Cambridge O Level

Cambridge International Examinations
Cambridge Ordinary Level

CANDIDATE NAME	

CENTRE NUMBER						CANDIDATE NUMBER				

6503926625

GEOGRAPHY **2217/22**

Paper 2 **October/November 2016**

2 hours 15 minutes

Candidates answer on the Question Paper.

Additional Materials: Ruler
Calculator
Protractor
Plain paper

1:50 000 Survey Map Extract is enclosed with this question paper.

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.

Section A
Answer **all** questions.
Section B
Answer **one** question.

The Insert contains Photograph A for Question 2, Figs. 11 and 15 and Table 3 for Question 7, and Figs. 16 and 20 and Tables 5 and 7 for Question 8.
The Survey Map Extract and the Insert are **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 document consists of **31** printed pages, **1** blank page and **1** Insert.

DC (NF/SG) 116660/5
© UCLES 2016

CAMBRIDGE International Examinations

[Turn over

Section A

Answer **all** questions in this section.

1 The 1:50 000 map is of Achill Island, Ireland.

(a) Study the three hill areas of Croaghaun, Slievemore and Doogort and complete the table by putting **one** tick in each row. The first row has been completed for you.

	Croaghaun	Slievemore	Doogort
Furthest east			✓
Has the highest peak			
Steepest slopes face south			
No rivers above the 100 m contour			
Lakes on the lower slopes			

[4]

(b) **(i)** Measure the distance from the Post Office at Keel (An Caol), along the road, to the end of the road at Keem Strand. Circle the correct answer.

6 km 8 km 10 km 14 km [1]

(ii) What is the bearing of Keem from Keel (An Caol)? Circle the correct answer.

0° 90° 180° 270° [1]

(c) **(i)** At what height is the lake at Lough Acorrymore?

..... [1]

(ii) Describe the changes in slope along Mill Stream from Lough Acorrymore to the sea.

.....

.....

.....

..... [2]

© UCLES 2016

(d) Describe the physical features of the northern coast.

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [5]

(e) Using map evidence, suggest why the site in 6304 and 6404 is a good location for a caravan and camping site.

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [5]

(f) Give the six-figure grid reference of the Signal Tower, in the centre of the extract.

..... [1]

[Total: 20 marks]

2 Study Photograph A (Insert), which shows a landscape in Albania.

(a) Fig. 1 is a sketch of the same area. On Fig. 1, label the following features with the given letter. The first one has been done for you.

- line of hills (A)
- mountain ridge (B)
- linear settlement (C)
- river meander (D)
- flood plain (E)
- city park (F) [5]

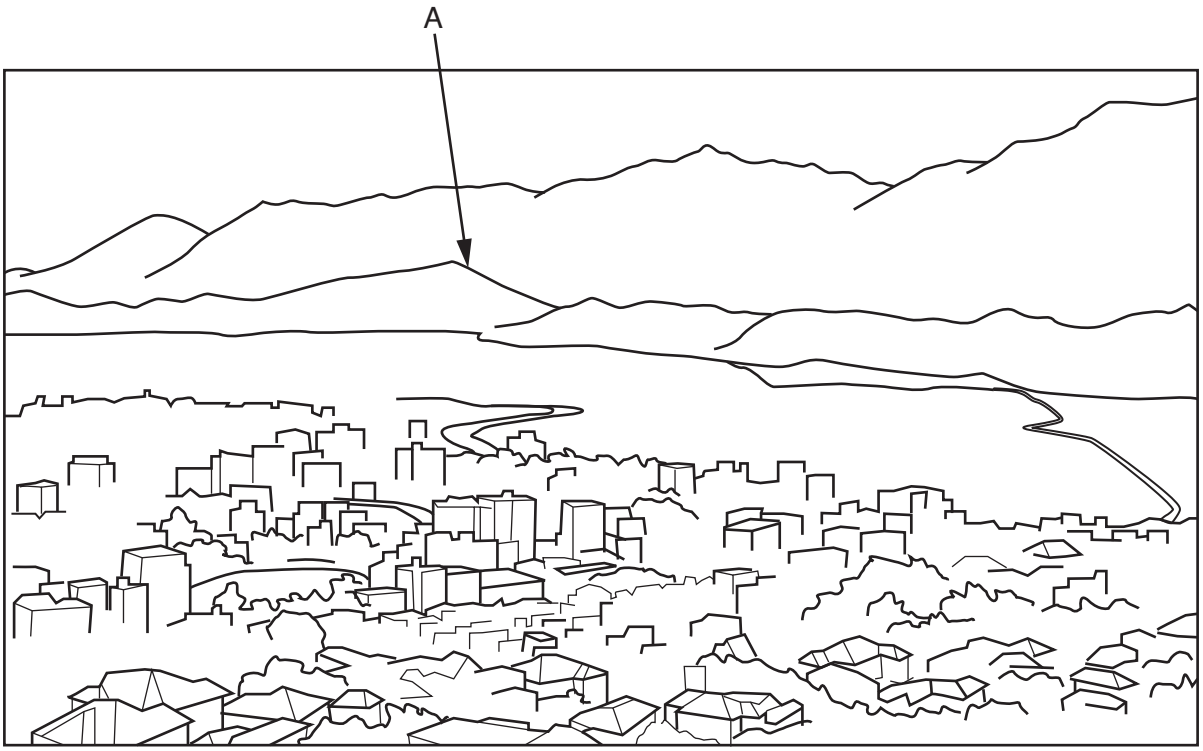


Fig. 1

(b) Describe the buildings in Photograph A.

.....

.....

.....

.....

.....

..... [3]

[Total: 8 marks]

TURN PAGE FOR QUESTION 3

3 Study Fig. 2, which shows a diagram of a river with a waterfall.

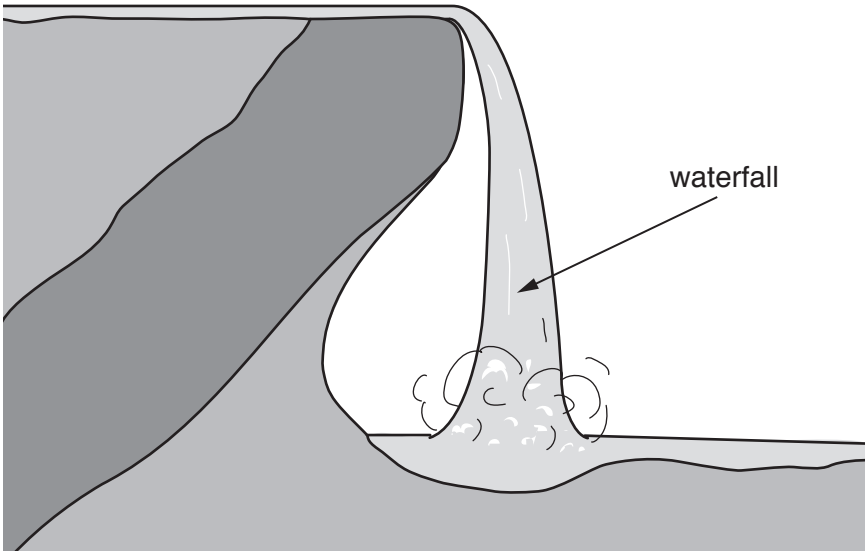


Fig. 2

(a) **(i)** Add labels to Fig. 2 to show the position of:

- plunge pool;
- hard rock layer;
- undercutting;
- soft rock layer. [4]

(ii) On Fig. 2, draw and label a future position of the waterfall. [1]

(b) Study Fig. 3, which shows changes in a waterfall's position.

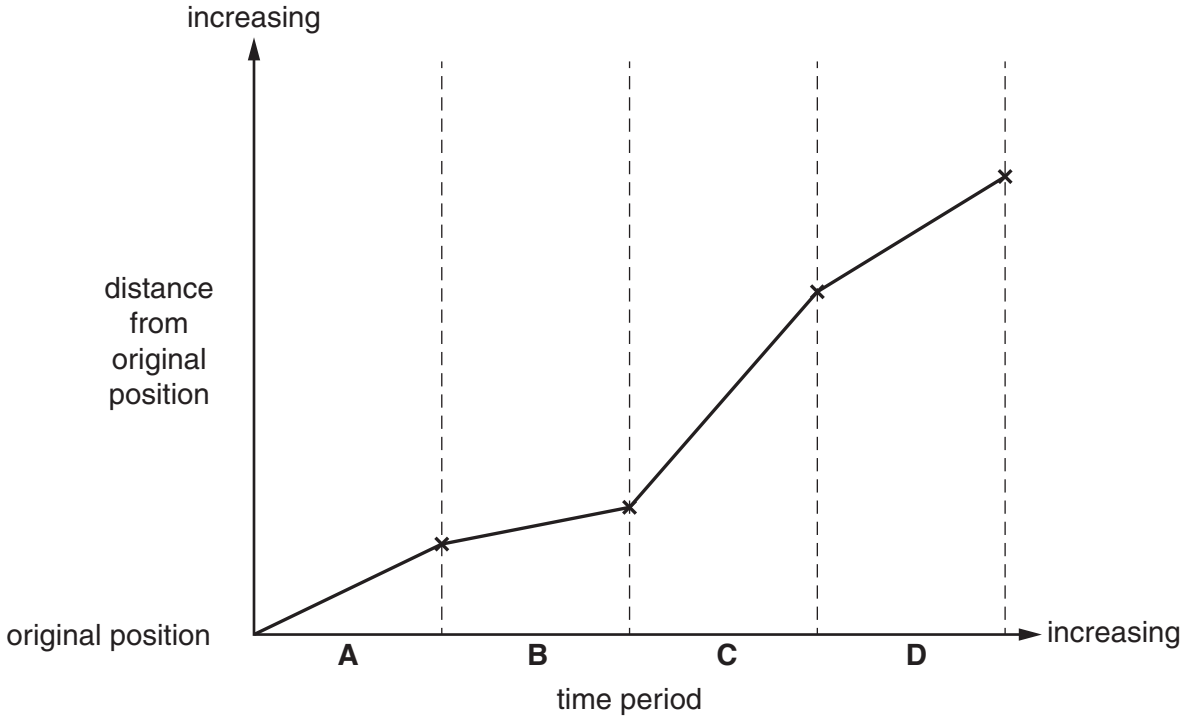


Fig. 3

(i) Which time period, **A**, **B**, **C** or **D**, had the fastest rate of erosion?

..... [1]

(ii) Which of the following could cause faster erosion at the waterfall? Tick **two** statements.

Statement	Tick (✓)
Increased rainfall in the area	
Increased speed of flow	
Low water volume	
Very hard rock	
Wider section of channel upstream	

[2]

[Total: 8 marks]

4 Study Fig. 4, which shows volcanoes in the west of the USA, active during the last 2000 years.

Fig. 4

(a) **(i)** Describe the distribution of volcanoes active during the last 2000 years.

.....

.....

.....

.....

..... [3]

(ii) Suggest reasons why many of the volcanoes are in a line.

.....

.....

.....

..... [2]

(b) Study Fig. 5, which shows information about the eruptions of the volcanoes over the last 4000 years.

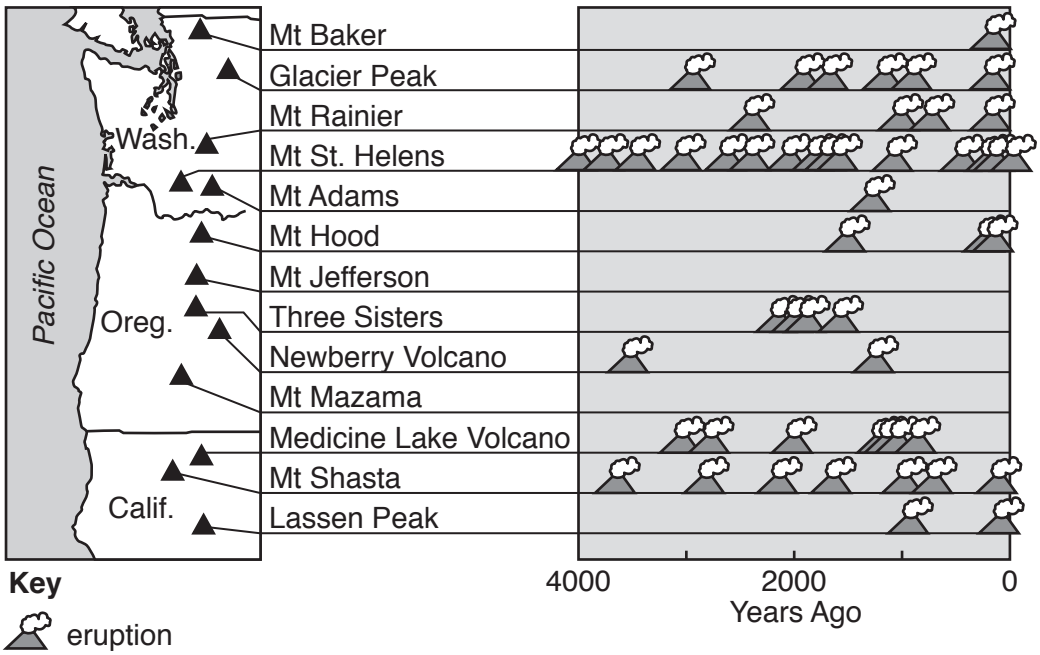


Fig. 5

(i) Which volcano is most active?

..... [1]

(ii) Which **two** volcanoes have not erupted in 4000 years?

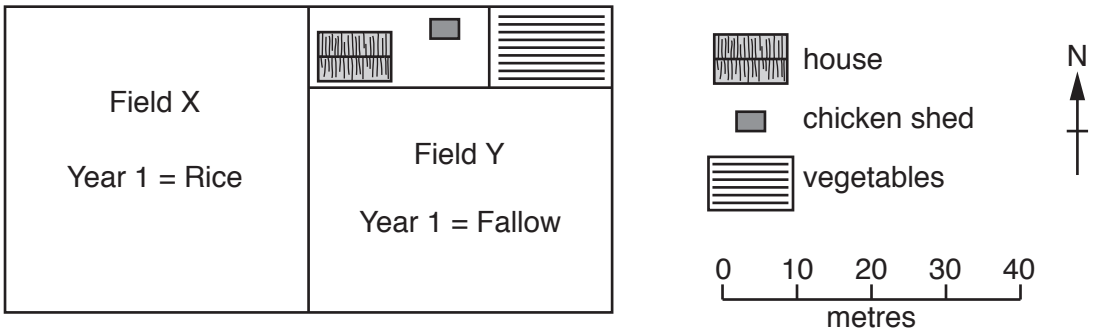
..... [1]

(iii) Which volcano was dormant for 2000 years between two eruptions?

..... [1]

[Total: 8 marks]

5 Study Fig. 6, which shows a plan of a subsistence farm, a question faced by the farmer and three options for him to consider.



Question: How can I get the best rice yield in Year 2?

Option **A**: Plant Year 2 rice crop in Field X

Option **B**: Apply fertiliser to Field X and plant Year 2 rice crop there

Option **C**: Plant Year 2 rice crop in Field Y

Fig. 6

(a) **(i)** The farmer has decided that Option **B** is most likely to give the best rice yield in Year 2. Why is Option **B** likely to give a good yield?

.....

..... [1]

(ii) Using Fig. 6 **only**, suggest why Option **A** and Option **C** could give comparatively lower yields in Year 2.

Option **A** .....

.....

Option **C** .....

..... [2]

(b) Study Fig. 7, which shows the yield per hectare of two crops, in the UK, from 1970 to 2010. Apples are a tree crop and carrots are a root crop.

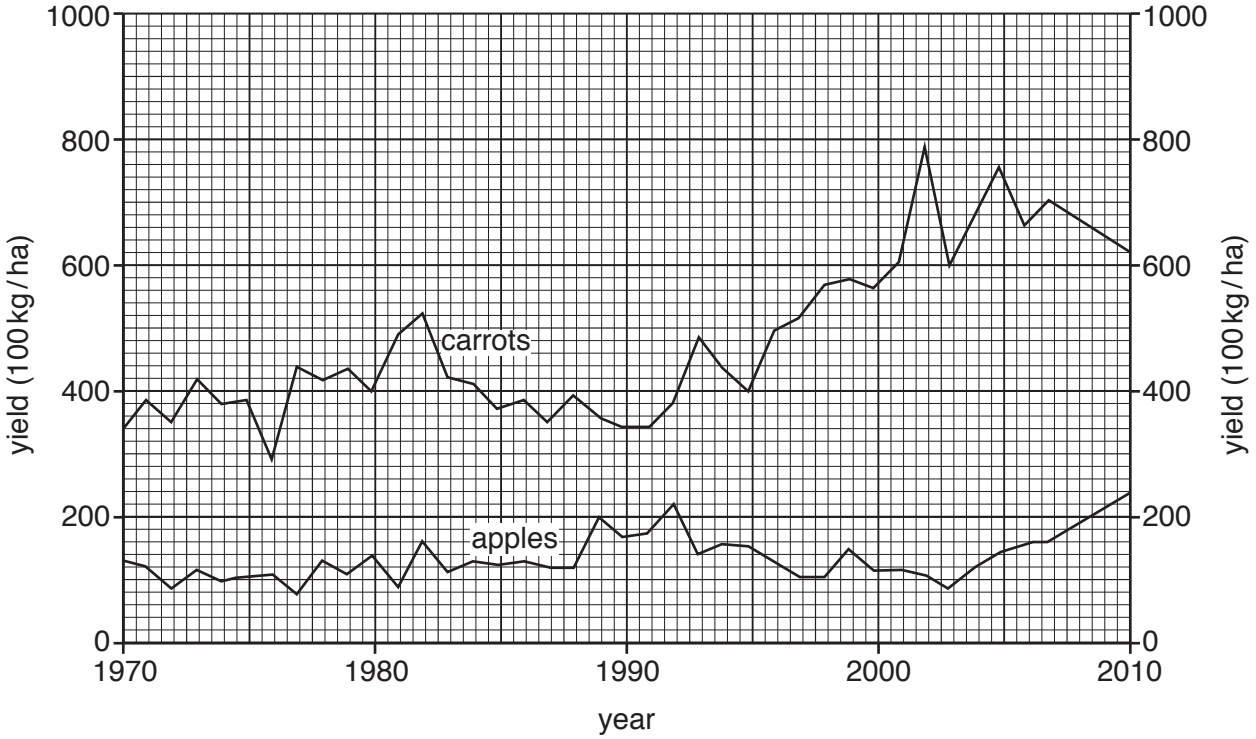


Fig. 7

(i) What was the yield per hectare of carrots in 1980?

..... [1]

(ii) Suggest reasons for the variation in yield of both crops per hectare.

.....

.....

.....

.....

.....

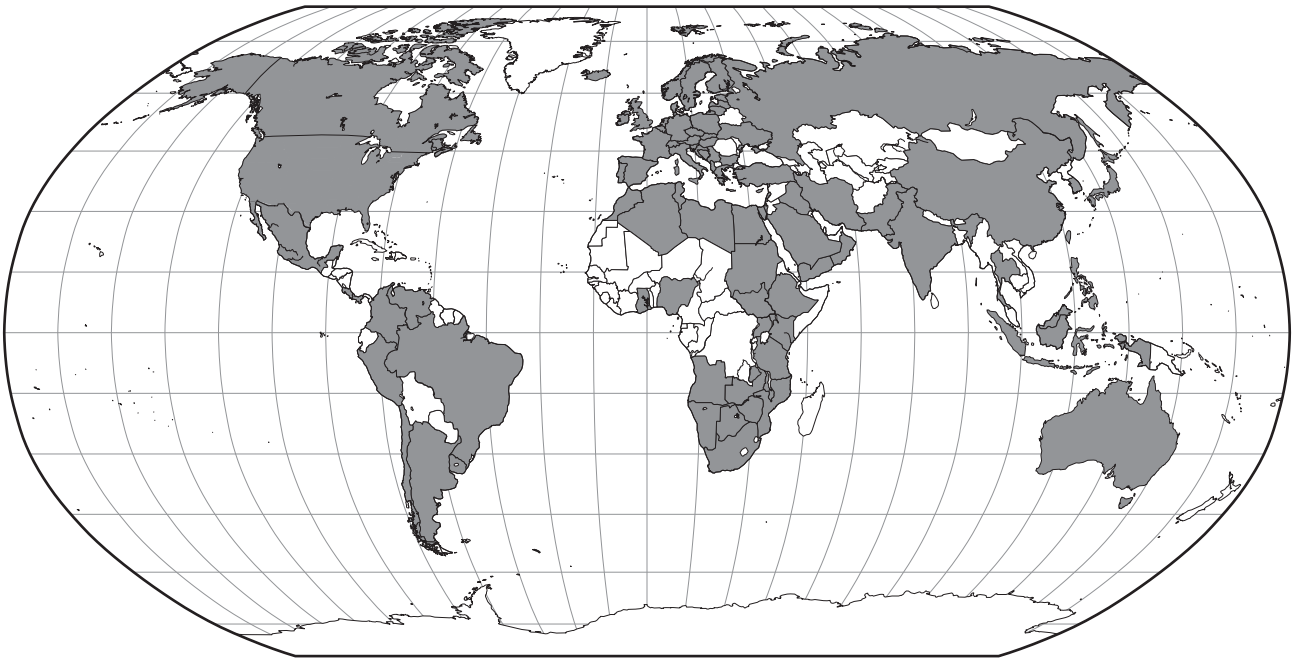
.....

.....

..... [4]

[Total: 8 marks]

6 Study Fig. 8, which shows the countries in which a transnational pharmaceutical company is located. A pharmaceutical company manufactures medicines.



Key

countries with locations of the pharmaceutical company

Fig. 8

(a) Describe the distribution of the countries shown on Fig. 8.

.....

.....

.....

.....

.....

.....

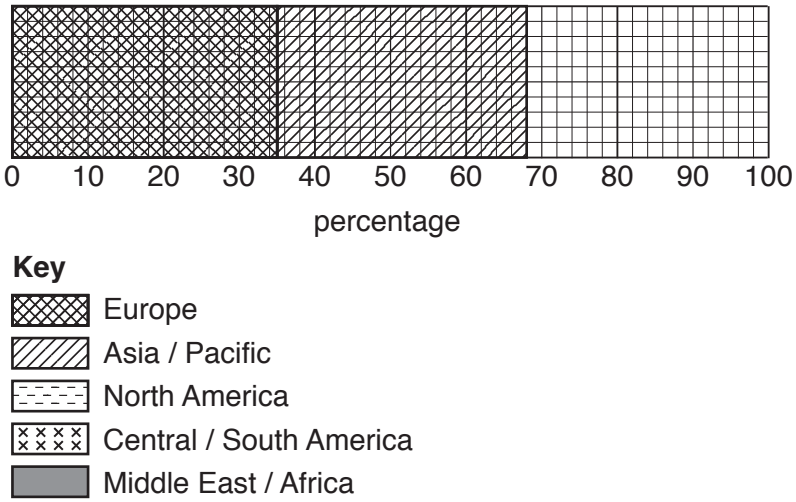
.....

..... [3]

(b) Table 1 shows the percentage of employees in the pharmaceutical company from each world region. Use the data in Table 1 to complete Fig. 9.

Table 1

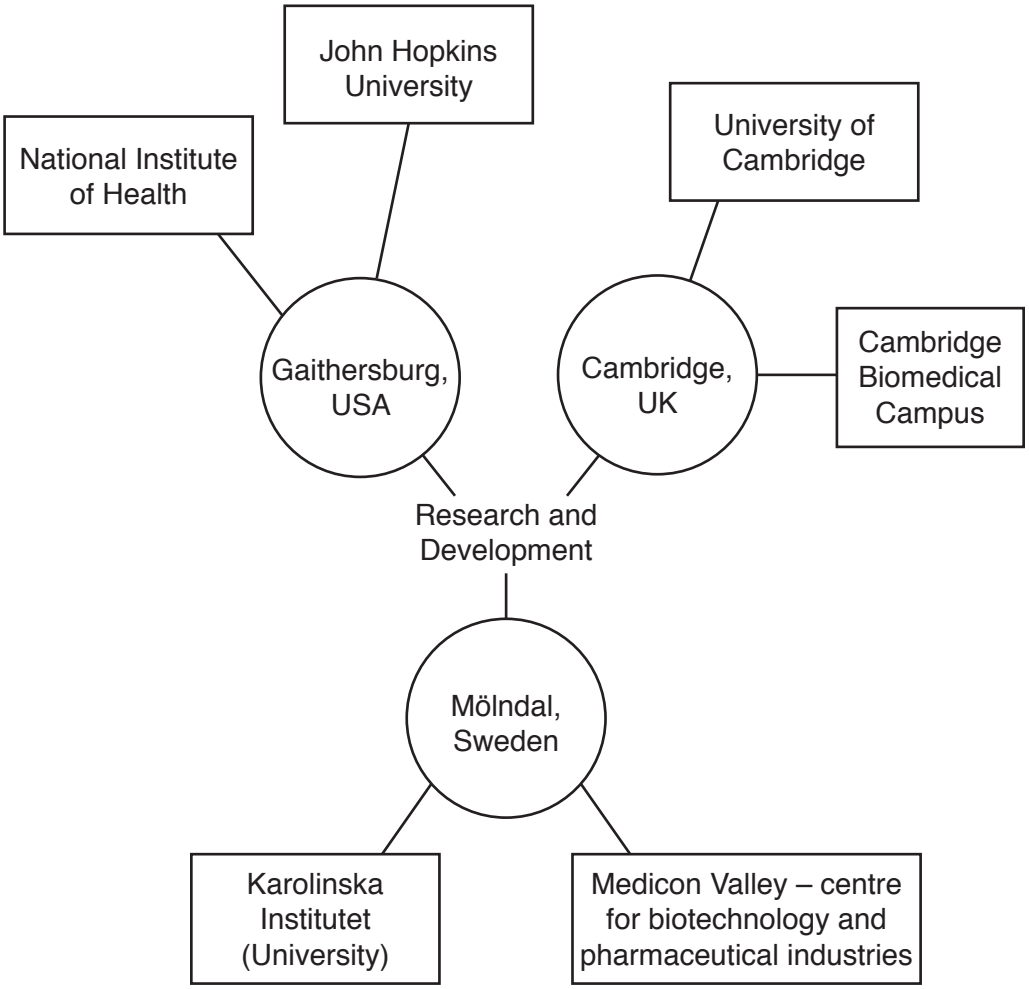
World Region	%
Europe	35
Asia / Pacific	33
North America	22
Central / South America	6
Middle East / Africa	4



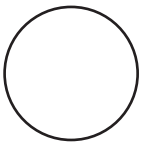
[3]

Fig. 9

(c) Fig. 10 shows the main research and development locations for the pharmaceutical company.



Key



Location of transnational pharmaceutical company

Location of other organisation in the same area

Fig. 10

Using Fig. 10, suggest why research and development is based at the locations shown in Fig. 10.

.....

.....

.....

..... [2]

[Total: 8 marks]

TURN PAGE FOR QUESTION 7

Section B

Answer **one** question from this section.

7 Some students did fieldwork in a small river drainage basin in south west England. The students chose four sites which are shown on Fig. 11 (Insert).

(a) Which **two** features of the drainage basin are labelled **A** and **B** on Fig. 11?

Choose from the following:

confluence meander source tributary watershed

Feature **A** .....

Feature **B** ..... [2]

The students decided to investigate the following hypotheses:

Hypothesis 1: *River discharge increases downstream.*

Hypothesis 2: *River pollution increases downstream.*

(b) In order to calculate river discharge the students had to measure river velocity and channel width and depth.

(i) First they measured velocity once at each site using floats, a tape measure and a stopwatch. Describe how they measured velocity.

.....

.....

.....

.....

.....

.....

.....

.....[4]

(ii) When the students returned to school they discussed with their teacher possible weaknesses of their method for measuring velocity. Give **two** weaknesses of the method.

1 .....

.....

2 .....

.....[2]

(iii) Next the students measured the width of the river channel and the depth of the river at points across the channel. Describe how the students made these measurements and what equipment they used.

.....

.....

.....

.....

.....

.....

.....

.....[4]

(iv) Using their measurements the students drew a cross section of the river channel at each site. The cross section at site 1 is shown in Fig. 12 below.

Cross section at site 1

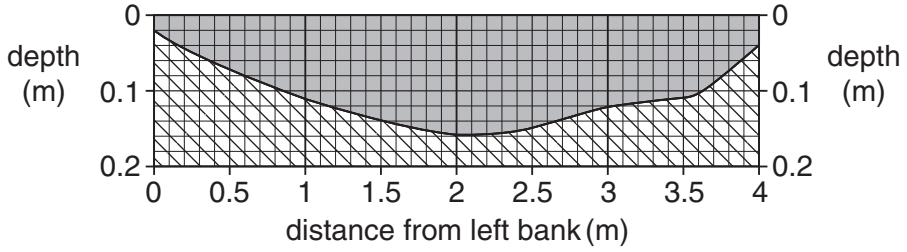


Fig. 12

The results of the students' measurements at site 3 are shown in Table 2 below.

Table 2

Site 3 measurements

Distance from left bank (m)	0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	**5.5**	**6.0**	6.5
Depth (m)	0.09	0.23	0.38	0.45	0.61	0.78	0.65	0.80	0.67	0.65	0.44	**0.38**	**0.21**	0.12

Use the results shown in Table 2 to complete the cross section and complete the shading of the river channel at site 3 in Fig. 13 below. [2]

Cross section at site 3

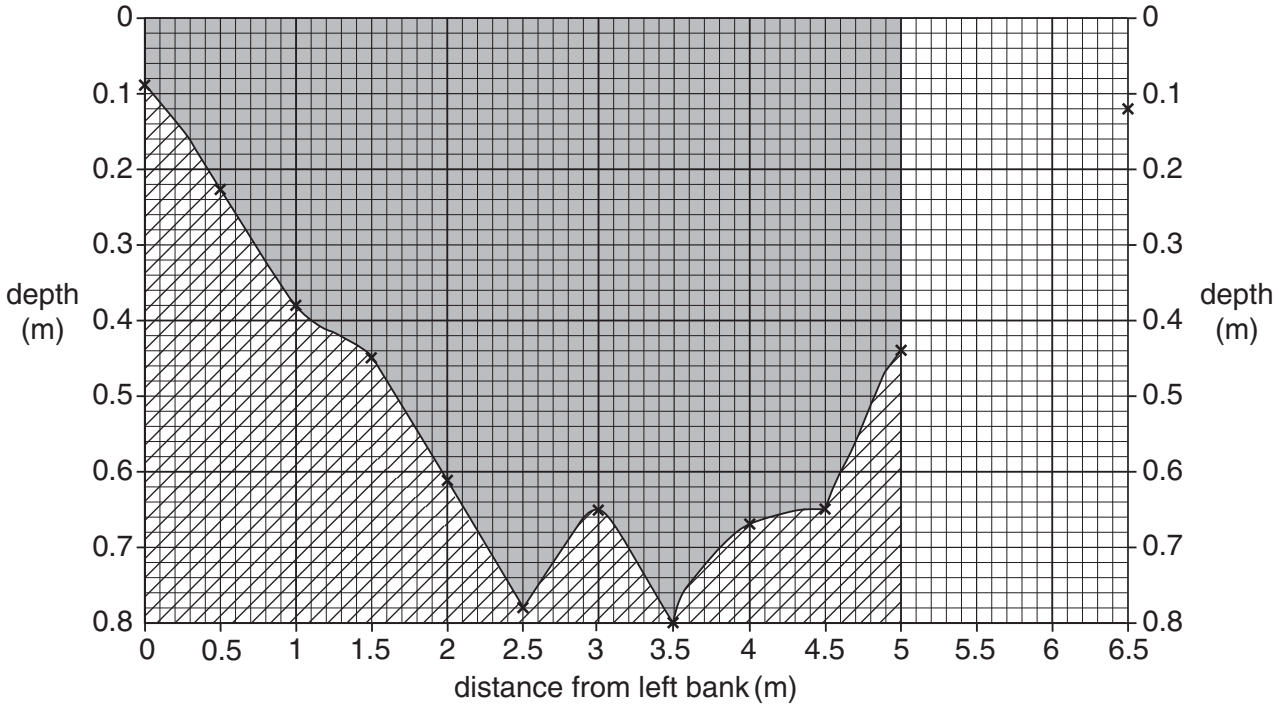


Fig. 13

(v) Describe **two** differences between the cross sections at site 1 and site 3.

1 .....

.....

2 .....

.....[2]

(vi) The students then calculated the cross sectional area of the river channel at each site. First they had to calculate the average depth of the river.

Table 2, on page 18, shows the water depth at the 14 measuring points across the river at site 3. Calculate the average depth at this site.

..... m [1]

(vii) Use the data in Table 2 and your calculation in **(b)(vi)** to work out the cross sectional area of site 3 below. [2]

Calculation of cross sectional area at site 3
Cross sectional area = width of river (metres) × average depth of river (metres)
=
= m^2

(c) **(i)** Using their data the students calculated the river discharge at each site. Discharge is calculated by the formula:

velocity × cross sectional area

Their results are shown in Table 3 (Insert). Use these results to complete the graph, Fig. 14 below. [1]

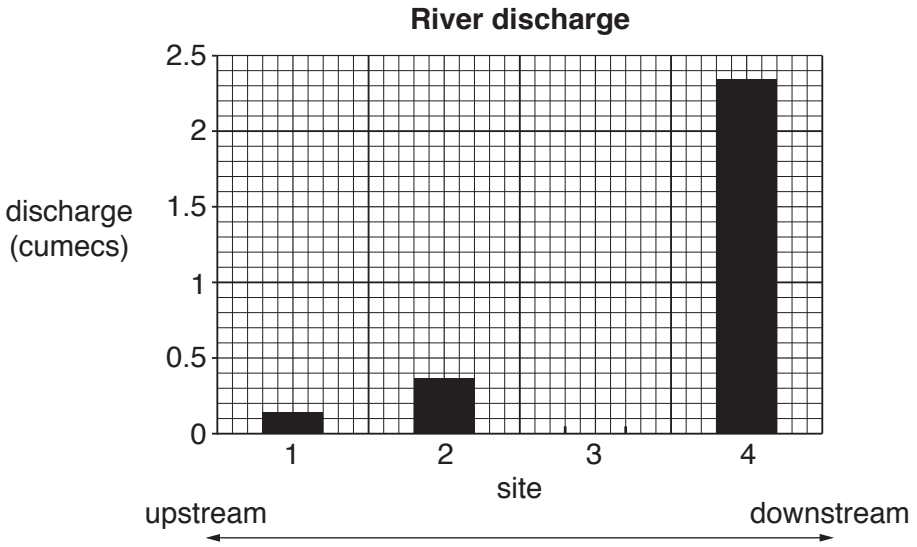


Fig. 14

(ii) What conclusion should the students make about **Hypothesis 1**: *River discharge increases downstream*? Use evidence from Fig. 14 to support the conclusion.

.....

.....

.....

.....[2]

(iii) Look again at Fig. 11 (Insert) and explain the change in discharge downstream.

.....

.....

.....

.....[2]

(d) To test **Hypothesis 2**: *River pollution increases downstream*, a different student at each site did a visual survey using the recording form shown in Fig. 15 (Insert).

(i) Fig. 15 shows the completed form for site 3. Use this information to calculate the overall pollution score. Put your answer into Table 4 below. [1]

Table 4

Site	Pollution score
1	5
2	3
3	
4	17

(ii) What conclusion would the students make about **Hypothesis 2**: *River pollution increases downstream*? Support your answer with evidence from Table 4.

.....

.....

.....

.....

.....

.....[3]

(iii) Suggest **two** ways that the students could improve the reliability of their pollution survey.

1 .....

.....

2 .....

.....[2]

[Total: 30 marks]

8 Students in Cascais, Portugal, were investigating differences in their local shopping area. They did fieldwork in three shopping areas:

- the CBD of the town;
- a suburban (neighbourhood) shopping centre located 3 km away from the CBD;
- an out-of-town shopping centre located 10 km from the CBD.

Some students decided to test the following hypotheses:

Hypothesis 1: *There will be differences between the types of shops and services located in the three shopping areas.*

Hypothesis 2: *The number of people who are shopping will decrease further away from the CBD.*

(a) To investigate **Hypothesis 1** the students completed a tally chart of the different types of shops and services in each area. Their completed tally chart for the suburban (neighbourhood) shopping centre is shown in Fig. 16 (Insert).

(i) The number of shops and services counted in the CBD and the out-of-town centre is shown in Table 5 (Insert).
A student wanted to plot all the results from the three shopping centres onto separate pie charts so that she could compare them. Explain why it would be difficult to do this.

.....

.....

.....

.....[2]

(ii) To make it easier to reach a conclusion to **Hypothesis 1** the student decided to classify the shops and services into five groups shown in Table 6 below.

Table 6

Classification of shops

Group	Description
A	Shops which sell mainly one type of product which are often expensive
B	Shops which sell a variety of products which are often cheaper
C	Shops which sell mainly food
D	Shops which sell mainly clothes
E	Services

In which group would the student have included:

- a hair and beauty salon; .....
- a jewellers? ..... [2]

(iii) Which **one** of the following describes the shops in group **A**?

Circle your answer.

business comparison convenience department public [1]

(iv) The results of the student's classification are shown in Table 7 (Insert). Use these results to complete the pie graph for the CBD in Fig. 17 below. [2]

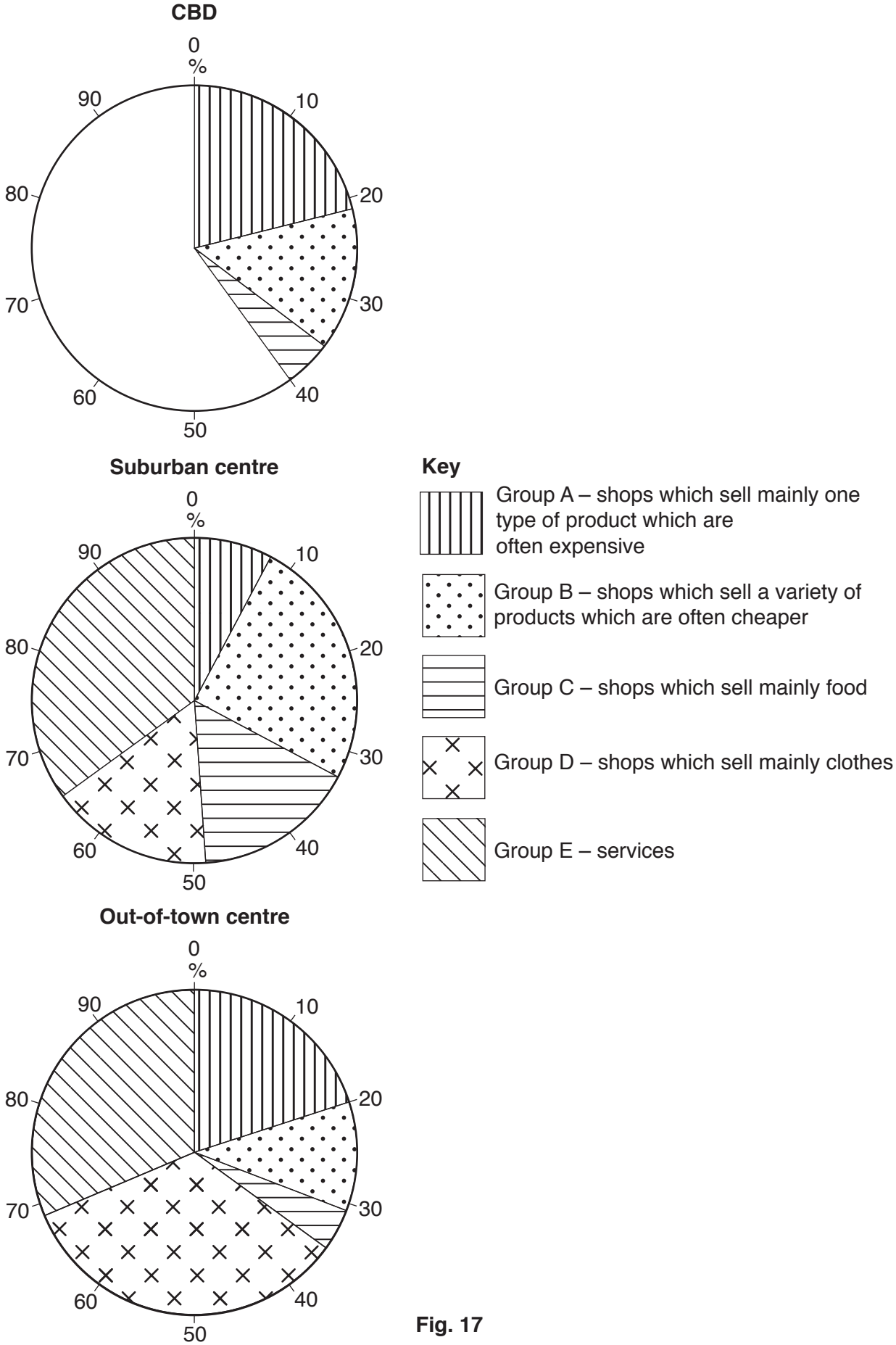


Fig. 17

(v) The students decided that **Hypothesis 1**: *There will be differences between the types of shops and services located in the three shopping areas* was true. Support this decision by comparing the three shopping areas. Use data from Fig. 17 and Table 7.

.....

.....

.....

.....

.....

.....

.....

.....[4]

(vi) Suggest **two** reasons for the differences between the types of shops and services in the different areas.

1 .....

.....

2 .....

.....[2]

(b) To investigate **Hypothesis 2**: *The number of people who are shopping will decrease further away from the CBD*, the students did a pedestrian count in each shopping area.

(i) Describe how the students would plan and carry out the pedestrian count so that they would get reliable results.

Plan the pedestrian count

.....

.....

.....

.....

.....

Carry out the pedestrian count

.....

.....

.....

.....

.....[4]

(ii) The results of the pedestrian count are shown in Fig. 18 below. How many people were counted in the out-of-town shopping centre?

..... [1]

Results of pedestrian count

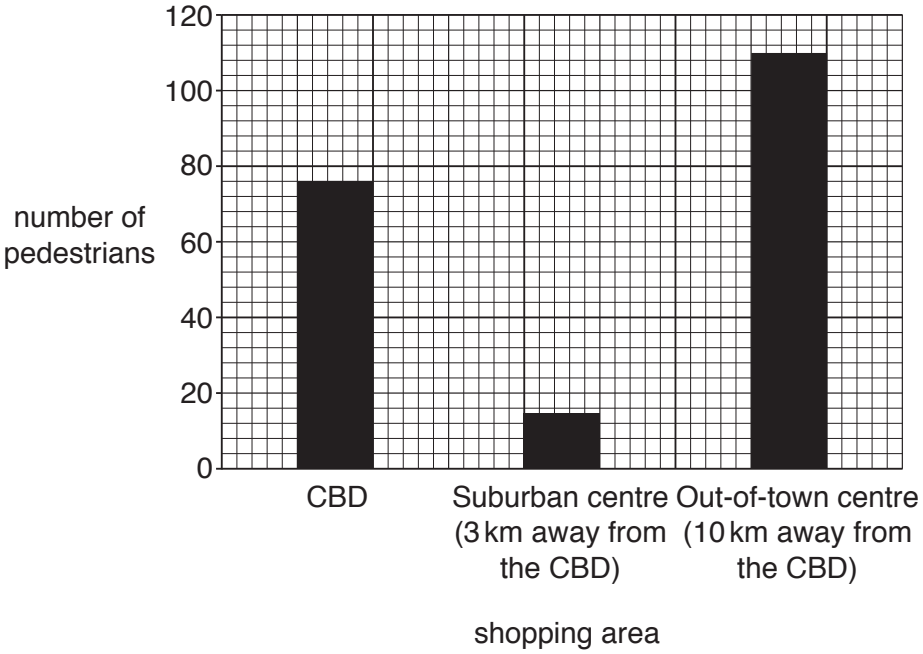


Fig. 18

(iii) The results of the pedestrian count show that **Hypothesis 2**: *The number of people who are shopping will decrease further away from the CBD* is partly true. Use evidence from Fig. 18 to support this conclusion.

.....

.....

.....

.....

.....

.....[3]

(iv) Fig. 19 below is an extract from a student's fieldwork diary.

Fieldwork diary

Monday 2nd February 2014
AM: Heavy rain. Pedestrian count in CBD at 09.00

Midday: Light rain. Pedestrian count at suburban shopping centre at 12.00

PM: Bright and sunny: Pedestrian count at out-of-town centre at 17.00

Fig. 19

How might the factors described by the student affect the results of the pedestrian count?

.....

.....

.....

.....[2]

(v) To check their results the students found on the school website some data which had been collected by students in 2008, 2010 and 2012. This data is shown in Fig. 20 (Insert) alongside the students' own fieldwork results collected in 2014. Why is this earlier data called *secondary* evidence?

.....

.....[1]

(vi) How does the secondary evidence in Fig. 20 support the students' conclusion that **Hypothesis 2**: *The number of people who are shopping will decrease further away from the CBD* is partly true?

.....

.....[1]

© UCLES 2016

(c) As an extension task two students wanted to investigate the sphere of influence of the CBD.

(i) Which **one** of the following is the correct definition of *sphere of influence*?

Tick your choice in the table below.

Definition	Tick (✓)
area where people have migrated to	
area where people go to work in the town centre	
area around a town centre	
area next to a shop or service	
area served by a settlement or service	

[1]

(ii) Describe a method the students could carry out to investigate the sphere of influence of the CBD.

.....

.....

.....

.....

.....

.....

.....

.....[4]

[Total: 30 marks]

© UCLES 2016

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.

© UCLES 2016

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.

© UCLES 2016