AQA GCSE Combined Science - Trilogy | 8464

SPECIFICATION POINT 4.6.1.5

Inherited disorders

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.

4.6.1.5 Inherited disorders

Question 01

June 2023 | 8464/B/2F | Original Q6

0 6 Sexual reproduction in humans involves the production of egg cells and sperm cells.

0 6 . 1 Name the type of cell division that produces egg cells and sperm cells.

[1 mark]

_____

0 6 . 2 Sexual reproduction produces offspring that are genetically different from each other.

Give **two** reasons why sexual reproduction causes variation in the offspring.

[2 marks]

1 _____

_____

2 _____

_____

Question 6 continues on the next page

4.6.1.5 Inherited disorders

Question 01 · continued

Polydactyly is an inherited disorder.

The allele for polydactyly is dominant, **D**.

A person with two copies of the allele **d** will **not** have polydactyly.

0 6 . 3 A person with the genotype **DD** is homozygous.

What word describes the genotype **Dd**?

[1 mark]

_____

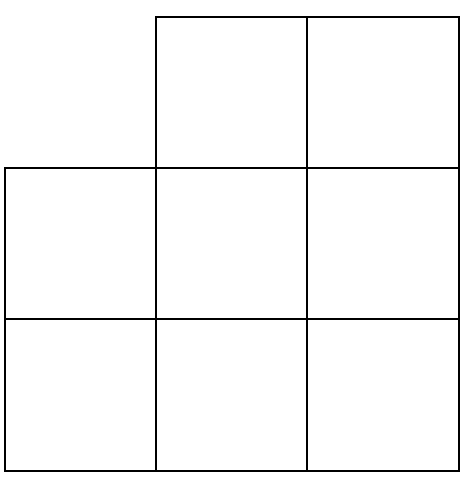
0 6 . 4 A person with the genotype **Dd** and a person with the genotype **dd** plan to have a child.

Determine the probability that the child will have polydactyly.

You should:

- complete the Punnett square diagram
- identify any offspring genotype that would have polydactyly.

[5 marks]



Probability that the child will have polydactyly = _____

4.6.1.5 Inherited disorders

Question 01 · continued

0 6 . 5 Embryos can be screened for the alleles that cause inherited disorders.

Give **two** advantages of embryo screening.

[2 marks]

1 _____

_____

2 _____

_____

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Turn over for the next question

4.6.1.5 Inherited disorders

Question 02

0 1 Cystic fibrosis is a genetic disorder.

0 1 . 1 Cystic fibrosis affects the movement of substances into and out of cells.

Which part of a cell controls the movement of substances into and out of the cell?

[1 mark]

Tick (✓) **one** box.

Cell membrane ☐

Cytoplasm ☐

Mitochondria ☐

Cystic fibrosis is caused by a recessive allele, **b**.

0 1 . 2 What name is given to the allele **B**?

[1 mark]

Tick (✓) **one** box.

DNA ☐

Dominant ☐

Gene ☐

0 1 . 3 Which term describes the genotype **Bb**?

[1 mark]

Tick (✓) **one** box.

Chromosome ☐

Heterozygous ☐

Phenotype ☐

4.6.1.5 Inherited disorders

Question 02 · continued

0 1 . 4 Two people plan to have a child.

Both people have the genotype **Bb**.

Complete **Figure 1** to show the possible genotypes of the child.

[3 marks]

Figure 1

		Parent 1	
		B	
Parent 2	**B**	BB	
	b		

0 1 . 5 What is the chance that a child of these parents will have cystic fibrosis?

Use **Figure 1**.

[1 mark]

Tick (✓) **one** box.

0% ☐ 25% ☐ 50% ☐ 75% ☐

Question 1 continues on the next page

4.6.1.5 Inherited disorders

Question 02 · continued

0 1 . 6 An embryo can be tested to find out its genotype.

What is the name of the testing process?

[1 mark]

Tick (✓) **one** box.

Genetic engineering ☐

Screening ☐

Selective breeding ☐

0 1 . 7 Inherited disorders can be caused by changes in DNA.

What is the name of a change in DNA?

[1 mark]

Tick (✓) **one** box.

Genome ☐

Helix ☐

Mutation ☐

0 1 . 8 Inheritance is one cause of variation in a population.

Environmental factors also cause variation in a population.

Suggest **one** environmental cause of variation in a human population.

Do **not** refer to inheritance or to changes in DNA in your answer.

[1 mark]

_____

_____

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