CHEMISTRY YEAR 12 - MODULE 6 - LESSON 3

Enthalpy of Neutralisation — Practical & Theory

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 antacid tablet you've ever swallowed releases heat as it neutralises stomach acid — and the amount of heat released tells you something fundamental about whether the acid and base involved are strong or weak.

- The formulas $q = mc\Delta T$, $n = cV$, and $\Delta Hn = -q/n$
- Why ΔHn is constant for all strong + strong combinations (same net ionic equation)

2. Success Criteria

By the end, you should be able to:

- The formulas $q = mc\Delta T$, $n = cV$, and $\Delta Hn = -q/n$
- The net ionic equation for strong + strong neutralisation: $H^+ + OH^- \rightarrow H_2O$
- $\Delta Hn \approx -57$ kJ/mol for strong acid + strong base

3. Key Terms

Enthalpy change (ΔH)
The heat energy exchanged at constant pressure during a reaction.

Exothermic
A reaction that releases heat to surroundings ($\Delta H < 0$).

Endothermic
A reaction that absorbs heat from surroundings ($\Delta H > 0$).

Activation energy
The minimum energy required for reactant collisions to be effective.

Catalyst
A substance that increases reaction rate without being consumed.

Energy profile diagram
A graph showing energy changes during a reaction pathway.

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: "The formulas q = mcΔT, n = cV, and ΔHn = −q/n". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "The net ionic equation for strong + strong neutralisation: H^+ + OH^- → H_2O". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Enthalpy of Neutralisation — Practical & Theory: "ΔHn ≈ −57 kJ/mol for strong acid + strong base".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Enthalpy of Neutralisation — Practical & Theory 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 Enthalpy of Neutralisation — Practical & Theory?

☐ 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 Enthalpy of Neutralisation — Practical & Theory?

☐ 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: The formulas q = mcΔT, n = cV, and ΔHn = −q/n

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: The net ionic equation for strong + strong neutralisation: $H^+ + OH^- \rightarrow H_2O$

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: ΔHn ≈ −57 kJ/mol for strong acid + strong base

BAND 5 4 MARKS

One thing I still need help with: