Greek Orthodox Patriarchate School
International - Fuhies

GRADE 8

Past paper booklet 2025 - 2026

Name: _____

Meray Kopty

Objectives

1) Know that photosynthesis occurs in chloroplasts and is the process by which plants make carbohydrates, using the energy from light.
2) Know and use the summary word equation for photosynthesis
   (Carbon dioxide + water → glucose + oxygen, in the presence of light and chlorophyll).
3) Describe the pathway of water and mineral salts from the roots to the leaves in flowering plants, including absorption in root hair cells, transport through xylem and transpiration from the surface of leaves.
4) Know that plants require minerals to maintain healthy growth and life processes (limited to magnesium to make chlorophyll and nitrates to make protein).
5) Describe the structure of the human excretory (renal) system and its function (limited to kidneys filtering blood to remove urea, which is excreted in urine).
6) Know that chromosomes contain genes, made of DNA, and that genes contribute to the determination of an organism's characteristics.
7) Describe the fusion of gametes to produce a fertilised egg with a new combination of DNA.
8) Describe the inheritance of sex in humans in terms of XX and XY chromosomes.
9) Describe variation within a species and relate this to genetic differences between individuals.
10) Describe the scientific theory of natural selection and how it relates to genetic changes over time.
11) Discuss how fetal development is affected by the health of the mother, including the effect of diet, smoking and drugs.
12) Describe what could happen to the population of a species, including extinction, when there is an environmental change.

1

This question is about growing tomato plants.

(a) (i) Write down the name of the **process** in tomato plants which uses carbon dioxide.

.....

(ii) Write down the name of the **two** products of this process.

..... and .....

(iii) State **one** reason why this process is important for animals.

.....

(b) Tomato plants need to absorb mineral salts.

(i) Write down the name of the part of a plant that absorbs mineral salts.

.....

(ii) Describe how mineral salts are transported in plants.

.....

2

Water and minerals move through flowering plants.

(a) Complete the sentences about how water and minerals move through a plant.

Choose parts of a plant from the list.

Each part can be used once, more than once or not at all.

palisade mesophyll **phloem** **root hair** **xylem**

Water and minerals enter plants through the ..... cells.

The water and mineral solution is transported in the stems through

..... cells.

The solution reaches the ..... cells in the leaves and is used for growth.

(b) Plants need water to make sugar.

Name **two other** things that plants need to make sugar.

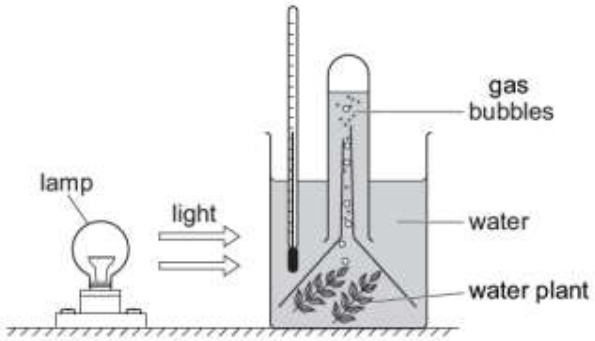
..... **and** .....

3

Safia and Jamila investigate photosynthesis.

They use water plants.

Here is the apparatus they use.



(a) In their first experiment they measure the number of gas bubbles made in one minute.

(i) What is the name of the gas made in photosynthesis?

Circle the correct answer.

carbon dioxide **methane** **nitrogen** **oxygen** **water**

(ii) What equipment does Safia use to measure one minute?

.....

(b) Safia and Jamila do two more experiments.

They move the lamp further away from the plant for each experiment.

Here are their results.

distance between light and water plant in cm	number of gas bubbles in one minute
10	98
20	54
40	26

(i) Why do they use one minute for each experiment?

.....

(ii) Complete the sentence describing the pattern of results.

As the distance between the light and the water plant increases, ...

.....

(c) **Predict** the results for:

a distance of 30 cm = ... gas bubbles

a distance of 50 cm = ... gas bubbles

(d) Circle the correct word or phrase that completes the conclusion.

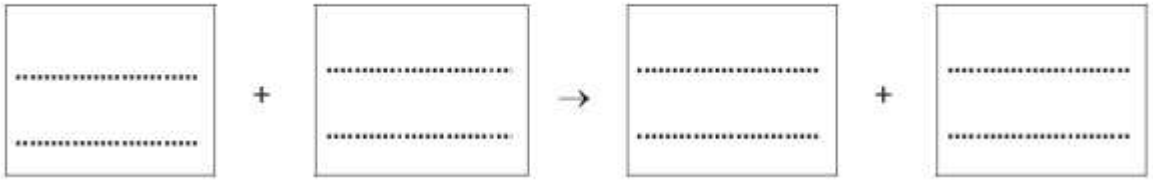
increases

The rate of photosynthesis **does not change** as light decreases.

decreases

4

(a) Write down the word equation for photosynthesis.



(b) Plants lose water from the surface of their leaves.

Write down the name of this process.

.....

5

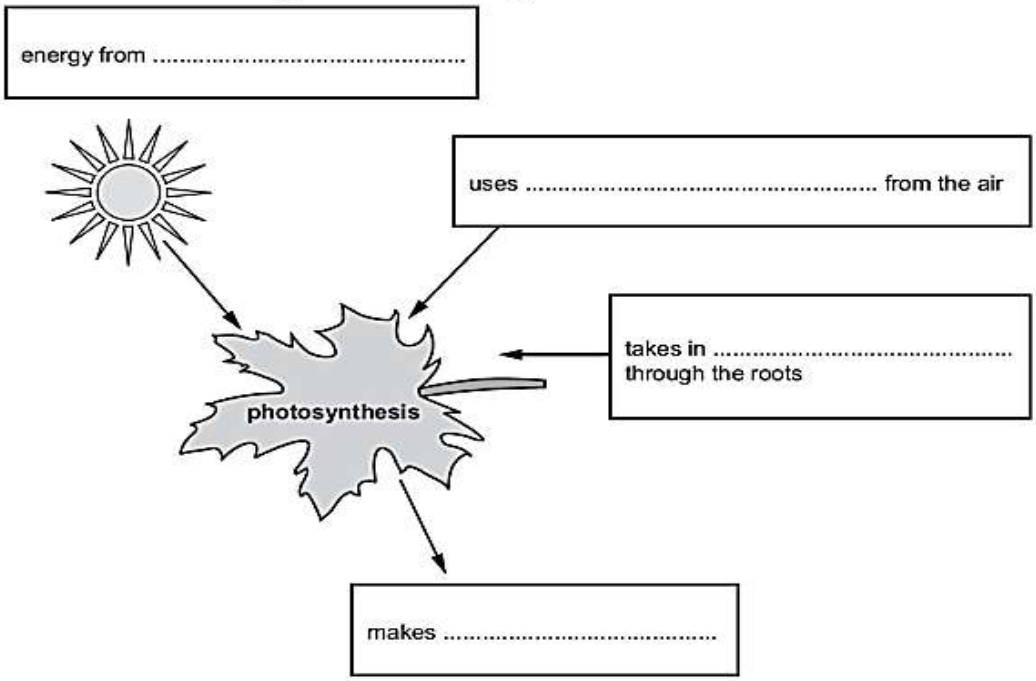
The diagram shows the process of photosynthesis in a leaf of a plant.

Complete the diagram.

Choose words from the list.

carbon dioxide **glucose** **minerals**

nitrogen **sunlight** **water**



6

Water moves through a plant.

The table shows information about the pathway of water into and out of a plant.

Number **1** is the part where water enters the plant.

Number **5** is the part where water is lost from the plant.

Complete the table by writing the numbers **1**, **2**, **3**, **4** and **5** to show the pathway of water into and out of a plant.

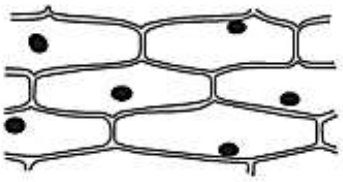
One has been done for you.

part of plant	order of pathway
leaf	5
leaf xylem	.....
root hair cell	.....
root xylem	.....
stem xylem	.....

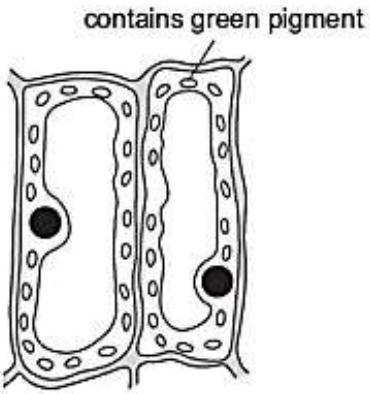
7

This is a question about photosynthesis and plant minerals.

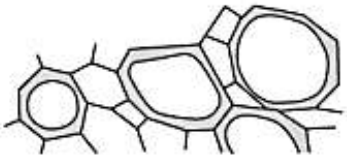
Look at the diagrams of different plant cells.



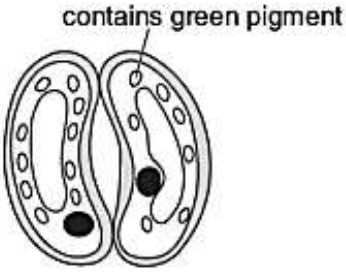
A onion epidermal cells



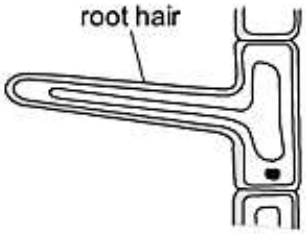
B palisade cells



C cells found in xylem



D guard cells



E epidermal cell in the root

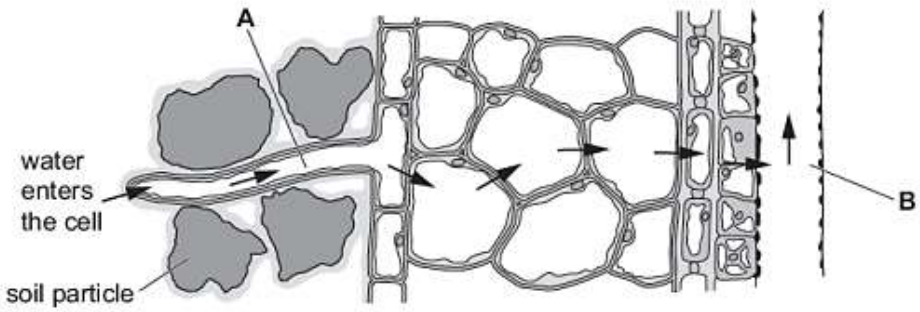
Which **two** diagrams show plant cells that photosynthesise?

Choose from **A**, **B**, **C**, **D** and **E**.

..... and .....

8

The arrows show the pathway of water through the root.



(a) Name the type of root cell labelled **A**.

.....

(b) Suggest **one** way root cell **A** is adapted to its function.

Use the diagram to help you.

.....

(c) Water is transported from the roots to the stem and the leaves through vessel **B**.

Name vessel **B**.

.....

(d) Vessel **B** transports minerals to the leaves.

Name the mineral needed to make chlorophyll.

.....

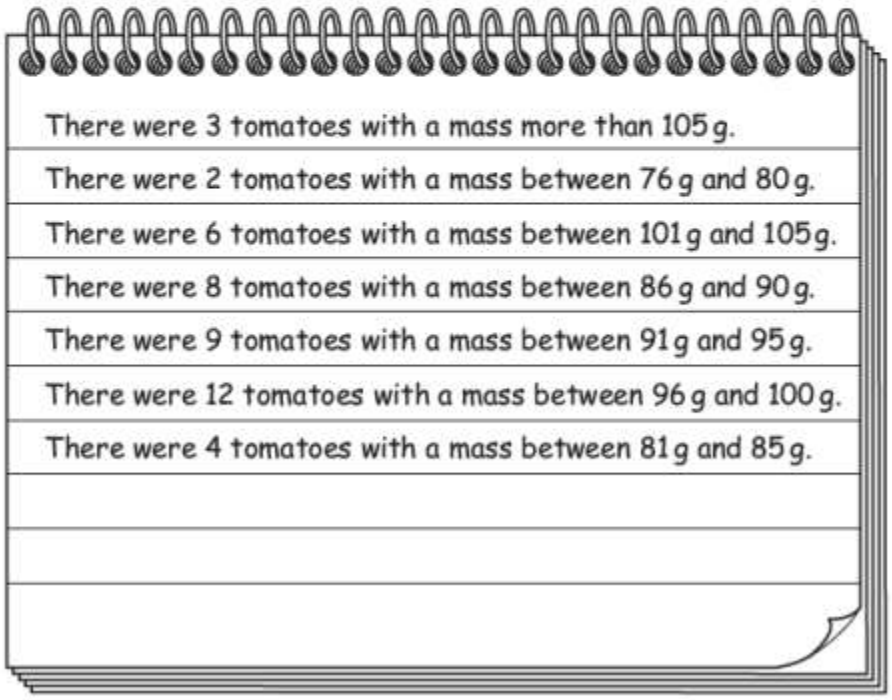
9

Lily investigates variation in tomatoes.

Lily:

- measures the mass of different tomatoes to the nearest whole gram
- classifies the tomatoes into different groups based on their masses.

Lily writes about her results.



(a) (i) Complete the table of results by writing the:

- unit for the mass range
- number of tomatoes in each mass range.

mass range in	number of tomatoes in mass range
76 – 80	.....
81 – 85	.....
86 – 90	.....
91 – 95	.....
96 – 100	.....
101 – 105	.....
more than 105	.....

(ii) What is the best way to present the data in the table?

.....

(b) Gardeners add nitrates to the soil to help tomato plants grow.

The nitrates are used by the plants to make a substance needed for growth.

Name this type of substance.

.....

10

Copy and complete these sentences about plants and water.
Choose words from the list.
You can use each word once, more than once or not at all.

air **gas** **leaves** **liquid**
root hairs **soil** **stomata** **xylem vessels**

Plants take up water from the ..... into their ..... .
The water flows through ..... which carry it to the plant's ..... .
In the leaves, a lot of the water changes from ..... to ..... .
It diffuses out of the leaf through the ..... .

11

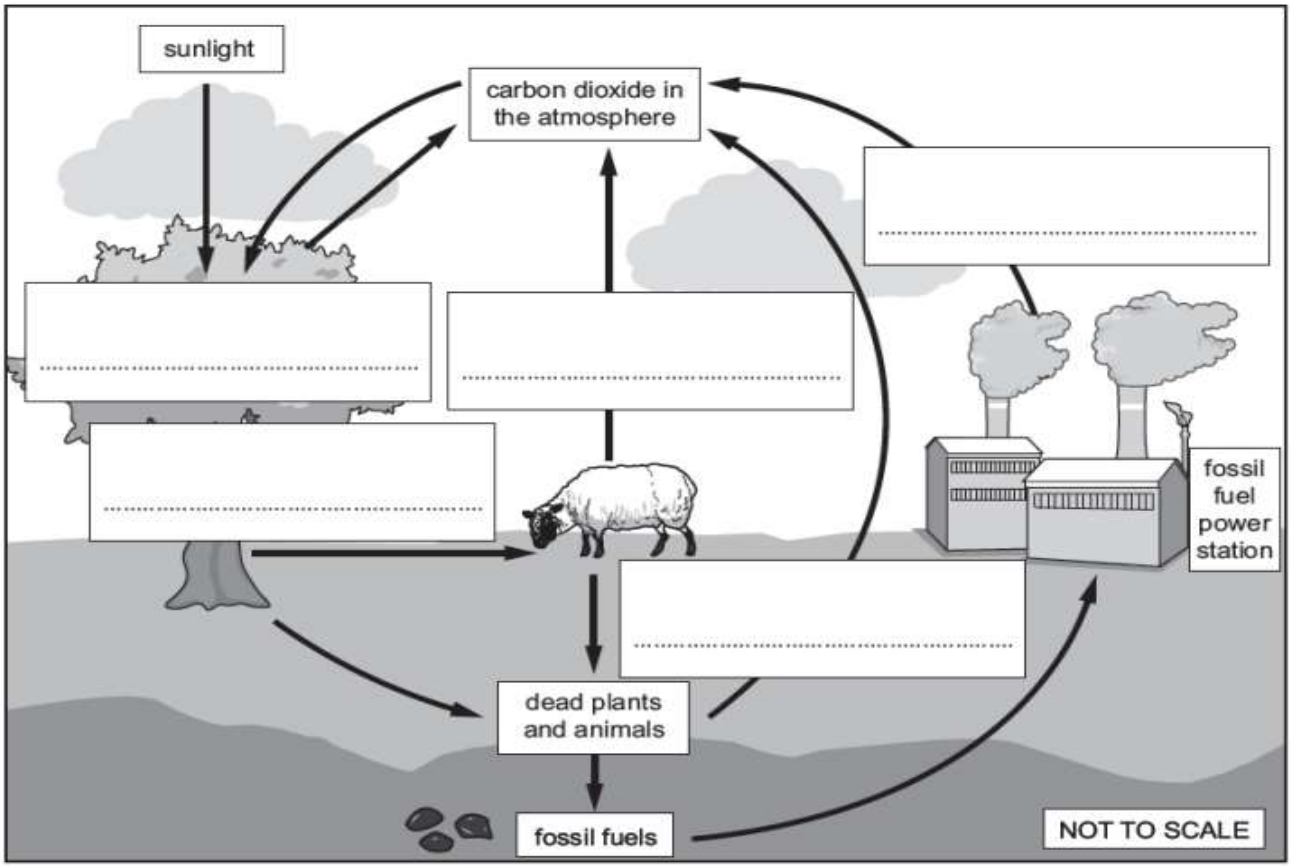
This question is about the carbon cycle and climate change.

(a) Complete the carbon cycle diagram.

Choose words from the list.

combustion **decomposition** **feeding**

photosynthesis **respiration**



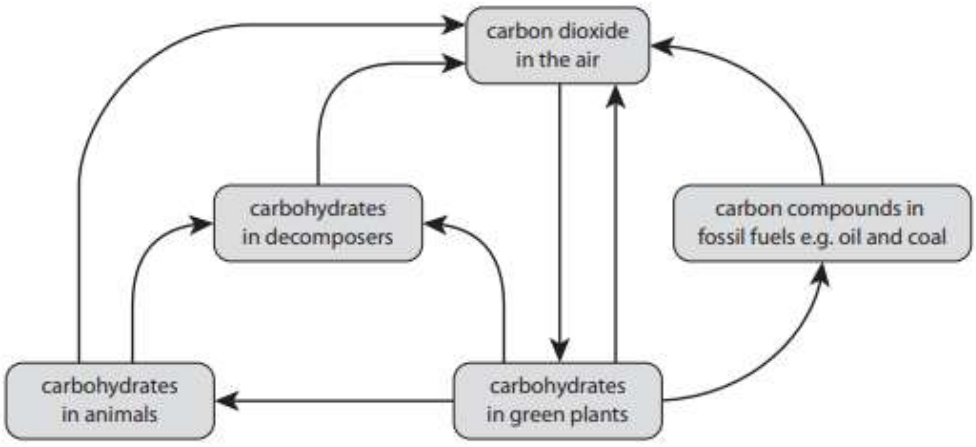
(b) Describe what happens during decomposition.

.....

.....

12

The diagram shows part of the carbon cycle.



(a) On the diagram, write these labels next to the correct arrows:

R next to three arrows that show respiration

P next to one arrow that shows photosynthesis

C next to one arrow that shows fossil fuels being formed

D next to two arrows that show decomposition

F next to one arrow that shows feeding

(b) Name the process in the carbon cycle that decreases the amount of carbon in the atmosphere.

..... [1]

13

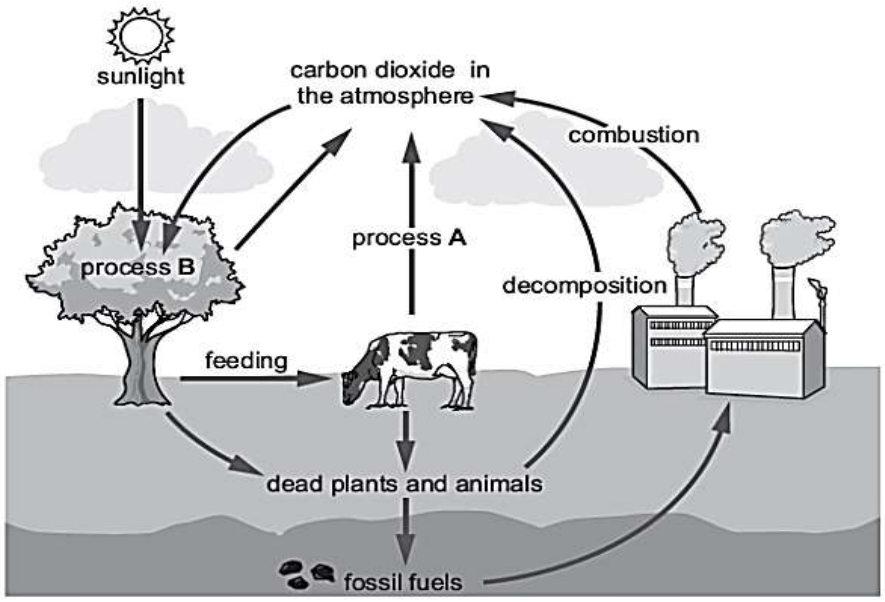
This question is about the carbon cycle.

Draw a straight line to match the **process** to its correct **description**.

process	description
combustion	carbohydrate moves from one organism to another organism
decomposition	the breakdown of dead and decaying waste material
feeding	the burning of fossil fuels
photosynthesis	the release of energy from the breakdown of glucose
respiration	the formation of glucose and oxygen by green plants

14

Look at the diagram of the carbon cycle.



(a) Write down the name of process **A**.

.....

(b) Write down the name of process **B**.

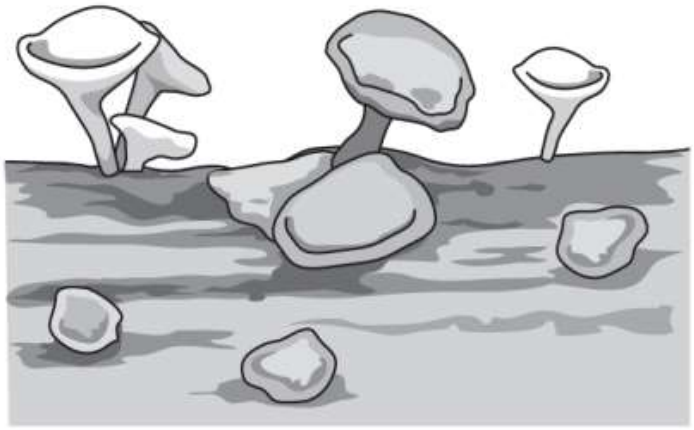
.....

(c) Write down **one similarity** between combustion and decomposition.

.....

15

The diagram shows fungi growing on a piece of wood.



Fungi are decomposers.

What are decomposers? .....

.....

.....

Why are decomposers important? .....

.....

.....

16

Scientists believe that too much carbon dioxide in the atmosphere causes climate change.

Describe **two** possible effects of climate change.

1 .....

.....

2 .....

.....

17

Complete the sentences. Use words from the list. Use each word once.

kidneys **renal** **urea** **urine** **water**

The ..... are part of the excretory system.

This is also known as the ..... system.

In the excretory system, a waste substance called ..... is filtered out of the blood.

It dissolves in ....., forming a liquid called

.....

18

This question is about the human excretory (renal) system.

Complete these sentences about the structure and function of the excretory (renal) system.

The excretory (renal) system filters blood.

Blood enters the ..... where it is filtered, and urine is formed.

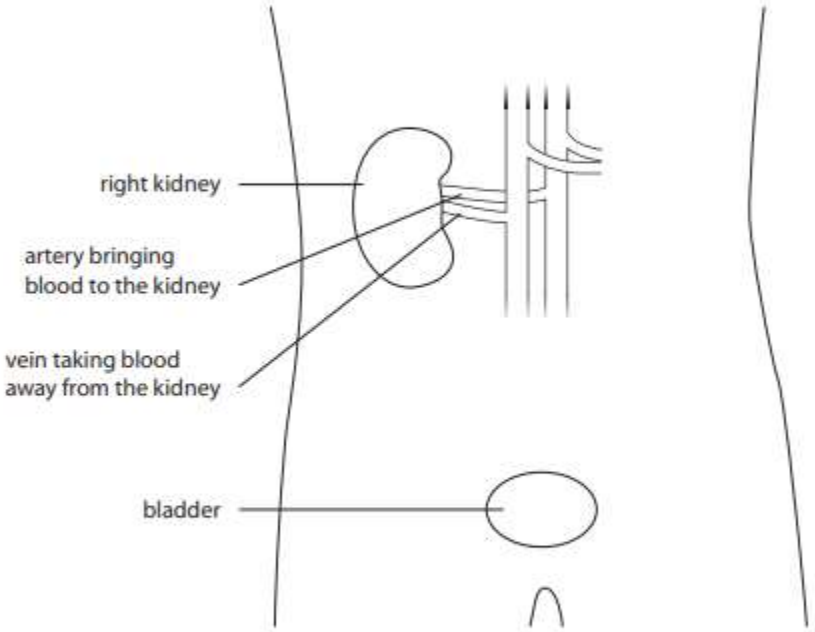
This urine passes along a tube called the ..... towards the bladder.

The urine is stored in the bladder.

Urine is released from the body through a different tube called the ..... .

19

Complete the diagram of the excretory system.



Add labels to the diagram. You should label **four** structures.

Describe the function of each of the structures that you have labelled on the diagram.

.....

.....

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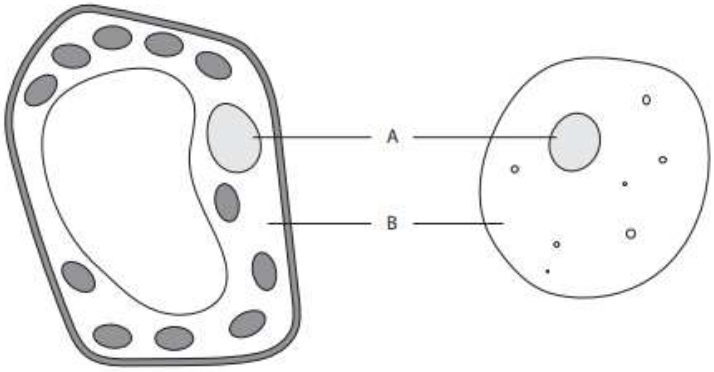
20

In this exercise, you will practise writing about chromosomes, genes and DNA.

The diagrams show a plant cell and an animal cell.



1 Name the parts labelled A and B.

A .....

B .....

2 Write the letter X in **each** cell to show where the chromosomes are found.

3 Write a sentence, in your own words, using each of the words. Try to include some scientific information in each sentence.

chromosome

.....

.....

gene

.....

.....

DNA

.....

.....

21

In this exercise, you use information from a diagram to complete a comparison table about the structure of egg cells and sperm cells.

Complete these sentences about egg cells and sperm cells.

Choose from the list.

cytoplasm **female** **fertilisation** **gametes**
male **nucleus** **swimming**

Egg cells and sperm cells are specialised cells called .....

Egg cells are .....and sperm cells are .....

A sperm cell can join with an egg cell in a process called

.....

22

This question is about a small mammal called a shrew.

Look at the picture of two shrews from the same species.

Each shrew has a different fur colour.

Fur colour is controlled by genes.

Write down the name of the chemical that makes up genes.

.....

23

(a) Chen investigates the inheritance of sex in humans.

Chen:

- uses green balls to represent gametes with X chromosomes
- uses yellow balls to represent gametes with Y chromosomes
- puts 25 green balls and 25 yellow balls into bag **A**
- puts 50 green balls into bag **B**
- takes one ball out of each bag and records the colours
- returns the balls to their bags.

Explain why bag **A** represents male gametes.

.....

.....

(b) Chen takes balls out of the bags five more times.

(i) Look at the table of his results.

The table is **not** complete.

Complete the table to identify if the two balls (gametes) chosen represent a male or a female offspring.

	colour of ball from bag A	colour of ball from bag B	male or female offspring
1	green	green	.....
2	yellow	green	.....
3	green	green	.....
4	yellow	green	.....
5	green	green	.....
6	green	green	.....

(ii) The chance of a male and a female producing a male offspring is 50%.

Chen's results do **not** show a value of 50%.

Suggest why.

.....

.....

24

The table shows the mean mass of an adult female of eight different species of mammal, and the mean time for which pregnancy lasts in that species.

Species	Mean mass of a female / kg	Mean length of pregnancy/ days
moose (elk)	550	245
llama	113	330
goat	15	150
wolf	40	64
lion	150	108
rabbit	1	33
elephant	5000	640
chimpanzee	40	227

In the table below, rearrange the data so that it is easier to see if there is a relationship between the mean mass of a female and the mean length of pregnancy.

Species	Mean mass of a female / kg	Mean length of pregnancy/ days

Is there a correlation between the mean mass of a female and the mean length of pregnancy? Explain your answer and use figures from the table to support it.

.....

.....

.....

.....

.....

25

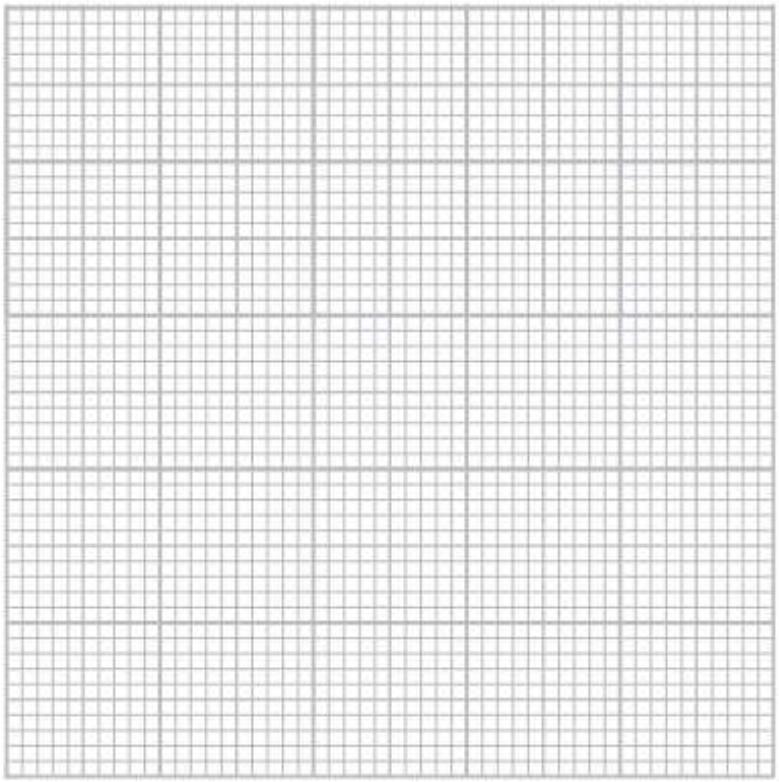
In this exercise, you will look at some data collected by researchers in Sweden. You will practise using data to make conclusions and think about how an investigation could be improved.

A study was carried out in Sweden to investigate the idea that women who drink a lot of coffee during pregnancy might have smaller babies. 1037 pregnant women took part. They each answered a questionnaire about how much coffee they drank.

When their babies were born, their birthweights were measured. The results are shown in the table.

Mean caffeine intake per day / mg	Mean birthweight / g
less than 100	3660
100 to 299	3661
300 to 499	3597
500 or more	3694

1 Plot these results as a bar chart on the grid. Think carefully about the range for the scale on the vertical axis. Remember that you do not need to begin at 0.



2 What conclusion can you make from these results? Explain your answer and use figures from the table to support it.

.....

.....

.....

.....

.....

3 Suggest **two** ways in which the researchers could have improved their study.

.....

.....

.....

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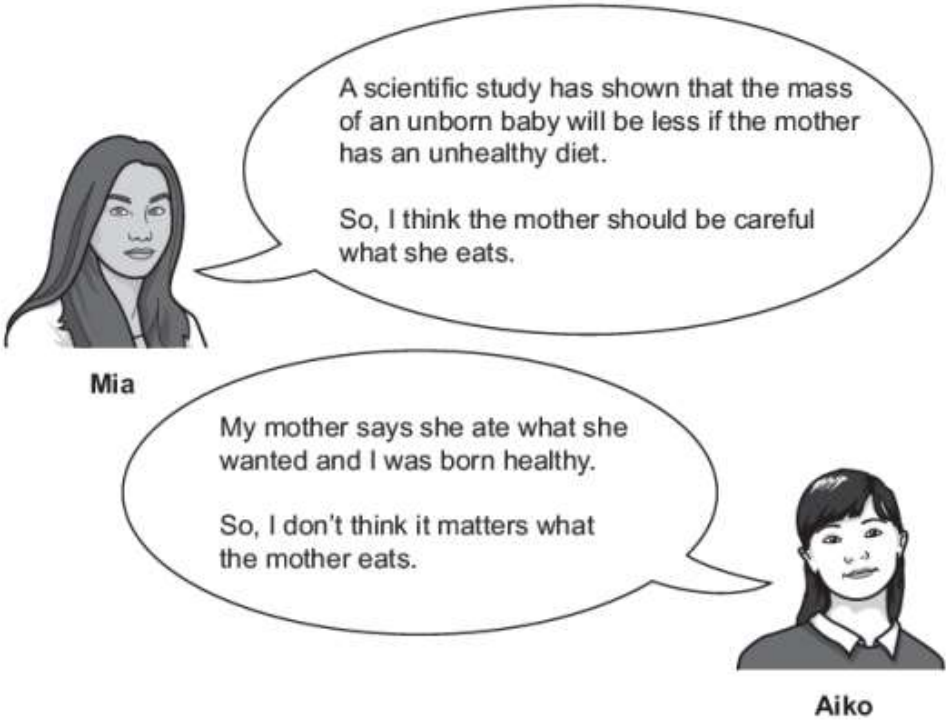
26

Mia and Aiko are discussing ideas about fetal development and the health of the mother.



(a) Who has made a more informed decision?

Tick (✓) **one** box.

Mia ☐ Aiko ☐

Explain your answer.

.....

.....

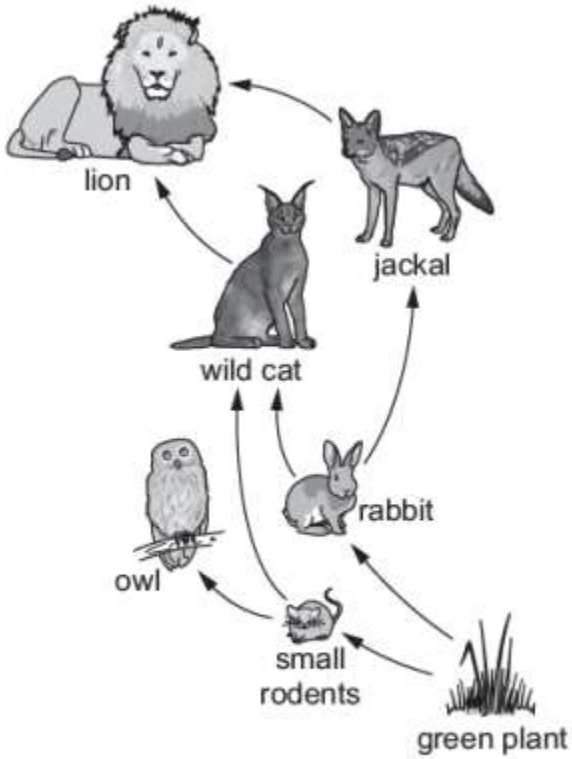
(b) The diet of the mother is one factor that affects fetal development.

Write down **one other** factor that affects fetal development.

.....

27

Look at the food web for a habitat.



NOT TO SCALE

(a) A disease decreases the number of small rodents in the habitat.

The number of owls decreases but the number of wild cats stays the same.

Complete the sentences to explain why.

The number of owls decreases because .....

.....

The number of wild cats stays the same because .....

.....

(b) Explain why green plants need the Sun to survive.

.....

.....

.....

28

In this exercise, you practise completing a results table. Then you use your results table to draw a bar chart.

Arun's class has a garden outside the classroom.

Arun's teacher gives him some canna lily tubers to plant in the garden.

Arun and Marcus plant the tubers. Each tuber grows into a plant and produces flowers.

The boys count the number of canna plants with different-coloured flowers.

Here is the table that they make

Flower colour	Yellow	White	Red	Orange
tally	𝍸 |	|||	||||	𝍸 ||
number of plants				

1 Complete the last row of Arun and Marcus's results table.

2 Calculate the total number of canna plants.

.....

3 Use Arun's and Marcus's results table to draw a bar chart.

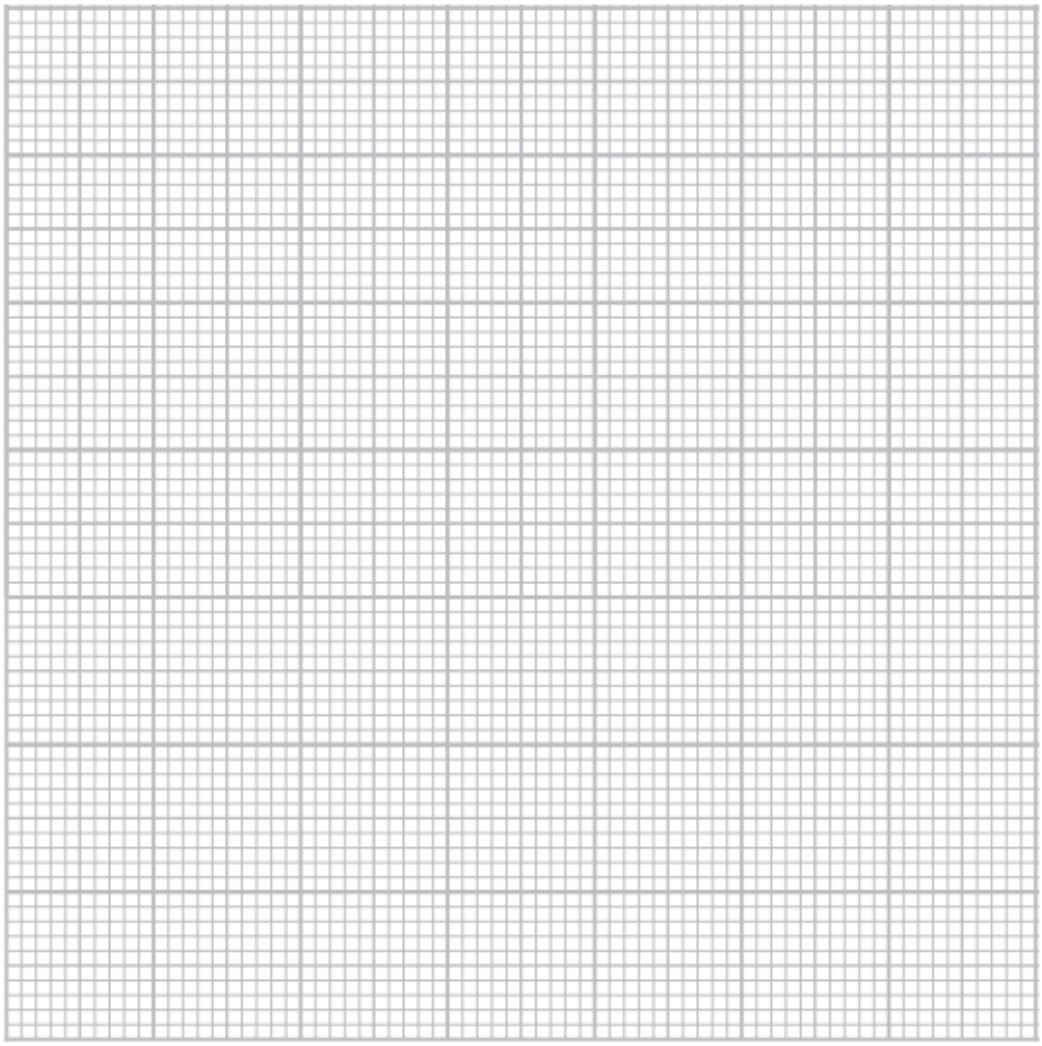
Put **flower colour** on the horizontal axis.

Put **number of plants** on the vertical axis.

Use a pencil and ruler to draw your bar chart.

Leave spaces between the bars.

Do not shade the bars.



29

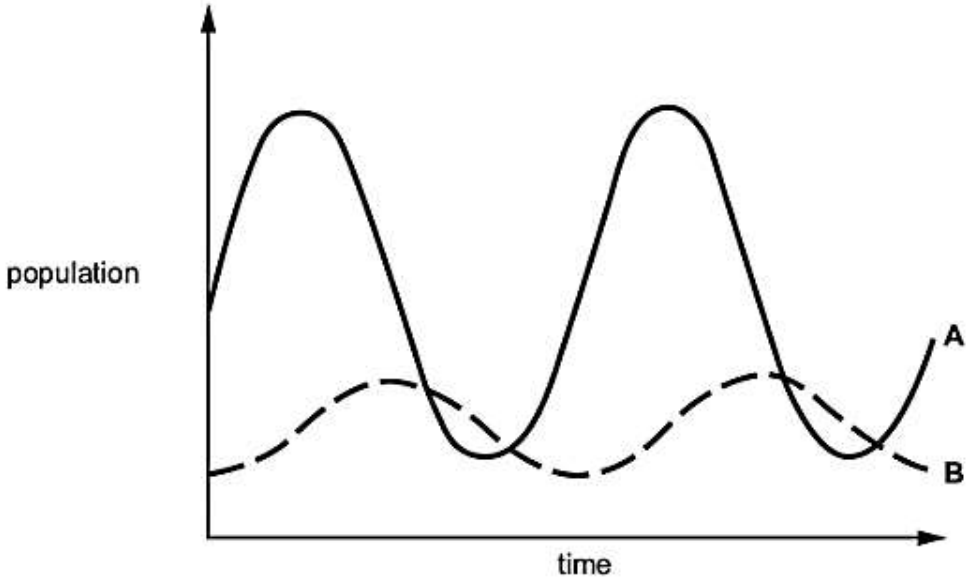
Myxomatosis is a disease that kills rabbits.

(a) Describe the effect of myxomatosis on the size of a rabbit population.

.....

(b) Foxes hunt rabbits for food.

The graph shows the population of foxes and the population of rabbits.



Tick (✓) the box that shows the population of rabbits.

line **A** ☐ line **B** ☐

Give **two** reasons for your answer.

1 .....

.....

2 .....

.....

30

Scientists estimate one million species of plants and animals are at risk of extinction.

(a) Which factors cause a species to become extinct?

Tick (✓) the **two** correct factors.

changes in seasons	☐
changes to the environment over time	☐
increased reproduction	☐
new diseases	☐
new food sources	☐

(b) Explain what is meant by the statement:

'An animal is at risk of extinction.'

Use ideas about death rate and reproduction rate.

.....

.....

The End