

# Stoichiometry Mole Ratios from Balanced Equations

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 balanced equation is more than a description of a reaction — it's a precise numerical recipe. The coefficients tell you exactly how many moles of each substance react and form. Mastering mole ratios is the gateway to every calculation in Inquiry Question 1.

- Law of conservation of mass — atoms are neither created nor destroyed
- Why coefficients — not subscripts — give the mole ratio

## 2. Success Criteria

By the end, you should be able to:

- Law of conservation of mass — atoms are neither created nor destroyed
- Balancing means equal atoms of each element on both sides
- Coefficients define the mole ratio of all species in a reaction

## 3. Key Terms

### Mole

The SI unit for amount of substance; contains exactly  $6.022 \times 10^{23}$  particles.

### Avogadro's Number

$6.022 \times 10^{23}$  — 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: "Law of conservation of mass — atoms are neither created nor destroyed". Use one specific example from the lesson.

**BAND 3** **2 MARKS**

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2. Apply this idea to a new example: "Balancing means equal atoms of each element on both sides". Show your reasoning clearly.

**BAND 4** **3 MARKS**

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3. Analyse why this idea matters for understanding Stoichiometry Mole Ratios from Balanced Equations: "Coefficients define the mole ratio of all species in a reaction".

**BAND 5** **4 MARKS**

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## 6. Extend: Apply the Idea

BAND 5/6

5 MARKS

**A student gives a memorised answer about Stoichiometry Mole Ratios from Balanced Equations 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.

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## 7. Multiple Choice

1. What is the best first step when answering a question about Stoichiometry Mole Ratios from Balanced Equations?

- 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 Stoichiometry Mole Ratios from Balanced Equations?

- 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: Law of conservation of mass — atoms are neither created nor destroyed**

**BAND 3** **2 MARKS**

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### SUCCESS CRITERION 2

**Prove that you can: Balancing means equal atoms of each element on both sides**

**BAND 4** **3 MARKS**

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### SUCCESS CRITERION 3

**Prove that you can: Coefficients define the mole ratio of all species in a reaction**

**BAND 5** **4 MARKS**

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**One thing I still need help with:**

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