MATHEMATICS ADVANCED YEAR 11 - MODULE 1 - LESSON 1

Functions & Relations

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

Every time your phone recognises your face, it relies on a simple mathematical rule: one input, one output. That's the essence of a function — and it governs far more than just your lock screen.

- The definition of a function and a relation
- Why a function allows only one output per input

2. Success Criteria

By the end, you should be able to:

- The definition of a function and a relation
- How to use function notation $f(x)$
- The vertical line test

3. Key Terms

Function
A relation where each input has exactly one output.

Domain
The set of all possible input values for a function.

Range
The set of all possible output values for a function.

Inverse Function
A function that reverses the effect of the original function.

Quadratic
A polynomial of degree 2, in the form $ax^2 + bx + c$.

Discriminant
The expression $b^2 - 4ac$ that determines the nature of quadratic roots.

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: "The definition of a function and a relation". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "How to use function notation $f(x)$". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Functions & Relations: "The vertical line test".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Functions & Relations 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 Functions & Relations?

☐ 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 Functions & Relations?

☐ 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: The definition of a function and a relation

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: How to use function notation $f(x)$

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: The vertical line test

BAND 5 4 MARKS

One thing I still need help with: