BIOLOGY YEAR 12 - MODULE 6 - LESSON 1

Mutation, Alleles and Genetic Change

Use this worksheet after reading the lesson to practise the key ideas and prove you can meet the success criteria.

Name _____

Date _____

Class _____

1. Key Ideas

Bacteria do not mutate because they need antibiotic resistance. Random mutations occur first, and natural selection later increases the frequency of any allele that happens to help survival. Module 6 starts by separating new allele creation from the reshuffling of alleles that already exist.

- Mutation creates new alleles.
- Random mutation and natural selection are separate steps.

2. Success Criteria

By the end, you should be able to:

- Mutation creates new alleles.
- Meiosis and fertilisation usually reshuffle existing alleles.
- The gene pool is population-level, not individual-level.

3. Key Terms

Mutation
A change in the DNA sequence. Mutation is the source of new alleles.

Allele
A variant form of a gene found at the same locus on homologous chromosomes.

Gene pool
The total collection of alleles present in a population.

Genetic variation
Differences in genetic makeup between individuals in a population.

Natural genetic change
Change arising through processes such as mutation, meiosis, fertilisation and population processes.

Induced genetic change
Genetic change caused or directed by human technologies such as cloning, recombinant DNA and gene editing.

4. Activity: Build the Lesson Map

Use the lesson to complete the table. Keep answers brief but specific.

Prompt	Your answer
Main concept	
Important example	
Common mistake to avoid	
How this links to the next lesson	

5. Short Answer Questions

1. Explain this lesson goal in your own words: "Mutation creates new alleles.". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "Meiosis and fertilisation usually reshuffle existing alleles.". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Mutation, Alleles and Genetic Change: "The gene pool is population-level, not individual-level.".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Mutation, Alleles and Genetic Change but does not use evidence or reasoning.

Improve the answer by writing a stronger response that uses accurate terminology, a relevant example and a clear explanation.

7. Multiple Choice

1. What is the best first step when answering a question about Mutation, Alleles and Genetic Change?

☐ A. Identify the key concept being tested

☐ B. Write every fact from memory

☐ C. Ignore the command word

☐ D. Skip examples and evidence

2. Which answer would show stronger understanding of Mutation, Alleles and Genetic Change?

☐ A. An answer with accurate terms and reasoning

☐ B. A copied definition only

☐ C. A single-word response

☐ D. An answer with no example

3. What should you do if a question asks you to explain?

☐ A. Link the idea to a reason or cause

☐ B. List unrelated facts

☐ C. Only draw a diagram

☐ D. Write the shortest possible answer

8. Success Criteria Proof

Finish with evidence that you can do each success criterion.

SUCCESS CRITERION 1

Prove that you can: Mutation creates new alleles.

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: Meiosis and fertilisation usually reshuffle existing alleles.

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: The gene pool is population-level, not individual-level.

BAND 5 4 MARKS

One thing I still need help with: