AQA GCSE Combined Science - Trilogy | 8464

SPECIFICATION POINT 4.6.1.2

Meiosis

Past-paper questions

Tier	**Foundation**
Question groups	**3**
Available paper years	**2018–2024**

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.

4.6.1.2 Meiosis

Question 01

June 2018 | 8464/B/2F | Original Q2

0 2 The genetic material in cells is made of DNA.

0 2 . 1 Which **two** of the following describe the structure of DNA?

[2 marks]

Tick **two** boxes.

- A double helix ☐
- A monomer ☐
- A polymer ☐
- A protein ☐
- A single strand ☐

0 2 . 2 Complete the sentences.

Choose answers from the box.

[2 marks]

clone	**disorder**	**gene**
genome		**mutation**

A small section of DNA which codes for one protein is called a _____ .

All the genetic material of an organism is called its _____ .

0 2 . 3 Gametes (sex cells) contain half the amount of DNA compared to body cells.

Give the names of the **two** types of gametes in humans.

[1 mark]

_____ and _____

0 2 . 4 What is the process called when the gametes join?

[1 mark]

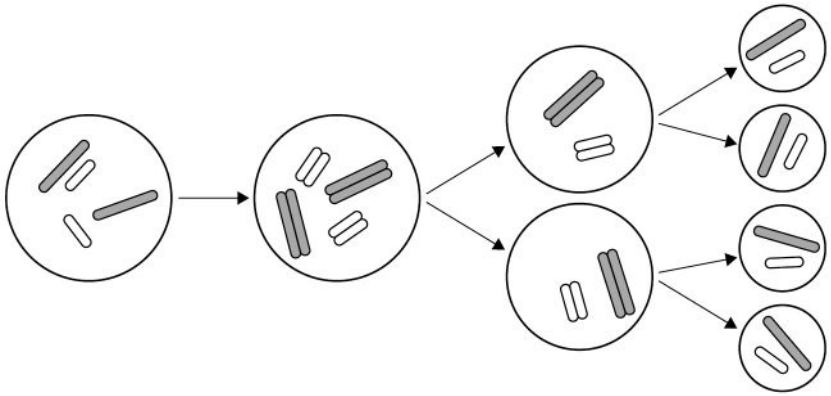
_____

4.6.1.2 Meiosis

Question 01 · continued

0 2 . 5 **Figure 1** shows cell division by meiosis to form gametes.

Figure 1



Which **two** features in **Figure 1** show that this cell division is meiosis and **not** mitosis?

[2 marks]

Tick **two** boxes.

- The cell divides twice ☐
- The chromosomes pull apart into the new cells ☐
- The cytoplasm divides into new cells ☐
- The DNA is copied ☐
- The new cells have half the number of chromosomes ☐

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4.6.1.2 Meiosis

Question 02

June 2022 | 8464/B/1F | Original Q6

0 6 This question is about cell division.

0 6 . 1 Write the biological structures from the box in the correct order of size.

[1 mark]

cell	**chromosome**	**gene**	**nucleus**

Smallest ↓ Largest

_____

_____

_____

_____

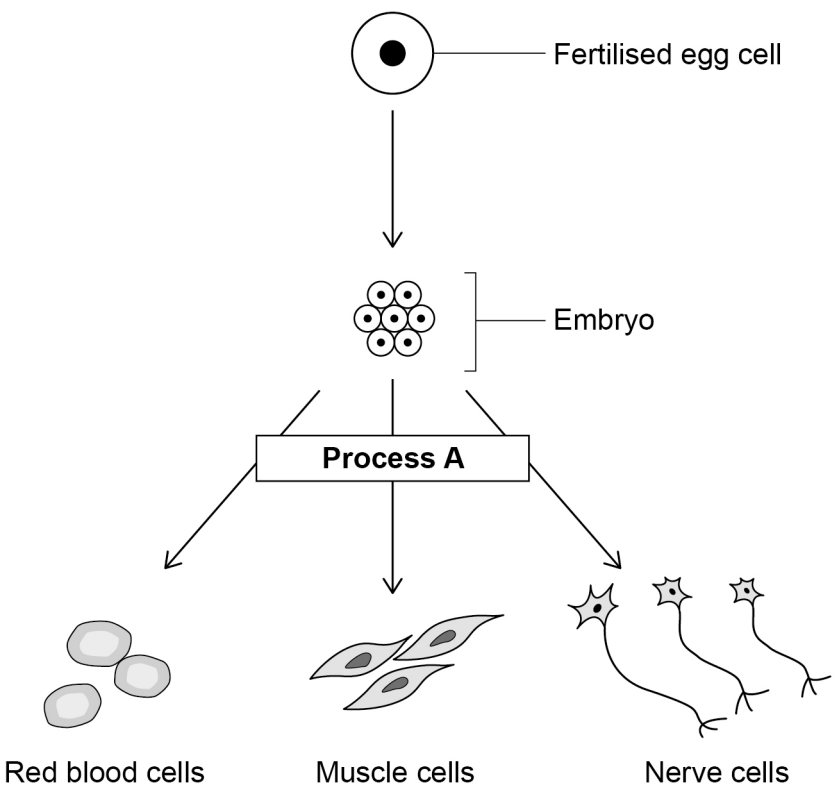
Question 6 continues on the next page

4.6.1.2 Meiosis

Question 02 · continued

Figure 9 shows how a fertilised egg cell can produce specialised cells.

Figure 9



0 6 . 2 Name **Process A**.

[1 mark]

0 6 . 3 How many cell divisions are needed to form a 16-cell embryo from the original fertilised egg cell?

[1 mark]

Number of cell divisions = _____

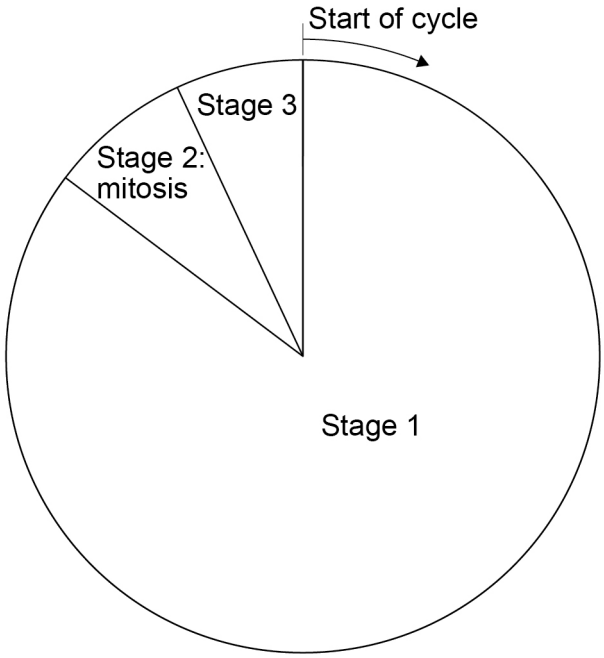
0 6 . 4 In humans a fertilised egg cell contains 23 pairs of chromosomes.

How many chromosomes will there be in each of the embryo cells?

[1 mark]

0 6 . 5 **Figure 10** represents a cell cycle for a human embryonic cell.

Figure 10



Describe **one** change in the cell that occurs during **each** of the stages of the cell cycle.

[3 marks]

Stage 1 _____

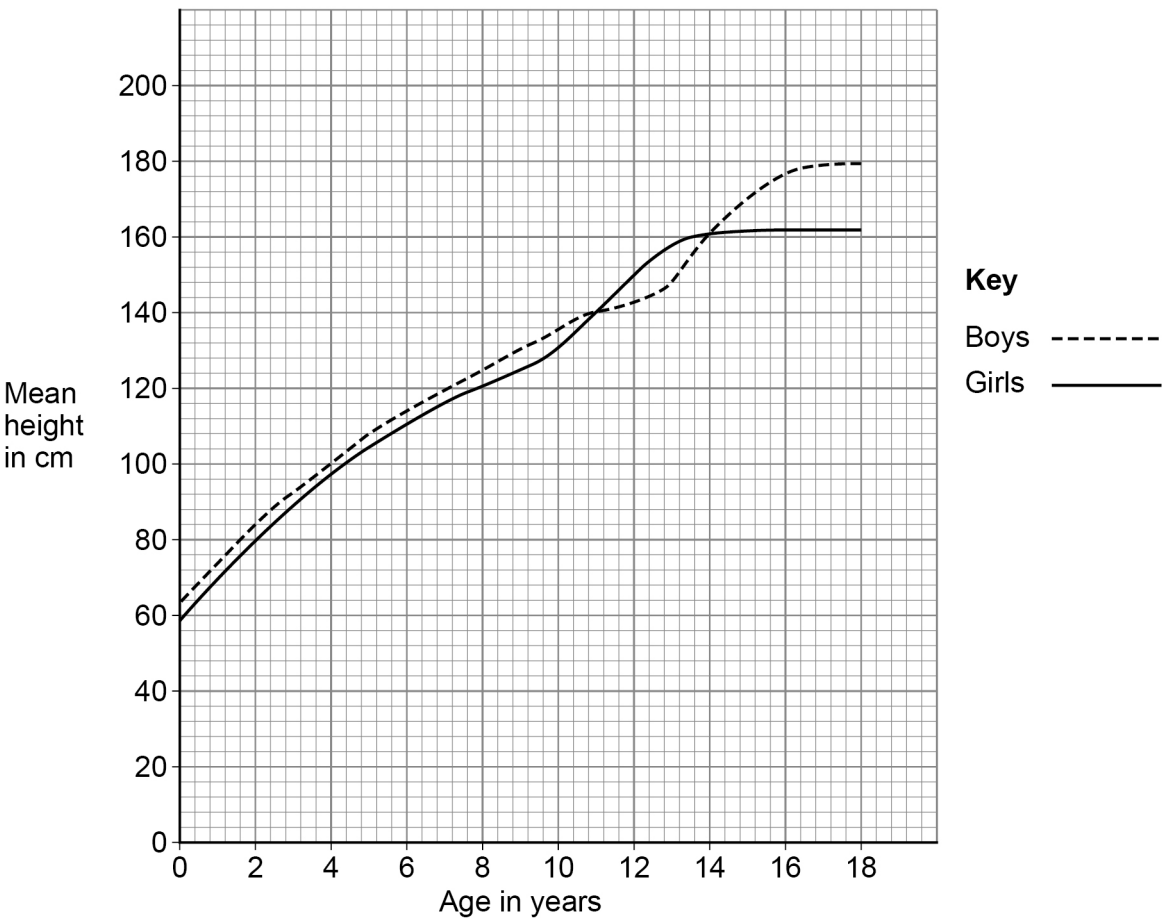
Stage 2 _____

Stage 3 _____

Cell division is important in the growth of multicellular organisms.

0 6 . 6 **Figure 11** shows the mean height of boys and of girls from birth to age 18 years.

Figure 11



4.6.1.2 Meiosis

Question 02 · continued

Compare the growth of boys with the growth of girls.

Use data from **Figure 11** in your answer.

[6 marks]

0 6 . 7 Give **one** way that cell division by mitosis is important in **fully grown** animals.

[1 mark]

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4.6.1.2 Meiosis

Question 03

June 2024 | 8464/B/2F | Original Q6

0 6 Potatoes are a food crop.

0 6 . 1 Potato plants are classified as eukaryota.

What type of classification group is eukaryota?

[1 mark]

Tick (✓) **one** box.

- Class ☐
- Domain ☐
- Kingdom ☐
- Phylum ☐

0 6 . 2 Potato plants can reproduce by asexual reproduction.

Which statement is true for asexual reproduction?

[1 mark]

Tick (✓) **one** box.

- Meiosis occurs. ☐
- Offspring are genetically identical. ☐
- Pollen and egg cells are produced. ☐

Question 6 continues on the next page

4.6.1.2 Meiosis

Question 03 · continued

0 6 . 3 Flowers of potato plants contain gametes for sexual reproduction.

How is a gamete different from other cells in a potato plant?

[1 mark]

Tick (✓) **one** box.

A gamete contains one-quarter of the number of chromosomes. ☐

A gamete contains half of the number of chromosomes. ☐

A gamete contains double the number of chromosomes. ☐

0 6 . 4 Plants in the same genus as potatoes have been studied by scientists.

Describe **one** way a new plant species could be identified as being in the same genus as potatoes.

[1 mark]

4.6.1.2 Meiosis

Question 03 · continued

0 6 . 5 Scientists have collected and stored seeds from species in the same genus as potatoes.

In the future, these seeds may be used for genetic modification of potato plants.

Genetically modified potato plants could help supply food to the human population as the climate changes.

Explain why genetic modification of crop plants may be important for the human population to survive climate change.

[6 marks]

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