MATHS STANDARD YEAR 11 - MODULE 2 - LESSON 10

Volume of Pyramids, Cones, and Spheres

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

A pyramid or cone holds exactly one-third as much as the prism or cylinder enclosing it. That factor of ⅓ is the key — and for spheres, $\frac{4}{3}\pi r^3$ captures the whole solid.

- $V = \frac{1}{3}Ah$ for any pyramid or cone
- Why a pyramid is $\frac{1}{3}$ of the enclosing prism

2. Success Criteria

By the end, you should be able to:

- $V = \frac{1}{3}Ah$ for any pyramid or cone
- $V = \frac{4}{3}\pi r^3$ for a sphere; hemisphere is half
- The factor $\frac{1}{3}$ compared to prism/cylinder

3. Key Terms

Formula
A rule showing the relationship between variables using symbols.

Substitution
Replacing variables with their known values in an equation.

Unit Conversion
Changing a measurement from one unit to another.

Capacity
The amount of liquid a container can hold, measured in litres or millilitres.

Perimeter
The total distance around the outside of a shape.

Area
The amount of space inside a two-dimensional shape.

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: "$V = \frac{1}{3}Ah$ for any pyramid or cone". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "$V = \frac{4}{3}\pi r^3$ for a sphere; hemisphere is half". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Volume of Pyramids, Cones, and Spheres: "The factor $\frac{1}{3}$ compared to prism/cylinder".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Volume of Pyramids, Cones, and Spheres 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 Volume of Pyramids, Cones, and Spheres?

☐ 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 Volume of Pyramids, Cones, and Spheres?

☐ 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: $V = \frac{1}{3}Ah$ for any pyramid or cone

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: $V = \frac{4}{3}\pi r^3$ for a sphere; hemisphere is half

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: The factor $\frac{1}{3}$ compared to prism/cylinder

BAND 5 4 MARKS

One thing I still need help with: