AQA GCSE Biology | 8461

SPECIFICATION POINT 4.6.2.3

Selective breeding

Past-paper questions

Tier	**Foundation**
Question groups	**2**
Available paper years	**2023–2024**

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.

4.6.2.3 Selective breeding

Question 01

June 2023 | 8461/2F | Original Q9

0 9 Reproduction can produce offspring which are:

- genetically different

  or

- genetically identical.

Farmers grow tomato plants in greenhouses.

The tomatoes are sold in supermarkets.

0 9 . 1 Suggest **one** advantage of growing tomato plants that are genetically different.

[1 mark]

0 9 . 2 Suggest **one** advantage of growing tomato plants that are genetically identical.

[1 mark]

0 9 . 3 Scientists can grow genetically identical tomato plants using tissue culture.

What is tissue culture?

[1 mark]

0 9 . 4 Genetically identical tomato plants growing in the same garden do **not** all grow to the same height.

Give **one** reason why.

[1 mark]

4.6.2.3 Selective breeding

Question 01 · continued

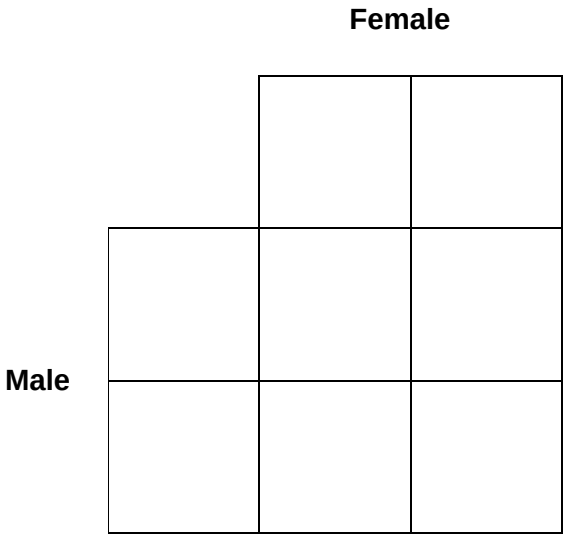
The sex of dogs is determined by **X** and **Y** chromosomes in the same way as in humans.

0 9 . 5 Complete the Punnett square diagram in **Figure 15** to show the inheritance of sex in dogs.

Use the symbols **X** and **Y**.

[3 marks]

Figure 15



0 9 . 6 A female dog gave birth to six offspring.

Why would you expect there to be three male offspring and three female offspring?

Use your answer to Question **09.5**.

[1 mark]

Question 9 continues on the next page

Question 01 · continued

Farmers keep chickens for:

- meat production
- egg production.

Some varieties of chicken grow more quickly and are more suitable for meat production.

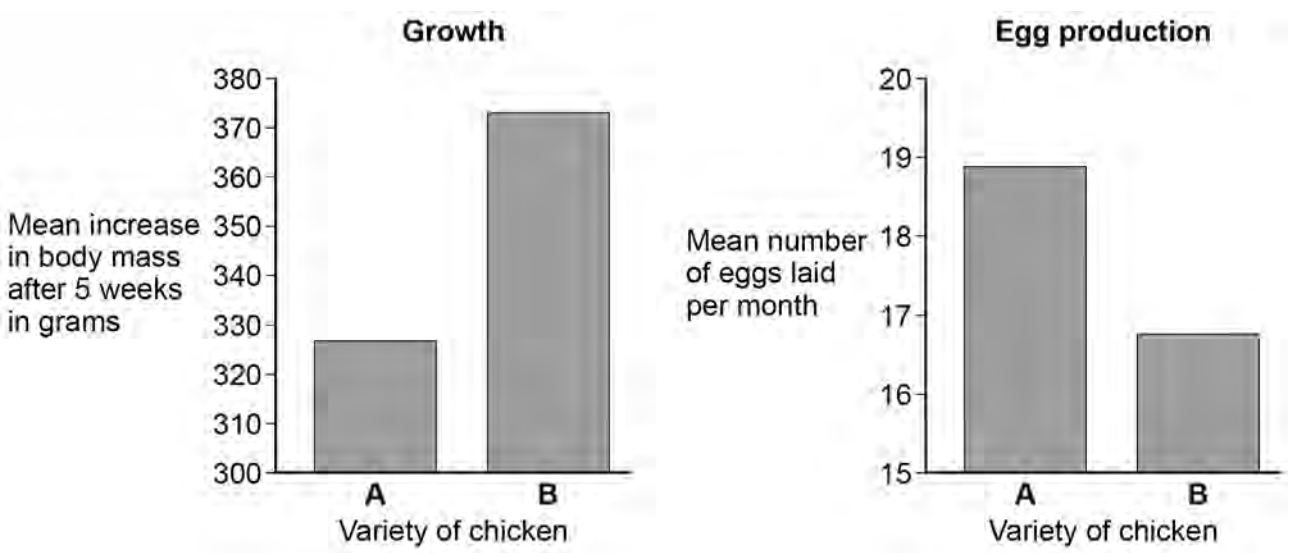
Other varieties of chicken produce more eggs.

A farmer keeps two varieties of chicken, **A** and **B**.

The farmer investigated the growth rates and egg-production rates of both varieties.

Figure 16 shows the results.

Figure 16



0 9 . 7 Suggest **two** control variables the farmer should have used in this investigation.

[2 marks]

1 _____

_____

2 _____

_____

4.6.2.3 Selective breeding

Question 01 · continued

0 9 . 8 **Figure 16** shows mean values from 500 chickens of each variety.

Give the reason the farmer used a large number of chickens.

[1 mark]

0 9 . 9 The farmer wants to produce a new variety of chicken that is good for **both** meat production **and** egg production.

Describe how selective breeding of chicken varieties **A** and **B** can produce the new variety of chicken.

[4 marks]

15

4.6.2.3 Selective breeding

Question 02

0 2 Carl Linnaeus invented a classification system that places organisms into groups.

0 2 . 1 What is the name of the largest classification group in Linnaeus's system?

[1 mark]

Tick (✓) **one** box.

- Family ☐
- Kingdom ☐
- Order ☐

0 2 . 2 Linnaeus gave each species a binomial name.

Which **two** classification groups form the binomial name?

[2 marks]

Tick (✓) **two** boxes.

- Class ☐
- Genus ☐
- Order ☐
- Phylum ☐
- Species ☐

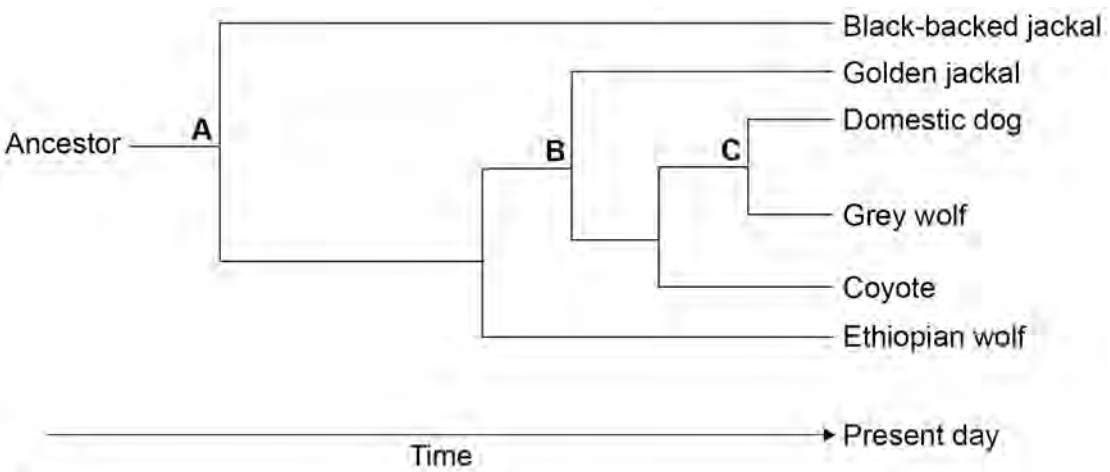
Question 2 continues on the next page

Question 02 · continued

Scientists think that the animals in **Figure 2** all evolved from an ancestor that lived about 6 million years ago.

Figure 2 shows how the animals may have evolved.

Figure 2



Key

A 6 million years ago
B 3 million years ago
C 32 thousand years ago

0 2 . 3 What was the **most recent** time that the domestic dog and the golden jackal shared a common ancestor?

[1 mark]

Tick (✓) **one** box.

32 thousand years ago ☐

3 million years ago ☐

6 million years ago ☐

4.6.2.3 Selective breeding

Question 02 · continued

0 2 . 4 Which present-day animal in **Figure 2** is the **most distant** relative of the domestic dog?

[1 mark]

Question 2 continues on the next page

4.6.2.3 Selective breeding

Question 02 · continued

Scientists think the grey wolf and the domestic dog had a common ancestor.

The common ancestor:

- lived about 32 thousand years ago
- is now extinct.

0 2 . 5 Give **two** possible causes of extinction.

[2 marks]

1 _____

_____

2 _____

_____

0 2 . 6 32 thousand years ago, humans hunted other animals for food.

Wolves also hunted other animals for food.

Suggest **one** reason why wolves began to follow groups of humans.

[1 mark]

_____

_____

0 2 . 7 Some wolves are more aggressive than other wolves.

Describe how selective breeding of wolves could produce a domestic animal that is less aggressive than the wolf.

[2 marks]

_____

_____

_____

_____

10