

IGCSE Chemistry	Common Mistakes
<i>Most lost marks here come from vague wording and from observations that were not recorded. Everything below is from Cambridge's own examiner reports.</i> ✓ ✗	
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.	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.	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'. “ ” 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. , 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. = – 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 Fe + O₂ with 2Fe and 3O₂.
- ✓ Balance the atoms one element at a time and recount: 3Fe + 2O₂.

Examiners name 2Fe with 3O₂, and 2Fe with 2O₂, 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 2H⁺ + 2e[−] → H₂ 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