

Neutralisation in Everyday Life & Industry

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

The chemistry behind treating acid rain, manufacturing fertilisers that feed billions, and neutralising acidic factory waste before it enters waterways is all the same reaction you wrote in L02 — scaled up by orders of magnitude and with real consequences if it goes wrong.

- Balanced equations for all three antacid reactions with HCl
- Why 2 mol NH_3 is needed for H_2SO_4 but only 1 mol for HNO_3 (diprotic vs monoprotic)

2. Success Criteria

By the end, you should be able to:

- Balanced equations for all three antacid reactions with HCl
- The two fertiliser production equations (ammonium sulfate, ammonium nitrate)
- The flue gas desulfurisation equation: $\text{Ca}(\text{OH})_2 + \text{SO}_2 \rightarrow \text{CaSO}_3 + \text{H}_2\text{O}$

3. Key Terms

Ammonium sulfate $(\text{NH}_4)_2\text{SO}_4$

A student compares two fertilisers: ammonium sulfate $(\text{NH}_4)_2\text{SO}_4$ (produced by $2\text{NH}_3 + \text{H}_2\text{SO}_4 \rightarrow (\text{NH}_4)_2\text{SO}_4$) and ammonium nitrate NH_4NO_3 (produced by $\text{NH}_3 + \text{HNO}_3 \rightarrow \text{NH}_4\text{NO}_3$).

diprotic

| H_2SO_4 is diprotic — donates 2 H^+ , each accepted by one NH_3 | $\text{NH}_3 + \text{HNO}_3 \rightarrow \dots$

Ammonium nitrate NH_4NO_3

A student compares two fertilisers: ammonium sulfate $(\text{NH}_4)_2\text{SO}_4$ (produced by $2\text{NH}_3 + \text{H}_2\text{SO}_4 \rightarrow (\text{NH}_4)_2\text{SO}_4$) and ammonium nitrate NH_4NO_3 (produced by $\text{NH}_3 + \text{HNO}_3 \rightarrow \text{NH}_4\text{NO}_3$).

monoprotic

NH_3 is the base (proton acceptor); HNO_3 is the acid (monoprotic — donates 1 H^+).

Brønsted-Lowry acid

A proton (H^+) donor in an acid-base reaction.

Brønsted-Lowry base

A proton (H^+) acceptor in an acid-base reaction.

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: "Balanced equations for all three antacid reactions with HCl". Use one specific example from the lesson.

BAND 3 **2 MARKS**

2. Apply this idea to a new example: "The two fertiliser production equations (ammonium sulfate, ammonium nitrate)". Show your reasoning clearly.

BAND 4 **3 MARKS**

3. Analyse why this idea matters for understanding Neutralisation in Everyday Life & Industry: "The flue gas desulfurisation equation: $\text{Ca}(\text{OH})_2 + \text{SO}_2 \rightarrow \text{CaSO}_3 + \text{H}_2\text{O}$ ".

BAND 5 **4 MARKS**

6. Extend: Apply the Idea

BAND 5/6

5 MARKS

A student gives a memorised answer about Neutralisation in Everyday Life & Industry 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 Neutralisation in Everyday Life & Industry?

- 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 Neutralisation in Everyday Life & Industry?

- 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: Balanced equations for all three antacid reactions with HCl

BAND 3 **2 MARKS**

SUCCESS CRITERION 2

Prove that you can: The two fertiliser production equations (ammonium sulfate, ammonium nitrate)

BAND 4 **3 MARKS**

SUCCESS CRITERION 3

Prove that you can: The flue gas desulfurisation equation: $\text{Ca}(\text{OH})_2 + \text{SO}_2 \rightarrow \text{CaSO}_3 + \text{H}_2\text{O}$

BAND 5 **4 MARKS**

One thing I still need help with:
