Chemistry review: evidence and exam reasoning

Student activity • observation and reasoning

YEAR 11 / LESSON 102 / CHEMISTRY + SCIENCE (DOUBLE AWARD)

The question

Does your answer justify its conclusion?

Practise original structured problems across calculation, observation and organic chemistry. Use a correction log to distinguish a factual error from weak evidence.

Equipment

- Booklet, pencil, periodic table and optional molecular model kit

Desk activity only; keep small model pieces away from mouths.

Course coverage: Shared tasks/questions 1–4. Chemistry-only tasks/questions 5–6 revisit ethanol manufacture and acid chemistry.

Plan, model or apparatus sketch

Draw a labelled structure or model to explain your reasoning for this lesson.

Method and reasoning

Read the whole sequence before starting

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1. Calculate the amount in 5.85 g NaCl using M=58.5 g mol^{-1}.

2. Use an invented 40.0 g calorimetry solution rising by 5.0 °C with c=4.18 J g^{-1} $°C^{-1}$ to calculate q.

3. Explain why bromine-water decolourisation needs controlled comparison before assigning an alkene.

4. Draw both straight-chain C_4H_8 alkene position isomers and name them.

5. Chemistry only: compare hydration and fermentation using conditions and raw materials.

6. Chemistry only: predict ethanoic acid plus carbonate products and correct your weakest answer.

Cleanup

- Return shared equipment and retain corrected reasoning.

Record your evidence

Blank spaces are for your own work

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Reference and task data

Original invented calculation values, not class observations: NaCl mass 5.85 g and M=58.5 g mol^{-1}; calorimetry m=40.0 g, ΔT=5.0 °C and c=4.18 J g^{-1} $°C^{-1}$. Explain assumptions rather than copying numbers into an unlabelled formula.

Task	My structure / working	Reason / correction
Calculation / units		
Structure / evidence		
Chemistry-only comparison		

Show your calculations, labelled model or correction here.

Explain and evaluate

Use evidence and show calculation steps where relevant

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1. Calculate NaCl amount.

2. Calculate calorimetry q.

3. State one limit of the bromine evidence.

4. Name and draw the two straight-chain butenes.

5. Chemistry only: give one advantage and limitation of fermentation.

6. Chemistry only: state the carbonate-reaction product types.