MATHS STANDARD YEAR 11 - MODULE 2 - LESSON 18

Units of Energy and Mass

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

From the joules in a lightning bolt to the kilojoules on a food label — energy and mass have a hierarchy of units. Convert fluently between them and you can answer any real-world measurement question.

- The hierarchy of mass units: mg, g, kg, tonne
- Why electricity is billed in kWh rather than joules

2. Success Criteria

By the end, you should be able to:

- The hierarchy of mass units: mg, g, kg, tonne
- The hierarchy of energy units: J, kJ, MJ
- The calorie conversions: 1 cal = 4.184 J; 1 kcal = 4.184 kJ

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: "The hierarchy of mass units: mg, g, kg, tonne". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "The hierarchy of energy units: J, kJ, MJ". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Units of Energy and Mass: "The calorie conversions: 1 cal = 4.184 J; 1 kcal = 4.184 kJ".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Units of Energy and Mass 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 Units of Energy and Mass?

☐ 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 Units of Energy and Mass?

☐ 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 hierarchy of mass units: mg, g, kg, tonne

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: The hierarchy of energy units: J, kJ, MJ

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: The calorie conversions: 1 cal = 4.184 J; 1 kcal = 4.184 kJ

BAND 5 4 MARKS

One thing I still need help with: