MATHEMATICS ADVANCED YEAR 11 - MODULE 1 - LESSON 13

Sketching & Modelling Transformed Functions

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

Architects do not draw every brick when they design a bridge. They start with a simple curve — usually a parabola — then stretch it, flip it, and move it until it fits the towers. In this lesson, you will learn to do the same thing: sketch any transformed function by tracking its key features, and use transformations to build mathematical models of real-world situations.

- The standard features that define the shape of a function's graph
- Why tracking key features is more efficient than plotting every point

2. Success Criteria

By the end, you should be able to:

- The standard features that define the shape of a function's graph
- How each transformation affects intercepts, turning points, and asymptotes
- Common parent functions used in modelling

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 standard features that define the shape of a function's graph". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "How each transformation affects intercepts, turning points, and asymptotes". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Sketching & Modelling Transformed Functions: "Common parent functions used in modelling".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Sketching & Modelling Transformed Functions 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 Sketching & Modelling Transformed Functions?

☐ 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 Sketching & Modelling Transformed Functions?

☐ 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 standard features that define the shape of a function's graph

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: How each transformation affects intercepts, turning points, and asymptotes

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: Common parent functions used in modelling

BAND 5 4 MARKS

One thing I still need help with: