AQA GCSE Biology | 8461

SPECIFICATION POINT 4.1.2.2

Mitosis and the cell cycle

Past-paper questions

Tier	**Foundation**
Question groups	**14**
Available paper years	**2008–2025**

Using this booklet

1. Answer the questions in order and show your working.
2. Original question numbers and marks are retained.
3. Print at actual size (100%) for measuring questions.
4. Use the companion answer booklet to check your work.

Name: _____ **Date:** _____

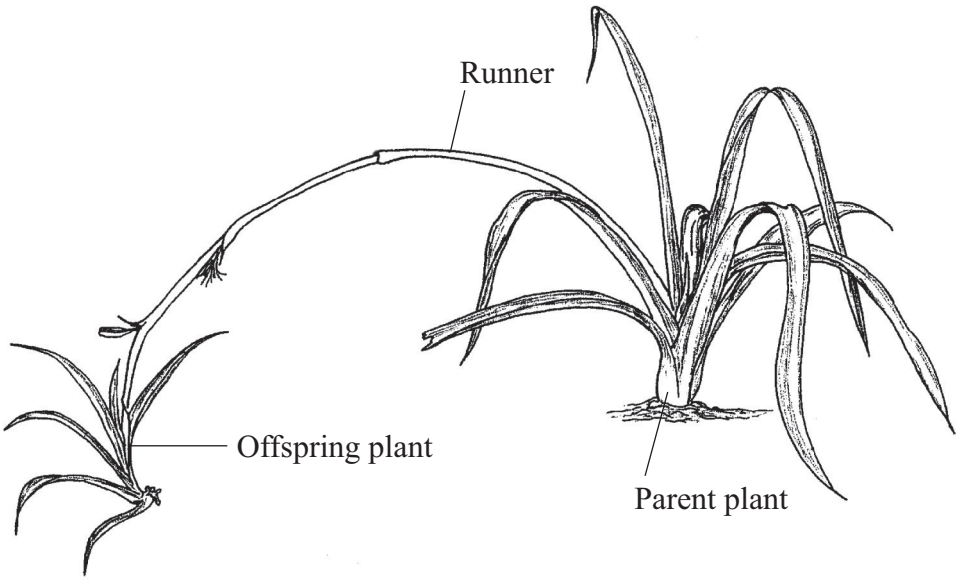
Whole questions are retained for context, so some parts assess other specification points. Current and legacy sources are labelled. Continue on extra paper if needed.

4.1.2.2 Mitosis and the cell cycle

Question 01

January 2008 | BLY2F | Original Q3 | Legacy

3 The diagram shows a spider plant during one type of reproduction.



Complete the sentences using words from the box.

asexual	**characteristics**	**chromosomes**	
gametes	**genes**	**mitosis**	**sexual**

(a) The colour and shape of the leaves of a spider plant are known as ..... .

(1 mark)

(b) The shape of the leaves is controlled by ..... .

(1 mark)

(c) The thread-like structures inside the nucleus of the cells are called ..... .

(1 mark)

(d) The spider plant produces new cells in the runner by a process called ..... .

(1 mark)

(e) This type of reproduction is called ..... reproduction.

(1 mark)

5

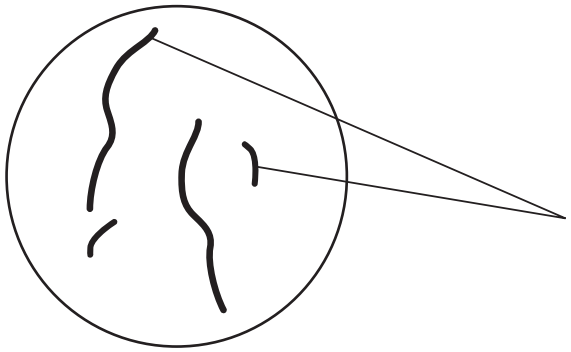
4.1.2.2 Mitosis and the cell cycle

Question 02

June 2009 | BLY2F | Original Q5 | Legacy

5 **Diagram 1** shows the nucleus of a body cell as it begins to divide by mitosis.

Diagram 1



.....

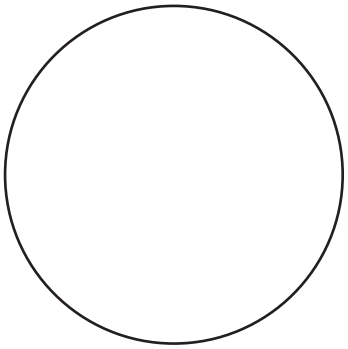
5 (a) Use a word from the box to label **Diagram 1**.

alleles	**chromosomes**	**gametes**

(1 mark)

5 (b) Complete **Diagram 2** to show what the nucleus of one of the cells produced by this mitosis would look like.

Diagram 2



(1 mark)

4.1.2.2 Mitosis and the cell cycle

Question 02 · continued

for mark

5 (c) Stem cells from a recently dead embryo can be grown in special solutions.

Some facts about stem cells are given below.

- Stem cells from an embryo can grow into any type of tissue.
- Stem cells may grow out of control, to form cancers.
- Large numbers of stem cells can be grown in the laboratory.
- Stem cells may be used in medical research or to treat some human diseases.
- Patients treated with stem cells need to take drugs for the rest of their life to prevent rejection.
- Collecting and growing stem cells is expensive.

Use **only** the information above to answer these questions.

5 (c) (i) Give **two** advantages of using stem cells.

1 .....

.....

2 .....

.....

(2 marks)

5 (c) (ii) Give **two** disadvantages of using stem cells.

1 .....

.....

2 .....

.....

(2 mark)

6

4.1.2.2 Mitosis and the cell cycle

Question 03

January 2013 | BL2FP | Original Q2 | Legacy

2 When humans reproduce, chromosomes and genes are passed on to the next generation.

In each of the following questions, draw a ring around the correct answer to complete the sentence.

2 (a) A gene is a small section of

- cellulose.
- DNA.
- protein.

(1 mark)

2 (b) The sex chromosomes in the human male are

- X and X.
- X and Y.
- Y and Y.

(1 mark)

2 (c) (i) Most human body cells contain

- 23 chromosomes.
- 46 chromosomes.
- 92 chromosomes.

(1 mark)

2 (c) (ii) The number of chromosomes in a human gamete (sex cell)

is

- the same number as
- half the number
- twice the number

in body cells.

(1 mark)

2 (d) Gametes are produced by

- fertilisation.
- meiosis.
- mitosis.

(1 mark)

5

4.1.2.2 Mitosis and the cell cycle

Question 04

June 2013 | BL2FP | Original Q3 | Legacy

3 (a) (i) Mitosis and meiosis are types of cell division.

For each feature in the table, tick (✓) **one** box to show if the feature occurs:

- only in mitosis
- only in meiosis.

Feature	Only in mitosis (✓)	Only in meiosis (✓)
Produces new cells during growth and repair		
Produces gametes (sex cells)		
Produces genetically identical cells		

(2 marks)

3 (a) (ii) Name the organ that produces gametes (sex cells) in:

a man .....

a woman. .....

(2 marks)

3 (b) **X** and **Y** chromosomes are the sex chromosomes. They determine a person's sex.

What sex chromosomes will be found in the body cells of:

3 (b) (i) a man .....

(1 mark)

3 (b) (ii) a woman? .....

(1 mark)

3 (c) A man and a woman decide to have a child.

What is the chance that the child will be a boy? .....

(1 mark)

7

4.1.2.2 Mitosis and the cell cycle

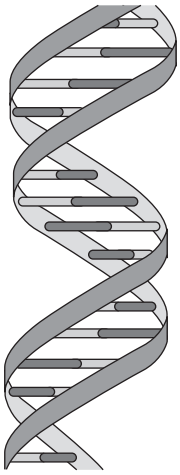
Question 05

June 2015 | BL2FP | Original Q9 | Legacy

9 DNA is the genetic material of human cells.

Figure 10 shows the structure of part of a DNA molecule.

Figure 10



9 (a) (i) Describe where DNA is found in a human cell.

[2 marks]

.....

.....

.....

9 (a) (ii) When a cell divides by mitosis the new cells are genetically identical.

What causes the cells to be genetically identical?

[1 mark]

.....

.....

9 (b) Many genes have different forms called alleles.

9 (b) (i) A person has polydactyly (extra fingers or toes). Polydactyly is caused by a dominant allele.
What is the smallest number of copies of the dominant allele for polydactyly that could be found in a body cell of this person?

[1 mark]

.....

9 (b) (ii) Another person has cystic fibrosis. Cystic fibrosis (CF) is caused by a recessive allele.
How many copies of the recessive CF allele are there in a body cell of this person?

[1 mark]

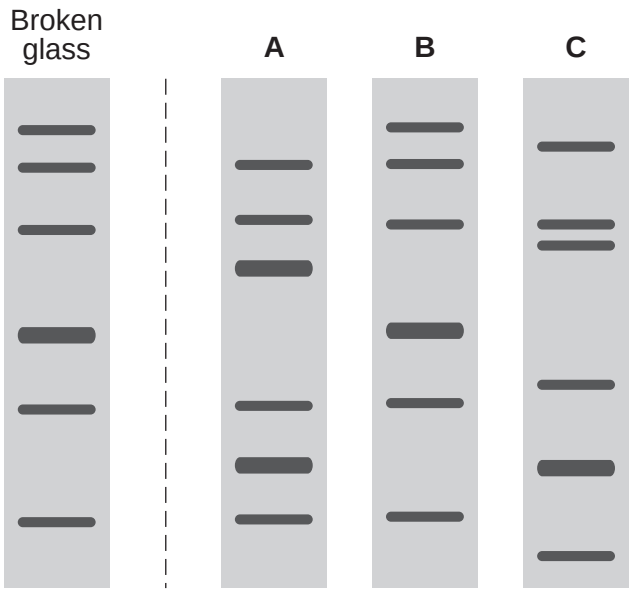
.....

9 (c) A burglar broke into a house. The burglar cut his hand on some broken glass. Scientists extracted DNA from the blood on the broken glass.

The scientists analysed the DNA from the glass and DNA from three suspects, **A**, **B** and **C**. The scientists used a method called DNA fingerprinting.

Figure 11 shows the scientists' results.

Figure 11



Which suspect, **A**, **B** or **C**, is most likely to have been the burglar?

[1 mark]

Tick (✓) **one** box.

A ☐

B ☐

C ☐

6

4.1.2.2 Mitosis and the cell cycle

Question 06

June 2018 | 8461/1F | Original Q1

0 1 This question is about the cell cycle.

0 1 . 1 Chromosomes are copied during the cell cycle.

Where are chromosomes found?

[1 mark]

Tick **one** box.

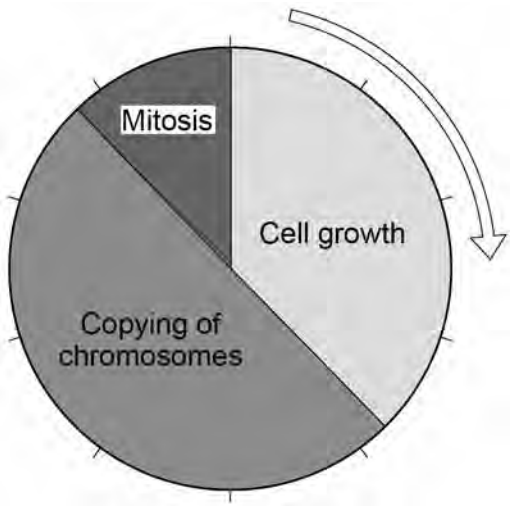
- Cytoplasm ☐
- Nucleus ☐
- Ribosomes ☐
- Vacuole ☐

0 1 . 2 What is the name of a section of a chromosome that controls a characteristic?

[1 mark]

Figure 1 shows information about the cell cycle.

Figure 1



4.1.2.2 Mitosis and the cell cycle

Question 06 · continued

0 1 . 3 Which stage of the cell cycle in **Figure 1** takes the most time?

[1 mark]

Tick **one** box.

- Cell growth ☐
- Copying of chromosomes ☐
- Mitosis ☐

0 1 . 4 During mitosis cells need extra energy.

Which cell structures provide most of this energy?

[1 mark]

Tick **one** box.

- Chromosomes ☐
- Cytoplasm ☐
- Mitochondria ☐
- Ribosomes ☐

0 1 . 5 The cell cycle in **Figure 1** takes two hours in total.

The cell growth stage takes 45 minutes.

Calculate the time taken for mitosis.

[2 marks]

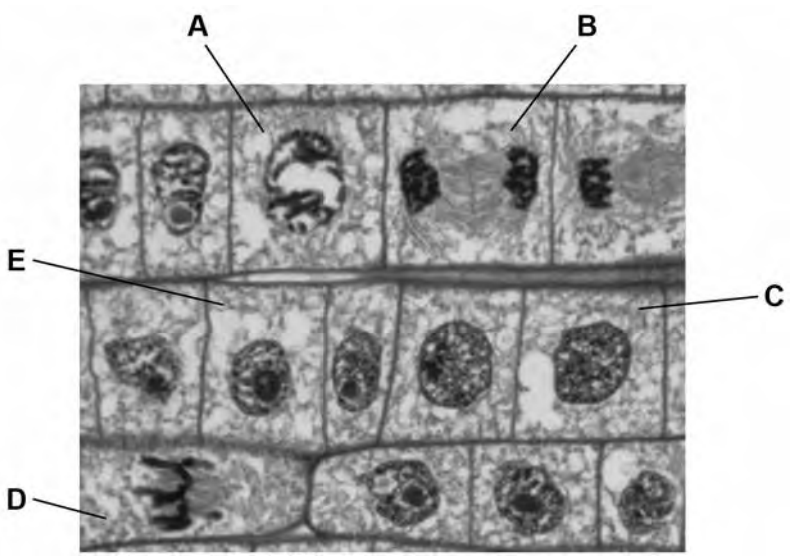
Time = _____ minutes

4.1.2.2 Mitosis and the cell cycle

Question 06 · continued

Figure 2 shows some cells in different stages of the cell cycle.

Figure 2



0 1 . 6 Which cell is **not** dividing by mitosis?

[1 mark]

Tick **one** box.

A		B		C		D	

4.1.2.2 Mitosis and the cell cycle

Question 06 · continued

0 1 . 7 Cell **E** in **Figure 2** contains 8 chromosomes.

Cell **E** divides by mitosis.

How many chromosomes will each new cell contain?

[1 mark]

Tick **one** box.

2 ☐

4 ☐

8 ☐

16 ☐

0 1 . 8 Why is mitosis important in living organisms?

[1 mark]

Tick **one** box.

To produce gametes ☐

To produce variation ☐

To release energy ☐

To repair tissues ☐

9

4.1.2.2 Mitosis and the cell cycle

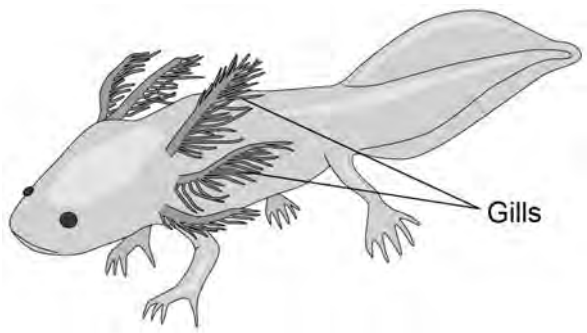
Question 07

June 2019 | 8461/1F | Original Q2

0 2 An animal called an axolotl lives in water.

Figure 3 shows an axolotl.

Figure 3



Oxygen enters the axolotl's bloodstream through the gills by diffusion.

0 2 . 1 What is diffusion?

[1 mark]

Tick (✓) **one** box.

The movement of particles from a high concentration to a low concentration ☐

The movement of particles from a low concentration to a high concentration ☐

The movement of water from a concentrated solution to a more dilute solution ☐

0 2 . 2 Describe how **one** feature of the axolotl's gills increases the rate of diffusion of oxygen.

Use information from **Figure 3**.

[2 marks]

Feature _____

Description _____

_____

_____

4.1.2.2 Mitosis and the cell cycle

Question 07 · continued

If a gill of an axolotl is removed, stem cells in the damaged area will divide and a new gill will grow.

0 2 . 3 Complete the sentence.

[1 mark]

Choose the answer from the box.

adaptation	**differentiation**	**evolution**	**variation**

When stem cells specialise to produce gill cells, this process is known as _____.

0 2 . 4 Complete the sentence.

[1 mark]

Choose the answer from the box.

binary fission	**mitosis**	**mutation**

To grow a new gill the stem cells divide by _____.

0 2 . 5 Which **one** of the following does **not** contain stem cells?

[1 mark]

Tick (✓) **one** box.

- Bone marrow ☐
- Embryos ☐
- Hair ☐
- Meristem tissue ☐

4.1.2.2 Mitosis and the cell cycle

Question 07 · continued

0 2 . 6 Axolotls are small animals. Axolotls are used in stem cell research.

What are **two** advantages of using axolotls in stem cell research?

[2 marks]

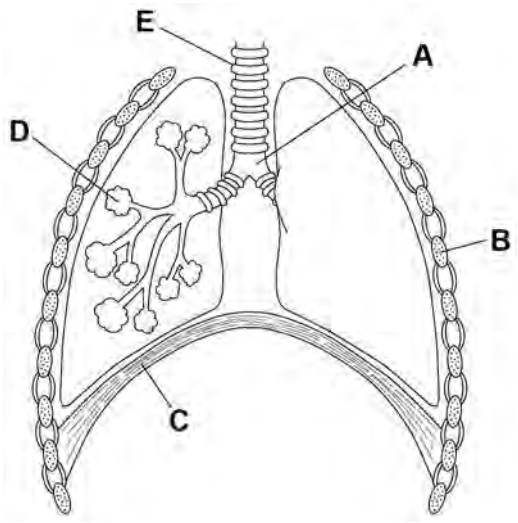
Tick (✓) **two** boxes.

- Axolotls are cheap to feed. ☐
- Axolotls are easy to breed. ☐
- Axolotls are endangered. ☐
- Axolotls live in water. ☐
- Axolotl research is cruel. ☐

Oxygen uptake in humans takes place in the lungs.

Figure 4 shows the human breathing system.

Figure 4



0 2 . 7 Where does oxygen enter the bloodstream?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

0 2 . 8 Name part **E** on **Figure 4**.

[1 mark]

0 2 . 9 Which blood vessel carries blood to the lungs?

[1 mark]

Tick (✓) **one** box.

Aorta ☐

Pulmonary artery ☐

Vena cava ☐

11

4.1.2.2 Mitosis and the cell cycle

Question 08

November 2020 | 8461/1F | Original Q2

0 2 This question is about cell division.

0 2 . 1 Which process makes two identical new body cells for growth and repair?

[1 mark]

Tick (✓) **one** box.

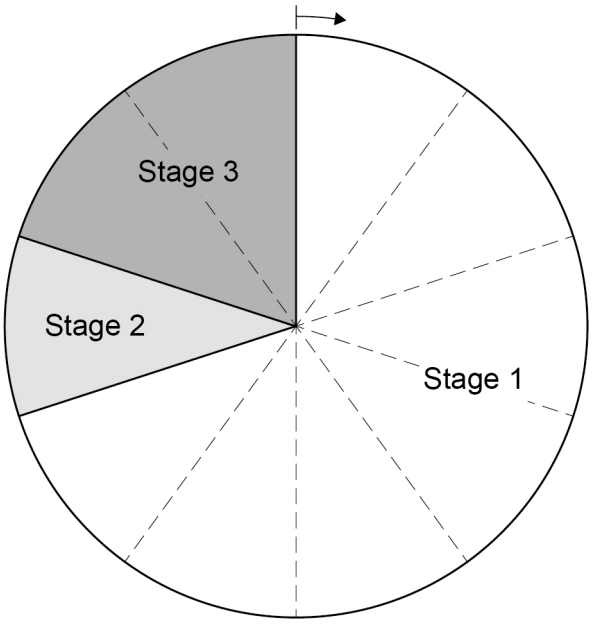
Differentiation ☐

Fertilisation ☐

Mitosis ☐

Figure 5 shows the three stages of a cell cycle.

Figure 5



4.1.2.2 Mitosis and the cell cycle

Question 08 · continued

0 2 . 2 Draw **one** line from each stage of the cell cycle to what happens during that stage.

[2 marks]

Stage of cell cycle	What happens during that stage
Stage 1	One set of chromosomes is pulled to each end of the cell
Stage 2	The cytoplasm and cell membrane divide to form two new cells
Stage 3	The cell grows and the chromosomes replicate

0 2 . 3 What percentage of the total time for the cell cycle is taken by stage 1?

[2 marks]

Percentage = _____ %

0 2 . 4 A cell divides to form two new cells every 24 hours.

How many days will it take for the original cell to divide into 8 cells?

[1 mark]

Tick (✓) **one** box.

1 ☐ 3 ☐ 6 ☐ 8 ☐

4.1.2.2 Mitosis and the cell cycle

Question 08 · continued

0 2 . 5 The chromosomes contain the genetic material.

Name the chemical which the genetic material is made from.

[1 mark]

0 2 . 6 The genetic material is made of many small sections.

Each section codes for a specific protein.

What is one section of genetic material on a chromosome called?

[1 mark]

Tick (✓) **one** box.

- A gamete ☐
- A gene ☐
- A nucleus ☐

0 2 . 7 Stem cells are cells which have **not** yet been specialised to carry out a particular job.

Bone marrow cells are one example of stem cells.

Explain how a transplant of bone marrow cells can help to treat medical conditions.

[2 marks]

10

4.1.2.2 Mitosis and the cell cycle

Question 09

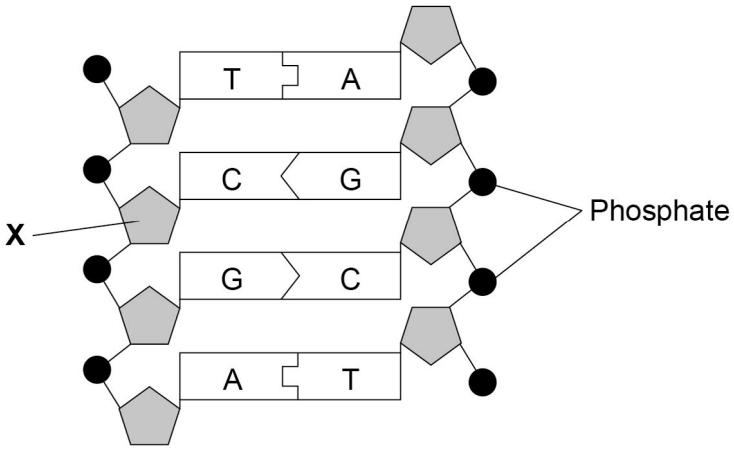
0 8 The nucleus of a cell contains DNA.

0 8 . 1 Name the structures inside the cell nucleus that contain DNA.

[1 mark]

Figure 13 shows part of a DNA molecule.

Figure 13



0 8 . 2 Name the part of the DNA molecule labelled **X**.

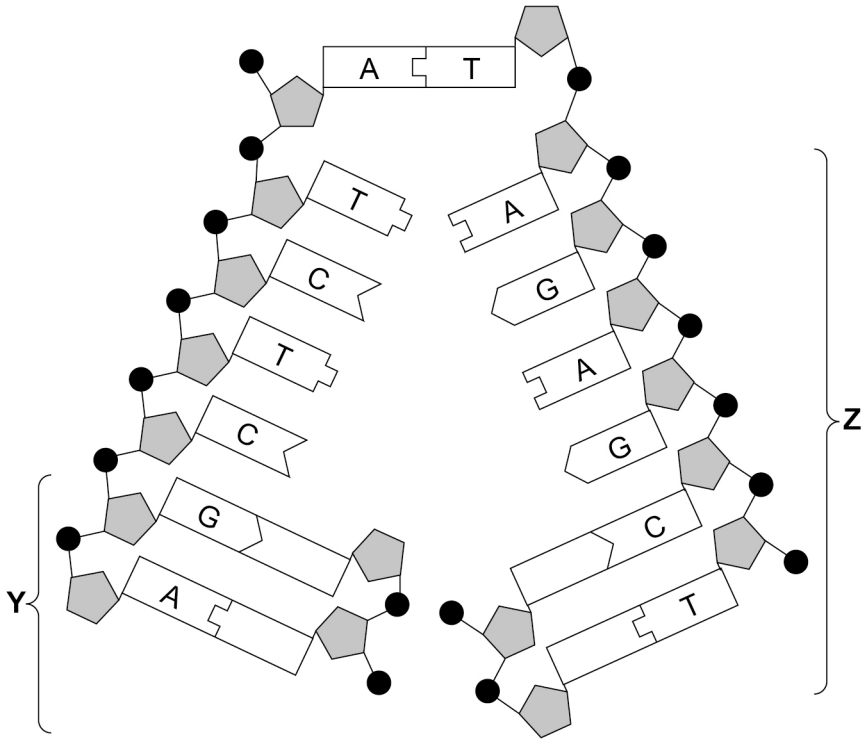
[1 mark]

0 8 . 3 What type of substances are labelled **A**, **C**, **G** and **T** in **Figure 13**?

[1 mark]

Figure 14 shows another section of a DNA molecule.

Figure 14



0 8 . 4 Four of the substances you named in Question **08.3** are **not** labelled in part **Y** of **Figure 14**.

Label each of these substances with the correct letter, **A**, **C**, **G** or **T**.

Use information from other parts of **Figure 14** to help you.

[1 mark]

0 8 . 5 What is happening to the DNA in part **Z** of **Figure 14**?

[1 mark]

Tick (✓) **one** box.

- Differentiation ☐
- Evolution ☐
- Fertilisation ☐
- Replication ☐

4.1.2.2 Mitosis and the cell cycle

Question 09 · continued

0 8 . 6 A gene is a length of DNA.

What type of substance does a gene code for?

[1 mark]

0 8 . 7 Most human body cells contain 6×10^{-12} grams of DNA.

What mass of DNA will a human sperm cell contain?

[1 mark]

Tick (✓) **one** box.

- 6×10^{-6} grams ☐
- 6×10^{-12} grams ☐
- 3×10^{-6} grams ☐
- 3×10^{-12} grams ☐

0 8 . 8 What is the name of the type of cell division that produces sperm cells?

[1 mark]

Tick (✓) **one** box.

- Binary fission ☐
- Differentiation ☐
- Meiosis ☐
- Mitosis ☐

8

4.1.2.2 Mitosis and the cell cycle

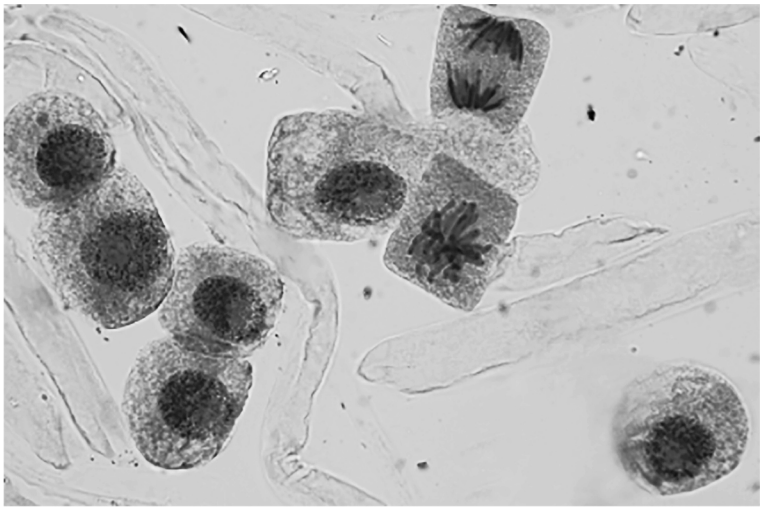
Question 10

June 2022 | 8461/1F | Original Q2

0 2 **Figure 1** shows animal cells.

Some of the cells are dividing by mitosis for growth and repair.

Figure 1



0 2 . 1 What fraction of the cells in **Figure 1** is dividing by mitosis?

[1 mark]

Tick (✓) **one** box.

$\frac{1}{8}$ ☐ $\frac{1}{4}$ ☐ $\frac{1}{2}$ ☐ $\frac{3}{4}$ ☐

0 2 . 2 The cells which are **not** dividing in **Figure 1** each contain 10 chromosomes.

One of these cells divides by mitosis to produce two new cells.

How many chromosomes will each new cell contain after mitosis?

[1 mark]

Tick (✓) **one** box.

5 ☐ 10 ☐ 15 ☐ 20 ☐

0 2 . 3 Cells divide in a series of stages called the cell cycle.

Complete the sentences.

Choose answers from the box.

[3 marks]

contracts	**divides**	**grows**
reacts	**relaxes**	**replicates**

Before mitosis occurs, the cell _____.

The genetic material in the cell doubles when the DNA _____.

After the chromosomes have been pulled to each end of the cell, the cytoplasm _____.

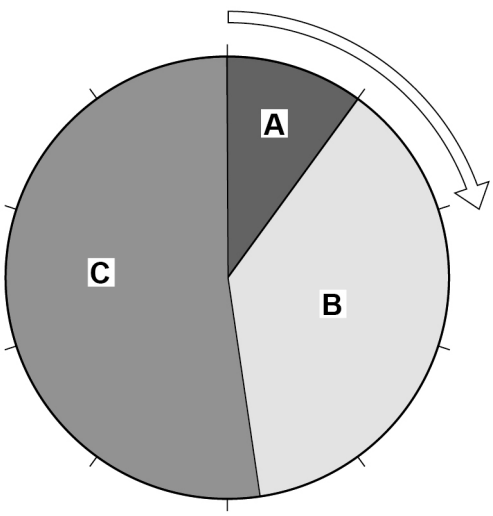
Question 2 continues on the next page

4.1.2.2 Mitosis and the cell cycle

Question 10 · continued

Figure 2 shows the time taken to complete different stages of the cell cycle.

Figure 2



0 2 . 4 Which stage of the cell cycle takes the most time?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐

0 2 . 5 What percentage of time in the cell cycle is stage **A**?

[1 mark]

Tick (✓) **one** box.

5% ☐ 10% ☐ 15% ☐ 25% ☐

4.1.2.2 Mitosis and the cell cycle

Question 10 · continued

Stem cells divide by mitosis.

Scientists can use stem cells from an embryo to create heart cells in a laboratory.

0 2 . 6 Which organ system contains heart cells?

[1 mark]

Tick (✓) **one** box.

- Circulatory system ☐
- Digestive system ☐
- Nervous system ☐
- Respiratory system ☐

0 2 . 7 Name **one** medical condition that could be treated using heart cells created from an embryo.

[1 mark]

0 2 . 8 Give **one** reason why a patient may **not** want to be treated with heart cells created from an embryo.

[1 mark]

10

4.1.2.2 Mitosis and the cell cycle

Question 11

June 2023 | 8461/1F | Original Q4

0 4 Malaria is caused by a protist.

The protist is passed from one person to another person by mosquitos.

0 4 . 1 Which term describes the mosquito?

[1 mark]

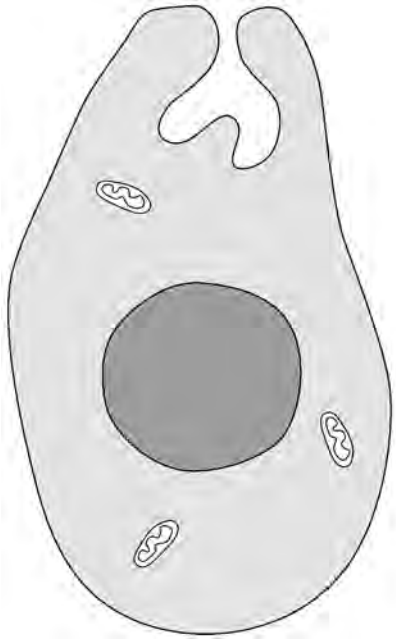
Tick (✓) **one** box.

- Bacterium ☐
- Gene ☐
- Vector ☐

0 4 . 2 The malarial protist is a eukaryotic cell.

Figure 2 shows a malarial protist.

Figure 2



4.1.2.2 Mitosis and the cell cycle

Question 11 · continued

Give **two** features of the malarial protist that show the cell is eukaryotic and **not** prokaryotic.

[2 marks]

1 _____

_____

2 _____

_____

0 4 . 3 Which organism is prokaryotic?

[1 mark]

Tick (✓) **one** box.

Cow ☐

Grass ☐

Salmonella ☐

0 4 . 4 The malarial protist reproduces asexually.

What is a feature of asexual reproduction?

[1 mark]

Tick (✓) **one** box.

Only one parent is involved. ☐

The offspring show genetic variation. ☐

Two gametes fuse. ☐

Question 4 continues on the next page

4.1.2.2 Mitosis and the cell cycle

Question 11 · continued

0 4 . 5 Mitosis occurs in the malarial protist during asexual reproduction.

The protist has 14 chromosomes.

How many chromosomes will each new protist cell have after mitosis?

[1 mark]

Tick (✓) **one** box.

7 ☐ 14 ☐ 21 ☐ 28 ☐

0 4 . 6 When a person has malaria, the protists destroy red blood cells.

What change would happen in the blood of a person with malaria?

[1 mark]

Tick (✓) **one** box.

Decreased antibodies ☐

Decreased haemoglobin ☐

Increased plasma ☐

Increased platelets ☐

4.1.2.2 Mitosis and the cell cycle

Question 11 · continued

0 4 . 7 It is estimated that 210 million people are infected with malaria every year. Half of these infected people survive the disease.

Calculate how many people would survive the disease in 3 years if the estimate is correct.

Give your answer in standard form.

[4 marks]

Number of people (in standard form) = _____

0 4 . 8 The spread of malaria can be controlled by using mosquito nets to avoid being bitten.

Describe **two** other ways that people can reduce the chance of being bitten by mosquitos.

Do **not** refer to mosquito nets in your answer.

[2 marks]

1 _____

2 _____

Question 4 continues on the next page

4.1.2.2 Mitosis and the cell cycle

Question 11 · continued

0 4 . 9 Different types of disease may interact.

Scientists studied how having disorder **S** interacts with malaria.

The scientists calculated the chance of children with disorder **S** getting malaria.

Table 4 shows the results.

Table 4

Age in years	Percentage (%) chance of children with disorder S getting malaria
2	70
4	65
6	50
8	45

Describe the trend shown in **Table 4**.

Use data from **Table 4**.

[2 marks]

15

4.1.2.2 Mitosis and the cell cycle

Question 12

June 2023 | 8461/1F | Original Q5

0 5 This question is about food and digestion.

0 5 . 1 Proteins are needed to make new body cells by mitosis.

Give **one** reason why a person needs new body cells.

[1 mark]

_____

_____

0 5 . 2 What are proteins made of?

[1 mark]

Tick (✓) **one** box.

- Amino acids ☐
- Fatty acids ☐
- Glucose ☐
- Starch ☐

0 5 . 3 Which chemical is used to test for protein in food?

[1 mark]

Tick (✓) **one** box.

- Benedict's reagent ☐
- Biuret reagent ☐
- Ethanol ☐

0 5 . 4 What colour would be seen in a positive test for protein?

[1 mark]

Tick (✓) **one** box.

- Black ☐
- Purple ☐
- Red ☐
- White ☐

Enzymes break down food molecules in the human body.

0 5 . 5 Characteristics of enzymes are linked to their function.

Draw **one** line from each characteristic to its effect on enzyme function.

[2 marks]

Characteristic	Effect on enzyme function
Has a special shape	Only fits one molecule
Is a catalyst	Speeds up reactions
	Works fast at high pH

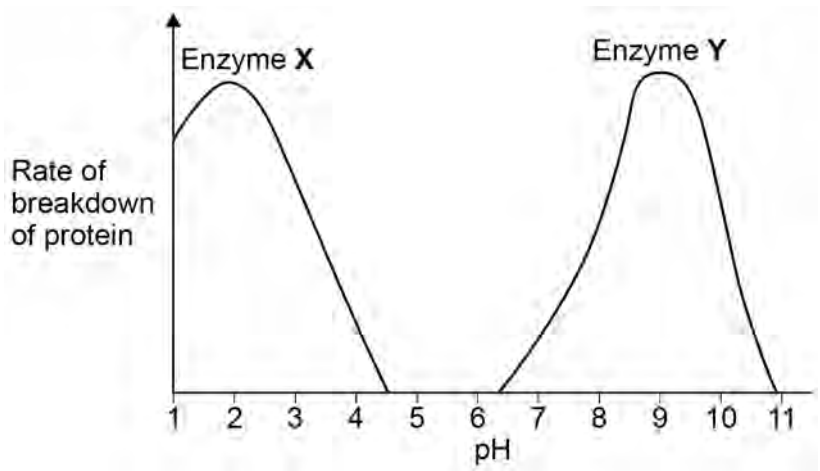
Question 5 continues on the next page

4.1.2.2 Mitosis and the cell cycle

Question 12 · continued

Figure 3 shows how pH affects the rate of breakdown of protein.

Figure 3



0 5 . 6 Which pH does enzyme **Y** work fastest at?

[1 mark]

pH = _____

0 5 . 7 Explain why enzyme **X** works best in the stomach.

[2 marks]

_____

_____

_____

_____

4.1.2.2 Mitosis and the cell cycle

Question 12 · continued

0 5 . 8 Complete the sentences.

Choose answers from the box.

[2 marks]

active site	**antigen**	**glucose**	**starch**	**substrate**

Enzyme **Y** does **not** break down protein at pH 6 because the shape of the enzyme has changed.

The part of the enzyme that changes shape is

the _____.

The change in shape means the enzyme cannot bind to

the _____.

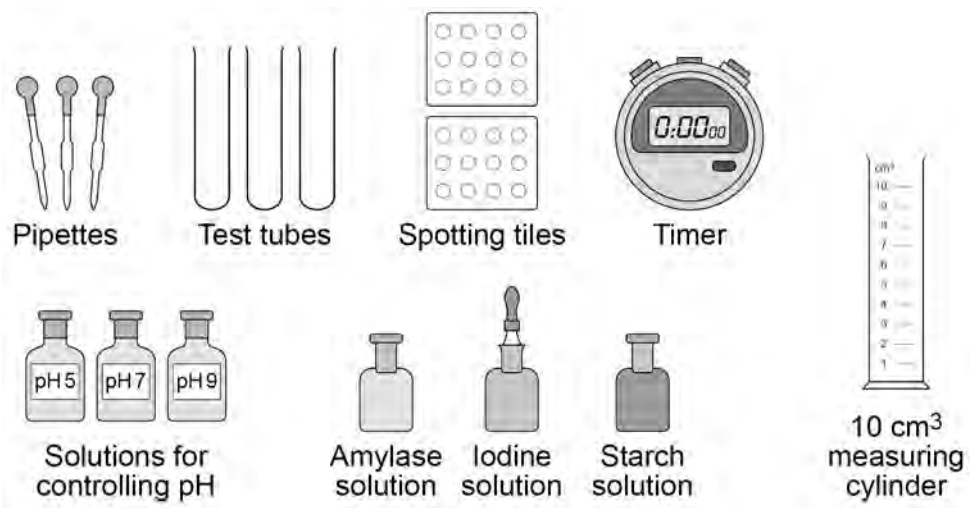
Question 5 continues on the next page

0 5 . 9 Amylase is an enzyme which breaks down starch.

A student investigated the effect of pH on the rate of starch breakdown by amylase.

Figure 4 shows some of the apparatus the student used.

Figure 4



Describe a method to investigate the effect of pH on the rate of starch breakdown by amylase.

You should include the apparatus shown in **Figure 4**.

[6 marks]

4.1.2.2 Mitosis and the cell cycle

Question 13

June 2024 | 8461/1F | Original Q5

0 5 Cancer occurs when there is uncontrolled cell division.

0 5 . 1 Which **two** factors can cause cancer?

[2 marks]

Tick (✓) **two** boxes.

- Antibiotics ☐
- Ionising radiation ☐
- Monoclonal antibodies ☐
- Salmonella ☐
- Viruses ☐

0 5 . 2 What type of cell division occurs in cancerous cells?

[1 mark]

Tick (✓) **one** box.

- Binary fission ☐
- Fertilisation ☐
- Mitosis ☐

4.1.2.2 Mitosis and the cell cycle

Question 13 · continued

June 2024 | 8461/1F | Original Q5

0 5 . 3 Complete the sentences.

Choose answers from the box.

[2 marks]

decrease	**fertilise**	**grow**	**replicate**

Before a cell divides, the cell needs to _____.

Before a cell divides, the DNA in the nucleus needs to _____.

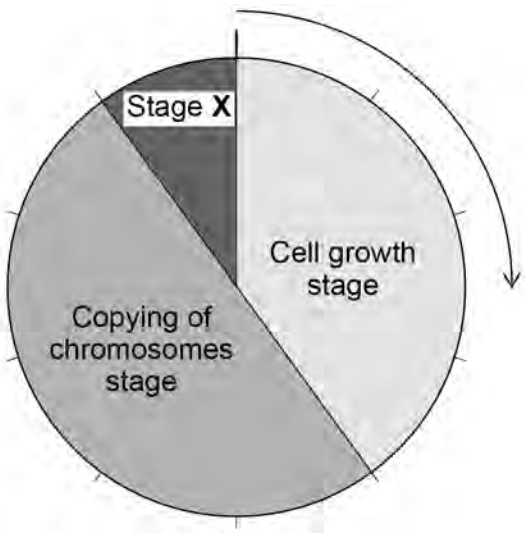
Question 5 continues on the next page

4.1.2.2 Mitosis and the cell cycle

Question 13 · continued

Figure 4 shows the cell cycle.

Figure 4



0 5 . 4 What percentage of the time taken for the cell cycle does the cell growth stage take?

Use **Figure 4**.

[1 mark]

Tick (✓) **one** box.

10% ☐ 20% ☐ 40% ☐ 90% ☐

0 5 . 5 What happens during stage **X** of the cell cycle in **Figure 4**?

[1 mark]

Tick (✓) **one** box.

Chromosomes are pulled to each end of the cell. ☐

The cell increases in size and mass. ☐

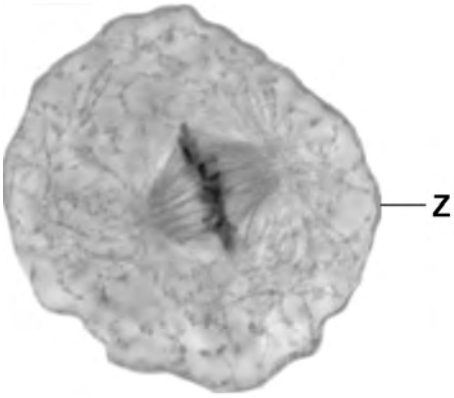
The number of mitochondria increases. ☐

4.1.2.2 Mitosis and the cell cycle

Question 13 · continued

Figure 5 shows an animal cell during cell division.

Figure 5



0 5 . 6 Name structure **Z** in **Figure 5**.

[1 mark]

Question 5 continues on the next page

4.1.2.2 Mitosis and the cell cycle

Question 13 · continued

0 5 . 7 The image of the cell in **Figure 5**:

- is magnified 800 times
- has a width of 50 mm.

Calculate the real width of the cell in **Figure 5**.

Give your answer in micrometres (µm).

Use the equation:

$$\text{real width of cell} = \frac{\text{width of image of cell}}{\text{magnification}}$$

1 mm = 1000 µm

[3 marks]

Real width of cell = _____ µm

4.1.2.2 Mitosis and the cell cycle

Question 13 · continued

June 2024 | 8461/1F | Original Q5

Some drugs can treat cancer.

0 5 . 8 Complete the sentences.

Choose answers from the box.

[2 marks]

cells	**people**	**plants**	**viruses**

Preclinical testing of cancer drugs is done using _____.

To check if the drug is safe, the drug is tested on _____.

0 5 . 9 In drug trials some patients are given a tablet which does **not** contain the drug.

What name is given to the tablet that does **not** contain the drug?

[1 mark]

_____

14

4.1.2.2 Mitosis and the cell cycle

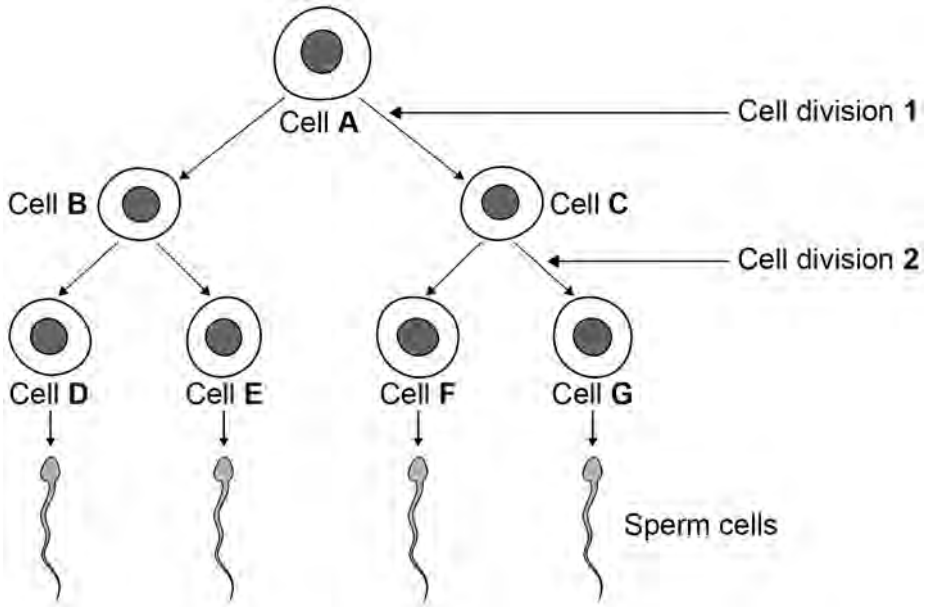
Question 14

June 2025 | 8461/2F | Original Q3

0 3 New cells are produced by cell division.

Figure 5 shows sperm formation in a human.

Figure 5



0 3 . 1 Where in the body are sperm cells produced?

[1 mark]

_____

0 3 . 2 How many chromosomes are there in cell **A** and in cell **D**?

Choose answers from the box.

[2 marks]

23	24	46	92

Cell **A** _____

Cell **D** _____

4.1.2.2 Mitosis and the cell cycle

Question 14 · continued

June 2025 | 8461/2F | Original Q3

0 3 . 3 Complete the sentence.

Choose the answer from the box.

[1 mark]

differentiation	evolution	fertilisation

A sperm cell joins with an egg cell in a process called _____.

Question 3 continues on the next page

4.1.2.2 Mitosis and the cell cycle

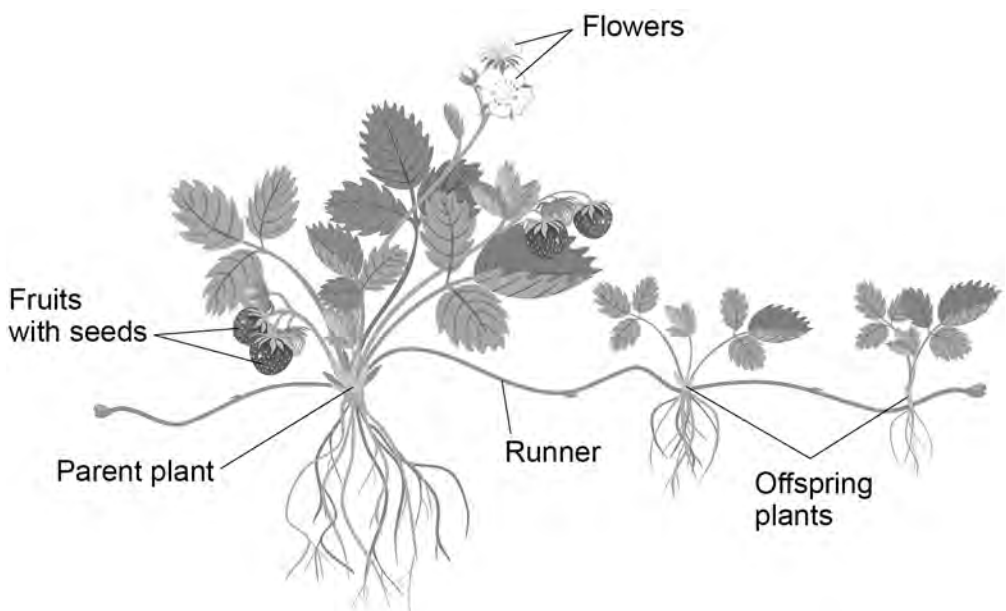
Question 14 · continued

Strawberry plants can reproduce both sexually and asexually.

Figure 6 shows a strawberry plant reproducing:

- sexually, using flowers, fruits and seeds
- asexually, using horizontal stems called runners.

Figure 6



0 3 . 4 Meiosis produces gametes.

What is the name of the male gamete in a flower?

[1 mark]

Tick (✓) **one** box.

Embryo ☐

Ovum ☐

Pollen ☐

4.1.2.2 Mitosis and the cell cycle

Question 14 · continued

0 3 . 5 Which process produces new cells in runners?

[1 mark]

Tick (✓) **one** box.

- Binary fission ☐
- Evolution ☐
- Mitosis ☐

0 3 . 6 Substances used for growth pass through the runners from the parent plant to the offspring plants.

Which **two** substances pass through the runners?

[2 marks]

Tick (✓) **two** boxes.

- Carbon dioxide ☐
- DNA ☐
- Insulin ☐
- Sugar ☐
- Water ☐

Question 3 continues on the next page

4.1.2.2 Mitosis and the cell cycle

Question 14 · continued

Sexual reproduction and asexual reproduction each have different advantages for the strawberry plant.

0 3 . 7 Give **one** advantage of reproducing **sexually**.

[1 mark]

0 3 . 8 Give **one** advantage of reproducing **asexually**.

[1 mark]

10