CHEMISTRY YEAR 11 - MODULE 2 - LESSON 14

Percentage Yield & Percentage Purity

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

Real reactions never give 100% yield, and real samples are rarely pure. Percentage yield tells you how efficient a reaction was after it happened. Percentage purity tells you how much of a reactant sample is actually usable before you start. These are different corrections applied at different stages — and confusing them is one of the most reliable ways to lose marks.

- % yield = (actual ÷ theoretical) × 100
- Why actual yield is always ≤ theoretical yield

2. Success Criteria

By the end, you should be able to:

- % yield = (actual ÷ theoretical) × 100
- % purity = (pure mass ÷ sample mass) × 100
- Purity applied before stoichiometry (on reactant)

3. Key Terms

Mole
The SI unit for amount of substance; contains exactly 6.022×10^{23} particles.

Avogadro's Number
6.022×10^{23} — the number of particles in one mole of a substance.

Molar Mass
The mass of one mole of a substance, measured in g/mol.

Limiting Reagent
The reactant that is completely consumed first, limiting the amount of product formed.

Empirical Formula
The simplest whole-number ratio of atoms in a compound.

Molecular Formula
The actual number of atoms of each element in a molecule of a compound.

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: "% yield = (actual ÷ theoretical) × 100". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "% purity = (pure mass ÷ sample mass) × 100". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Percentage Yield & Percentage Purity: "Purity applied before stoichiometry (on reactant)".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Percentage Yield & Percentage Purity 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 Percentage Yield & Percentage Purity?

☐ 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 Percentage Yield & Percentage Purity?

☐ 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: % yield = (actual ÷ theoretical) × 100

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: % purity = (pure mass ÷ sample mass) × 100

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: Purity applied before stoichiometry (on reactant)

BAND 5 4 MARKS

One thing I still need help with: