BIOLOGY YEAR 12 - MODULE 5 - LESSON 7

Mitosis - Maintaining Genetic Stability in Somatic Cells

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

When you heal a cut or grow from childhood to adulthood, cells are dividing constantly. Those new cells must usually keep the same chromosome number and the same core hereditary information as the original body cells. Mitosis is the process that makes that possible.

- That DNA is replicated before mitosis begins.
- Why mitosis supports growth and tissue repair.

2. Success Criteria

By the end, you should be able to:

- That DNA is replicated before mitosis begins.
- The main stages of mitosis at HSC depth.
- That chromosome number is maintained in daughter cells.

3. Key Terms

Mitosis
Cell division that produces two daughter cells with the same chromosome number as the parent somatic cell.

Somatic cell
A body cell that is not a gamete.

Chromosome
A condensed DNA-protein structure carrying hereditary information.

Chromatid
One of two identical copies of a replicated chromosome joined together before separation.

Cytokinesis
Division of the cytoplasm to form separate daughter cells.

Genetic stability
Maintenance of the correct chromosome number and hereditary information in daughter cells.

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: "That DNA is replicated before mitosis begins.". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "The main stages of mitosis at HSC depth.". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Mitosis - Maintaining Genetic Stability in Somatic Cells: "That chromosome number is maintained in daughter cells.".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Mitosis - Maintaining Genetic Stability in Somatic Cells 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 Mitosis - Maintaining Genetic Stability in Somatic Cells?

☐ 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 Mitosis - Maintaining Genetic Stability in Somatic Cells?

☐ 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: That DNA is replicated before mitosis begins.

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: The main stages of mitosis at HSC depth.

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: That chromosome number is maintained in daughter cells.

BAND 5 4 MARKS

One thing I still need help with: