Nobel

Year: KS4

Subject: Chemistry

By following the AQA GCSE science qualifications, we are building on the hard work our students have completed during their key stage 3 studies. Students follow either AQA Combined Science: Trilogy or AQA Separate Sciences. This allows us to ensure the students follow the best path for them.

	Foci	Assessment	Knowledge Organiser
Unit 1 (Year 9)	**Atomic structure and the periodic table** The development of the periodic table and the understanding the structure of an atom • Atoms, elements and compounds • Mixtures • The development of the model of the atom • Subatomic particles – location, electrical charge, size and mass • Relative atomic mass • Structure and development of the periodic table • Groups of the periodic table – Groups 1, 7, 0 and transition elements	• Continuous assessment via knowledge recall • End of unit test via past paper examination questions	Knowledge organisers are included in student's booklet (at the back) with blank copies to practice recall.
Unit 9 (Year 9)	**Chemistry of the atmosphere** Understanding the development and changes within the atmosphere including causes of pollution and global warming. • Composition and evolution of the atmosphere • Greenhouse gases • Climate change and global warming • Carbon footprints • Pollutants	• Continuous assessment via knowledge recall • End of unit test via past paper examination questions	Knowledge organisers are included in student's booklet (at the back) with blank copies to practice recall.

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Unit 2 (Year 10)	**Bonding, structure and the properties of matter** The bonding within materials and how this relates to their physical and chemical properties • States of matter • Formation of ions • Ionic bonding • Covalent bonding • Polymers • Metallic bonding • Alloys • Allotropes of carbon – diamond, graphite, graphene, fullerene • Nanoparticles and nanotechnology	• Continuous assessment via knowledge recall • End of unit test via past paper examination questions	Knowledge organisers are included in student's booklet (at the back) with blank copies to practice recall.
Unit 3 (Year 10)	**Quantitative chemistry** Using quantitative methods and calculations to determine reaction outcomes, establish patterns and make predictions of chemical behaviour • Conservation of mass and balancing equations • Relative formula mass • Chemical measurements • Moles • Limiting reactants • Concentration of solutions – g/dm^3 and mol/dm^3 • Yield and atom economy • Gas volume	• Continuous assessment via knowledge recall • End of unit test via past paper examination questions	Knowledge organisers are included in student's booklet (at the back) with blank copies to practice recall.

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Unit 4 (Year 10)	**Chemical changes** Developing an understanding of common reactions and using these to predict the outcomes of other reactions • Reactions and reactivity of metals • Extraction metals • Oxidation and reduction (redox) • Reactions of acids and neutralisation, including titration • Electrolysis • Half equations	• Continuous assessment via knowledge recall • Required practical 1 – Preparing a pure and dry sample of soluble salts from an insoluble oxide or carbonate • Required practical 2 – Determining reacting volumes of a strong acid and alkali through titration • Required practical 3 – investigating what happens when aqueous solutions are electrolysed using inert electrodes • End of unit test via past paper examination questions	Knowledge organisers are included in student's booklet (at the back) with blank copies to practice recall.
Unit 5 (Year 10)	**Energy changes** The transfer of energy within reactions and how this affects the surroundings. How electricity can be produced and used within chemical reactions • Exothermic and endothermic reactions • Reaction profiles • Bond energies • Chemical and fuel cells	• Continuous assessment via knowledge recall • Required Practical 4 – Investigating the variables that affect temperature change • End of unit test via past paper examination questions	Knowledge organisers are included in student's booklet (at the back) with blank copies to practice recall.

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Unit 6 (Year 10)	**The rate and extent of chemical change** Determining the rate at which a reaction is moving, including dynamic equilibrium • Calculating rate of reaction and the factors that can affect it, including catalysts • Collision theory and activation energy • Reversible reactions and dynamic equilibrium • Changing conditions and the effect on equilibrium	• Continuous assessment via knowledge recall • Required practical 5 – Investigating how changing concentration affects rate of reaction using two different methods • End of unit test via past paper examination questions	Knowledge organisers are included in student's booklet (at the back) with blank copies to practice recall.
Unit 7 (Year 11)	**Organic chemistry** The chemistry of carbon compounds, their sources and the modifications of them to produce new and useful materials. • Crude oil • Fractional distillation and uses of the fractions • Hydrocarbons and their properties • Homologous series – alkanes, alkenes, alcohols, carboxylic acids • Polymerisation • Amino acids and DNA	• Continuous assessment via knowledge recall • End of unit test via past paper examination questions	Knowledge organisers are included in student's booklet (at the back) with blank copies to practice recall.
Unit 8 (Year 11)	**Chemical analysis** Using chemical test to detect the chemical composition of a substance • Purity and formulations • Chromatography • Gas tests – oxygen, carbon dioxide, hydrogen, chlorine • Identifying metal and non-metal ions • Flame emission spectroscopy	• Continuous assessment via knowledge recall • Required practical 6 – determining the composition of a coloured substance using chromatography • Required practical 7 – using chemical tests to identify ions • End of unit test via past paper examination questions	Knowledge organisers are included in student's booklet (at the back) with blank copies to practice recall.

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Unit 10 (Year 11)	**Using resources** Developing sustainable methods of using limited resources to reduce our impact on the environment. • Sustainable development • Creating potable water • Alternative metal extraction • Lifecycle assessment • Reducing resource use • Corrosion and its prevention • Using alloys • Ceramics, polymers and composites • Haber process and fertilisers	• Continuous assessment via knowledge recall • Required practical 8 – analysing and purifying water samples from different sources • End of unit test via past paper examination questions	Knowledge organisers are included in student's booklet (at the back) with blank copies to practice recall.