CHEMISTRY YEAR 11 - MODULE 2 - LESSON 15

Gas Stoichiometry

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

Gas stoichiometry is not a new method — it is the 4-step method with one extra conversion step added. When a gas is given or asked for, you convert between volume and moles using molar volume, then proceed as normal. The only trap is choosing the right molar volume for the stated conditions.

- STP = 0°C, 100 kPa → 22.71 L/mol (NESA standard)
- Why all gases occupy the same molar volume at the same T and P (Avogadro's law)

2. Success Criteria

By the end, you should be able to:

- STP = 0°C, 100 kPa → 22.71 L/mol (NESA standard)
- RTP = 25°C, 100 kPa → 24.8 L/mol
- n = V ÷ molar volume (volume to moles)

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: "STP = 0°C, 100 kPa → 22.71 L/mol (NESA standard)". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "RTP = 25°C, 100 kPa → 24.8 L/mol". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Gas Stoichiometry: "n = V ÷ molar volume (volume to moles)".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Gas Stoichiometry 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 Gas Stoichiometry?

☐ 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 Gas Stoichiometry?

☐ 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: STP = 0°C, 100 kPa → 22.71 L/mol (NESA standard)

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: RTP = 25°C, 100 kPa → 24.8 L/mol

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: n = V ÷ molar volume (volume to moles)

BAND 5 4 MARKS

One thing I still need help with: