3 **(a)** The photograph shows a small-scale irrigation method.

(i) Describe the small-scale irrigation method shown in the photograph.

.....

.....

.....

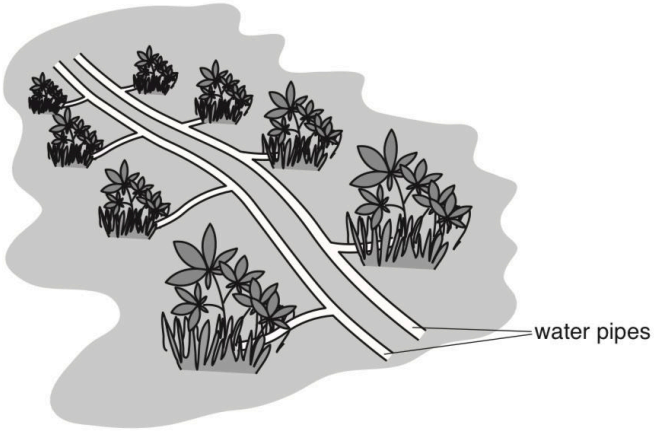
.....[2]

(ii) Suggest why this irrigation method wastes water.

.....

.....[1]

(b) The diagram shows another type of small-scale irrigation.



(i) Name the method of irrigation shown in the diagram.

.....[1]

(ii) Explain why the method of irrigation shown in the diagram wastes less water than the method shown in the photograph.

.....

.....[1]

(c) (i) Suggest why the method of irrigation shown in the photograph helps to reduce the risk of soil erosion.

.....

.....

.....

.....[2]

(ii) Explain why soil erosion can occur on land used for grazing.

.....

.....

.....

.....

.....

.....[3]

6 **(a)** The table shows a classification of some farming types.

	crops	grazing	subsistence	commercial
rice farming	✓		✓	
dairy farming		✓		✓
shifting cultivation	✓		✓	
cattle ranching		✓		✓
plantations	✓			✓

(i) State **one** type of subsistence farming shown in the table.

.....[1]

(ii) State **one** type of commercial farming shown in the table where animals are grazed.

.....[1]

(iii) Explain the difference between commercial and subsistence farming.

.....

.....

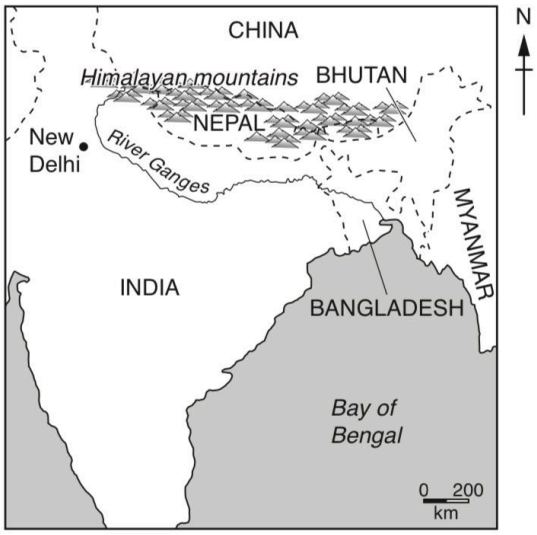
.....

.....[2]

(iv) State **one** other way that can be used to classify farming.

.....[1]

(b) The map shows part of Asia.



Key

River Ganges

international boundary

city

(i) Describe the location of the River Ganges.

.....

.....

.....

.....[2]

(ii) The table shows some information about a farming system for rice cultivation along the River Ganges.

requirements	farming activities	products
heavy rain high temperatures fertile soil flat land hand tools hand labour water buffalo	ploughing planting seeds transplanting seedlings weeding	rice to feed the family small profits fish for protein manure

Place the following into the correct column in the table.

harvesting seeds [2]

(iii) State **one** piece of evidence that this farming system is:

growing crops .....

.....

subsistence farming. .....

.....

[2]

(c) (i) A subsistence farmer was given a loan to increase the yield from their farm.

Choose **two** of the following and explain how each would help the farmer to increase yields.

- irrigation
- pesticides
- high-yielding varieties of seeds

.....

.....

.....

.....

.....

.....

.....

.....[4]

(ii) Fertilisers can also be used to increase yields.

Explain why it is important not to overuse fertilisers.

.....

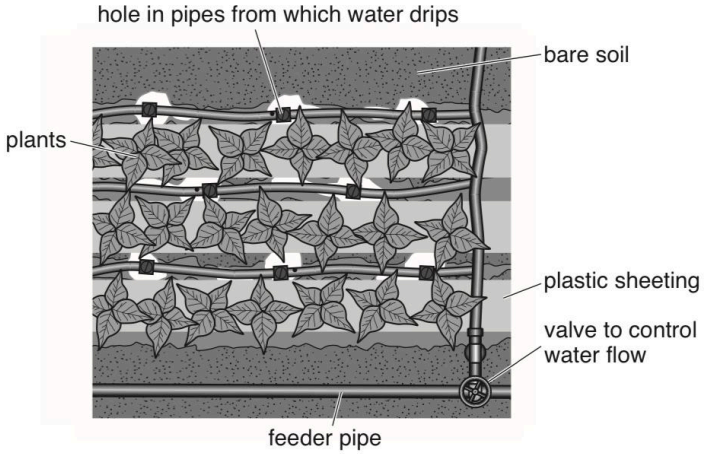
.....

.....

.....

.....[3]

(d) (i) The diagram shows trickle drip irrigation, as seen from above.



Suggest how the irrigation system shown in the diagram works.

.....

.....

.....

.....

.....

.....[3]

(ii) Suggest **two** advantages of this type of irrigation.

1 .....

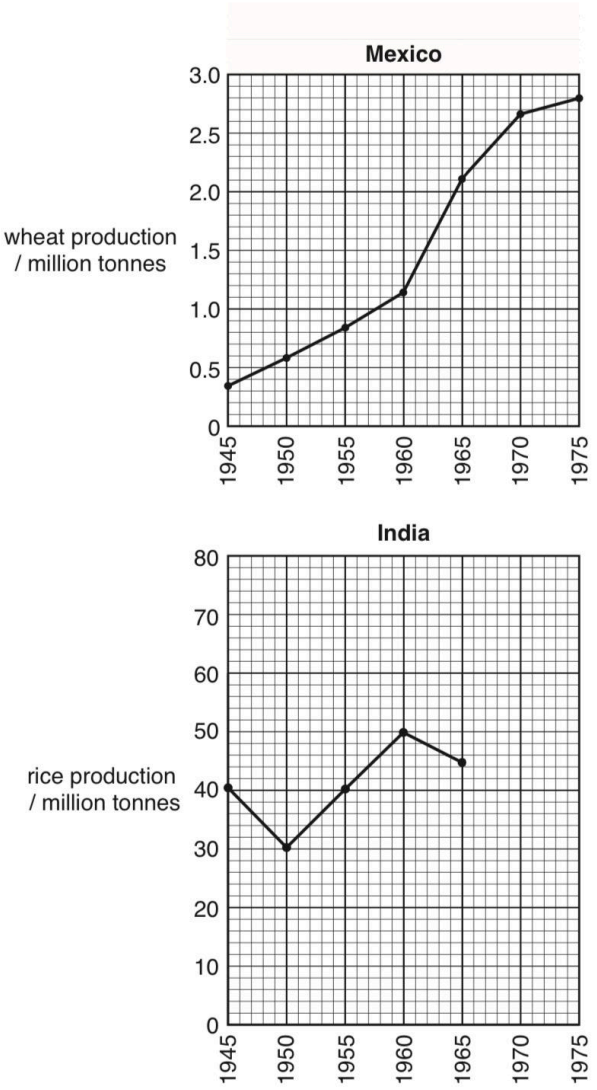
.....

2 .....

.....

[2]

(e) The graphs show wheat production in Mexico and rice production in India during the green revolution.



(i) Use the information from the graphs to describe the trend in wheat production in Mexico from 1945 to 1975.

.....

.....

.....

.....[2]

(ii) State the five-year period during which wheat production increased the most in Mexico.

.....[1]

(iii) Complete the line graph for India by plotting the following information.

year	rice production / million tonnes
1970	65
1975	71

[2]

(iv) Calculate the increase in rice production in India between 1945 and 1975. Give the unit.

.....[1]

(v) Suggest reasons why some people did not agree with the green revolution even though production increased.

.....

.....

.....

.....

.....

.....[3]

(f) Many people in rural areas of developing countries use fuelwood. For example, 90% of people in countries like Burkina Faso and Nepal rely on fuelwood. It can be a renewable energy source as long as trees are replanted at the same rate as they are cut down. Unfortunately, population growth means that too many trees are being cut down leading to soil erosion and desertification.

(i) State what is meant by a *renewable energy source*.

.....[1]

(ii) State what percentage of people rely on sources other than fuelwood in Burkina Faso and Nepal.

.....[1]

(iii) Suggest why some people are in favour of using biomass as an alternative energy source whilst others are not.

.....

.....

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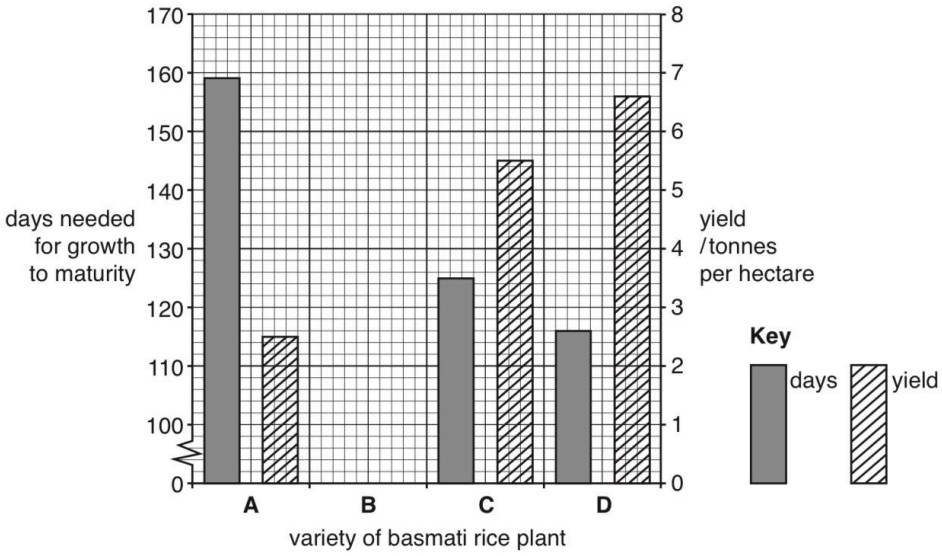
.....[6]

3 **(a)** The graph shows information about four varieties of basmati rice plant, **A**, **B**, **C** and **D**, developed by a breeding programme in a research institute.



(i) Complete the bar graph by plotting the values in the table for variety **B**.

days needed for growth to maturity	140
yield/tonnes per hectare	4.5

[2]

(ii) Suggest the aim of this breeding programme.

.....

.....[1]

(b) Explain why the Green Revolution had disadvantages for some farmers.

.....

.....

.....

.....

.....

.....[3]

(c) New agricultural methods, such as integrated pest control, have been developed since the Green Revolution.

(i) Describe **two** methods that could be used for an integrated pest control scheme.

1 .....

.....

2 .....

.....

[2]

(ii) Explain why integrated pest control is thought to be sustainable.

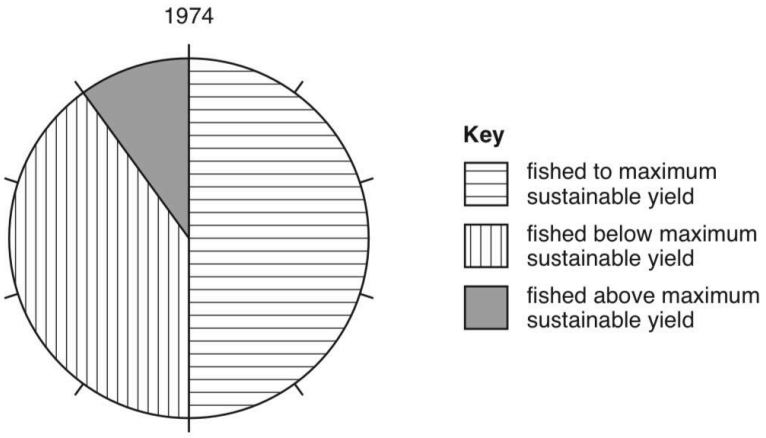
.....

.....

.....

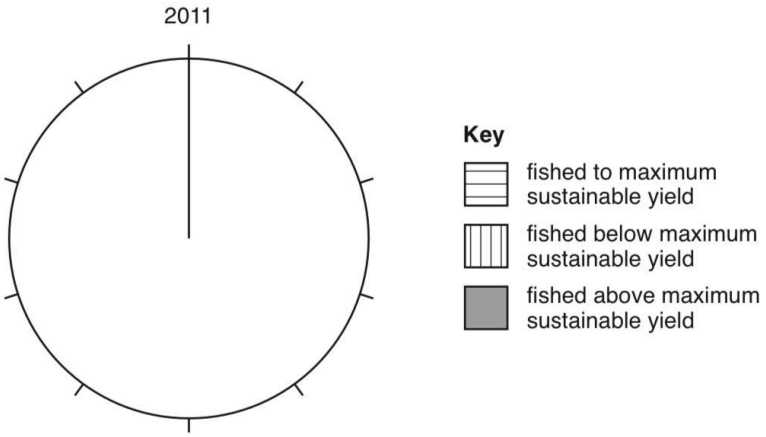
.....[2]

2 **(a)** The pie graph shows the state of world fisheries in 1974. Maximum sustainable yield means the largest catch of fish that can be caught without reducing future fish stocks.



(i) Use the figures in the table to complete the pie graph for 2011. Use the key provided.

state of world fisheries in 2011	percentage
fished to maximum sustainable yield	61
fished below maximum sustainable yield	10
fished above maximum sustainable yield	29



[2]

(ii) State the percentage of fish stocks that were **not** fished above the maximum sustainable yield in 1974.

.....[1]

(iii) Suggest reasons why the percentage of fish stocks that were fished **above** the maximum sustainable yield increased between 1974 and 2011.

.....

.....

.....

.....

.....

.....

.....

.....[4]

(b) Quotas are one method used to try to keep fishing sustainable.

(i) Explain how quotas keep fishing sustainable.

.....

.....

.....

.....[2]

(ii) Give **one** reason why quotas can be harmful to fish stocks.

.....

.....[1]

3 **(a)** The photograph shows a wheat farming area. Some information about the wheat farming is given in the box.

- low capital expenditure per hectare
- low numbers of farm workers per hectare
- low yield per hectare
- high yield per farm worker

(i) Explain why the area in the photograph is suitable for the use of farming machinery.

.....

.....

.....

.....

.....

.....[3]

(ii) Wheat is grown in some of these fields year after year.

Suggest why wheat yields per hectare are decreasing year by year.

.....

.....[1]

(iii) Suggest a purpose for the trees shown in the photograph.

.....

.....[1]

(iv) Circle **three** terms in the list that describe the system of farming shown in the photograph.

commercial **subsistence** **cropland** **pastoral** **intensive** **extensive** [1]

(v) Give **one** economic factor that influences the type of farming in the photograph.

.....

.....[1]

(b) Mixed cropping is a different type of farming.

Explain how mixed cropping can be managed to be a sustainable method of farming.

.....

.....

.....

.....

.....

.....[3]

Section A

1 The table shows world insecticide use in arbitrary units in 2009 and 2014.

world region	insecticide use / arbitrary units	
	2009	**2014**
Africa and Middle East	1865	2215
Asia and Oceania	11000	12820
Central and South America	8330	10820
Eastern Europe	3960	4575
North America	11985	13340
Western Europe	7905	8230

(a) State the world region with the lowest insecticide use in 2014.

..... [1]

(b) Calculate the increase in insecticide use in Asia and Oceania from 2009 to 2014.

..... arbitrary units [1]

(c) Suggest **two** reasons why some world regions use more insecticide than other world regions.

1 .....

.....

2 .....

.....

[2]

(d) State **two** ways, other than insecticide use, to reduce the impact of pests on crops.

1 .....

.....

2 .....

.....

[2]

[Total: 6]

2 The photograph shows part of a farm in southern Africa.

(a) Describe the vegetation shown in the photograph.

.....

.....

.....

..... [2]

(b) The farm in the photograph has had four years of drought.

Explain why cattle can no longer be kept on the farm.

.....

.....

.....

..... [2]

[Total: 4]

3 The photograph shows soil erosion on an arable farm in the wet season.

(a) State **one** piece of evidence in the photograph that the soil has been eroded.

.....

..... [1]

(b) Suggest **two** reasons why soil erosion has occurred in the area shown on the photograph.

1 .....

.....

2 .....

.....

[2]

(c) Describe what could be done to reduce soil erosion in the area shown on the photograph.

.....

.....

.....

..... [2]

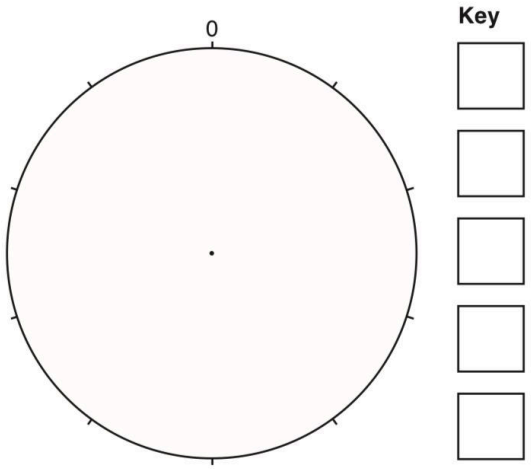
[Total: 5]

8 The table contains data on phosphate fertiliser use with different crop types.

crop type	percentage world phosphate fertiliser use
grains	44
oil seeds	18
fruit and vegetables	8
sugar and cotton	4
other crops	26

(a) Complete the pie chart and the key to show the data in the table.

Phosphate fertiliser use with different crop types



[4]

(b) There has been an increase in the use of phosphate fertilisers in the last 20 years.

Give **two** reasons for this increase.

1 .....

.....

2 .....

.....

[2]

(c) The fact sheet presents an argument for not eating meat for environmental reasons.

Fact sheet

Not eating meat is the future of food production.

It takes 7 kg of grain to produce 1 kg of beef. This gives a ratio of 7:1 for beef.

The ratio for chicken is 2:1.

Producing meat also uses a large quantity of water; 15 415 litres for 1 kg of beef.

Meat production also releases CO_2; 27 kg of CO_2 for 1 kg of beef.

It is more efficient to obtain food from plants rather than animals; 1 kg of lentils releases only 0.9 kg of CO_2.

(i) Calculate the difference in carbon dioxide released by the production of 1 kg of beef compared with 1 kg of lentils.

..... kg [1]

(ii) Suggest why the production of chicken is less expensive than the production of beef.

.....

..... [1]

(iii) One animal in a herd of beef cattle produces 375 kg of beef.

Calculate the volume of water needed to produce this mass of beef.

..... litres [1]

(iv) Suggest **two** reasons why some farmers continue to raise livestock rather than grow crops, even if it is more efficient to grow crops.

1 .....

.....

2 .....

.....

[2]

[Total: 11]

Section A

1 The photograph shows terracing, a method of reducing soil erosion.

(a) Describe how this method reduces soil erosion.

.....

.....

.....

..... [2]

(b) State **two** other methods that could be used to reduce soil erosion.

1 .....

2 .....
[2]

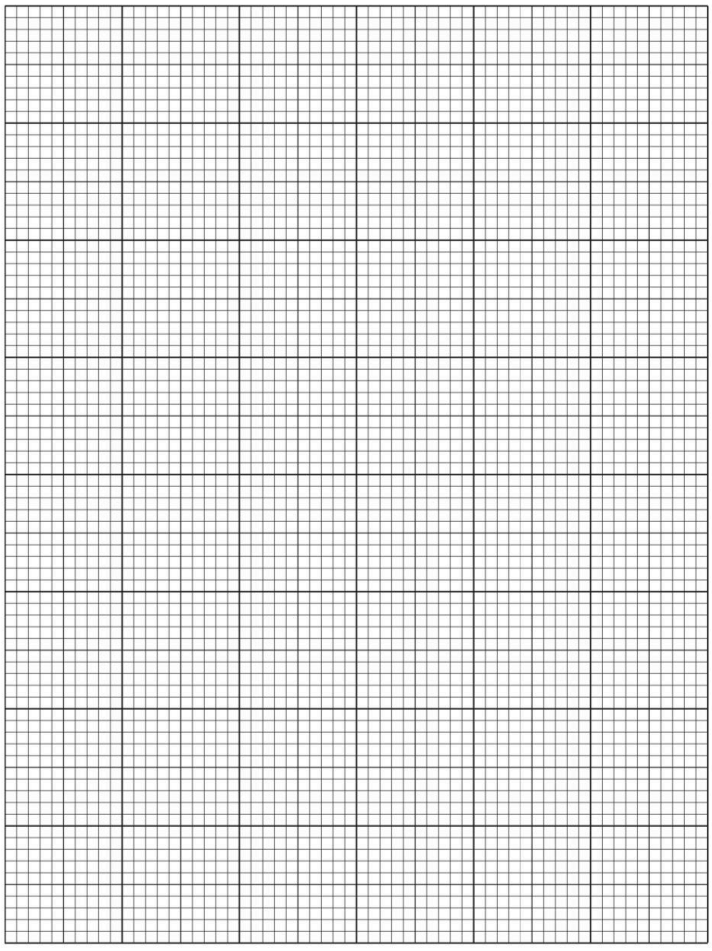
[Total: 4]

6 The table shows the top five exports from Kenya, a country in East Africa, in 2015.

export	value /million USD
coffee, tea and spices	1400
plants and cut flowers	717
fuels	426
vegetables	282
clothing	214
total	.....

(a) (i) **Complete the table**, by calculating the total value for the top five exports from Kenya. [1]

(ii) Draw a bar chart to show the top five exports from Kenya.



[4]

(b) (i) Some plants and cut flowers are grown intensively. This requires large amounts of insecticides to control pests.

Describe **two** possible effects of the overuse of insecticides on the local environment.

1 .....

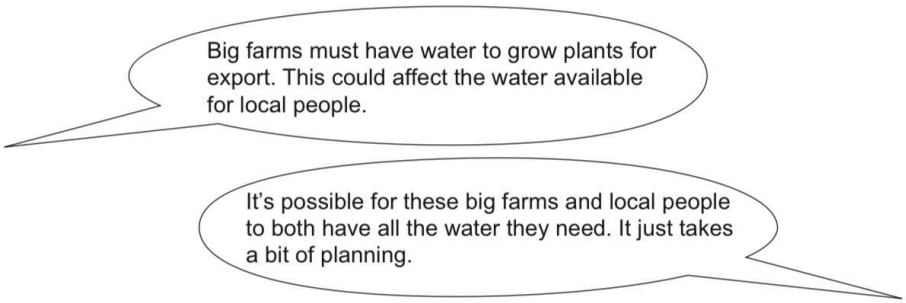
.....

2 .....

.....

[2]

(ii) Two students are discussing the water availability in Kenya.



Suggest strategies for ensuring a reliable supply of water for all people in Kenya.

Use examples to justify your answer.

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [5]

[Total: 12]

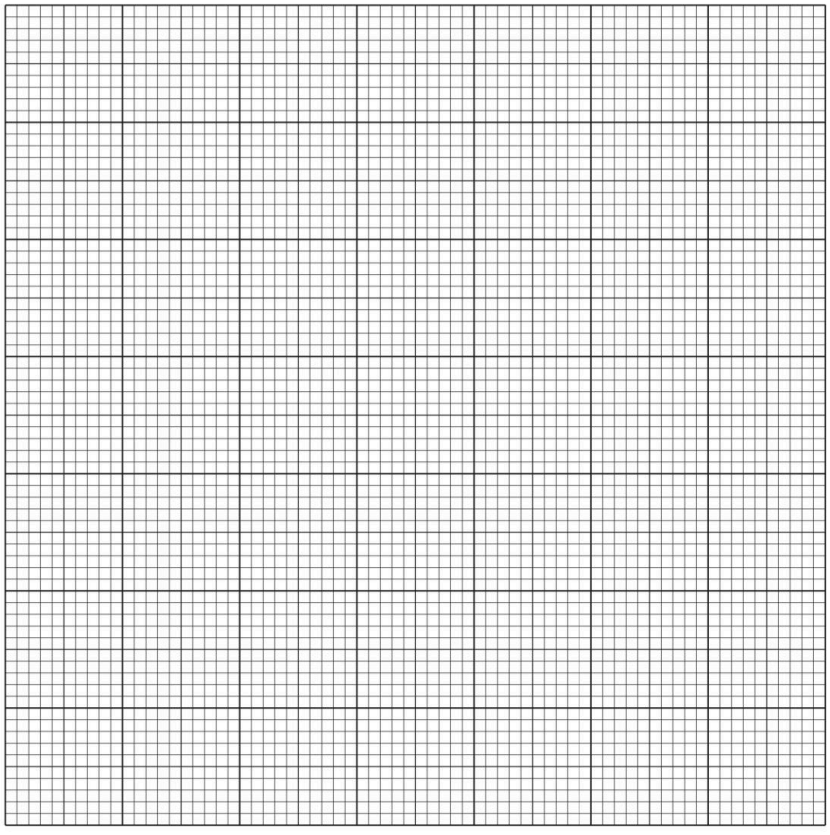
8 A scientist investigates the effect of nitrogen fertiliser on the yield of corn plants.

The table shows the results.

mass of nitrogen fertiliser applied /kg per hectare	yield of corn /kg per hectare	increase in yield of corn /kg
0	814	0
10	1142	328
20	1305	.....
30	1393	579
40	1417	603
50	1441	627
60	1441	627

(a) (i) **Complete the table** to calculate the increase in yield of corn when 20 kg per hectare of nitrogen fertiliser is applied compared to 0 kg per hectare. [1]

(ii) Plot, on the grid, a line graph of the **increase** in yield of corn against mass of nitrogen fertiliser applied.



[4]

(iii) Use the data to predict what will happen to the yield of corn if 70 kg per hectare of nitrogen fertiliser is applied.

.....

..... [1]

(iv) Suggest **two** environmental factors that can cause a change in the yield of corn.

1 .....

.....

2 .....

.....

[2]

(b) Overuse of fertilisers can cause river pollution.

Explain how fertilisers get into rivers.

.....

.....

.....

..... [2]

(c) Crop yield can be increased by using genetically modified plants.

Explain **two** ways genetically modified plants can increase yield.

1 .....

.....

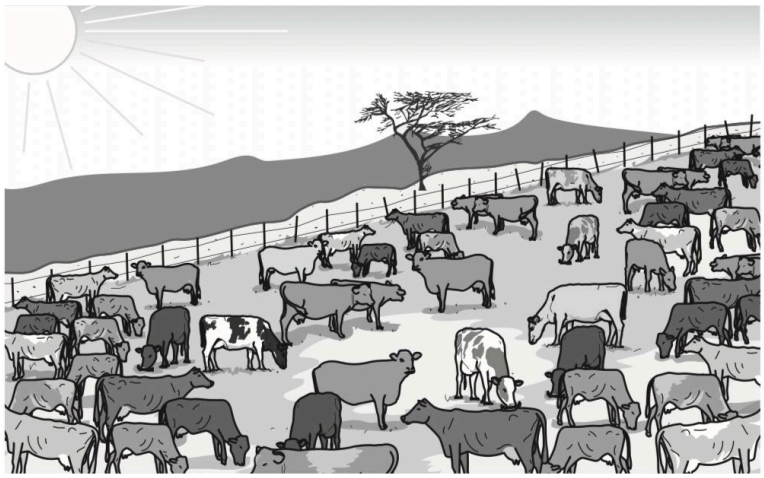
2 .....

.....

[2]

[Total: 12]

2 The drawing shows part of a farm in Africa.



(a) Describe the type of agriculture shown in the drawing.

.....

.....

.....

..... [2]

(b) Explain why soil erosion is a risk on this farm.

.....

.....

.....

.....

.....

..... [3]

[Total: 5]

2 The photograph shows a large area of farmland.

(a) Circle the type of agriculture shown in the photograph.

commercial arable	subsistence arable	commercial pastoral	subsistence pastoral	[1]

(b) Crop yield can be increased by improving irrigation methods.

State **two** other methods of increasing crop yield.

1 .....

2 .....
[2]

(c) State **two** ways of damaging soil by the mismanagement of irrigation.

1 .....

2 .....
[2]

[Total: 5]

7 **(a)** Agriculture can be divided into three main types: arable, mixed and pastoral.

(i) Complete the table using the words shown to match the descriptions to the types of agriculture.

arable **mixed** **pastoral**

description	type of agriculture
The farm grows crops.	.....
The farm raises animals.	.....
The farm grows crops and raises animals.	.....

[1]

(ii) Describe the difference between a commercial farm and a subsistence farm.

.....

..... [1]

(b) State **two** problems caused by mismanagement of irrigation.

1 .....

2 .....

[2]

(c) Describe how crop rotation and selective breeding of plants can be used to increase agricultural yield.

crop rotation .....

.....

.....

.....

selective breeding .....

.....

.....

.....

[4]

(d) The factsheet contains information about the prickly pear cactus in Australia.

The prickly pear cactus

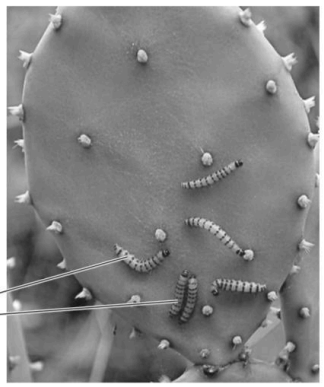
The prickly pear cactus is native to the Americas.

When it was brought to Australia, it spread rapidly, covering millions of hectares of farmland.

Farmers unsuccessfully tried several methods of controlling the cactus.

Eventually, the 'cactus moth' from South America was introduced.

The larvae of this moth ate the cacti and successfully reduced the cacti population.



(i) Suggest why the prickly pear cactus spread so rapidly in Australia.

.....

.....

.....

..... [2]

(ii) Suggest the impact of the prickly pear cactus on the farmlands of Australia.

.....

.....

.....

..... [2]

(iii) State the type of control used successfully by the farmers.

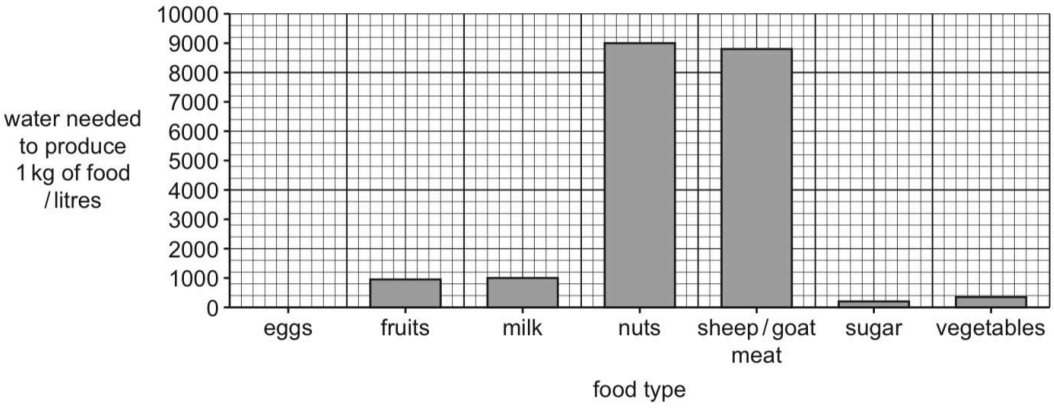
..... [1]

[Total: 13]

Section B

4 The bar chart shows the volume of water required to make 1 kg of different types of food.

The bar chart is **not** complete.



(a) (i) The production of 1 kg of eggs needs 3200 litres of water.

Complete the bar chart for eggs. [1]

(ii) Rank the food types according to the amount of water required to produce 1 kg of food.

One has been completed for you.

water use	food type
most water	nuts
least water	

[2]

(b) Explain how increasing the amount of land used for agriculture affects the availability of safe drinking water.

.....

.....

.....

.....

.....

..... [3]

(c) Describe strategies a farmer could use to reduce water usage in agriculture.

.....

.....

.....

.....

.....

.....

.....

..... [4]

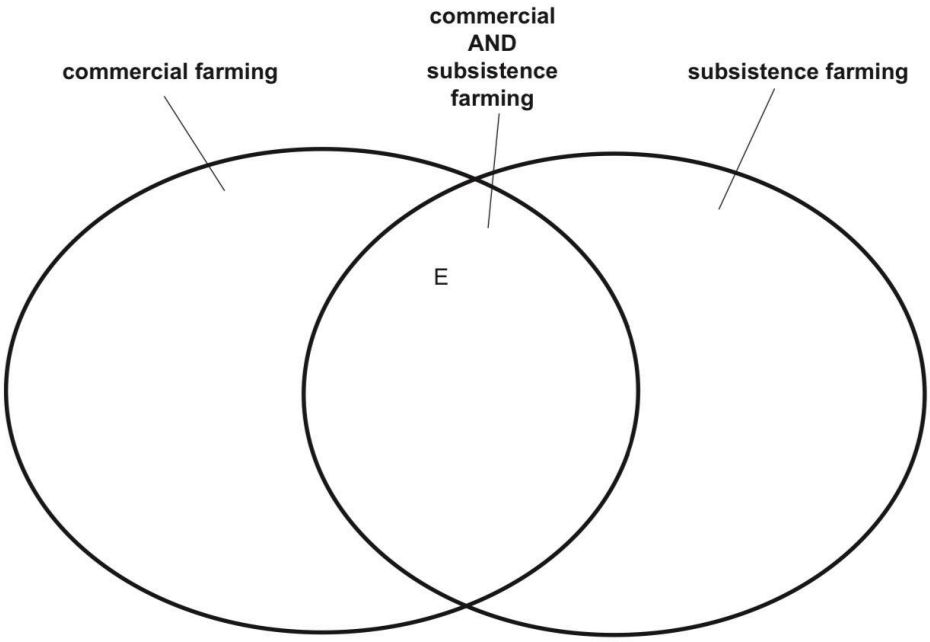
[Total: 10]

3 The table describes different farming activities.

farming activity	description
A	production mainly for selling
B	production mainly for own use
C	growing crops
D	using machinery
E	using irrigation

(a) Use the table to complete the diagram.

One has been completed for you.



[4]

(b) Explain how the overuse of insecticides impacts biodiversity.

.....

.....

.....

.....

.....

..... [3]

(c) State **one** alternative to using insecticides to control pests.

.....

..... [1]

[Total: 8]

3 The photograph shows part of a forest.

(a) Describe the activity that has happened in this part of the forest.

..... [1]

(b) Explain why there is a risk of soil erosion in this part of the forest.

.....

.....

.....

..... [2]

(c) State **two** reasons, other than soil erosion, why forests need to be conserved.

1 .....

2 .....

[2]

[Total: 5]