

Standard Solutions & Dilutions

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 forensic toxicologist testing a blood sample can't use a vague "roughly 1 mol/L" acid — the result has to stand up in court. A pharmaceutical lab dissolving a drug standard can't afford to be off by 0.1%. This is why primary standards and volumetric flasks exist: chemistry where precision is not optional.

- Definition of a primary standard
- Why moles of solute are conserved during dilution

2. Success Criteria

By the end, you should be able to:

- Definition of a primary standard
- Four properties a primary standard must have
- Examples: Na_2CO_3 , KIO_3 , oxalic acid

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: "Definition of a primary standard". Use one specific example from the lesson.

BAND 3 **2 MARKS**

2. Apply this idea to a new example: "Four properties a primary standard must have". Show your reasoning clearly.

BAND 4 **3 MARKS**

3. Analyse why this idea matters for understanding Standard Solutions & Dilutions: "Examples: Na_2CO_3 , KIO_3 , oxalic acid".

BAND 5 **4 MARKS**

6. Extend: Apply the Idea

BAND 5/6

5 MARKS

A student gives a memorised answer about Standard Solutions & Dilutions 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 Standard Solutions & Dilutions?

- 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 Standard Solutions & Dilutions?

- 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: Definition of a primary standard

BAND 3

2 MARKS

SUCCESS CRITERION 2

Prove that you can: Four properties a primary standard must have

BAND 4

3 MARKS

SUCCESS CRITERION 3

Prove that you can: Examples: Na_2CO_3 , KIO_3 , oxalic acid

BAND 5

4 MARKS

One thing I still need help with:
