

Most lost marks here come from vague wording and from observations that were not recorded. Everything below is from Cambridge's own examiner reports.

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Across every paper

✗ Writing a formula you are unsure of instead of the chemical's name.

✓ **If you are not sure, write the NAME. A correct formula is always accepted; a wrong one is not.**

The most repeated message in these reports, across ten sessions. The name is the safer answer whenever the formula is uncertain.

ER 10 sessions P4

✗ Using 'it' and 'they' in an answer that mentions two substances.

✓ **Name the substance every time: 'the zinc dissolves', not 'it dissolves'.**

Examiners raise the vague 'it' and 'they' directly – an ambiguous answer cannot be credited.

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ER 3 sessions P4

✗ Giving two answers where one was asked for, in case one is right.

✓ **Commit to one.**

Examiners state that an incorrect statement may contradict a correct one, and record many such incidences.

ER 3 sessions P4

✗ Leaving a question blank because the answer goes on the diagram and there is no dotted line.

✓ **Write on the diagram. An answer space is wherever the question puts it.**

Examiners note these errors of omission repeatedly, and that they would not otherwise have happened.

ER 3 sessions P4

✗ Saying 'the reaction is fast'.

✓ **Make it comparative: 'faster than the reaction at 20 °C'.**

Named as the most common error in two separate rate questions – a comparison was required and only a description was given.

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ER 2 sessions P4

■ **Match your answer to the marks.** Examiners note that a three-mark question needs three separate points and that omitting detail is a common reason for losing credit.

ER 2 sessions P4

2 · Atoms, elements and compounds

✗ Writing 2H for two hydrogen atoms bonded together.

✓ **H₂ – the subscript means bonded, the coefficient means separate.**

Recorded as the most common incorrect answer in three sessions of the same question.

H₂ 2H

ER 3 sessions P2

✗ Answering ‘how many outer electrons’ with the number of shells, or vice versa.

✓ **Read which the question wants, then count on the diagram.**

Examiners record ‘one’ as the most common incorrect answer to a straightforward electron question.

ER 2 sessions P2

1 · States of matter

✗ Explaining diffusion by saying the acid ‘spreads out’ or ‘moves along the tube’.

✓ **Say what moves: the PARTICLES move randomly and spread from a high to a low concentration.**

Examiners record that only a minority gained full credit, and that the missing word was ‘particles’.

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ER 2 sessions P2

✗ Confusing the bonds inside a molecule with the forces between molecules.

✓ **Covalent bonds hold the atoms together; weaker intermolecular forces hold the molecules near each other.**

Examiners name this confusion directly in a question that was not well answered.

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ER 2 sessions P4

2 · Atoms, elements and compounds

✗ Drawing a dot-and-cross diagram of water with three lone pairs on the oxygen, or lone pairs on the hydrogens.

✓ **Oxygen keeps TWO non-bonding pairs; hydrogen has none.**

Examiners list all three faults together – omitted, too many, and put on the wrong atom.

ER 2 sessions P4

✗ Reading the proton number as the number of neutrons.

✓ **Electrons equal protons in an atom; neutrons are mass number minus proton number.**

Examiners list 54, 24 and 18 as wrong neutron counts in one question – each a different arithmetic slip.

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ER 2 sessions P2

3 · Stoichiometry

✗ Calculating relative formula mass without using the numbers of atoms in the formula.

✓ **Multiply each relative atomic mass by its subscript, then add.**

Examiners record many incorrect answers arising from ignoring the subscripts.

ER 2 sessions P2

✗ Balancing $\text{Fe} + \text{O}_2$ with 2Fe and 3O_2 .

✓ **Balance the atoms one element at a time and recount: $3\text{Fe} + 2\text{O}_2$.**

Examiners name 2Fe with 3O_2 , and 2Fe with 2O_2 , as the two common errors in the same equation.

ER 2 sessions P2

✗ Answering a WORD equation with symbols, or writing ‘potassium bromine’.

✓ **Word equation means words, and the names must be right: potassium bromIDE.**

Examiners state that when a word equation is asked for, no other form is accepted.

ER 2 sessions P2

✗ Calculating a bond-energy answer and giving it the wrong sign.

✓ **Bonds broken minus bonds formed. A negative value means exothermic.**

Examiners note candidates confidently reaching 1425 kJ and 1800 kJ and then a significant number going wrong at the final step.

ER 2 sessions P4

4 · Electrochemistry

✗ Writing the cathode half-equation as $2\text{H}^+ + 2\text{e}^- \rightarrow \text{H}_2$ when the question wants the reduction of one species.

✓ **Check what is actually discharged at that electrode, and balance charge as well as atoms.**

Examiners note that a mathematically equivalent equation is not necessarily the one the question asks for.

ER 2 sessions P4

6 · Chemical reactions

✗ Defining equilibrium as ‘a reversible reaction’ or ‘a balance’.

✓ **The forward and backward reactions occur at the SAME RATE, so the concentrations stay constant.**

Examiners found this question demanding, with many candidates offering only reversibility or a vague idea of balance.

ER 2 sessions P4

✗ Answering a Le Chatelier question by talking about the reaction rather than the position of equilibrium.

✓ **Say which way the position shifts, and why.**

Examiners state candidates must be taught that it is the equilibrium the question is about.

ER 2 sessions P4

5 · Chemical energetics

✗ Saying a reaction is exothermic because the temperature fell.

✓ **Falling temperature means the reaction took energy IN: it is endothermic.**

Examiners record a significant proportion giving exothermic, and confusion expressed in terms of heat energy rather than the direction of transfer.

ER 2 sessions P4

✗ Comparing fuels by their temperature rise alone.

✓ **Divide the temperature rise by the MASS of fuel burned.**

Examiners name the fuel with the highest rise as the most common wrong answer, because the mass was never divided out.

ER 2 sessions P5

11 · Organic chemistry

✗ Spelling an ester 'propanote' or 'propenoate'.

✓ **Methyl propanoate – check the stem, the '-an-' and the '-oate' separately.**

Examiners name the misspelling as the most common error in a question most candidates otherwise knew.

ER 2 sessions P4

✗ Drawing a nine-carbon chain for a polymer repeat unit, with or without continuation bonds.

✓ **Draw ONE repeat unit, with a continuation bond at each end.**

Named as the most common incorrect response – the structure was drawn but not as a repeat unit.

ER 2 sessions P4

12 · Experimental techniques and chemical analysis

✗ Recording 25.0, 25.15 and 25.2 in the same burette table.

✓ **Every reading from one instrument goes to the same number of decimal places.**

Raised in nine separate reports. The resolution is a property of the apparatus, not of the reading.

ER 9 sessions P5

✗ Leaving a test blank because nothing happened.

✓ **Record 'no change' or 'no visible reaction'. A negative result is a result.**

Examiners state in eight reports that a negative test is useful because it rules an ion out.

ER 8 sessions P5

✗ Writing 'white precipitate' for a sulfate test on a solution containing no sulfate.

✓ **Report what you actually saw: no change.**

Examiners record the expected observation being written instead of the observed one – the commonest way to lose a qualitative-analysis mark.

ER 2 sessions P5

✗ Skipping the gas test when the question says ‘test any gas produced’.

✓ **Do the test and record both the test and the result.**

Raised in eight reports: where the instruction appears, the test and its result are both expected.

ER 8 sessions P5

✗ Giving one observation where ammonia was added dropwise AND then in excess.

✓ **Give an observation for each step.**

Examiners state this explicitly – two additions means two observations.

ER 2 sessions P5

✗ Reporting a white precipitate where the silver halide is cream or yellow.

✓ **Learn the three: chloride white, bromide cream, iodide yellow.**

Examiners note it was not uncommon for the cream precipitate to be reported as white.

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ER 2 sessions P5

✗ Describing a colour change in the wrong direction – colourless to orange instead of orange to colourless.

✓ **State the starting colour first, then the final one.**

Examiners record candidates confusing the direction of the change, which reverses the chemistry.

ER 2 sessions P5

✗ Writing ‘the solvent dissolves in the solute’.

✓ **The SOLUTE dissolves in the SOLVENT to make a solution.**

Examiners record candidates attempting the right terminology and reversing it.

ER 2 sessions P5

✗ Choosing a graph scale that puts all five points in one corner.

✓ **Choose a scale that spreads the points across most of the grid, and use easy divisions.**

Examiners note some candidates selected a scale that made accurate plotting difficult.

ER 2 sessions P5

✗ Naming a chemical test wrongly, or describing a physical observation instead of a test.

✓ **Give the reagent AND the positive result: limewater turns milky.**

Examiners describe one such question as very poorly answered, with candidates mixing tests up or giving no chemical test at all.

ER 3 sessions P5

■ Analyse the stem before writing. Examiners state in five reports that many candidates need more practice at this.

ER 5 sessions P4