GCSE CHEMISTRY

GCSE2MED: CHEM SPEC CHECK ✅

Tick things off as you learn them. Based on AQA (8462) — Edexcel & OCR differences flagged where they exist.

My exam details

Name: _____ Board: _____ Tier: _____

Exam date: _____ Target grade: _____ **Progress:** greens so far ___ / 127

How to use this

Each topic has three columns, not one — because "I've seen it" and "I could answer an exam question on it" are very different things:

Covered — you've been taught it or read through it. **Test** — you've actually tested yourself on it with exam questions or past paper questions, not just notes.

Review — this is where you do RAG (Red, Amber, Green) rating. Colour the circle red if you're not confident, amber if you're getting there, or green if you could teach it — based on how you actually performed on exam questions, not just how it felt reading it.

Use the Board/Tier box above to filter what applies to you — skip anything tagged for a different tier or course. If you get to the end of a topic and most circles are red or amber, that's your revision priority, not the topics already green.

If a topic doesn't make sense: try a revision website (BBC Bitesize, Save My Exams, Seneca) or a YouTube GCSE Chemistry creator first — they're written specifically for this level, often walk through past exam questions, and are a good first stop before turning to AI.

Using AI to help you understand a topic: if a topic name on this checklist means nothing to you, type it into an AI chat and ask it to explain it — that's a genuinely good use of it. But keep it at GCSE level: you only need to know what's on the specification, not the full A-level or university explanation underneath it. Don't let it write your notes for you, and don't lean on it to answer every practice question — it won't be sitting next to you in the exam. Use it to understand, then close the chat and prove to yourself you can do it without it.

One more thing — spacing it out: revisiting a topic once isn't enough to make it stick. A good rhythm is to come back to it after a day, then after a week, then after a month — each time you recall it successfully, you can leave it longer before the next check. That's what the "Last revisited" line under each topic is for: use it to notice when a topic is overdue, not just to record that you once did it.

What the tags mean

[HT] — Higher tier only. Skip this if you're sitting Foundation.

[Triple only] — Separate Chemistry only. Skip this if you're doing Combined Science.

[Edexcel] — Extra content specific to the Edexcel exam board.

[OCR] — Extra content specific to the OCR exam board.

[Edexcel & OCR] — Extra content on both Edexcel and OCR, but not AQA.

RP — A required practical. These come up often as "describe how you would..." questions — know the method, not just the result.

⭐ — a high-yield sub-topic: based on looking at recent past papers and examiner reports, this specific point comes up almost every year. Prioritise these if you're short on time.

No tag = examined on all three boards, both tiers, both Combined Science and separate Chemistry.

1. Atomic Structure & the Periodic Table · Paper 1

Last revisited: _____ *(update this whenever you go back over the whole topic)*

Topic	Covered	Test	Review
The structure of an atom — protons, neutrons, electrons (charge & mass)	☐	☐	◯
Why atoms have no overall charge	☐	☐	◯
Size & scale of atoms — standard form, nucleus vs whole atom	☐	☐	◯
Atomic number & mass number — working out numbers of particles	☐	☐	◯
Working out protons/neutrons/electrons in an ion **[OCR]**	☐	☐	◯
Isotopes — same protons, different neutrons	☐	☐	◯
Relative atomic mass from isotope abundance	☐	☐	◯
Electronic structure — shells, and writing configurations (e.g. 2,8,1)	☐	☐	◯
The development of the atomic model — Dalton, Thomson, Rutherford, Bohr, Chadwick ⭐	☐	☐	◯
Elements, compounds & mixtures — the difference between them	☐	☐	◯
Separating mixtures — filtration, crystallisation, distillation, chromatography	☐	☐	◯
How the periodic table is arranged — groups, periods, atomic number	☐	☐	◯
Development of the periodic table — Newlands, Mendeleev, and why it changed	☐	☐	◯
Metals vs non-metals — position, properties, and ion formation	☐	☐	◯
Group 0 — the noble gases: trends and uses⭐	☐	☐	◯
Group 1 — the alkali metals: trends and reactions⭐	☐	☐	◯
Group 7 — the halogens: trends, reactions & displacement⭐	☐	☐	◯
Transition metals — properties and named examples **[Triple only]**	☐	☐	◯

2. Bonding, Structure & the Properties of Matter · Paper 1

Last revisited: _____

Topic	Covered	Test	Review
The three types of bonding — ionic, covalent, metallic⭐	☐	☐	◯
Ionic bonding — electron transfer, dot-and-cross diagrams	☐	☐	◯
Ionic compounds — giant lattice structure & properties	☐	☐	◯
Reading empirical formula directly off a lattice diagram	☐	☐	◯
Covalent bonding — shared electron pairs, drawing small molecules	☐	☐	◯
Limitations of dot-and-cross, ball-and-stick & 2D/3D representations	☐	☐	◯
Metallic bonding — the "sea of electrons" model	☐	☐	◯
The three states of matter & changes of state	☐	☐	◯
Limitations of the simple particle model **[HT]**	☐	☐	◯

Properties of small molecules vs polymers vs giant covalent structures	☐	☐	◯
Diamond, graphite, graphene & fullerenes	☐	☐	◯
Why alloys are harder than pure metals	☐	☐	◯
Nanoparticles — properties, uses & risks **[Triple only]**	☐	☐	◯

3. Quantitative Chemistry · Paper 1

Last revisited: _____

Topic	Covered	Test	Review
Conservation of mass & balanced symbol equations	☐	☐	◯
Relative formula mass	☐	☐	◯
Mass changes when a reactant or product is a gas	☐	☐	◯
The mole & Avogadro's constant **[HT]**	☐	☐	◯
Amount of substance calculations using moles **[HT]**	☐	☐	◯
Balancing equations using masses & moles **[HT]**	☐	☐	◯
Limiting reactants **[HT]**	☐	☐	◯
Empirical formula from masses or percentages	☐	☐	◯
Concentration of solutions — g/dm^3 and mol/dm^3	☐	☐	◯
Percentage yield **[Triple only]**	☐	☐	◯
Atom economy **[Triple only]**	☐	☐	◯
Explaining why a particular reaction pathway is chosen (yield, rate, equilibrium, by-products) **[Triple only]** **[HT]**	☐	☐	◯
Using moles to balance equations & work out reacting masses **[Triple only]** **[HT]**	☐	☐	◯
Volumes of gases — the molar gas volume **[Triple only]** **[HT]**	☐	☐	◯

4. Chemical Changes · Paper 1

Last revisited: _____

Topic	Covered	Test	Review
Metal oxidation & the reactivity series	☐	☐	◯
Extraction of metals by reduction with carbon	☐	☐	◯
Alternative extraction methods — phytomining & bioleaching **[HT]**	☐	☐	◯
Oxidation & reduction in terms of electrons (OIL RIG)	☐	☐	◯
Reactions of acids with metals	☐	☐	◯
Neutralisation & making salts	☐	☐	◯

Making a pure, dry soluble salt RP	☐	☐	◯
Making an insoluble salt by precipitation [Edexcel]	☐	☐	◯
General solubility rules — predicting precipitates [Edexcel]	☐	☐	◯
The pH scale & neutralisation reactions	☐	☐	◯
Strong & weak acids — degree of ionisation [HT]	☐	☐	◯
Titrations — method & concentration calculations [Triple only] RP ★	☐	☐	◯
Electrolysis — the process & electrolysis of molten ionic compounds ★	☐	☐	◯
Using electrolysis to extract reactive metals (e.g. aluminium)	☐	☐	◯
Purifying copper by electrolysis [Edexcel & OCR]	☐	☐	◯
Electrolysis of aqueous solutions RP ★	☐	☐	◯
Half equations for electrode reactions [HT] ★	☐	☐	◯

5. Energy Changes · Paper 1

Last revisited: _____

Topic	Covered	Test	Review
Exothermic & endothermic reactions	☐	☐	◯
Investigating temperature changes RP	☐	☐	◯
Reaction profiles — activation energy & overall energy change ★	☐	☐	◯
Calculating energy transferred (energy = mass × 4.2 × Δt) [Edexcel & OCR] ★	☐	☐	◯
Using bond energies to calculate energy changes [HT] ★	☐	☐	◯
Chemical cells & batteries [Triple only]	☐	☐	◯
Fuel cells [Triple only]	☐	☐	◯

6. The Rate & Extent of Chemical Change · Paper 2

Last revisited: _____

Topic	Covered	Test	Review
Calculating rates of reaction	☐	☐	◯
Factors affecting rate RP	☐	☐	◯
Collision theory & activation energy ★	☐	☐	◯
Catalysts — how they work, and why they're useful	☐	☐	◯
Reversible reactions & energy changes	☐	☐	◯
Dynamic equilibrium — what it means (and what it doesn't)	☐	☐	◯

Le Chatelier's principle — effect of changing conditions [HT] ☆	☐	☐	◯

7. Organic Chemistry · Paper 2

Last revisited: _____

Topic	Covered	Test	Review
Crude oil, hydrocarbons & alkanes	☐	☐	◯
Fractional distillation & petrochemicals	☐	☐	◯
Complete & incomplete combustion	☐	☐	◯
Cracking & why we do it ☆	☐	☐	◯
Alkenes — structure, formulae & addition reactions [Triple only] ☆	☐	☐	◯
Alcohols — properties, reactions & uses [Triple only]	☐	☐	◯
Comparing alcohol fuels by energy released (ethanol, propanol, butanol, pentanol) [Triple only] [Edexcel] RP	☐	☐	◯
Carboxylic acids & esters [Triple only]	☐	☐	◯
Addition polymerisation [Triple only]	☐	☐	◯
Condensation polymerisation [Triple only] [HT]	☐	☐	◯
Amino acids [Triple only] [HT]	☐	☐	◯
DNA & naturally occurring polymers [Triple only]	☐	☐	◯

8. Chemical Analysis · Paper 2

Last revisited: _____

Topic	Covered	Test	Review
Pure substances & formulations	☐	☐	◯
Chromatography & calculating Rf values	☐	☐	◯
Paper chromatography RP	☐	☐	◯
Tests for gases — hydrogen, oxygen, carbon dioxide, chlorine ☆	☐	☐	◯
Test for ammonia [Edexcel & OCR]	☐	☐	◯
Flame tests for metal ions [Triple only]	☐	☐	◯
Metal hydroxide precipitates with sodium hydroxide [Triple only] ☆	☐	☐	◯
Identifying carbonates, halides & sulfates [Triple only] RP ☆	☐	☐	◯
Instrumental methods — flame emission spectroscopy [Triple only] ☆	☐	☐	◯

9. Chemistry of the Atmosphere · Paper 2

Last revisited: _____

Topic	Covered	Test	Review
How the Earth's early atmosphere evolved	☐	☐	◯
The composition of today's atmosphere	☐	☐	◯
The greenhouse effect⭐	☐	☐	◯
Human activities & climate change⭐	☐	☐	◯
Carbon footprint & ways to reduce it	☐	☐	◯
Atmospheric pollutants from burning fuels	☐	☐	◯

10. Using Resources · Paper 2

Last revisited: _____

Topic	Covered	Test	Review
Finite vs renewable resources & sustainable development	☐	☐	◯
Potable water — what makes water safe to drink	☐	☐	◯
Treating waste water	☐	☐	◯
Analysing & purifying water samples RP	☐	☐	◯
Alternative methods of extracting metals **[HT]**	☐	☐	◯
Life cycle assessment⭐	☐	☐	◯
Ways of reducing the use of resources & recycling	☐	☐	◯
Corrosion & how to prevent it **[Triple only]**	☐	☐	◯
Alloys as useful materials **[Triple only]**	☐	☐	◯
Ceramics, polymers & composites **[Triple only]**	☐	☐	◯
The Haber process **[Triple only]**	☐	☐	◯
Interpreting Haber process graphs — conditions vs rate/yield **[Triple only]** **[HT]**	☐	☐	◯
NPK fertilisers — production & uses **[Triple only]**	☐	☐	◯

11. Maths Skills & Working Scientifically · Both papers

Last revisited: _____

Not its own topic — but examined throughout both papers, inside questions on the topics above. Roughly a fifth of your marks depend on these skills, so don't skip them.

Topic	Covered	Test	Review
Using and rearranging standard form⭐	☐	☐	◯
Rearranging and substituting into equations (e.g. moles, concentration, rate)⭐	☐	☐	◯
Calculating percentages, means, and simple ratios	☐	☐	◯

Reading values off, and drawing, graphs, tables and bar charts	☐	☐	◯
Finding the gradient of a graph, and drawing/using a tangent **[HT]**	☐	☐	◯
Using appropriate units and significant figures	☐	☐	◯
Identifying independent, dependent and control variables	☐	☐	◯
Evaluating an experimental method & suggesting improvements	☐	☐	◯
Identifying hazards and suggesting ways to reduce risk	☐	☐	◯
Spotting anomalous results, and calculating a mean without them	☐	☐	◯
Understanding the difference between correlation and causation	☐	☐	◯

My weakest topics

This page is for topics that **past papers** have exposed as weak — not just things you haven't got to yet. Ticking "Covered" in the checklist tells you what you've seen; getting a question wrong under exam conditions tells you what you actually don't know, and that's a more reliable signal.

Every time you mark a past paper, add anything you got wrong or were unsure of here, with the page number so you can find it fast. **Treat this list as your priority order for revision** — work down it before going back over topics you've already rated green in Review.

A note on accuracy: specifications get updated. Always check the live specification document for your exact board and tier alongside this checklist — treat this as a study companion, not a replacement for it.