MATHS STANDARD YEAR 11 - MODULE 2 - LESSON 13

Errors and Limits of Accuracy

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 measurement is an approximation. The absolute error is always half the smallest unit of the instrument — and when measurements are combined, errors compound. Knowing this prevents catastrophic calculation mistakes.

- Absolute error = ½ × smallest unit of measurement
- Why every measurement has an inherent uncertainty

2. Success Criteria

By the end, you should be able to:

- Absolute error = ½ × smallest unit of measurement
- Upper bound = value + absolute error; lower bound = value − absolute error
- Percentage error = (absolute error ÷ measurement) × 100%

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: "Absolute error = ½ × smallest unit of measurement". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "Upper bound = value + absolute error; lower bound = value − absolute error". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Errors and Limits of Accuracy: "Percentage error = (absolute error ÷ measurement) × 100%".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Errors and Limits of Accuracy 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 Errors and Limits of Accuracy?

☐ 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 Errors and Limits of Accuracy?

☐ 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: Absolute error = ½ × smallest unit of measurement

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: Upper bound = value + absolute error; lower bound = value − absolute error

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: Percentage error = (absolute error ÷ measurement) × 100%

BAND 5 4 MARKS

One thing I still need help with: