# Revision Checklist: GCSE AQA Chemistry (Higher Tier)

| | 1. ATOMIC STRUCTURE AND THE PERIODIC TABLE | Subject Knowledge (how well do I know this) | Practice (quiz/exam questions) |
|---|---|---|---|
| a. | Elements, compounds & mixtures | | |
| b. | Separating mixtures | | |
| c. | Development of atomic model | | |
| d. | Mass & atomic number | | |
| e. | Relative atomic mass | | |
| f. | Electronic structure | | |
| g. | Groups & periods | | |
| h. | Development of periodic table | | |
| i. | Metals & non-metals | | |
| j. | Group 0 elements | | |
| k. | Group 1 elements | | |
| l. | Group 7 elements | | |
| m. | Transition metals | | |

| | 2. BONDING, STRUCTURE, AND THE PROPERTIES OF MATTER | Knowledge | Practice |
|---|---|---|---|
| a. | Ionic bonding | | |
| b. | Covalent bonding | | |
| c. | Dot and cross diagrams | | |
| d. | Metallic bonding | | |
| e. | States of matter | | |
| f. | Properties of ionic compounds | | |
| g. | Properties of small molecules | | |
| h. | Polymers & giant covalent structures | | |
| i. | Properties of metals | | |
| j. | Alloys | | |
| k. | Diamond & graphite | | |
| l. | Graphene & fullerenes | | |
| m. | Nanoparticles | | |

| | 3. QUANTITATIVE CHEMISTRY | Knowledge | Practice |
|---|---|---|---|
| a. | Balancing chemical equations | | |
| b. | Conservation of mass | | |
| | Relative formula mass | | |
| | Estimating uncertainty | | |
| c. | Moles | | |
| d. | Using moles to calculate masses | | |
| e. | Using moles to balance equations | | |
| f. | Limiting reactants | | |
| g. | Concentration | | |
| h. | Percentage yield | | |
| i. | Atom economy | | |
| j. | Moles & volumes of gases | | |

| | 4. CHEMICAL CHANGES | Knowledge | Practice |
|---|---|---|---|
| a. | The reactivity series | | |
| | Reduction & oxidation | | |
| b. | Extracting metals by reduction | | |
| c. | Ionic & half equations | | |
| d. | Reacting acids with metals | | |
| e. | Neutralisation of acids & naming salts | | |
| f. | pH | | |
| g. | Titrations | | |
| h. | Strong & weak acids | | |
| i. | Electrolysis of molten ionic compounds | | |
| j. | Electrolysis of aqueous solutions | | |

| | 5. ENERGY CHANGES | Knowledge | Practice |
|---|---|---|---|
| a. | Exothermic & endothermic reactions | | |
| b. | Reaction profiles | | |
| c. | Calculating energy change of reactions | | |
| d. | Cells & batteries | | |
| e. | Hydrogen fuel cell | | |

| | 6. THE RATE AND EXTENT OF CHEMICAL CHANGE | Knowledge | Practice |
|---|---|---|---|
| a. | Calculating rate of reaction | | |
| b. | Factors affecting rate of reaction | | |
| c. | Collision theory & activation energy | | |
| d. | Catalysts | | |
| e. | Reversible reactions | | |
| f. | Le Chatelier's principle | | |
| g. | Factors which affect equilibrium | | |

| | 7. ORGANIC CHEMISTRY | Knowledge | Practice |
|---|---|---|---|
| a. | Crude oil | | |

| | | | |
|---|---|---|---|
| b. | Alkanes | | |
| c. | Fractional distillation | | |
| d. | Properties of hydrocarbons | | |
| | Combustion reactions | | |
| e. | Alkenes | | |
| | Addition reactions | | |
| f. | Cracking | | |
| g. | Alcohols | | |
| h. | Carboxylic acids | | |
| i. | Addition polymerisation | | |
| j. | Condensation polymerisation | | |
| k. | Naturally occurring polymers | | |

| | 8. CHEMICAL ANALYSIS | Knowledge | Practice |
|---|---|---|---|
| a. | Purity | | |
| b. | Formulations | | |
| c. | Paper chromatography | | |
| d. | Tests for common gases | | |
| e. | Flame tests | | |
| f. | Identifying metal hydroxides | | |
| g. | Tests for carbonates, halides & sulphates | | |
| h. | Flame emission spectroscopy | | |
| | Instrumental methods | | |

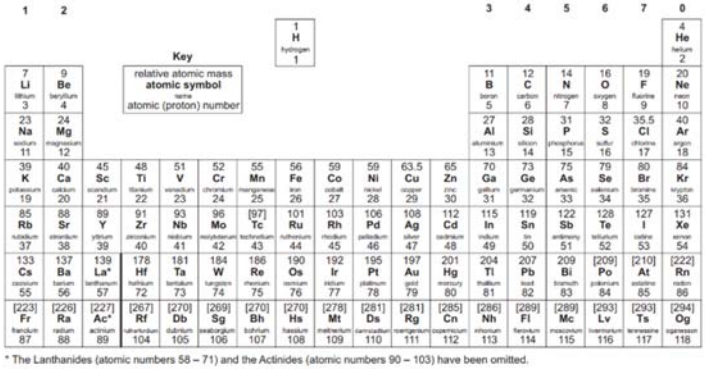
| | 9. CHEMISTRY OF THE ATMOSPHERE | Knowledge | Practice |
|---|---|---|---|
| | Composition of Earth's atmosphere | | |
| a. | Evolution of Earth's atmosphere | | |
| b. | The greenhouse effect | | |
| c. | Human activity & greenhouse gases | | |
| d. | Global climate change | | |
| e. | The carbon footprint | | |
| f. | Atmospheric pollutants | | |

| | 10.USING RESOURCES | Knowledge | Practice |
|---|---|---|---|
| a. | Using Earth's resources | | |
| b. | Potable water | | |
| c. | Waste water treatment | | |
| d. | Low-grade copper ores | | |
| e. | Life cycle assessment | | |
| f. | Recycling | | |
| g. | Preventing corrosion | | |
| h. | Uses of alloys | | |
| i. | Ceramics, polymers & composites | | |
| j. | The Haber process | | |
| k. | NPK fertilisers | | |

| PRACTICALS | Knowledge |
|---|---|
| RP 1: "Prepare a pure, dry sample of a soluble salt from an insoluble oxide or carbonate." | |
| RP 2: "Determine the concentration of one of the solutions when reacting a strong acid and a strong alkali by titration (when the concentration of the other solution is known)." | |
| RP 3: "Investigate the electrolysis of aqueous solutions (a hypothesis must be formed and developed)." | |
| RP 4: "Investigate factors affecting temperature change when reacting solutions together." | |
| RP 5a: "Investigate how concentration affects the rate of reaction by measuring the volume of gas produced (a hypothesis must be formed and developed)." | |
| RP 5b: "Investigate how concentration affects the rate of reaction by observing a colour change (a hypothesis must be formed and developed)." | |
| RP 6: "Use paper chromatography to separate coloured substances and determine $R_f$ values." | |
| RP 7: "Use appropriate chemical tests to identify unknown ionic substances (all ions covered in sections 8e, 8f and 8g)." | |
| RP 8: "Identify pH and amount of dissolved solids in water samples from different sources, and use distillation to purify them." | |

| ASSESSMENTS | Duration | Marks | Topics |
|---|---|---|---|
| Paper 1 | 1 hour 45 minutes | 100 marks | Topics 1 – 5 |
| Paper 2 | 1 hour 45 minutes | 100 marks | Topics 6 - 10 |

The Periodic Table of Elements



* The Lanthanides (atomic numbers 58 – 71) and the Actinides (atomic numbers 90 – 103) have been omitted.
Relative atomic masses for **Cu** and **Cl** have not been rounded to the nearest whole number.