CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

GEOGRAPHY **2217/23**

Paper 2 **May/June 2011**

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 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.

Section A
Answer **all** questions.
Section B
Answer **one** question.
Sketch maps and diagrams should be drawn whenever they serve to illustrate an answer.
The Insert contains Photograph A for Question 3, Figs 15, 16 and 17 for Question 7 and Fig. 20 and Tables 4 and 5 for Question 8.

The Survey Map Extract and the Insert are **not** required by the Examiner.

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 **27** printed pages, **5** blank pages and **1** Insert.

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International Examinations

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Section A

Answer **all** questions in this section.

1 Study the 1:50 000 map of Mvurwi, Zimbabwe.

(a) Give the four-figure grid reference of the square where the two wide tarred roads meet the narrow tarred road in Mvurwi.

.... [1]

(b) Name **four** services available in Mvurwi.

....

....

....

.... [2]

(c) Study the area of the map shown in Fig. 1.
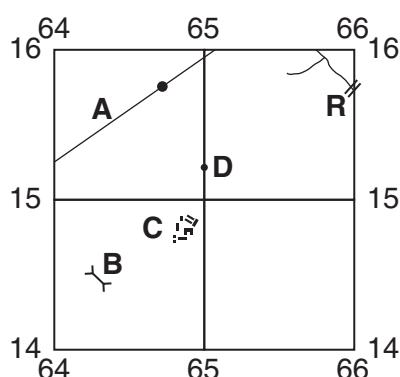
Fig. 1

(i) Name feature **A**.

.... [1]

(ii) Name feature **B**.

.... [1]

(iii) Name the settlement at **C**.

.... [1]

(iv) State the height at spot height **D**.

.... [1]

(v) Name the river feature at **R**.

.... [1]

(d) (i) Measure the length of the dam wall at the Pembi Dam in grid squares 7214 and 7215.

.... metres [1]

(ii) Describe the direction of the dam wall.

....

....

.... [2]

(e) Fig. 2 is a cross-section from Chisiwa (665100) to Pembi (687106).
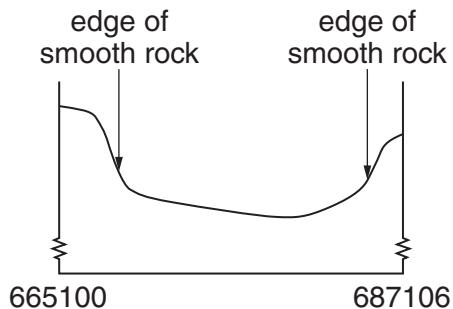
Fig. 2

On Fig. 2 indicate, with a labelled arrow, the position of:

- the orchard or plantation;
- the river.   [2]

                                                       [Turn over

(f) Study the area of the map shown on Fig. 3.
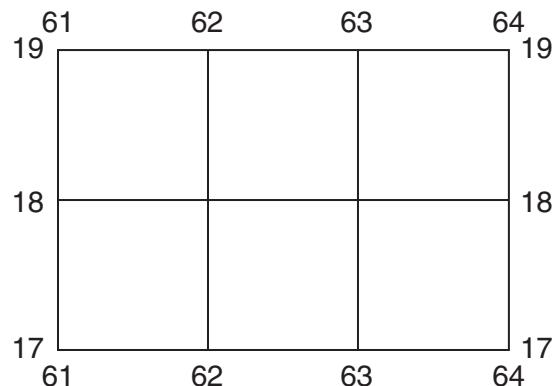
Fig. 3

(i) State map evidence to indicate human use of this area.

....

....

....

....

....

....

....

.... [4]

(ii) On Fig. 3, mark with an X the location of the highest point in this area. [1]

(iii) On Fig. 3, shade the area of medium bush. [2]

[Total: 20 marks]

5

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2   Study Fig. 4, a sketch map of an area showing four villages **A**, **B**, **C** and **D**.

N

A

B

D

C

midday
sun

0   200
metres

Key

⅄ marsh

♠ trees

╱ steep slope

● spring

╱ tributary

╱ main river
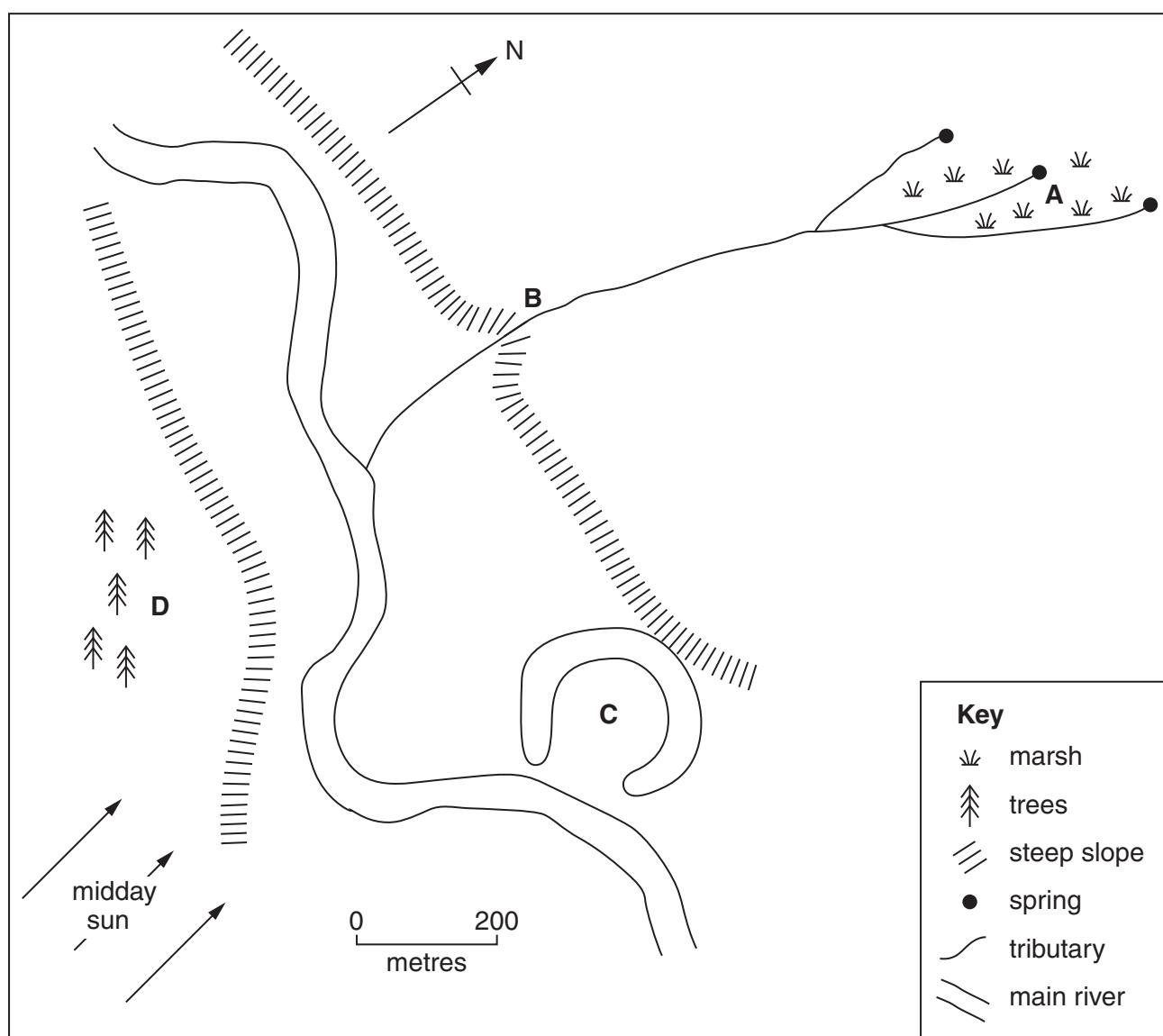
Fig. 4

(a) (i) Name the feature that surrounds village **C**.

.... [1]

(ii) Suggest why water supply quality at village **A** will be purer than at village **B**.

....

.... [1]

(iii) Name **two** difficulties in building a road from **A** to **D**.

....

....

....

.... [2]

(b) For villages **A**, **B**, **C** and **D**, state **one** advantage of each site. You should use a different advantage for each village.

Advantage for **A**:

....

....

....

Advantage for **B**:

....

....

....

Advantage for **C**:

....

....

....

Advantage for **D**:

....

....

.... [4]

[Total: 8 marks]

3 Study Photograph A (Insert), of a location near Dhaka, Bangladesh and Fig. 5, a sketch of the same area.
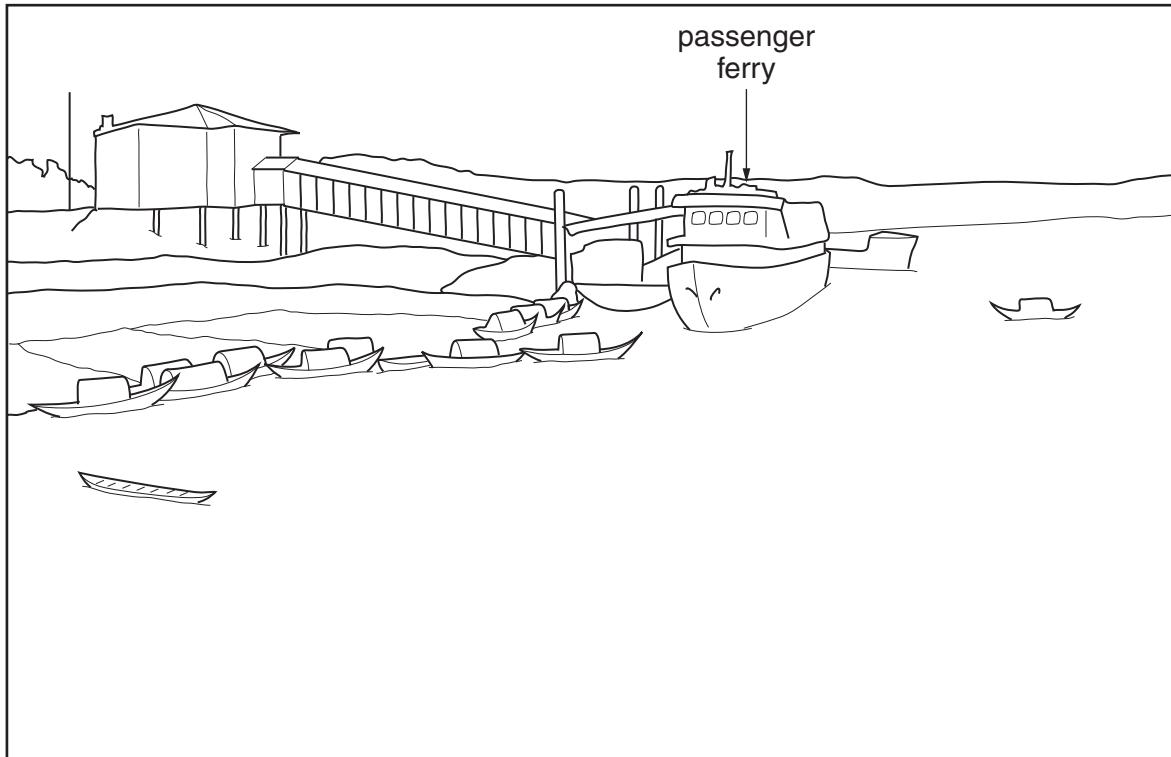
Fig. 5

(a) (i) Complete Fig. 5 to show the shore in the foreground. [1]

(ii) On Fig. 5 label:

• fishing boats;
• rice cultivation. [2]

(b) Give **two** pieces of evidence, from Photograph A, that show that the water has previously been at a higher level.

....

....

....

.... [2]

(c) Fig. 6 is a system diagram for rice cultivation in Bangladesh. Rice cultivation is an example of small scale subsistence farming.

```
┌─────────────────────────┐
│ Inputs                  │
│                         │        ┌──────────────────────┐
│ Monsoon climate         │        │ Processes            │        ┌────────────────┐
│ Annual rain   1790 mm   │   →    │ .................... │   →    │ Outputs        │
│ Temperature  24–31°C    │        │ .................... │        │                │
│                         │        └──────────────────────┘        └────────────────┘
│ Other Inputs            │
│                         │
│ .....................   │
│                         │
│ .....................   │
└─────────────────────────┘
```
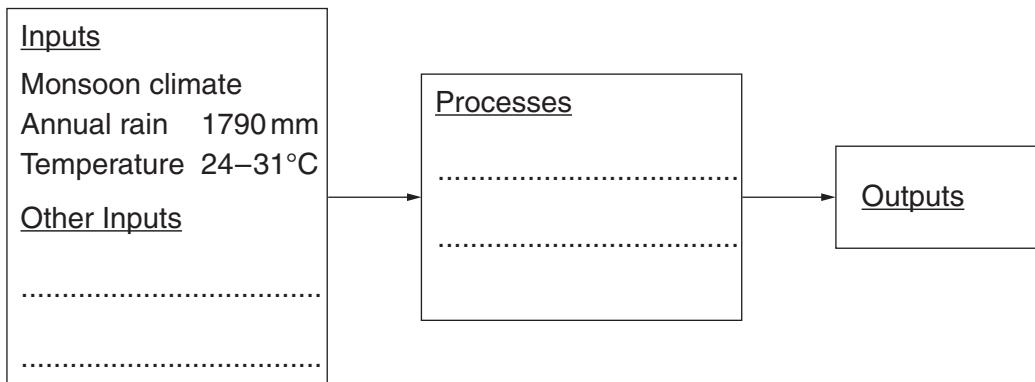
Fig. 6

   (i) Complete Fig. 6 by naming **two** other inputs and **two** processes. [2]

   (ii) Suggest why this is a suitable climate for rice cultivation.

   ....

   ....

   .... [1]

[Total: 8 marks]

4   Study Fig. 7, which shows the vegetation in a tropical rainforest.
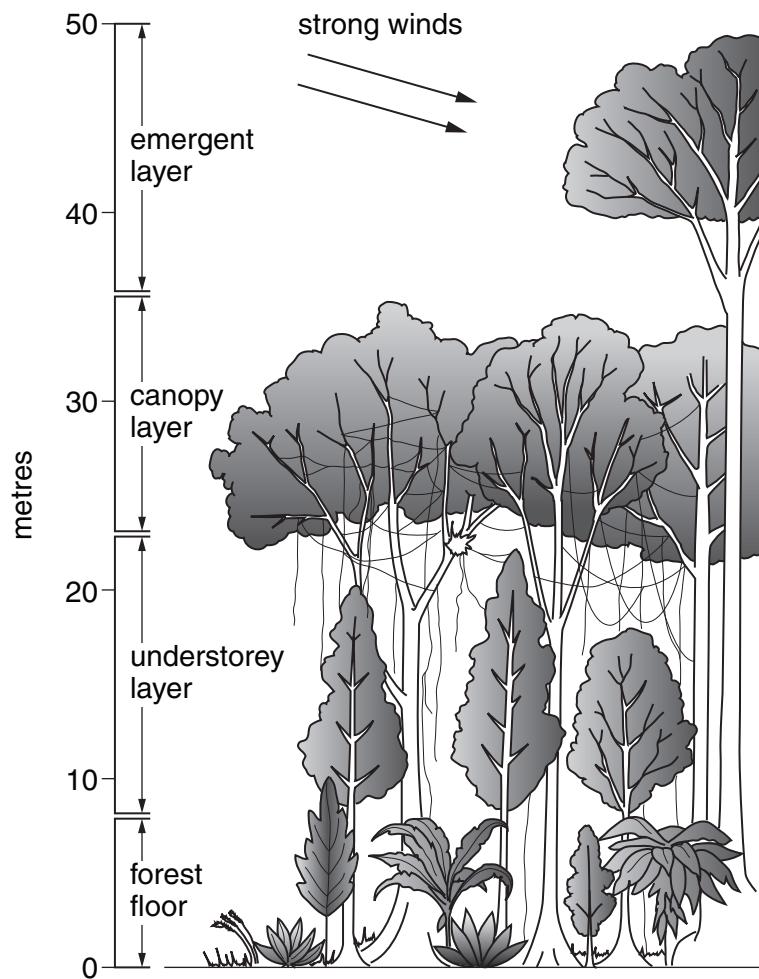
Fig. 7

(a) (i)   Between what heights is the canopy layer on Fig. 7?

Between .... metres and .... metres.[2]

(ii) Describe the shape of the trees in the understorey layer.

.... [1]

(b) Study Fig. 8, which shows climate data for Manaus in the Brazilian tropical rainforest.
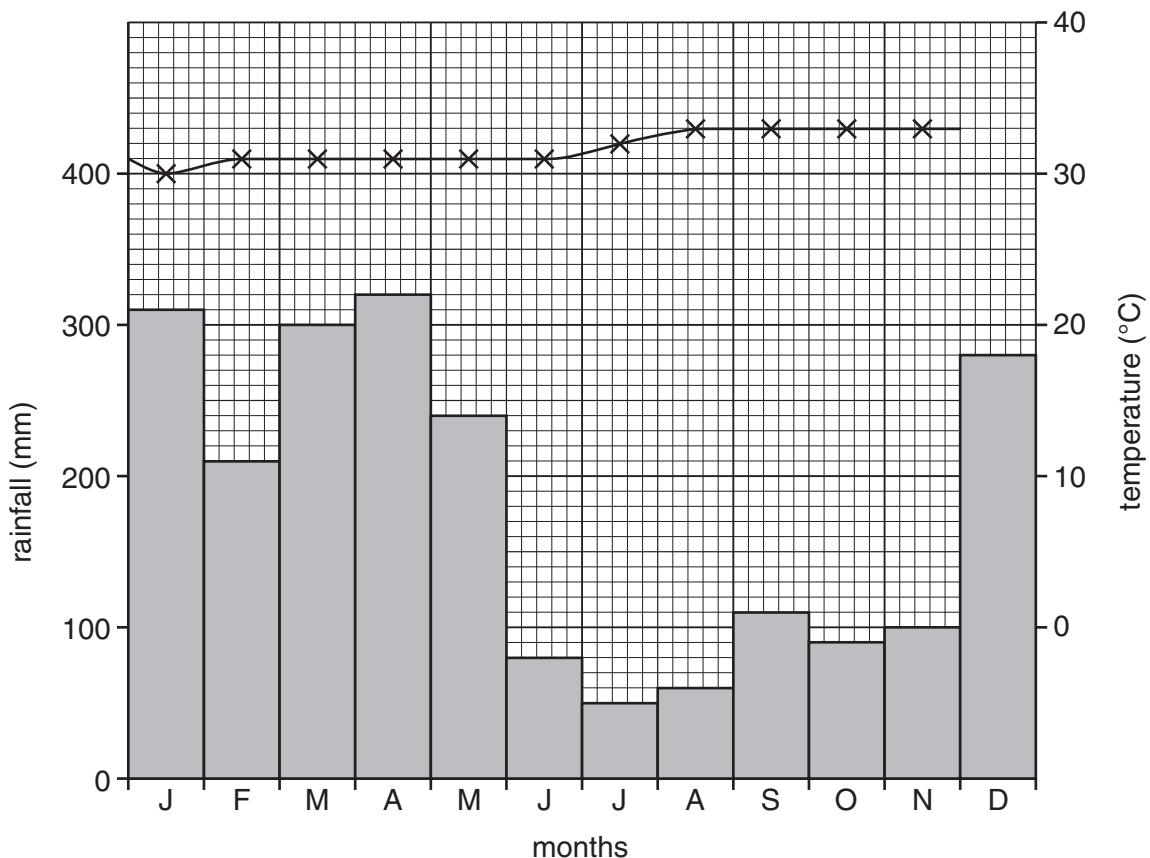
Fig. 8

Complete Fig. 8 to show a temperature of 32°C in December. [1]

(c) Use the information in Figs. 7 **and** 8 to complete the paragraph.

This climate is ideal for plant growth. The driest month is .... but this

still has .... mm of rain. The temperature is constantly high with an

annual range of only .... °C. However, trees in the ....

layer have to be able to withstand the effect of strong winds. [4]

[Total: 8 marks]

5 Study Fig. 9, which shows tourist arrivals to three Caribbean countries in 2008.
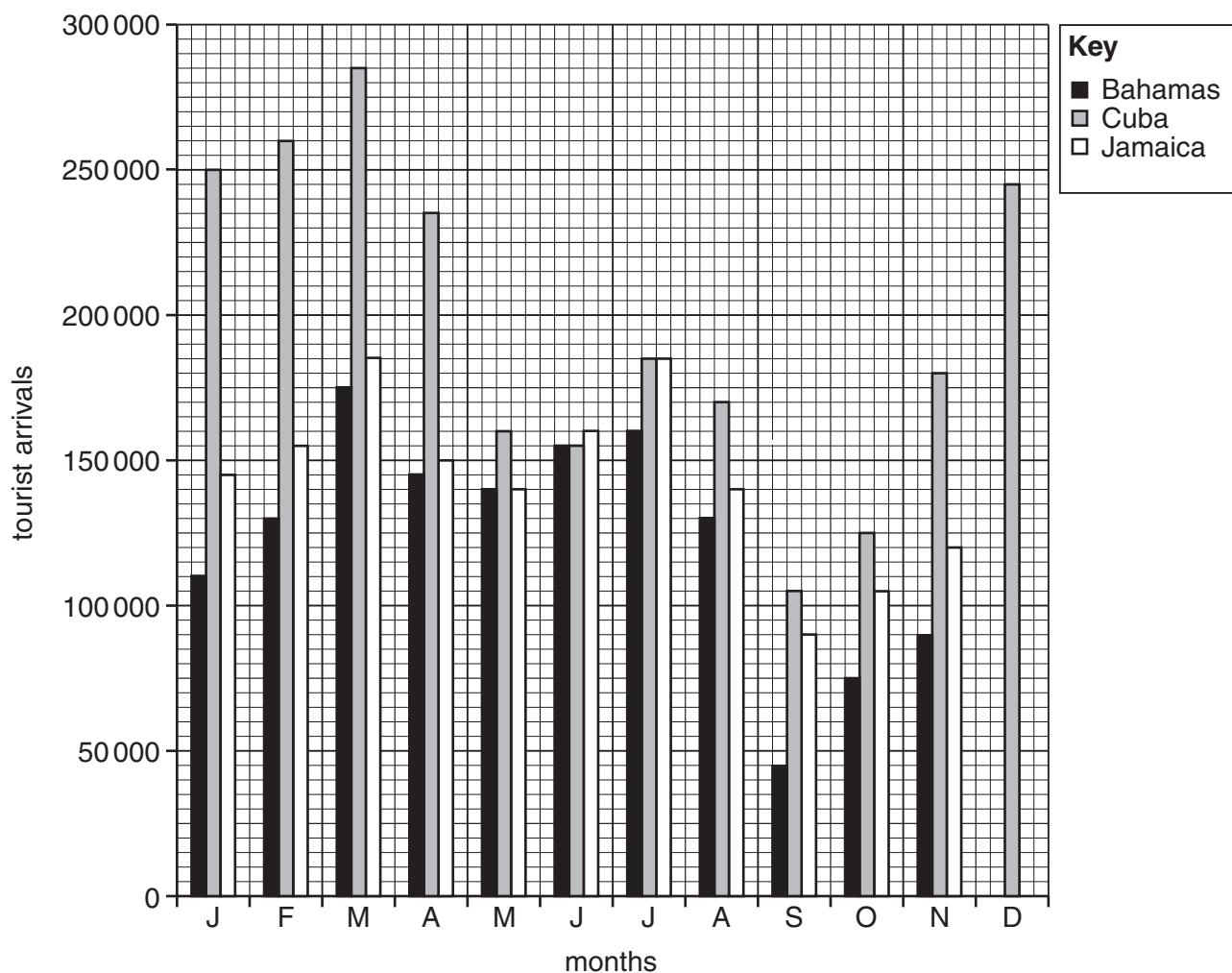
Fig. 9

(a) (i) Complete Fig. 9 to show 110 000 tourist arrivals to the Bahamas and 180 000 tourist arrivals to Jamaica in December 2008. [2]

(ii) In which month does Fig. 9 show the same number of tourist arrivals to the Bahamas and Jamaica?

.... [1]

(iii) Which **three** months have the most tourist arrivals to Jamaica?

.... [1]

(b) Describe the variation in tourist arrivals to Cuba during 2008.

....

....

....

....

....

....

.... [4]

[Total: 8 marks]

6 Study Fig. 10, which shows countries where harvests were reduced, due to late or inadequate rainfall, in 2009.
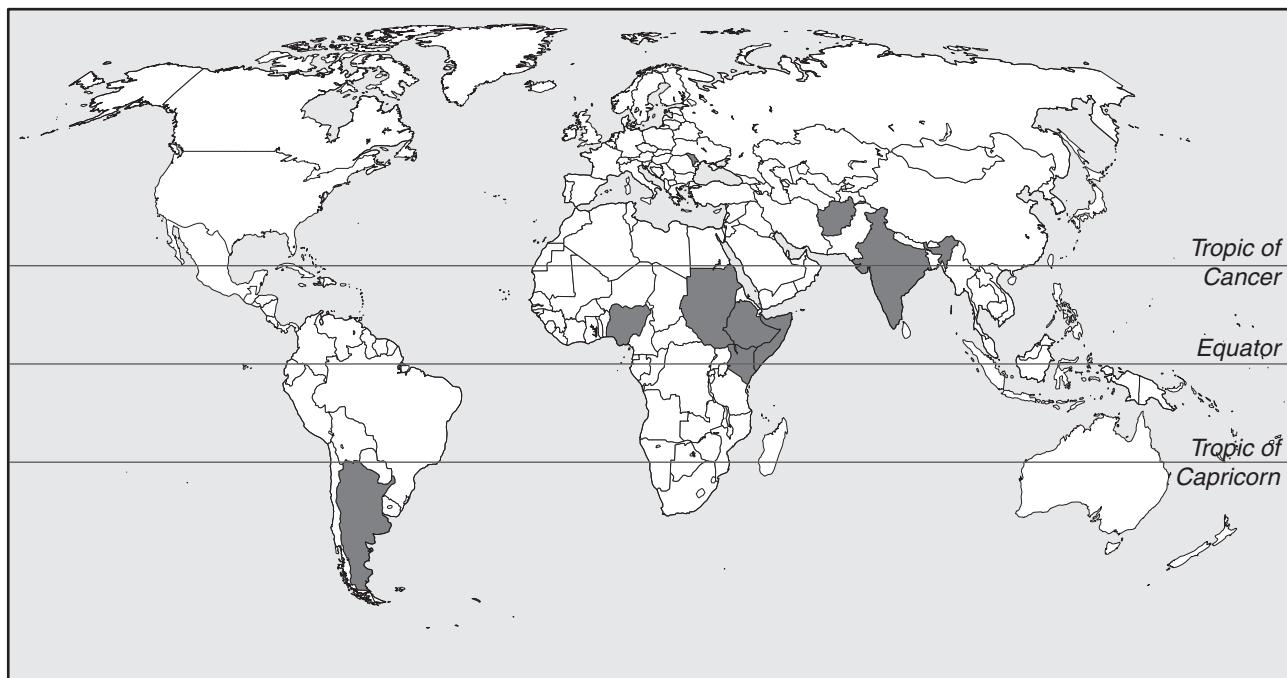
Key

☐ areas where harvests were affected by late or inadequate rainfall

Fig. 10

(a) Describe the location of these countries.

....

....

....

....

....

.... [3]

(b) Study Fig. 11, which shows countries with food supply difficulties before the 2009 harvest, **and** Fig. 10.
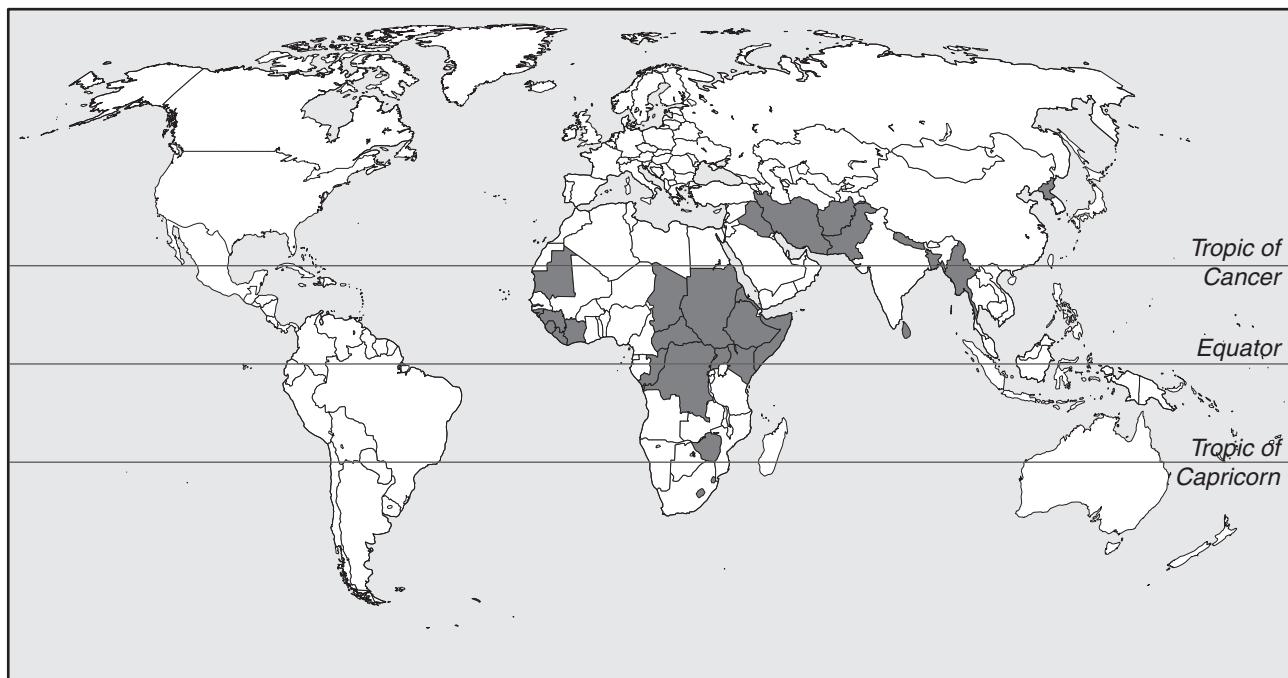
Key

▇ countries with food supply difficulties before 2009 harvest

Fig. 11

How many countries had existing food supply difficulties **and** decreased harvests in 2009?

.... [1]

(c) Study Fig. 12, which shows some of the causes of food shortages.

internally
displaced
persons

lack of rain

cyclone ⟶ food
shortages ⟵ refugees or
returnees

war

HIV / AIDS
pandemic
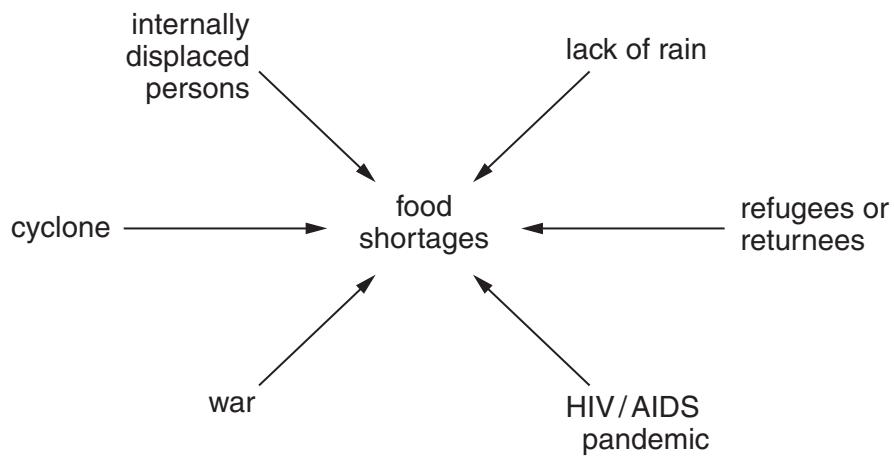
Fig. 12

   (i) Using Fig. 12 **only**, name:

   • a natural cause of food shortages;

   ....

   • a cause of food shortages due to problems with its distribution.

   .... [2]

   (ii) Why might refugees be a cause of food shortages in some countries?

   ....

   .... [1]

   (iii) How does sickness, such as the AIDS / HIV pandemic, result in food shortages?

   ....

   .... [1]

[Total: 8 marks]

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Section B

Answer **one** question in this section.

7 A class of students was studying weather measurements using a Stevenson Screen which contained a maximum-minimum thermometer and a wet and dry bulb thermometer (hygrometer). They were recording weather measurements throughout the year.

A Stevenson Screen and maximum-minimum thermometer are shown in Figs 13 and 14 below and opposite.

A Stevenson Screen

Screen is painted white so that

....

....

....

Screen stands 121cm above the ground so that

....

....

....

....

....

Slides are made of wooden slats with air space between so that

....

....

....

....

....
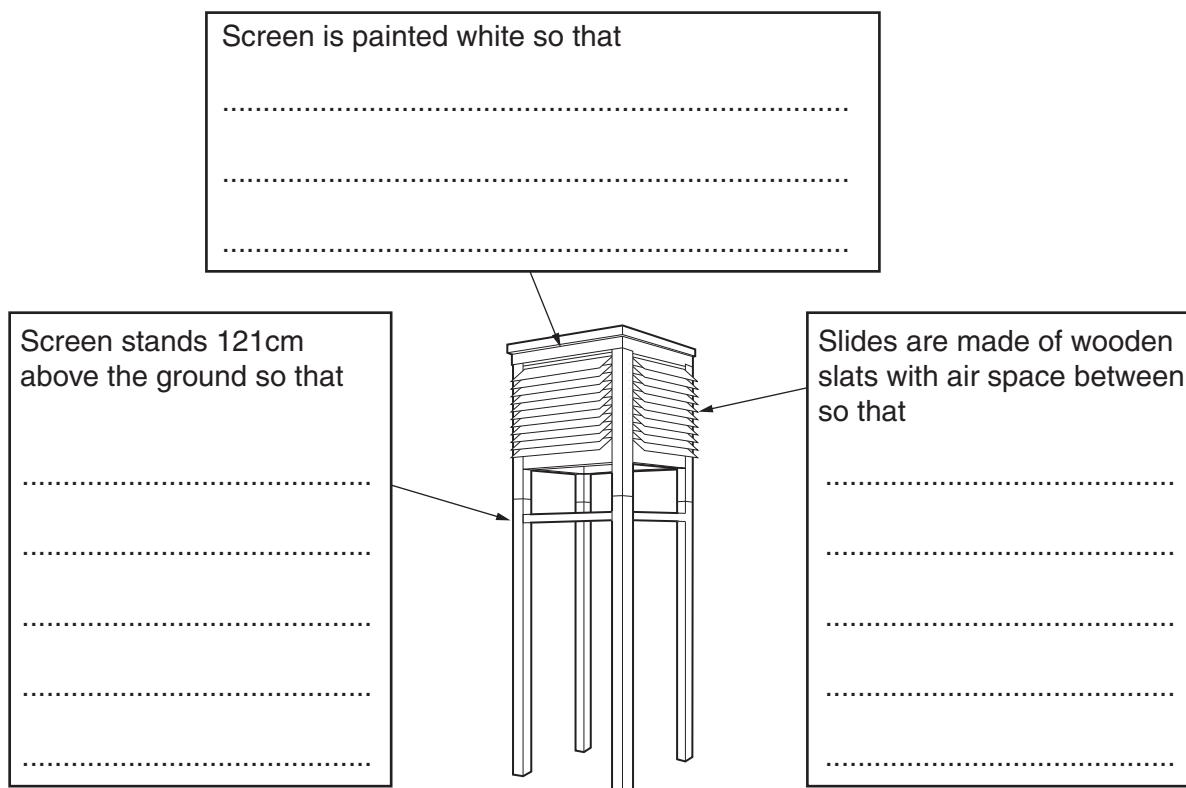
Fig. 13

(a) (i) Complete the **three** sentences on Fig. 13. [3]

(ii) What is the maximum and minimum temperature recorded on the thermometer shown in Fig. 14 (opposite)?

Maximum .... °C

Minimum .... °C [2]

A maximum-minimum thermometer
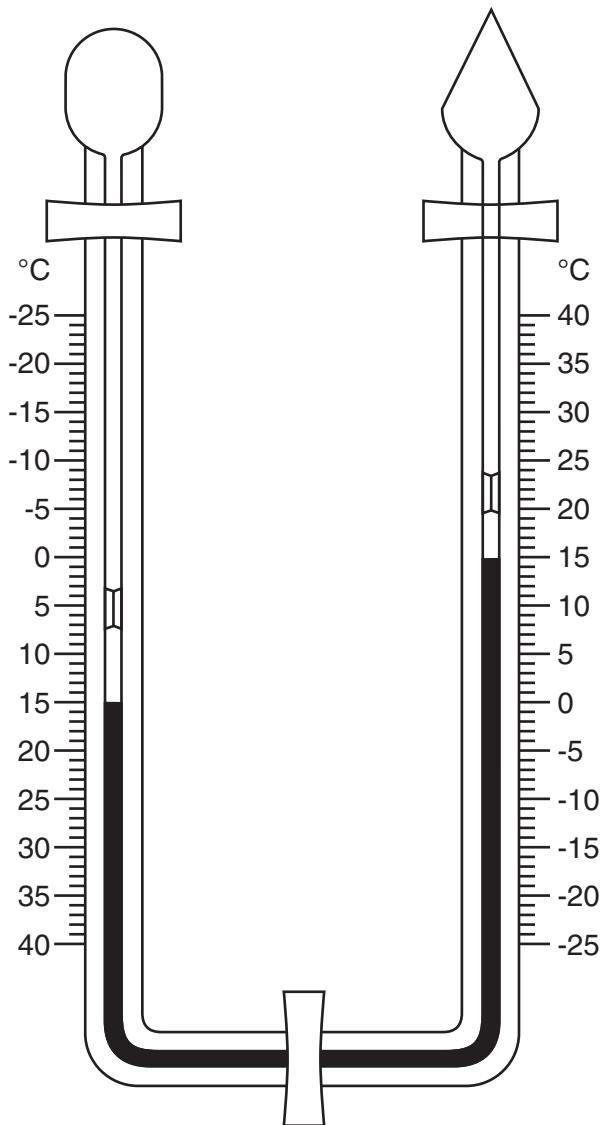
Fig. 14

(b) (i) A wet and dry bulb thermometer measures relative humidity.
Which **one** of the following is the correct definition of relative humidity?
Circle your answer.

- The amount of water vapour held in the air.

- The percentage of moisture in the air after rainfall.

- The amount of moisture in the air as a percentage of the total moisture it could hold at that temperature.

- The minimum amount of water vapour in the air when it is warmed up.

[1]

(ii) Relative humidity is calculated using a relative humidity table like the one shown in Fig. 15 (Insert).
An example of how relative humidity is calculated is shown below.

Dry bulb temperature = 15 °C
Wet bulb temperature = 12.5 °C
Temperature difference = 2.5 °C
Relative Humidity = 75%

Use the relative humidity table in Fig. 15 (Insert) to calculate the relative humidity of the example below:

Dry bulb temperature = 19 °C

Wet bulb temperature = 18 °C

Temperature difference = ... °C

Relative Humidity = ... % [2]

(c) Two students in the class wanted to carry out an investigation around their school to test the following hypotheses:

Hypothesis 1: *Temperatures are higher nearer to buildings.*

Hypothesis 2: *Relative humidity is affected by the type of ground surface.*

In order to make some weather measurements they decided to use a digital thermometer and hygrometer. This instrument is shown in Fig. 16 (Insert).
They selected 12 sites around the school campus. These are shown on Fig. 17 (Insert). They measured the distance from each site to the nearest building. At each site they measured temperature and relative humidity.

(i) What are **two** advantages of this digital thermometer and hygrometer over a maximum-minimum thermometer and a wet and dry bulb thermometer?

1 ....

....

2 ....

....[2]

(ii) How could the students check that their temperature and relative humidity readings were accurate?

....

....

....

....[2]

(d) The temperatures at the twelve sites are shown in Table 1 below.

Table 1

Temperatures at 12 measuring sites

Site	A	B	C	D	E	F	G	H	J	K	L	M
Distance from school building (m)	32	2	3		1	17	9	2	10	24	30	42
Temperature (°C)	8.2	8.5	9.1	8.1	8.9	8.2	8.4	8.8	8.6	8.3	8.1	8.0

(i) Use Fig. 17 (Insert) to complete Table 1 by filling in the distance of site D from the edge of the nearest building. [1]

(ii) On Table 1 circle the **three** sites where the highest temperatures were recorded. [1]

(iii) Do you think **Hypothesis 1:** *Temperatures are higher nearer to buildings* is correct? Support your answer with evidence from Table 1.

....

....

....

....

....

....[3]

(iv) Use Fig. 17 (Insert) to suggest **two** reasons why temperatures vary around the school campus.

1 ....

....

2 ....

....[2]

(e) The relative humidity readings at the 12 sites are shown in Table 2 below.
Fig. 18, below, shows these results plotted onto a dispersion graph.

Table 2

Relative Humidity at 12 measuring sites

Site	A	B	C	D	E	F	G	H	J	K	L	M
Type of ground surface	Grass	Bushes	Concrete	Tarmac	Concrete	Trees	Next to water	Concrete	Grass	Tarmac	Grass	Tarmac
Relative Humidity (%)	73	77	73	73	76	73	75	77	75	77	76	75

Relative Humidity on different ground surfaces
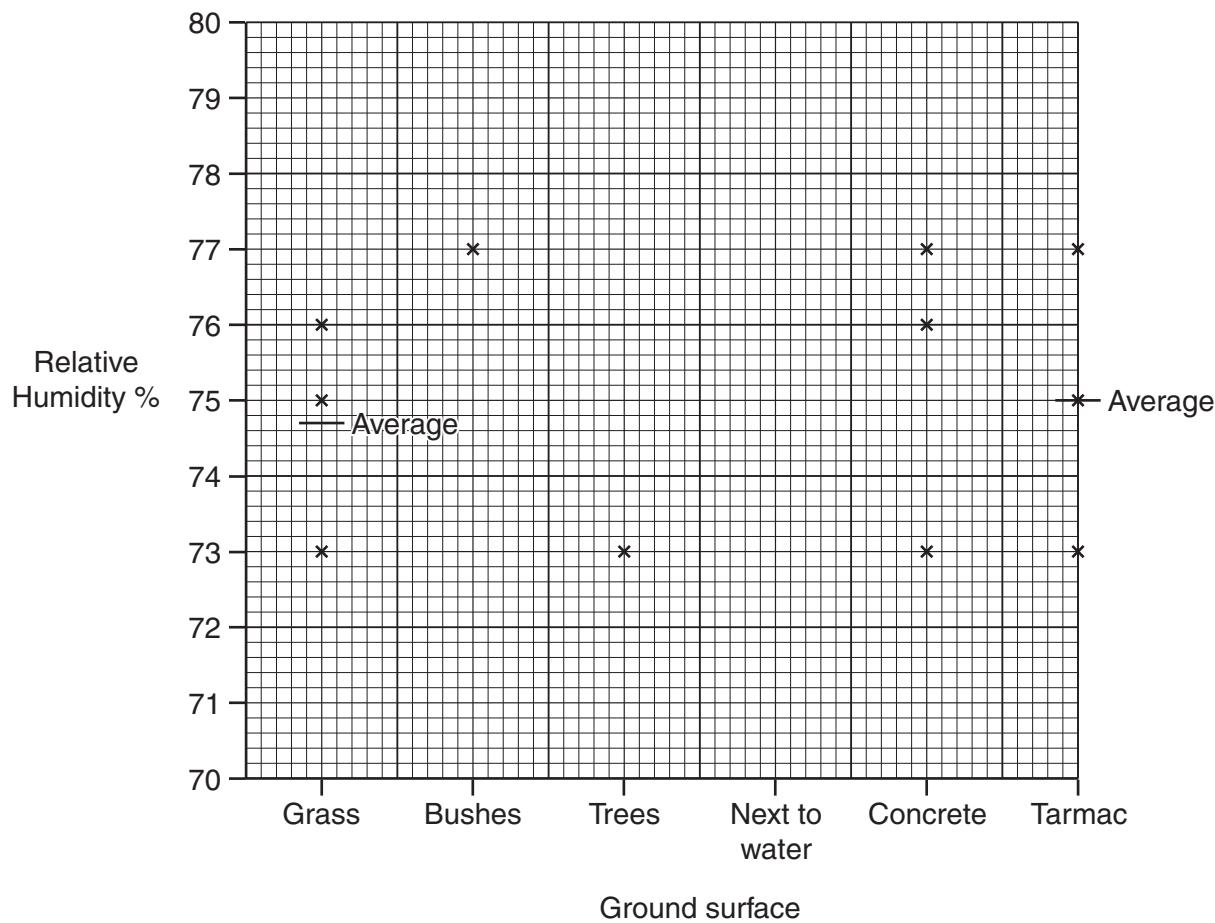
Fig. 18

(i) Plot the result of site G on the dispersion graph (Fig. 18) above. [1]

(ii) The average (mean) relative humidity for readings made on a concrete surface is shown below. Show the calculation which produced this answer.

Answer: **75.3%** [1]

(iii) Plot this answer on Fig. 18. [1]

(iv) The students reached the conclusion that **Hypothesis 2:** *Relative humidity is affected by the type of ground surface* was incorrect. Use evidence from Fig. 18 to support their conclusion.

....

....

....

....

....

....[3]

(f) (i) Suggest a suitable hypothesis for the class to investigate using a maximum-minimum thermometer in a Stevenson Screen.

....

....[1]

(ii) Describe how the students would carry out an investigation into this hypothesis.

....

....

....

....

....

....

....

....[4]

[Total: 30 marks]

8 A student decided to investigate the land use on a farm in Portugal. It was located on a hillside and contained both crops and animals.

He decided to investigate **two** hypotheses:

Hypothesis 1: *The land use changes as land gets steeper and higher.*

Hypothesis 2: *Farming is more labour intensive in larger fields.*

(a) The student got a map of land use on the farm from the farmer. Using the map he was able to estimate the area used for different types of farming.
His results are shown in Table 3 below.

Table 3

Land use on the farm

Land use	Area (hectares)	Percentage of farm area
Olives	25	27.2
Oranges	17	18.5
Barley	13	
Sheep	10	10.9
Potatoes	8	8.7
Onions	7	7.6
Artichokes	7	7.6
Tomatoes	5	5.4
Total		100

(i) Calculate the total area of the farm.

.... hectares [1]

(ii) Calculate the percentage of land on the farm used to grow barley.

.... % [1]

(iii) The student plotted the area of each land use on a bar graph, and the percentage of the total farm land in each land use on a pie graph.
These are shown in Fig. 19 below.

Area used for each type of land use
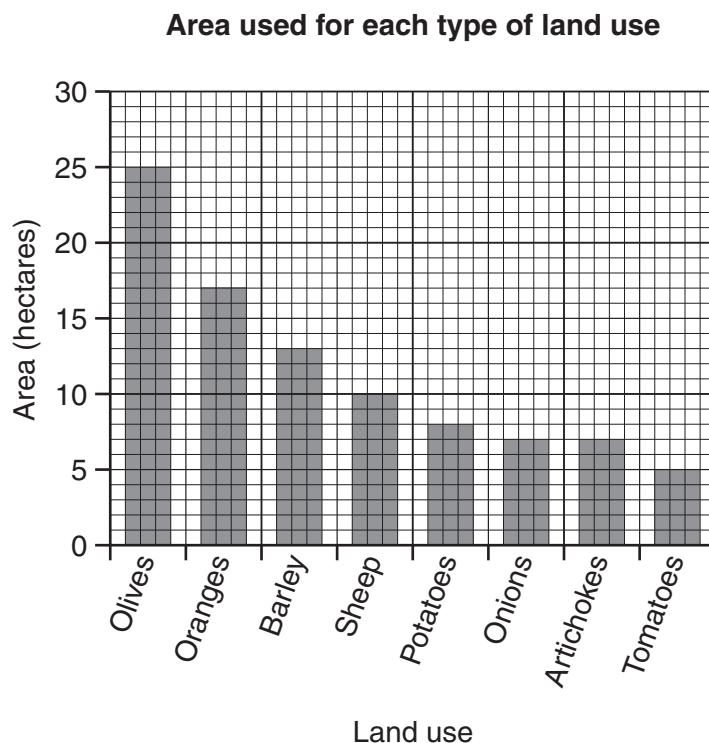
Land use

Percentage of total farm area in each land use

- ⋰ Olives
- ☐ Oranges
- ▥ Barley
- ■ Sheep
- ⊠ Potatoes
- ▨ Onions
- ▨ Artichokes
- ▨ Tomatoes
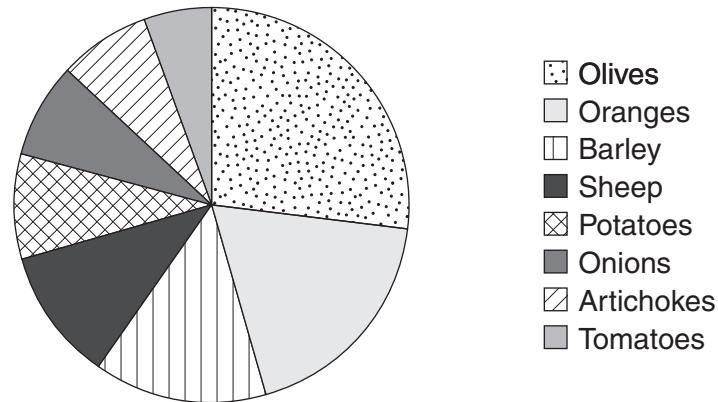
Fig. 19

Give **one** advantage of each graph to show the data collected.

Bar graph ....

....

Pie graph ....

....[2]

(b) The student then looked at how farming varied between different fields on the farm. He followed a path from the farmhouse up the hillside. Every 100 m along the path he performed three tasks.

(i) He recorded a reading from a Global Positioning System (GPS). This is shown in Fig. 20 (Insert). Name **two** pieces of information shown by the GPS.

1 ....

....

2 ....

....[2]

(ii) He measured the angle of slope by looking up the path. Suggest what equipment he used and how he would have done this.

....

....

....

....

....

....[3]

(iii) He recorded the land use in the field next to the path. Unfortunately, the student did not recognise some of the crops growing in the fields. How could he solve this problem?

....

....

....

....[2]

(iv) Table 4 (Insert) shows the results of his fieldwork. The student reached the conclusion that his results supported **Hypothesis 1:** *The land use changes as land gets steeper and higher.* Use evidence from Table 4 to explain why he reached this conclusion.

....

....

....

....

....

....[3]

(v) Give **two** reasons why farming activity changes as the land gets steeper and higher.

1 ....

....

2 ....

....[2]

(c) To test **Hypothesis 2:** *Farming is more labour intensive in larger fields*, the student obtained some secondary data from the farmer about average field size and labour input. This is shown in Table 5 (Insert).

He plotted this data on a scatter graph, Fig. 21, below.

Scatter graph of field size and labour

Total labour
input
………………
………………

Average field size ………………
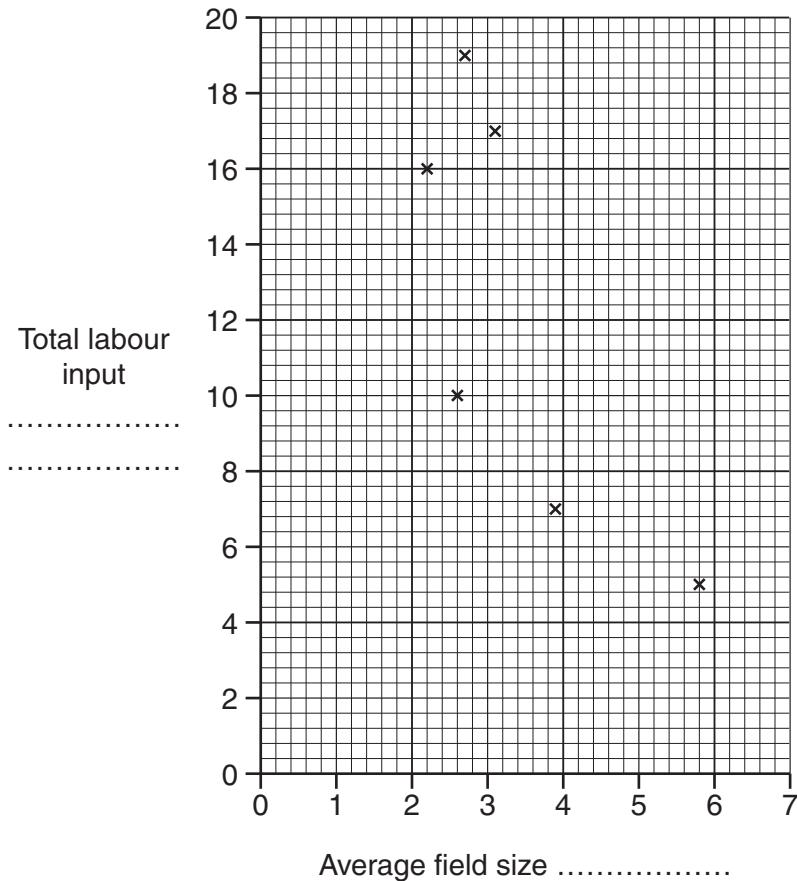
Fig. 21

(i) Label both axes on Fig. 21 with the correct units of measurement. [1]

(ii) Using Table 5 (Insert) plot the information for artichokes and barley on Fig. 21. [2]

(iii) Draw a best-fit line onto Fig. 21. [1]

(iv) What is your conclusion about **Hypothesis 2:** *Farming is more labour intensive in larger fields*? Support your conclusion with evidence from Fig. 21.

....

....

....

....

....

....[3]

29

(d) Labour input is one way to measure how 'intensive' farming is. Suggest **three** other inputs which could be used.

1 ....

2 ....

3 ....[3]

(e) The student thought about ways to improve his investigation. Describe **two** ways he might do this, and explain how each would make the study better.

1 ....

....

....

....

2 ....

....

....

....[4]

[Total: 30 marks]

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29

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....[4]

[Total: 30 marks]

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