MATHEMATICS ADVANCED YEAR 11 - MODULE 2 - LESSON 10

Graphs of Sine and Cosine

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

The graphs of $y = \sin x$ and $y = \cos x$ are among the most important in mathematics. They model everything from sound waves to planetary orbits. In this lesson, you will learn the key features of these graphs — amplitude, period, and intercepts — and discover how to transform them into more general sinusoidal functions.

- The shape and key features of $y = \sin x$ and $y = \cos x$
- Why sine and cosine are periodic with period 2π

2. Success Criteria

By the end, you should be able to:

- The shape and key features of $y = \sin x$ and $y = \cos x$
- How to find amplitude, period, and vertical shift
- The relationship between degrees and radians in graphing

3. Key Terms

Period
The length of one complete cycle of a periodic function.

Amplitude
The maximum displacement from the centre line of a periodic function.

Sine Curve
The graph of y = sin(x); oscillates between -1 and 1 with period 2π.

Cosine Curve
The graph of y = cos(x); oscillates between -1 and 1 with period 2π.

Maximum
The highest point on a graph in a given interval.

Minimum
The lowest point on a graph in a given interval.

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 shape and key features of $y = \sin x$ and $y = \cos x$". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "How to find amplitude, period, and vertical shift". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Graphs of Sine and Cosine: "The relationship between degrees and radians in graphing".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Graphs of Sine and Cosine 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 Graphs of Sine and Cosine?

☐ 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 Graphs of Sine and Cosine?

☐ 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 shape and key features of $y = \sin x$ and $y = \cos x$

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: How to find amplitude, period, and vertical shift

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: The relationship between degrees and radians in graphing

BAND 5 4 MARKS

One thing I still need help with: