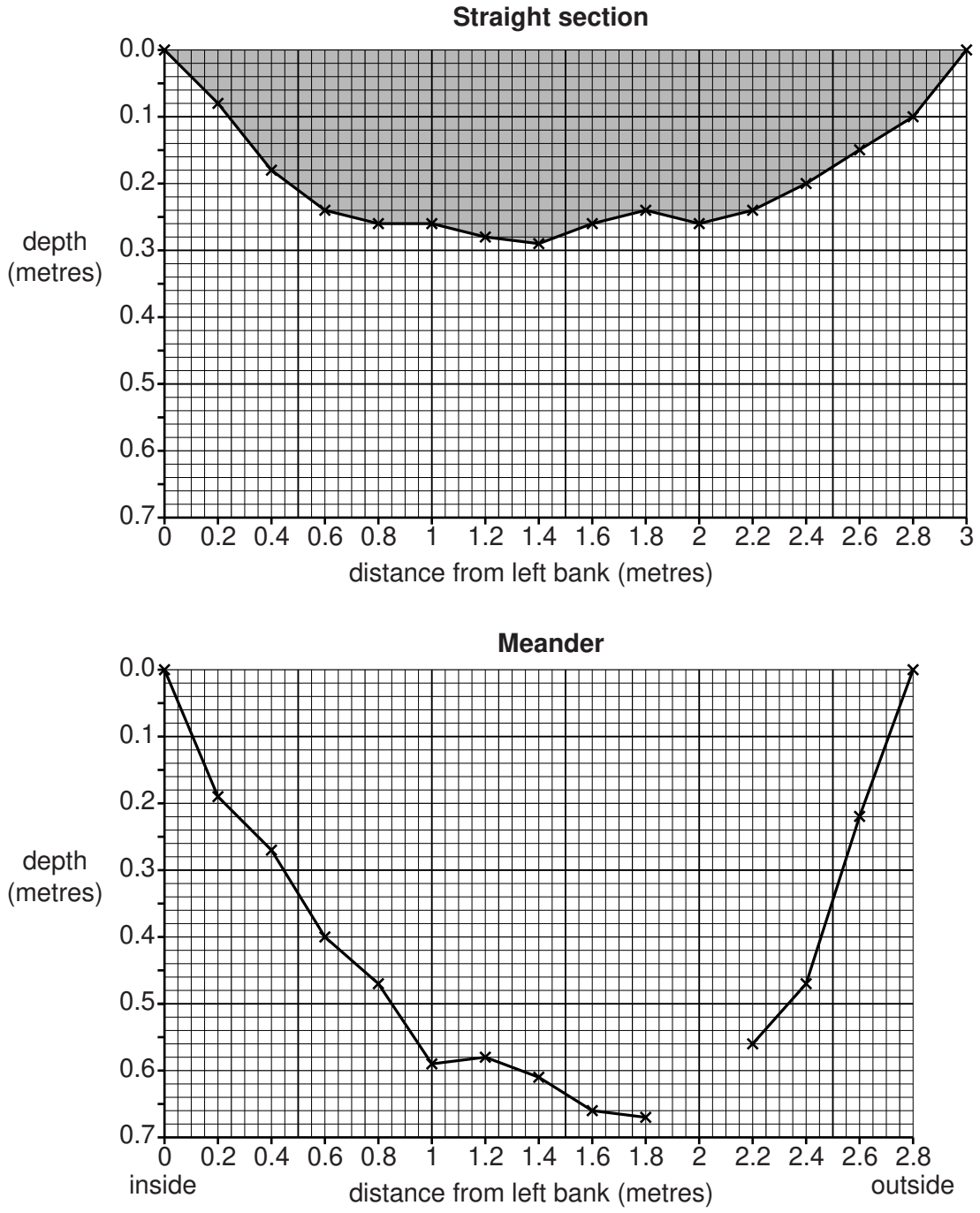


Fig. 5

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(ii) Use the results in Table 4 (Insert) to complete the average velocity graph for the meander in Fig. 6 below. [2]

For Examiner's Use

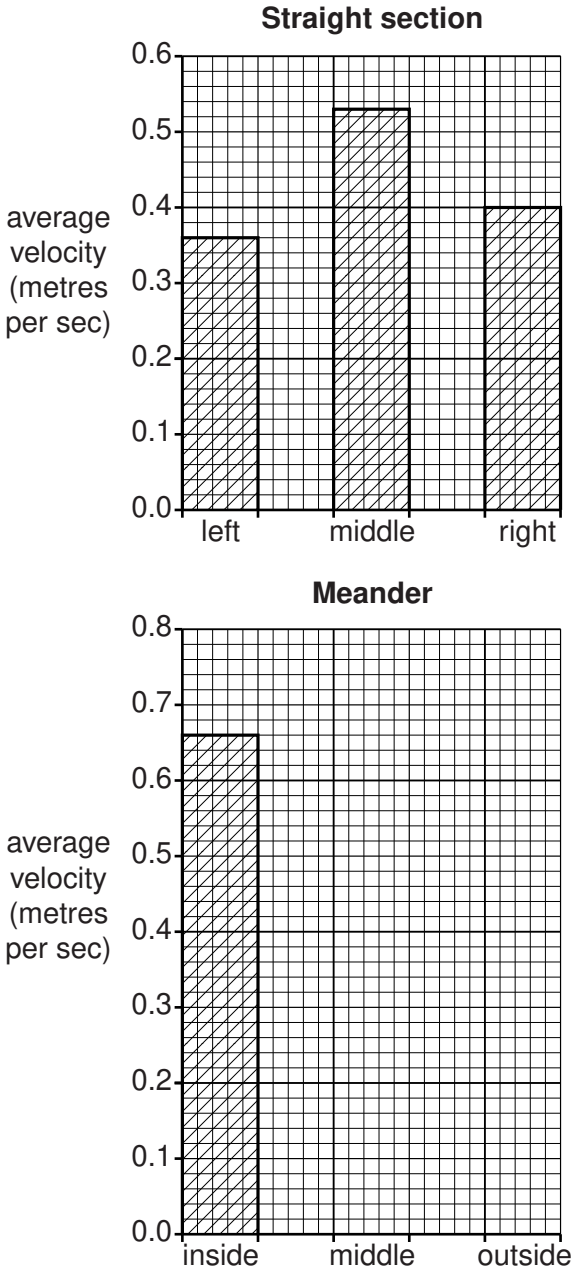


Fig. 6

(d) (i) When the girls looked at their results in Figs 5 and 6 they reached the conclusions that both **Hypothesis 1:** *The speed of flow (velocity) is faster in the middle of the channel in a straight section of a river* and **Hypothesis 2:** *The speed of flow (velocity) is faster on the outside of the channel in a river meander* were correct. What evidence from Fig. 6 supports these conclusions?

Hypothesis 1 .....

.....

Hypothesis 2 .....

.....[2]

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(ii) Give **two** reasons why the pattern of velocity, shown in Fig. 6, is different between the straight section and the meander.

1 .....

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(iii) The results of the boys' fieldwork are shown in Fig. 7 (Insert). Do these results support the girls' conclusions that the hypotheses were correct? Explain your answer by reference to Fig. 7.

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(e) When they returned to school the students discussed how they could improve their data collection to make their results more reliable. Suggest **three** improvements they could have made.

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.....[3]

[Total: 30 marks]

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2 A group of students wanted to compare the Central Business District (CBD) of their town with a retail park (out of town shopping centre) next to the town's by-pass road.

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They decided to test the following hypotheses:

Hypothesis 1: *There is a greater variety of shops and services in the CBD than in the retail park.*

Hypothesis 2: *People who are shopping are attracted to the CBD and the retail park for different reasons.*

(a) The students' first task was to map the layout and land use of the CBD and retail park. These are shown in Figs 8 and 9 (Insert). The key for Figs 8 and 9 is on page 9 of the Insert.

(i) Give **two** examples of services, other than shops, which are located in the CBD shown in Fig. 8.

1 .....

2 .....[2]

(ii) Suggest **two** reasons why services such as these are located in the CBD.

1 .....

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2 .....

.....[2]

(iii) Suggest **two** reasons why there are so many vacant or unoccupied shops in the CBD.

1 .....

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2 .....

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(b) To help them to reach a conclusion about Hypothesis 1, the students made a classification of the shops and services in the two shopping centres. Their results for the CBD are shown in Table 5, below.

Table 5

Results of classification

	CBD	Retail park
Shops selling comparison / high order goods	44	
Shops selling convenience / low order goods	13	
Services	18	
Vacant / unoccupied	7	
Total	**82**	**14**

(i) Use the information in Fig. 9 (Insert) to complete the classification of the retail park in Table 5. [2]

(ii) Which **two** of the following statements about different types of goods are correct? Tick (✓) your choices.

	Tick (✓)
Comparison / high order goods are bought more frequently than convenience / low order goods	
Comparison / high order goods are always local, fresh produce	
Comparison / high order goods usually cost more than convenience / low order goods	
People travel further to buy comparison / high order goods than convenience / low order goods	
Comparison / high order goods are better quality than convenience / low order goods	

[2]

(iii) Use Fig. 8 (Insert) to give an example of a type of shop which sells:

high order goods; .....

low order goods. ..... [2]

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(iv) Look again at Figs 8 and 9 (Insert) and Table 5. What conclusion would the students make about **Hypothesis 1:** *There is a greater variety of shops and services in the CBD than in the retail park*?
Support your answer with evidence.

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.....[3]

(c) To get some information to test **Hypothesis 2:** *People who are shopping are attracted to the CBD and the retail park for different reasons* the students decided to use a questionnaire with some people in the shopping centres.
This questionnaire is shown in Fig. 10 (Insert).

(i) Suggest **three** pieces of advice their teacher gave them about using a questionnaire with people who are shopping.

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3 .....

.....[3]

(ii) Before using their questionnaire the students did a pilot (trial) study with their families. What are **two** advantages of doing this?

1 .....

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2 .....

.....[2]

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(d) (i) Table 6 below shows the results of Question 1 in the questionnaire.

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Table 6

Answers to Question 1: What is the main reason you are shopping here today?

	CBD (%)	Retail park (%)
Near home	6	8
Near work	18	3
Visitor to the area	12	1
Good parking	2	51
Wide range of shops available	51	4
Good value for money	11	33
Total	**100**	**100**

Use the results from Table 6 to complete the pie graph for the CBD in Fig. 11 below. [2]

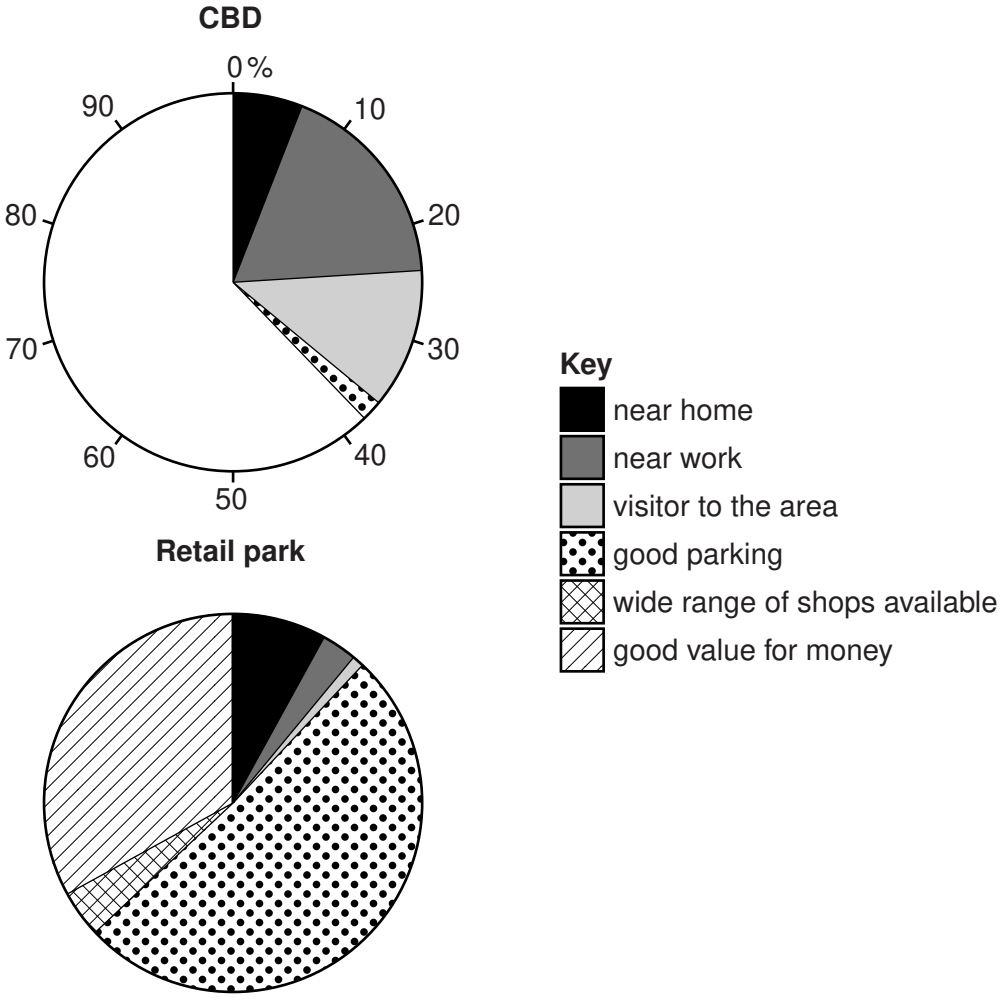


Fig. 11

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(ii) Table 7 below shows the results of Question 2 in the questionnaire.

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Table 7

Answers to Question 2: What are the main items you are buying here today?

	CBD (%)	Retail park (%)
Food and drink	5	30
Home improvement goods	4	22
Furniture / electrical goods	12	26
Clothes / jewellery	56	16
Other	23	6
Total	**100**	**100**

Use the results from Table 7 to complete the bar graph for the retail park in Fig. 12 below. [2]

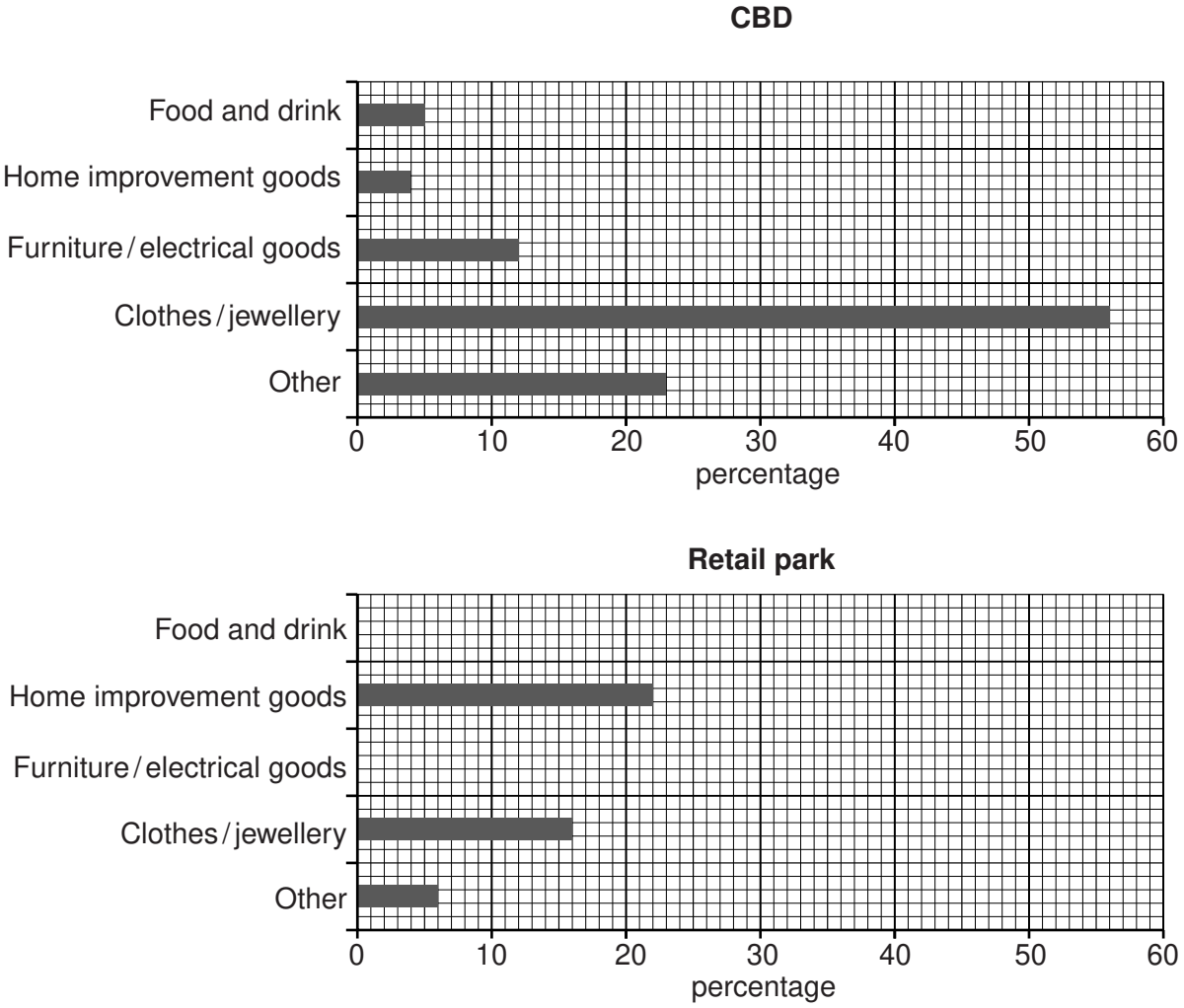


Fig. 12

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(iii) Do the results of the questionnaire support **Hypothesis 2:** *People who are shopping are attracted to the CBD and retail park for different reasons*?
Use evidence from Figs 11 and 12 to support your conclusion.

For Examiner's Use

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.....[4]

(e) Some students wanted to find out more about shopping patterns in the two shopping centres. Suggest a suitable investigation and explain why it would be useful.

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.....[2]

[Total: 30 marks]

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