KS3 Curriculum Map – Chemistry:

Topic	Substantive Knowledge This is the specific, factual content for the topic, which should be connected into a careful sequence of learning.	Disciplinary Knowledge (Skills) This is the action taken within a particular topic in order to gain substantive knowledge.	Assessment Opportunities What assessments will be used to measure student progress?
Lab safety	• Hazard symbols • Equipment • Bunsen burner	• Draw accurate 2D diagrams of equipment	• Using a Bunsen burner safely • 2D Drawing of equipment
Practical planning	• Hypothesis • Variables • Method • Results • Conclusion	• Identify variables in an experiment • Analyse results from experiments	• Practical planning
Particle theory (solids, liquids and gases)	• Properties • Density (including units) • Diffusion	• Draw particle diagrams • Model diffusion using a variety of methods	• Density calculations • Density practical • Diffusion practical
Solubility	• Key terms (DISSOLVING, SOLUBLE, INSOLUBLE, SOLUTE, SOLVENT, SOLUTION.) • Key terms (FILTRATION, FILTRATE, RESIDUE) • Key terms (SATURATION) • Key terms (CRYSTALLISATION)	• Apply the idea of fair testing to design experiments • Explain the difference between disappearing, dissolving and melting • Generate data and draw a solubility curve	• Practical's (solubility, filtration, crystallisation) • Graphing • Practical planning (rock salt)

Separation techniques	• DISTILLATION involves EVAPORATION followed by CONDENSATION • Chromatography can be used to separate two or more solutes dissolved in a given solvent.	• Distil inky water • Carry out chromatography or pens and food colouring • Explain chromatography in terms of particle ideas • Research forensic science uses of chromatography	• Exam questions • Analysing chromatograms • Practical planning
Heating and cooling	• Changing state	• Draw particle diagrams • Use data to draw a cooling curve	• Graphing
Rocks	• Rock cycle • differences in appearance between sedimentary, metamorphic and igneous rocks • Properties of sedimentary, metamorphic and igneous rocks • Quantitative/ qualitative data • Peer review • Weathering • Extrusive and intrusive rocks	• Identify different types of rock based on their key features • Research types of weathering • Model weathering using experimental work • Carry out practical work to determine hardness of sedimentary rocks • Relate crystal size to conditions of crystallisation.	• Devise and carry out a practical investigating the porous nature of sedimentary rocks • Graphing • Analysing data • Conclusions
Chemical & physical changes	• Chemical change (permanent) • Physical change (temporary) • Key terms (ELEMENT, MIXTURE, COMPOUND) • Key terms (REVERSIBILITY)	• Use experimental work to demonstrate examples of chemical and physical changes	• Practical planning • Equation writing
Acids and bases	• Key terms (ACID, ALKALI, BASE, INDICATOR) • pH scale • Key terms (SALT, NEUTRALISATION))	• Determine what makes a good indicator based on quantitative vs qualitative data • Draw coloured diagrams of the pH scale	• Practical planning • Equation writing • Graphing

Composition of air	• burning requires oxygen • oxygen combines with elements during burning and another word for burning is OXIDATION. • Fire triangle • % composition of air • Test for water	• Write word equations for the reactions covered to date • Use examples of Cu and Mg to explain reactions of metals with oxygen • Make accurate observations and record them	Candle experiment – (Graphing Interpret data, identify patterns, Evaluation of methods.)
Carbon cycle	• CO_2 can be produced by human activity • Pollution of atmosphere • Climate change • Global warming • Carbon cycle	• Draw diagrams and annotate to explain Formation / Problems / effects / solutions	• Exam questions
Composition of the earth	• label the main cross sections of the Earth and its atmosphere.	• Create visual representations to explain models of the Earth. • Compare different ways of presenting information	• Poster
Elements and the periodic table	• Key terms (ATOM, ELEMENT, COMPOUND, MIXTURE, PURE) • Element symbols	• Draw particle diagrams • Classify substances according to definitions learned • Compare the origin of different element names	• Quick element quiz
Chemical and physical changes	• Metals are found on the LHS of the periodic table • Non-Metals are found on the RHS of the periodic table • Key terms (malleability, ductility, electrical conductivity, magnetism, density, shine (lustrous) melting point) •	• Compare physical properties of metals and non-metals through experiment • Compare chemical properties of metals and non-metals through experiment(pH of oxides) • Classify unknown substances as metals and non-metals • Explain common uses of metals based on properties	• Analysing data • Equation writing • Research interesting elements

Groups	• Group 7 (Name, state and colour at room temperature) • Group 1 • Group 0	• Make predictions about reactions of elements based on their position within a group	• Making prediction of properties • Analysing data • Graphing
Forming compounds	• Elements can combine in a chemical reaction, and that the properties of the compound are not necessarily similar to the elements that it is made from. • How to name compounds	• Compare Sodium chloride with the properties of its constituent elements • Repeat this for Iron sulphide • Name salt compounds	• Practical planning • Equation writing • Evaluation and conclusions • Risk assessment
Practical work and graphs	• Bar chart • Line graphs • Scales, units, axis, LOBF	• Plot graphs using the data provided and generated by experiment	• MgO assessment (Graphing skills, Data analysis, Calculations)
Oxidation vs Combustion	• Key terms (OXIDATION, COMBUSTION)	• Classify reactions as oxidation/ combustion	• Writing equations
Law of conservation of mass	• Thermal decomposition • Oxidation is when elements bond with oxygen (eg Mg) • Test for water • Hydrated salts • Test for CO_2 • Carbonate loses mass when heated (releases CO_2)	• Explain the loss and gain of mass in experiments using the law of conservation of mass • Carry out experiments to weigh to constant mass • Write word equations for decomposition reactions • Extrapolate Graphs to determine key information • Identify variables in experimental work	• Mg practical • Graphing • Practical planning

Reactivity series	• Group 1 • Group 2 • Properties of metals • Displacement reactions • Key terms (oxidation, rusting) • Testing for hydrogen	• Recall the reactions with oxygen, acid and water • Make and record accurate experimental observations	• Predictions • Observations • Writing equations • Graphing • Data collection/ evaluation • Risk assessment • Limitations of data
Acids and alkalis	• Properties of acids and alkalis • Hazards/ precautions • Indicators • Key terms (concentration/ strength) • pH scale	• Discuss examples of acids and alkalis • Control variables required for fair testing	• Practical planning
Neutralisation	• Indictors • pH • key terms (Salt) • Acid + Alkali → Salt + Water • acid + carbonate → salt + water + CO_2 • Testing for CO2 • acid + metal oxide → salt + water. • Crystallisation	• Make a pH diagram • Make a selection of salt compounds • Name salts	• Practical planning • Observations • Equation writing • Graphing
ceramics, polymers and composites	• basic structure • properties • resources they are derived from	• select the most appropriate material based on its property for a specific use	• Poster